รายงานวิจัยฉบับสมบูรณ์

โครงการ
การปรับตัวด้านภาวะเจริญพันธุ์
ของผู้ย้ายถิ่นชาวพม่าในประเทศไทย

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กุมภาพันธ์ 2548

สัญญาเลขที่ BGJ / 33 / 2544

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สนับสนุนโดยสำนักงานกองทุนสนับสนุนการวิจัย

CONTENTS

ACKNOWLEDGEMENT

We would like to thank the Thailand Research Fund who granted me the scholarship through this studying. We also thanks Institute for Population and Social Research that allow us to participate in the Kanchanaburi Project and field workers of Kanchanaburi project round 1 (2000) and round 2 (2001) even though their names are not mentioned here, who actually work hard with me during the data collection.

The grateful acknowledgement is given to Professor Dr. Philip Morgan, the foreign advisor at Duke University, North Carolina, USA., who spent his valuable time to give us suggestion intensely about methods of analysis using in this project.

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บทคัดย่อ

รหัสโครงการ : BGJ4480033

ชื่อโครงการ : การปรับตัวด้านภาวะเจริญพันธุ์ของผู้ย้ายถิ่นชาวพม่าในประเทศไทย

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การศึกษาครั้งนี้เป็นการศึกษากลุ่มผู้ย้ายถิ่นสตรีจากประเทศพม่า เปรียบเทียบกับสตรีไทยโดยกำเนิดที่มีอายุอยู่ในช่วงวัยเจริญพันธุ์ (15-49 ปี) ที่อาศัยอยู่ในพื้นที่เดียวกันในจังหวัดกาญจนบุรี โดยมีวัตถุประสงค์เพื่อ 1) กำหนดแบบแผนการปรับตัวทางภาวะเจริญพันธุ์ของผู้ย้ายถิ่น และ 2) ศึกษาความคาดหวังทางภาวะเจริญพันธุ์เพื่อที่จะยืนยันแบบแผนการปรับตัวภาวะเจริญพันธุ์ในอนาคตของสตรีกลุ่มนี้ โดยใช้ข้อมูลทุติยภูมิจาก โครงการกาญจนบุรีรอบที่ 1 (พ.ศ. 2543) และ รอบที่ 2 (พ.ศ. 2544) ดำเนินการโดยสถาบันวิจัยประชากรและสังคม มหาวิทยาลัยมหิดล และข้อมูลปฐมภูมิจากชุดแบบสอบถามที่ผู้วิจัยสร้างขึ้น เก็บเฉพาะประวัติการย้ายถิ่นของสตรีจากประเทศพม่าในพื้นที่ศึกษา

การอธิบายการปรับตัวทางภาวะเจริญพันธุ์ของผู้ย้ายถิ่น ได้ใช้ทฤษฎีพฤติกรรมมนุษย์กับสิ่งแวดล้อมทางสังคม จากแนวคิดสังคมวิทยาและจิตวิทยา โดยมีตัวชี้วัดดังนี้คือ อัตราเจริญพันธุ์รวม อัตราเจริญพันธุ์รายอายุ สัดส่วนการมีบุตรตามลำดับที่ ความต้องการบุตรเพิ่ม สำหรับแบบแผนการปรับตัวทางภาวะเจริญพันธุ์ของผู้ย้ายถิ่นที่จะทดสอบนั้น ได้กำหนดไว้ 3 แบบ คือ การกลืนกลายของภาวะเจริญพันธุ์ การหยุดชะงักของภาวะเจริญพันธุ์ และการรักษาไว้ของภาวะเจริญพันธุ์เดิม (แบบแผนสองวัฒนธรรม) โดยมีสมมติฐานว่า ผู้ย้ายถิ่นจะปรับตัวตามแบบการกลืนกลายของภาวะเจริญพันธุ์ วิธีที่ใช้ทดสอบคือ การเปลี่ยนแปลงลำดับการมีบุตรอย่างต่อเนื่องของผู้ย้ายถิ่น และความคาดหวังที่จะมีบุตรเพิ่ม ตามระยะเวลาที่อยู่ในประเทศไทย

ผลการศึกษาพบว่า ผู้ย้ายถิ่นมีอัตราเจริญพันธุ์รายอายุสูงกว่าคนไทยทุกกลุ่มอายุ ผู้ย้ายถิ่นมีความต้องการบุตรเพิ่มสูงกว่าคนไทยในทุกกลุ่มอายุ การทดสอบสมมุติฐานโดยใช้วิธีวิเคราะห์ประวัติชีวิตเพื่อนำมาสร้างตารางชีพพหุของการมีบุตรต่อเนื่องใน 3 ช่วงเวลาที่ผ่านมา พบว่า ผู้ย้ายถิ่นไม่ได้ปรับตัวแบบการกลืนกลายของภาวะเจริญพันธุ์ และความต้องการบุตรเพิ่มของผู้ย้ายถิ่นยังคงสูงกว่าคนไทยในทุกกลุ่มอายุ และไม่พบความแตกต่างมากนักของความต้องการบุตรเพิ่มของผู้ย้ายถิ่นที่อยู่นาน (มากกว่า 15 ปี) กับผู้ย้ายถิ่นที่อยู่สั้น (น้อยกว่า 15 ปี) แต่มีแนวโน้มว่าผู้ย้ายถิ่นที่มีระยะเวลาที่อยู่อาศัยในประเทศไทยนานมีความต้องการบุตรเพิ่มต่ำกว่าผู้ย้ายถิ่นที่อยู่สั้นเล็กน้อย อย่างไรก็ตาม แบบแผนสองวัฒนธรรมอาจสามารถใช้อธิบายการปรับตัวทางภาวะเจริญพันธุ์ของผู้ย้ายถิ่นได้

คำสำคัญ : การปรับตัว พฤติกรรมการเจริญพันธุ์ ผู้ย้ายถิ่น ชาวพม่า

Abstract

Project Code : BGJ4480033

Project Title : The Adaptation of Fertility Behavior among Immigrant from Myanmar in Thailand

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Project Period : 2002-2005

Immigrants from Myanmar in Thailand are found in large numbers within Thailand and along the borders. They are spread out along the border of provinces of Thailand, working as legal and illegal migrants, and spending their daily lives and working with Thais. Objective of this study is to investigate the adaptation pattern of fertility behavior with particular focus on the assimilation, disruption, and biculturalism explanations of the adaptation among Myanmar immigrant women living at the Thai-Myanmar border. In addition, fertility expectation will be examined in order to predict the strength forward of the fertility behavior explanation among immigrants. This analysis uses data from the Kanchanaburi project 2000 and 2001 collected by Institute for Population and Social Research, Mahidol University. Married women were interviewed retrospective fertility and migration information in 24 communities of four districts along the border of Kanchanaburi province, which located in Western part of Thailand. Parity progression and intention to have more child are the indicators of fertility behavior. Use of the technique of event history analysis and multivariate life table has provided probability of having parity progression by comparing fertility behavior between natives and immigrants in the same area. The analysis shows the explanation of adaptation of immigrant fertility behaviors during three decades, 1970-1980, 1980-1990 and 1990-2000 periods. Socio-economic and cultural variables also contribute to examine in this study. The results show that the hypothesis of an assimilation pattern of fertility adaptation is rejected as the findings that, there are significantly different fertility patterns between natives and immigrants, but that there is no statistically difference between the two groups of immigrants. However, the results show some evidence of decline in the probability of immigrants who have lived in Thailand for a long period of time proceeding to higher parities. In addition, immigrants who live longer intend to add less child than ones who live shorter.

Keywords : Adaptation, Fertility Behavior, Immigrant, Myanmar

Introduction

Demographic change due to accelerating flows of international migration has been a concern of countries with net in-migration for decades. A major issue has been the impact of cultural change on immigrant behaviors. The processes of adaptation, assimilation, integration, or disruption, have been postulated as mechanisms though which the environment in the receiving country shape the migrants behavior. Among the many topics studied, the adaptation of fertility behavior has been a focus of research in studies in various regions. Research into fertility among immigrants in destination countries has included perspectives based on selectivity and forced migration. However, there is little research on international migrant fertility among Asian countries, especially immigrants from Myanmar in Thailand, who constitute the largest flow of international migrants into Thailand.

The differences in development level, culture, and fertility between Thailand and Myanmar are also examined in this study. Socio-economic and cultural factors have been observed to affect fertility, and are the motivational aspects of reproductive behavior. Patterns of family formation such as family size, parity, and birth order differ from culture to culture and from place to place (Omran et.al. 1976). In host countries of migrants, the socio-economic status differentials between migrants and non-migrants may also contribute to "cultural lag" in the adoption by immigrants of the reproductive health behavior of natives. Cultural lag in this sense is the time lag between availability and accessibility of modern birth control methods (Johnson 1960 cited by United Nations 1973).

Interest in social and demographic change among immigrants from Myanmar in Thailand stems from the fact that both legal and illegal migrants are found in large numbers within Thailand and along the borders. Estimates of the numbers of immigrants from Myanmar in Thailand, excluding displaced persons living in camp, are approximately one million people (The Registration Administration Bureau 1999). They are spread out along the border of provinces of Thailand, working as legal and illegal migrants, and spending their daily lives and working with Thais. The numbers of those people, both documented and undocumented, have been increasing over the past decades. The government has recently initiated the new programme in some provinces that provide family planning services to immigrants (Caouette et al. 2000). The growth of the non-thai population in Thailand comes from immigration, births, and naturalisation by intermarriage with Thai; however, little research has been conducted on the fertility behavior of immigrants. The study of fertility behavior and the adaptation of this behavior that occurs will provide valuable demographic data for population projections at the local level and will also contribute to understanding the family building patterns of immigrants in Thailand.

There is limited research on the demography of Myanmar although it is the most important neighbouring country (Chutitranon 2000), and it has had a close relationship with Thailand for a long period. More importantly, there is no research that has been undertaken on the fertility of immigrants from Myanmar to Thailand. Therefore, the objectives of this study are, firstly, to investigate the adaptation pattern of fertility behavior with particular focus on the assimilation, disruption, and biculturalism explanations of the adaptation. Secondly, for further

study, fertility expectation will be examined in order to predict the strength forward of the fertility behavior explanation among immigrants.

This study will be valuable for two reasons: firstly, exploring through investigating different explanations for change in fertility of international migrants, and secondly, providing important information to demographers for conducting population projections of the Myanmar population in Thailand. These results will be useful for policy makers in population, education, community development, government and national security policy towards migrants from Myanmar.

Profile of immigrants from Myanmar in Thailand:

The generally accepted estimate of the numbers of Myanmar migrants in Thailand is approximately one million people (Archavanitkul et al. 1997). Immigrants from Myanmar, principally Karen, Mon and other ethnic minorities from highland areas, began crossing into Thailand in significant numbers in 1959, during the political struggle in what was then called Burma. Most of these migrants have since been granted work permits and at least temporary residency.

Flows continued as political unrest in Myanmar intensified, the 1980s saw very larger flows of persons displaced over the border, while increasing gaps in development levels between Myanmar and Thailand saw a surge of undocumented migration into Thailand during the 1990s. Since many migrants are in Thailand illegally, it is difficult to determine how

migrants are distributed within Thailand, how many live along the borders, and how many penetrate deeply into the country. According to the Thai policy, many of the migrants can be identified as both displaced persons, refugees from threats of war, and migrants worker (illegal migrants). Also, many of those fleeing Burma are not allowed to stay in refugee camps, while others who move from these camps are recognized only as migrant workers.

The previous study I also explored the comparison of the current fertility pattern and level between natives and Myanmar immigrants in the same area during 1996-2000 (Peailueang, 2002). The result shows the estimate of ASFR in every age group of natives is lower than that of immigrants. The total fertility rate of natives (1.65) is significantly lower than that of immigrants' (3.19).

Fertility situation in Myanmar

There are various tribes of people in Myanmar. The life style and culture towards family building among them are difference in courtship and marriage. However, for Myanmar identities, no pattern obligation about family size and childbearing except Buddhist beliefs of both groups of people and large extended family size implied in their social structure.

As in many developing countries, demographic data are very limited in Myanmar. The country indicates a high fertility society from the last two censuses, with the fertility level is about 6.26 in 1973 and 5.27 in 1983 (United Nations, 1967 cited by Win Thint 1991), but with subsequent declines to 3.48 in 1996 (Myanmar Department of Population 1997) and 3.1 in

1998 (World Bank, 1999). This current fertility levels are significantly higher than those of Thai women, as replacement fertility level has existed in Thailand since 1990 (see table 1 in appendix). Myanmar pursued a pro-natalist policy from 1948 to 1991, and still encourages childbearing. The use and sale of condoms were not legalized until 1993 (Caouette et al. 2000), however contraceptive methods, i.e. spills, injections and condoms are available through various channels (Win Tint 1991) and widespread in almost all regions and various classes of people (Myint 1991). A study conducted in 1989, reported the occurrence of unwanted pregnancies, and high rates of abortion, maternal and infant mortality (Hla Pe, et al. 1992 cited by Caouette et al. 2000) due to low quality of contraceptive methods and an inadequate health service (Caouette 2000). The official "birth spacing" policy, the contraceptive programme of the Myanmar government, has been implemented to meet the high demand for contraceptives throughout the country. However, there remain problems of access as a result of poor health service management quality.

The Study area: Kanchanaburi province

Kanchanaburi is the Thailand's third largest province, covering an area of 19,486 square kilometres and about 200 kilometres west of Bangkok. The provincial area is mountainous and borders Myanmar to the west (see figure 1 in appendix). There are countless unofficial crossing points as government controls which are difficult to maintain because of the mountainous and jungle terrain in this area. Most of immigrants inhabit both sides of the border and maintain linguistic, cultural and family ties across the border. Some of

the immigrants have lived in Thailand for a long time and have interacted with all aspects of Thai culture.

Agricultural activities are mainly performed and also some mineral site in numerous mountains. Kanchanaburi is a province which has a large numbers of immigrants from Myanmar who come to live in Thailand and work for varying periods of time. Data available of Kanchanaburi in 1994 show 90,633 of Myanmar labour including Mon, Karen, and Burmese who have various reasons of immigration and status of entering. The province of Kanchanaburi consists of 13 districts (amphoe). Four Amphoe ; Amphoe Saiyok, Amphoe Thongpha phum, Amphoe Sangkhlaburi, and Amphoe Srisawat are the research site of this study because these districts have the large number of immigrants from Myanmar living in Thai communities and also has some living in their own communities along the border.

Figure 1 The map of Thailand and the study area in Kanchanaburi province

Literature Review

'Motivations for childbearing cannot in themselves explain behavior without reference to the social environment....' (Leon 1980 cited by Weeks, 1996:132). Therefore, human behavior and social environment are considered to be inter-related. (Queralt 1996; Weeks 1996). Application of these theories to migrant adaptation in this study involves understanding a process where immigrants undergo adaptation or adjustment to their new environment through adjusting to the new physical and social environment, learn how best to negotiate everyday life, and integrate to extent that their demographic behavior becomes increasingly similar to that of the native population (Schoenmaeckers, et.al. 1999; Weeks 1996; Ford 1990; Bach 1981; Queralt 1996).

Theory of assimilation is also stated in this study. Assimilation is a process of interpretation and fusion in which persons and groups acquire the memories, sentiments and attitudes of other persons or groups and, by sharing their experience and history, are incorporated into them with a common cultural life. After a period of contact with the native born population, the characteristics of the immigrant population should approach the characteristics of the native born population (Ford 1990). In a general theory of assimilation, individuals moving from one environment to another carry with them a set of behaviors, values, etc. which they acquire through socialization at the place of origin. Upon entry into the new environment at the place of destination, these characteristics are subject to change as the individual adapts to structural, cultural and psychological conditions (Bach 1981).

Exclusion from the host society is a situation where immigrants are kept separate from most members of the host society and are maintained in separate enclaves or ghettos. This contrasts, with multiculturalism or biculturalism where immigrants retain their ethnic communities but share the same legal rights as other members of the host society. Immigrants able to negotiate completely two or more cultures, the mainstream culture of the society and the individual's own culture(s), so that they can set of their own values, beliefs, lifestyles, and behavioral expectations (Queralt 1996).

Concept approaches to immigrant fertility

Migration and fertility have been considered to conceptualize that they are inter-related in various pattern. Migration has been identified as having a disruptive effect on fertility. The period just before migration, as people plan for their move, is a time of lower than expected fertility. Then, a lag occurs that is often overcome by accelerated (catch-up) fertility once migrants are established at their destination, or "catch-up" time after migration is complete (Ribe and Schultz 1980). Immigrants may actually adopt the norms, values, behavior and life styles, such as family size, and value of children, of the mainstream culture. It is assumed that migrants will undergo changes in fertility attitudes and behavior after migration as they gradually adapt to the new socio-economic, cultural, and physical environment at their destination (Hervitz 1985). The adaptation theory postulates that, over time, the fertility of immigrants moves from the level they brought with them to the level characteristic of the native-born at the destination, because the socio-economic characteristics of the migrants converge with those of people in the adopted home. Based on an assimilation model, with

increasing duration of residence in a new area immigrants should experience assimilation into the labour force, a decrease in residential segregation and a decrease in fertility levels (Ford 1990).

The innovation, diffusion, and cultural perspectives can also be employed to explain how people make rational choices about their behavior. People may adopt technology and may change attitudes and behavior. Therefore, this perspective may explain fertility behavior in which innovation may be attitudinal and behavioral, such as deciding that two children is the ideal family size and then utilizing means to achieve that number of children (Weeks 1996). The belief of the "two-children family size" can diffuse through contact with natives.

Previous studies relate to immigrant fertility adaptation

The literature on immigrant fertility includes a debate on whether immigrant fertility adjustment should be explained in a framework of fertility assimilation or in a model of fertility disruption. Some research suggests that the motivations behind migration also determine fertility (Hendershot 1971 cited by Brockerhoff and Yang 1994). In all countries there is a tendency for integration to extent that demographic behavior of migrant populations becomes increasingly similar to that of the native population (Schoenmaeckers, 1999). It assumed that migrants will undergo changes in fertility attitudes and behavior after migration as they gradually adapt to the new socioeconomic, cultural, and physical environment at their destination (Hervitz 1985).

Fertility adaptation in terms of assimilation has occurred in the case of immigrants to countries such as Yugoslavia in Europe (Parris 1982), immigrants in Australia (Abbasi-Shavazi and McDonald 2000), and immigrants in Germany (Mayer and Riphahn 2000). Studies have also been made of the impacts of international migration on delayed childbearing (Carlson 1985; Schoenmaeckers, et al. 1999). Immigrants move toward more modern behavior in destination countries, and this can include an increase in the age at first marriage, and a delay of childbearing as a result of later marriage. The delay may also be due to desires to limit family size by using modern contraceptives (Schoenmaeckers, et al. 1999).

Some U.S. studies suggest a temporary disruption may occur in the receiving country due to the migration event (Jasso and Rosenzweig 1991). U.S. census observed in 1970s-1980s data showed that the arrival during the 1970s of large numbers of immigrants from countries with high fertility had higher fertility on average than native-born women (Blau 1992; Jasso and Rosenzweig 1991).

While some scholars have investigated the process of adaptation of the first-generation migrants to the place of destination with lengthening duration of residence, some studies show that, post-migration, some migrant groups have maintained fertility behavior similar to that of their home countries. Evidence of cultural maintenance was observed in the fertility of Greek Australians. Both first and second generations have displayed similar patterns to Greeks in Greece, perhaps indicating a continuity of cultural influence of the country of origin in Greek communities in Australia. They are able to maintain the culture and fertility behavior of their

parents' generation and, on the other hand, adapt to the host society. This is the essence of multiculturalism (Abbasi-Shavazi and McDonald 2000) or biculturalism.

Concept of fertility adaptation patterns

Theoretical and previous research considerations lead to definitions of fertility patterns that can be used to explain the process of adaptation behavior. Three patterns, including fertility assimilation, fertility disruption, and fertility biculturalism, are described as follows.

Fertility assimilation: Fertility assimilation refers to the situation where immigration/native fertility convergence is located in the processes that occur after migration. A process of gradual acculturation to fertility norms and values of the destination society occurs from generation to generation. The result is that the greater the length of exposure to the host society, including its norms and values about marriage, fertility behavior will come to approximate those of nonimmigrant majority women

Fertility disruption: Fertility disruption refers to the process of migration interfering with fertility. This interference may derive from financial/ psychological hardships that would lead to a postponement of additional births or by temporarily separating spouses. It may be caused by reducing fecundity owing to stress typically associated with moving to a new place or country. The effect of disruption, however, is shown to be temporary, occurring only for a short period of time after the movement, after which fertility may resume its previous level and pace, or even accelerate, in order to compensate for disruption. However, even in the latter case,

temporary disruptions in childbearing may be severe enough to reduce cumulative fertility or completed fertility.

Fertility biculturalism: biculturalism refers to situation where the process of migration does not interfere with fertility. Biculturalism, occurs where immigrants retain the norms and values of their origin communities but share the same legal rights as other members of the host society. Norms and values of fertility behavior still remain at the same level of non-migrants at the origin. Therefore, fertility rates remain unaffected by migration and stay at the home country level, and immigrants' fertility level is constant over or below the natives' fertility level.

Fertility Expectation: Fertility expectation or the intention to have additional fertility refers to the intention of having additional births. It is also another useful fertility indicator, as it indicates what women who are presently of childbearing period might intend to do in the future. Asking women about the number of births they intend to have in the future provide information that is useful for estimating completed fertility rates. A fertility study by Westoff in 1999 conclude that "the proportion of women reporting that they want no more children has high predictive validity and is therefore a useful tool for short-term fertility forecasting" (Weeks, 1996). This method gives reasonably accurate results for women who are near the end of their reproductive years of life, but the results for younger women must be treated more cautiously (Campbell, 1983).

Conceptual Framework

Socio-economic and cultural factors are considered broadly as factors that strongly influence fertility. The duration of stay in the receiving country is an indicator that can affect the fertility outcomes of immigrants. These factors work as the environmental context of shaping attitudes, norms and values of people in society. Since lengthy birth interval may inhibit fertility, the events that occur prior to the end of the last segment are very important issues. Women who survive beyond the 10^{th} year, as well as the inverse of the survival function; that is the probability of having birth, will determine fertility patterns. Therefore, an independent variable in this analysis is the birth interval, which is the number of women-years of exposure. The dependent variable is the dichotomous variable of fertility behavior state within the ten years of the observation period. Women aged 15-49 who state of 'having birth' (yes or no) within 10 year of observation period are uncensored in lexis diagram. Migration status is the most important variable that will be used to determine fertility behavior adaptation, and duration of living in the destination is the other variable used examine whether immigrants fertility behavior is significantly different. Socio-economic and cultural variables will be used as control variables in the study. Migration status is defined as immigrants and natives, while duration of living in the destination will be categorized into two groups, including "immigrants who have lived in the destination equal and less than 15 years", and "immigrants who lived in the destination more than 15 years". Fifteen years is an appropriate length for women who moved to Thailand after they were born as by then they have entered reproductive ages.

The socio-economic variables that be used to examine factors affecting fertility patterns are education, land holdings, and employment status. Cultural variables that will be examined are intermarriage and language use. Language use refers to Myanmar immigrant women who can speak the Thai language.

A time-varying variable is also defined. Some immigrant women may have moved back to their origin and entered Thailand during the observation periods specified as 1970-1980, 1980-1990, and 1990-2000. Thus, living in Thailand during segments of observation will be controlled in the analysis because it may affect the fertility pattern.

Event History Analysis contributed by lexis diagram is used to manage the data set by and Logistic regression is an appropriate statistical technique to analyse the dichotomous dependent variable.

The variables that be used to predict the fertility expectation are parity and additional children. **Parity:** Parity refers to number of live births per woman. Parity is assessed by calculating the number of children born alive reported by women age 45-49. Parity is used to calculate the parity progression ratio, therefore, women of this age group will represent women who have completed their fertility. **Additional children:** Additional children refers to the number of births that women who are presently of childbearing state that they intend to have. Women aged 15-49 are assessed by self-reported of number of additional children they want.

Fertility adaptation pattern

The study of adaptation of fertility behavior will contribute to new knowledge about immigrants, particularly fertility behavior. This knowledge will contribute to explain how a cohesive community or ethnic identities among immigrants, or how success in family planning policy, can affect fertility. Estimated probabilities of having birth since marriage through the fifth birth will be presented by migration status and duration of living in Thailand. Coefficient values from a Logit model will be calculated to produce multivariate quasi-life tables. Probabilities of having birth for each parity (first birth and subsequent births) among ethnic groups and periods of duration of living in Thailand will be presented to illustrate the shape of adaptation of fertility behavior pattern from 1970 through 2000.

In this study, fertility adaptation is defined as a pattern that has changed due to various factors. The pattern of fertility adaptation is categorized based on theoretical approaches into three patterns. Firstly, ***fertility assimilation*** refers to the pattern where immigrants fertility declines with the number of years spent living in Thailand. Secondly, ***fertility disruption*** refers to the pattern where immigrants fertility declines at the beginning of moving and then it may increase or decrease along with the number of years spent living in Thailand. Finally, ***fertility biculturalism*** refers to the pattern where immigrants fertility is constant over time spent living in Thailand.

Fertility Expectation refer to the state of having more child while immigrants living in Thailand. Fertility expectation will be examined in order to predict the strength forward of the

fertility behavior explanation among immigrants. It will be measured by the number of births that women who are presently of childbearing state that they intend to add more child over time spent living in Thailand due to various factors.

Hypothesis

Hypotheses in this study are derived from theoretical approaches, previous studies, and empirical evidence. The sociological perspective suggests that, human behavior and social environment are inter-related and immigrants adapt or adjust to their new environment. In addition, the family planning program in Thailand has succeeded across the country and has contributed to replacement level fertility that was attained 1990. Thai women have strong norms and attitudes on limiting family size. The Thai culture, and cohesive community exist in a context without the fear of war and political stress that is evident in Myanmar. In order to survive the economic and psychological stress in their destination, Myanmar immigrants should adapt their behaviors, especially fertility limitation. Thus, they should acquire knowledge of family planning services and decide to control their fertility.

The reasons above lead to the main hypothesis of this study : fertility behavior among immigrants is adapted to the natives in an assimilation pattern. In addition, Number of additional children among immigrants are the same as natives.

Methodology

Data source

The data employed to achieve the objectives of this study consist of two sources, employing both primary and secondary data. The secondary data is taken from the survey of the Kanchanaburi project of the first round (2000). This survey was implemented by the Institute for Population and Social Research, Mahidol University, Thailand. The primary data is an additional module of migration history asking only women aged 15-50 years old in relevant villages in the second round of the Kanchanaburi survey. This study uses data from 25 villages from the four districts (amphoe) of Sangklaburi, Tongphaphume, Saiyok, and Srisawat. These four districts are "the restricted areas for displaced persons (The Registration Administration Bureau 1999).

Retrospective data from the fertility history contained in the first round of Kanchanaburi project is linked to the migration history for the longitudinal analysis. The fertility history data includes the list of all children of female respondents, the name of the children and information about their birth, include date, month, and year of birth, and place of birth registration. The information from the migration history was collected by face-to-face interviews and included age and year of entering Thailand, and the year and place moved since they first came to Thailand.

For the examination of the adaptation of fertility pattern, the timing of migration is used to link to the fertility history in the event history analysis. As migration data from the 2000

and 2001 rounds was not sufficiently precise, an additional module was added to the 2001 round in order to collect the history of migration. For merging the two data sets, immigrant women who had been interviewed in the Kanchanaburi project in the year 2000 were asked retrospective data on their migration history. Unfortunately, of the 691 immigrant women from 2000, only 337 were found in the same residence in 2001.

Based on the objectives of the study, ever-married women of reproductive age (15-49) have been selected to analyse fertility behavior. The total number of women in the study is 3,354 persons. Retrospective data on childbearing taken from the fertility section of the survey is employed to analyse fertility level and pattern. Nuptiality and other personal data are also employed to analyse fertility pattern and factors affecting fertility. The number of ever-married women by migration status is 2,676 natives and 678 Myanmar immigrants.

Data on intention for additional children is not available in the Kanchanaburi project data for 2000. In the second round of data collection for the project, in 2001, data on whether women wanted more children was collected. The question is "Do you want to have more children? If "still want" how many children do you expect to have?"

The number of women included in the analysis depends on the data source and the study objectives. The total numbers of women interviewed in the first round was 4,295. However, 3,354 women aged 15-49 are the population used for analyzing the fertility levels and patterns for the first objective. For the second and the third objectives, 2,946 ever married women aged 15-49 are used for analyzing fertility behavior and adaptation patterns.

Nevertheless, only 337 of immigrant women are included in the fertility adaptation analysis. For analyzing the intention to have additional children and estimating the "unmet need", data in the second round is analyzed from 2,246 ever married women aged 15-49 is employed. In addition, new immigrants living in the selected area are also included in this part of analysis which consisted of 701 cases altogether (see table 1).

Table 1 Number of women interviewed and number of eligible studied cases.

Studied areas	Natives	immigrants	Total
District Saiyok	863	40	903
District Srisawat	1,117	32	1,149
District Tongphapume	1,086	483	1,569
District Sangkhlaburi	435	239	674
Total (all women)	3,501	791	4,295
First round (2000) **(all women aged 15-49)**	**2,676**	**678**	**3,354**
ever married women aged 15-49	**2,297**	**651**	**2,946**
Second round (2001) **(ever married women aged 15-49)**	**1,545**	**701***	**2,246**
Additional module **(immigrant women aged 15-49)**		**337****	**337**

* 364 new immigrants are added

** Only 337 of 678 cases women was found in the same residence

Fertility Adaptation Analysis

Multivariate analysis for hypothesis testing

The objective of this section is to describe the logistic regressions for the creation of life tables for individuals in each parity with a given set of characteristics. Duration of ten years for having birth order n+1 (birth interval) is used to define the discrete-time hazard function. Individuals will experience the target event (having birth) in time period given or not (dummy variable 1=yes, 0=no), depending on a set of characteristics. We can obtain an expected interval length for a variety of individual characteristics combinations from the "Event History Analysis" method. Coefficients used to generate the Hazard probability of having a first birth and birth consequences within a duration of 10 years are included in the models of multivariate analysis for each parity group. Three periods -- 1970-1980, 1980-1990, and 1990-2000 -- are analysed to describe the change and adaptation of fertility behavior. Multivariate life tables are constructed from the Hazard probability, which is exactly analogous to q_x in the life table (Guilkey and Rindfuss 1987; Singer and Willete 1993).

In order to investigate the adaptation of fertility during the past three decades, the statistical method used should be suitable for longitudinal data analysis. In this study hazard analysis is employed. The reasons of using this method are firstly, the hazard technique is particularly well suited in fertility studies for determining the risk of having a birth within an observation period when there are censored observations. Secondly, the proportional hazards model used in this study can investigate the covariate effects on subsequent fertility and enable evaluation of the probability of having the next birth for a mother in view of her

particular circumstance such as migration disruption during birth interval. Finally, the characteristic and detail of information in the fertility data used in this study are well suited and of sufficient quality to be used for analyzing fertility in the three decadal periods and enable us to see the response so that fertility adaptation pattern can be determined.

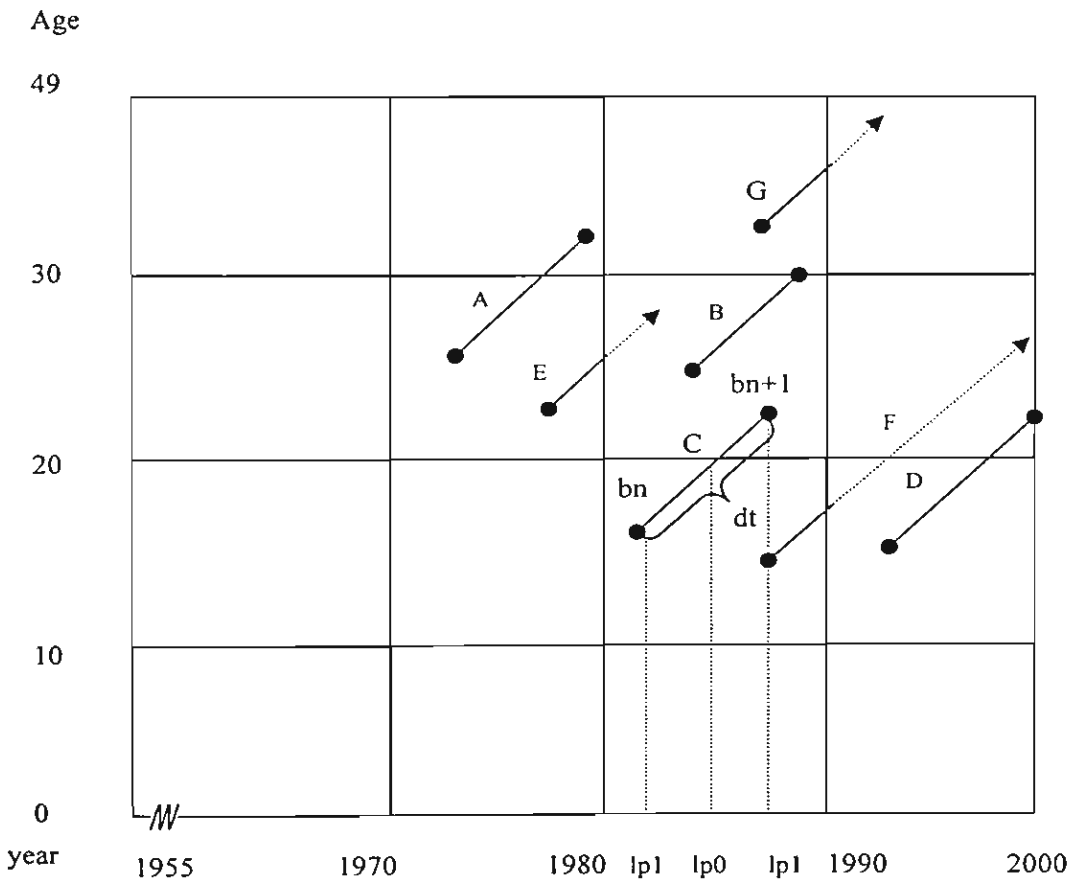

Figure 2 Lexis diagram for cohorts of women aged 15-49 in 2000.

Table 2 Name, abbreviation and category of variables using in estimate hazard function

Variable name	Abbreviation	Categorized
State of having birth n+1	-	1= Yes, 0 = No
Birth interval or duration from birth n to n+1	DU	Interval scale; I=1, 2, ,..10
Migration status:	MS	1= natives 0 = immigrants
Duration of having birth in the first year	DU1	1=yes, 0=others
Duration of Living in Thailand	MTA	1 = more than 15 years 0 = equal or less than 15 years
Moved out of the village at the time of survey	MTM	1 = yes, 0 = others
Time dependent variable: Living at the time at segment during observation period	LP	1 = living in Thailand 0 = not living in Thailand

Event History Analysis and Logistic Regression are the methods used to estimate discrete-time hazard functions and quasi-life-table summary measures of parity progression for the two-migration status. The methods are used to analyse the probability of having a birth by duration in three observation periods, 1970-1980, 1980-1990 and 1990-2000. These three periods are the first large wave of immigration to Thailand.

For the study on duration of repeat episodes of having a birth within the three observation periods, the state of "having birth" is distinguished. A person who has n+1 birth within 10 years after having n birth is considered "uncensored", if not the observation is "censored". The lexis diagram of history of childbearing and time of immigration are presented the three periods of the childbearing history of women aged 15-49 at the time of survey in

2000 (see figure 2 in appendix). The periods since 1970 through 2000 are the years that births up to parity five and from the time of marriage are distinguished. The three periods of 1970-1980, 1980-1990, and 1990-2000 are categorized as the three segments analysed for calculating the probabilities of having a birth during each segment, that is ten years duration for each segment. Therefore, the duration to a birth (d_t) is an independent variable, and the state of having a birth is the dependent variable. Obviously, any case where the woman does not have a birth n+1 within a segment (ten years) is censored because we do not know how much longer she would continue to proceed 'not having' birth n+1.

The diagram shows selected intervals of childbearing as a black spot, labelled "A", "B", "C", and "D", each with a starting point and end point relative to the time line. The starting point of each interval represents the date of birth of the child n. and the end point represents giving birth to child n+1. Therefore, the line with closed intervals with the black spot will be "uncensored" if they stop within each segment. In these cases the length of each interval is the duration to having the child n+1. Some intervals have not closed by the end of segment of analysis ("E", "F", and "G"), and continued past the end years (1980, 1990, and 2000). These are shown as hypothetical dotted lines and arrows because they could have a birth after the end of the interval or after the year of the survey. At the ending year of each segment, or the year of survey, the only thing that would be known about these cases is that the woman has still not given birth to child n+1. These 'open' intervals are also often known as "censored" intervals. Note that the length of the interval up to the end year for a censored case is treated as the observation duration for input into the model.

Table 3 Harzard regression and standard error results for having birth in 1970-1980, 1980-1990 and 1990-2000 period by duration of having birth, migration status and living duration

Explanatory variables	First birth			Second birth		
	Period 1970-1980	Period 1980-1990	Period 1990-2000	Period 1970-1980	Period 1980-1990	Period 1990-2000
Duration from 0 to 1st birth						
Duration	-0.489***	-0.696***	-0.698***	0.771	0.235	0.032
	(0.115)	(0.103)	(0.099)	(0.918)	(0.554)	(0.482)
Duration^2	0.066***	0.101***	0.103***	-0.198	-0.074	0.028
	(0.026)	(0.021)	(0.021)	(0.211)	(0.121)	(0.102)
Duration^3	-0.003*	-0.005***	-0.005***	0.012	0.004	-0.004
	(0.062)	(0.001)	(0.001)	(0.015)	(0.008)	(0.007)
Duration for 1 year	-1.231***	-1.567***	-1.548***	-0.800	-1.041**	-0.932**
	(0.179)	(0.154)	(0.148)	(0.477)	(0.330)	(0.323)
Migration status 1=natives	-0.448***	0.122	0.583***	0.303	-0.117	-0.808***
0= immigrants	(0.115)	(0.095)	(0.074)	(0.289)	(0.221)	(0.169)
Timing variables						
Living duration in Thailand	-0.066	0.110	0.502***	-0.252	0.070	-0.392
1> 15 years, 0<= 15 years	(0.164)	(0.130)	(0.152)	(0.401)	(0.304)	(0.312)
Moved immigrants and	-0.647	-0.206	-0.249**	0.086	0.017	-0.284
unidentified times 1= yes, 0=no	(0.147)	(0.117)	(0.093)	(0.376)	(0.286)	(0.208)
Constant	0.632**	0.789***	0.307*	-1.316	-0.790	-1.209
	(0.190)	(0.163)	(0.145)	(1.215)	(0.771)	(0.865)
LR ch^2	131.15***	213.70***	416.35	58.02***	80.47***	101.53***
df	6	7	7	7	7	7
R^2	0.0130	0.0173	0.0308	0.0440	0.0350	0.0361
Number of observations	673	849	989	346	510	478

* significant at level .05

** significant at level .01

*** significant level at .001

Table 3 (continue)

Explanatory variables	Third birth			Fourth birth		
	Period 1970-1980	Period 1980-1990	Period 1990-2000	Period 1970-1980	Period 1980-1990	Period 1990-2000
Duration	0.258	-0.473	-0.104	-2.414	-1.426	0.109
	(1.191)	(0.802)	(0.498)	(2.331)	(1.470)	(1.197)
Duration^2	-0.082	0.140	0.057	0.902	0.484	0.027
	(0.296)	(0.195)	(0.106)	(0.549)	(0.339)	(0.246)
Duration^3	0.003	-0.016	-0.006	-0.080*	-0.043	-0.005
	(0.002)	(0.015)	(0.007)	(0.041)	(0.024)	(0.015)
Duration for 1 year	-1.013	-1.089**	-1.004**	-1.052	-1.203	-1.775
	(0.541)	(0.393)	(0.337)	(1.357)	(0.878)	(1.064)
Migration status 1=natives	0.854	-0.147	-0.246	13.376***	-1.592***	-2.078***
0= immigrants	(0.629)	(0.223)	(0.188)	(3.062)	(0.313)	(0.369)
Timing variables						
Living duration in Thailand	0.485	0.092	-0.358	15.990***	-0.351	0.292
1> 15 years, 0<= 15 years	(0.721)	(0.324)	(0.307)	(3.036)	(0.453)	(0.456)
Moved immigrants and	0.414	-0.303	-0.053	15.04***	-0.338	-0.388
unidentified times 1= yes, 0=no	(0.686)	(0.302)	(0.234)	(3.101)	(0.428)	(0.439)
Constant	-1.664	-0.577	-1.663**	-15.580	-0.999	-3.043
	(1.552)	(1.009)	(0.713)	(3.030)	(1.947)	(1.753)
LR ch^2	60.58***	91.42***	70.50***	80.09***	68.59***	69.67***
df	7	7	7	7	7	7
R^2	0.0429	0.0359	0.0255	0.1523	0.0760	0.1130
Number of observations	570	973	443	70	106	59

* significant at level .05

** significant at level .01

*** significant level at .001

Table 3 (continue).

Explanatory variables	Fifth birth		
	Period 1970-1980	Period 1980-1990	Period 1990-2000
Duration	a	-0.249	-0.114
		(1.556)	(1.635)
Duration^2	a	0.058	0.007
		(0.364)	(0.374)
Duration^3	a	-0.008	-0.003
		(0.026)	(0.026)
Duration for 1 year	a	-1.452	-1.149
		(0.862)	(0.938)
Migration status 1=natives	a	-1.066*	-1.409**
0=		(0.454)	(0.410)
immigrants			
Timing variables			
Living duration in Thailand	a	-0.411	-1.651
1> 15 years, 0<= 15 years		(0.600)	(0.514)
Moved immigrants and	a	-0.521	-0.842
unidentified times 1= yes,		(0.615)	(0.538)
0=no			
Constant	-	-0.686	-1.070
		(2.027)	(2.153)
LR ch^2	-	34.21***	32.31***
df	-	7	7
R^2	-	0.0642	0.0722
Number of observations	-		

* significant at level .05

** significant at level .01

*** significant level at .001

a number of observation less than 5

The time-dependent variable or time-varying predictor is included as cross-border migration could happen at anytime. During a segment a migrant may move back to Myanmar. The diagram show an example case "C" who shows lp_1 is the year of living in Thailand and lp_0 is the year of living in Myanmar. Therefore, lp_1 represents the state of living in Thailand at the time during the observation period and lp_0 represents the state of living in Myanmar during the observation period.

The central concept in event history analysis in this part of the study is the risk set, which is the set of individuals who are at risk of an event occurring at each point in time. For example, immigrants and natives who have n birth order, some of them are at risk of having parity progression (n+1) within the observation period, thus the entire sample constitutes the risk set in that period. Hence, at the end of period, the risk set is diminished by the number who experience events in that period.

The Hazard rate in discrete time is another key concept of the model. The hazard rate is the probability that an event will occur at a particular time to a particular individual, given that the individual is at risk at that time. The probability of women having parity progression (n+1) in 1970-1980, 1980-1990 and 1990-2000 period is the "Hazard rate: derived from the risk set of person-period data set. Logistic regression is used to estimate discrete-time hazards functions from a logit estimation model for ten years duration with the set of characteristics. Both time-independent variables and time-dependent variables produce the coefficients in the model.

The hazard function ((h(t)) is calculated by an equation using the specification of the first-order, second-order, and third-order effects of duration (duration, duration^2, and duration^3) to specify the nonlinear relationship. The t in the equation is the duration 1 through 10 years.

Hazard function of the explanatory variables can be written as equation:

$$h_i(t) = \exp(\alpha+\beta_i X_i+ \ldots) \quad (1)$$

$$\text{or} \quad \log(h(t)/(1-h(t))) = (\alpha+\beta_i X_i + \ldots) \quad (2)$$

where $h_i(t)$ is hazard rate of having birth at duration i year.

The multivariate life table is used to estimate the survival function and probability of parity progression that individuals with a particular set of characteristics will experience within a multivariate framework (Guilkey & Rindfuss, 1987). An appropriate model (shown in table 3) will be selected to estimate the Hazard function for constructing forty-five life tables.

This is used to create a multivariate life table to obtain a survival function (S(t)) and probability event (P(t)) by equations:

$$S(t_i) = l_{i-1} - h(t_i) * l_{i-1} / 1000 \quad (3)$$

$$P(t_i) = 1-S(t_i) \quad (4)$$

where t=duration to having birth(year) i=1,2,3,...,10

l = numbers of women who survived at t = i when numbers of women at t_0 = 1000.

In order to create multivariate life table, probabilities of having birth n to n+1 are calculated from forty-four equations by using equation (1).

Examples of equations of Hazard functions from the appropriated model are as follows:

First birth, 1970-1980:

$$h(t) = \exp (-0.632)+(-0.489)DUt_i+(0.066)DUt_i^2 + (-0.003)DUt_i^3 +(-1.231)DU1+(-0.448)\ MS+(-0.066)MTA+(-\ 0.647)MTM$$

First birth, 1980-1990 :

$$h(t) = \exp (0.789)+(-0.696)DUt_i+(0.101)DUt_i^2 + (-0.005)DUt_i^3 + (1.567)DU1 +(0.122)MS+(0.110)MTA+(-0.206)MTM$$

First birth, 1990-2000 :

$$h(t) = \exp (-1.307)+(-0.698)DUt_i+(-0.103)DUt_i^2+ (-0.005)DUt_i^3 +(-0.548)DU1 + (0.583)\ MS +(-0.502)MTA+(-0.249)MTM$$

The same method is used for the subsequent birth so that the Harzard rates are used to calculated from multivariate analysis by adopting the life table method with a radix of '100' women. Table A2 in appendix is the example of survival rate using the life table technique.

An example of calculation of survival rate for having first birth at year tenth (t=10), 1970-1980 is as follow.

$$S(t_{10}) = 180.814 - (0.1005 * 180.814) / 1000$$

$$= 0.1626$$

$$P(t_{10}) = 1 - 0.1626$$

$$= 0.8374$$

An appropriate model is selected to estimate the Hazard function for constructing the forty-five life tables. Forty-five life tables derived from forty-five equations of each parity group and of each period are plotted for each period. The three graphic presentations of 1970-1980, 1980-1990, and 1990-2000 illustrate the tendency of moving to higher parities. In addition, parity distributions among natives and immigrants will be examined in order to specify fertility behavior adaptation pattern during the past decades with the support of logistic regression analysis to test the difference between the two groups of migration status by duration of living duration in Thailand.

Results of fertility adaptation analysis

According to migration status and the duration of living in Thailand are the important variables which are used to investigate whether time spending in Thailand affect fertility adaptation pattern among immigrants, set of characteristics including socioeconomic, cultural and timing variables are also controlled in models of testing. The multivariate analysis includes the effects of set of characteristics including socioeconomic, cultural and timing variables. Five

parity groups are presented for three periods. The result indicated that migration status has a strong effect in all three periods and every model when other socio-economic, cultural, and timing factors are controlled. Native women tend to have births at higher order slower and less frequently than do immigrant women within each ten-year period. The education and landholding variables do not strongly influence the probability of having children. However, women who had been educated are more likely to bear higher order births slower and less often than women who have never been educated. Landholding, the indicator of economic status, does not show any evidence of affecting the probability of having a high parity birth. This may be because most immigrants cannot own land in Thailand. For cultural factors, the results show that there are no significant effects of intermarriage or Thai language ability on having a birth. However, the negative coefficients indicate that immigrants who are married to Thai men and can speak Thai, are less likely to have higher order births.

The key issue of testing hypothesis is that duration of living in the destination is a variable that measures the period of contact that an immigrant potentially has with the native born population. Therefore, table 2 in appendix shows the coefficient of Harzard regression and standard error results for having first and subsequent births in 1970-1980, 1980-1990 and 1990-2000 period by birth interval (duration of having next birth), migration status and duration of living in the destination. The results of this study do not show strong evidence supporting this hypothesis. However, there is a tendency for immigrants who have lived longer in Thailand to have their first birth faster, and their second and third births slower, than those who have had a shorter duration of residence in Thailand. The finding that immigrants with a

long duration, compared to those with a short duration, have behavior that is closer to the natives suggests that they try to adapt to the natives pattern. For time dependent variable, women who spend time in Thailand during each parity duration tend to have births slower than women who spend time in Myanmar.

Multivariate analysis of first and subsequent births

The first and subsequent birth analysis for the three periods is useful for explaining fertility behavior and attitudes. This section deals with the multivariate exercise of hazard modelling. The results in table 3 show that natives tend to have their first birth faster than immigrants. Immigrants probably had their first birth before immigration. However, duration of living in Thailand does seem to encourage more rapid first births among those women who have lived in Thailand for a longer period. For second birth, immigrants who live longer in Thailand tended to have second birth slower in 1970-1980 and 1990-2000 compared to immigrants who had lived in Thailand for a shorter period. In the 1990-2000 period. For third birth, living duration also does not have significant effects. However, the longer the duration of residence of immigrants in Thailand the lower the probability of a third birth at each time unit during the period 1990-2000 difference is not statistically significant. For fourth birth and fifth birth, duration of living in Thailand do not have statistically significant effects. Migration status does have a significant effect, with natives, compared to immigrants, less likely at each time period to have a birth of fifth parity.

The results described above indicate that at the first parity, natives tend to have first birth faster than immigrants. However, immigrants who have lived longer than 15 years in Thailand, compared to those who have lived in Thailand equal or equal or less than 15 years, have first births faster. For subsequent births, natives and immigrants who have lived longer than 15 years, compared to immigrants who have lived in Thailand equal or less than 15 years, are less likely at each time period, to have a birth of the specified parity. In order to compare the parity curve of natives and both immigrant groups, the best fitting model is selected to estimate the hazard function and create multivariate life tables.

Determination of fertility adaptation pattern

Table A2 in appendix shows probabilities at year ten of having a first birth through the fifth birth derived from the forty-four equations above (the equation of a fifth birth in 1970-1980 was not estimated due to a lack of observations). Probabilities of having a first birth and subsequent births at year ten are selected to display the results because these numbers are derived from the life-table in which observations are censored at year ten if a birth did not occur in the period. The interval of 10 years is sufficiently long to examine whether the fertility of natives and immigrants are disrupted from any event.

The parity curves in Figure 3 provide a visual representation of fertility responses during the three periods. Probabilities having a birth for each parity (first birth and subsequent births) by migration status and periods of duration of living in Thailand are presented to illustrate the shape of adaptation of fertility patterns from 1970 through 2000.

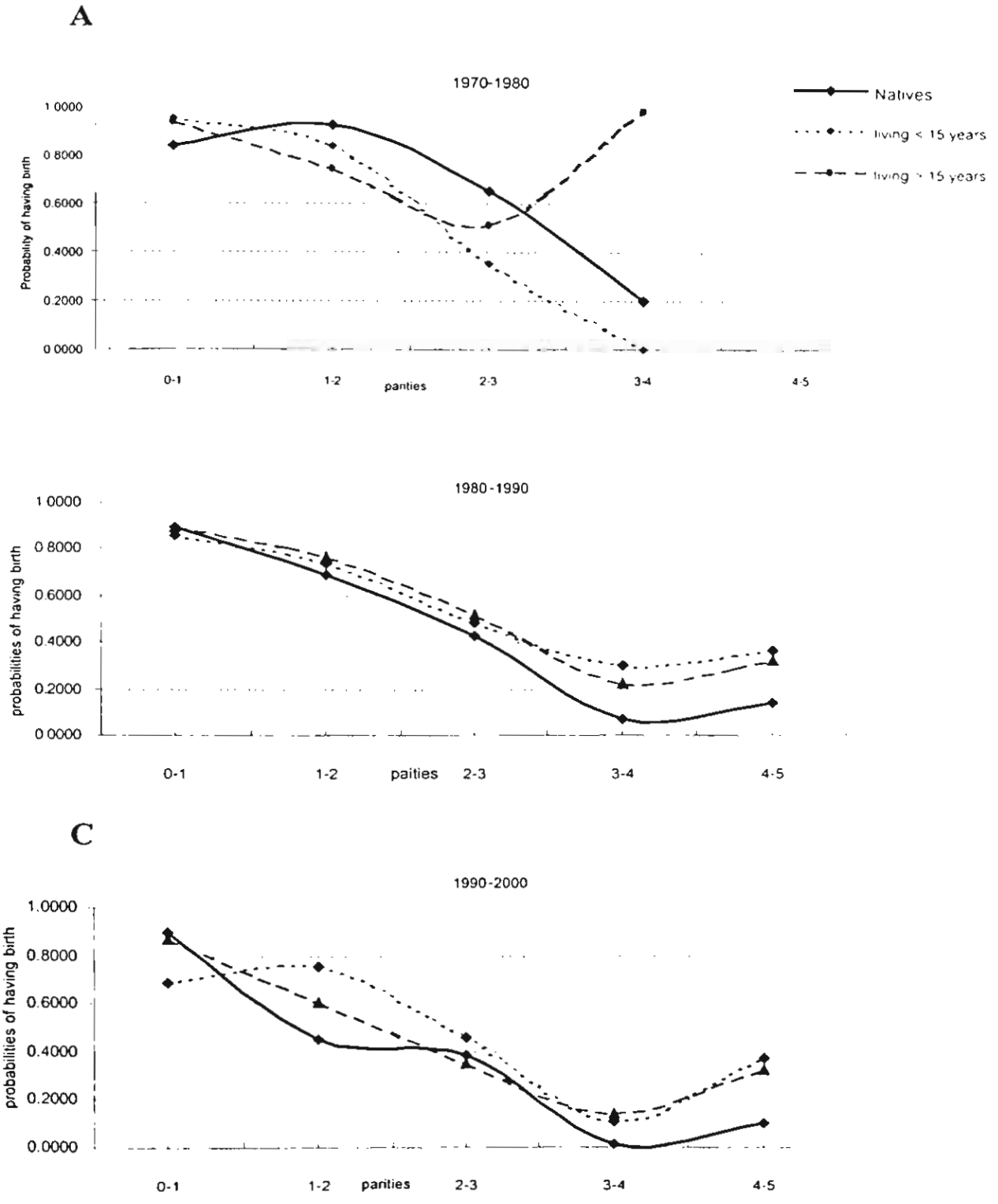

Figure 3 Probability of having birth of parity at year ten, of three groups, 1970-1980 1980-1990, and 1990-2000

The three periods identified are 1970-1980, 1980-1990, and 1990-2000. They are compared to describe the change and adaptation of fertility patterns over time. The three curves shown in Figure 3 compare probabilities of a next birth among natives and immigrants who have been living in Thailand equal or less than 15 years and, more than 15 years. The probabilities at year ten for every parity group are plotted in each period separately. Therefore, the three graphs demonstrate changes in fertility in the three periods, 1970-1980, 1980-1990, and 1990-2000.

In the 1970-1980 period

During 1970-1980, the national family program was initiated in Thailand, and all Thais are expected to have had some exposure to the program while some immigrants may have not been exposed. Immigrants who entered Thailand before and during this period probably had some experience of the family planning program in Thailand. The program may affect them if they entered Thailand soon after birth or they entered when they were in their reproductive ages.

Figure 3, A, shows the probabilities of parity progression at year ten among natives, immigrants living less than 15 years, and living more than 15 years. Marked differences in parity progression patterns are apparent between natives and both groups of immigrants during 1970-1980. At the beginning of the family planning program in Thailand in 1970, probabilities of having birth at parity two and three are still high so that curve is distinctly convex. Native women still have a high probability (more than 0.60) to give birth to parity

three although they have had a previous birth in the 10 years. While the shape of probability curves of both groups of immigrants fluctuate they also show high probabilities to give birth to parity four. The native's curve is smoother than the immigrant's curve. This difference may be due to disruption from migration, which causes an initial drop in fertility and a subsequent rise in fertility (Mayer & Riphahn, 2000). Some U.S. studies suggest temporary disruption may occur in the receiving country due to the migration event (Jasso and Rosenzweig, 1990 cited by Mayer & Riphahn, 2000).

The different curves of probabilities of having birth between immigrants who living longer and less than 15 years show that recent immigrants may control their births so that the curve of probability of having a high birth order is under that of natives. Immigrants who live have lived longer in Thailand tend to control their births at parity two and probably three, then they may want more children in parity four so that the curve may rise again. The results of duration of living indicate that fertility adaptation during the beginning wave of migration is affected by disruption.

In the 1980-1990 Period

The national family planning program was well entrenched and successful in this period. Native women had positive attitudes to limiting their family size so that the fertility level of the country sharply deceased to replacement level by the end of the period. A large wave of immigrants from Myanmar moved to Thailand because of war and political change in their

country. The high fertility level in Myanmar was very different from the low fertility in Thailand during this period.

Figure 3, B, distinctly depicts fertility adaptation among the three groups of women. Both of immigrants' curves are smoother when compared to 1970-1980. After 10 years of a successful family planning program in Thailand, the native parity progression curve had declined during 1980-1990. Comparing 1970-1980 and 1980-1990, native probabilities of having birth at parity two and three sharply decreased from more than 0.92 to 0.69 and 0.65 to 0.43, respectively. Immigrants' curves exhibit the same shape, but the speed of decrease among both immigrants' curves is slower than among natives. Immigrant probabilities of having birth at parity two through parity five are higher than natives. In addition, comparison of immigrant groups show that immigrants living in Thailand equal and less than 15 years exhibit slightly lower probabilities of births at parity three than those living more than 15 years. This may indicate that immigrants have adapted their fertility behavior in an assimilation pattern after they have lived in Thailand for a long period of time.

During 1985-1990, the total fertility rate of Myanmar women was 3.55 in 1985 and 3.57 in 1990 (Myanmar Central Statistic organization, 1997). However, it is inconclusive evidence because TFR in Myanmar has also gradually declined since 1973 (United Nation, 1967 cited by Win Thint, 1991:32). Since immigrants continuously flow to Thailand and the move is short distance, immigrants may still experience the fertility norms and values of their origin society. Immigrant fertility has already reduced at the origin before moving because of

selectivity characteristics, such as age, education, marital status, or occupation and this may have influenced their fertility adaptation. Therefore, it would be expected that migrant and native fertility differentials would tend to be insignificant (Ribe and Schultz' s research of Columbia, 1980 cited by Hervitz, 1985: 295). The results from this analysis show insignificant differences by migrant status in probabilities of giving birth to parity two and three. The evidence shows that native's fertility decreased in this period while that of the two immigrant groups was stable or slightly declined.

In the 1990-2000 period

Another large wave of labour immigrants from Myanmar moved the short distance to Thailand during this period due to economic stress. Illegal and legal immigrants spread out through the country. Economic stress, spousal separation, and inability to access family planning services may have affected the family building among them.

The fertility patterns displayed in Figure 3, C, support the interpretation of a bicultural fertility behavior pattern. The fertility of natives and immigrants who have lived in Thailand longer than 15 years have been declined, while the fertility of immigrants who have lived in Thailand equal or less than 15 years is still high. The natives exhibit an almost concave shaped pattern. In contrast, immigrants who have lived in Thailand equal or less than 15 years still have convex shape to their fertility pattern. However, there is no statistically significant difference in the probabilities of parity progression between the two immigrant groups. Probabilities of having a second birth among natives declined from 0.69 in 1980-1990

to 0.45 in 1990-2000, while the respective probabilities for both groups of immigrants were higher than 0.60. However, probabilities of having a third birth did not decline by a large amount of for natives. Most of the respondents live in rural areas along the border and the TFR in this area is higher than replacement level, and this is reflected in why probabilities of having third birth have not declined to the extent expected.

Fertility Expectation Analysis

For further investigation, Logistic Regression are also the methods used to predict intention to have more child in the future.

Table 4 Name, abbreviation and category of variables using in estimate hazard function

Variable name	Abbreviation	Categorized
State of having more child	I	1= Yes, 0 = No
Age group	A	age 15-19(A_1 =1), 20-24(A_2 =1), 25-29(A_3 =1), 30-34(A_4 =1), 35-39(A_5 =1), 40-44 (A_6 =1), and 45-49(A_7 =1)
Migration status:	MS	1 = immigrants 0= natives
Myanmar Generation	G	1^{st} = first Myanmar generation (born in Myanmar) 2^{nd} = second Myanmar generation (born in Thailand)
Parity	Pa	Parity when i= 0,1,2,...,5
Duration of Living in Thailand	DT	1 = equal or less than 15 years 0 = more than 15 years
Education	Ed	1 = some schooling, 0 = never
Employment	Em	1 = employment 0 = unemployment
Language use	Lg	1= Myanmar Speaker, Others=0

Dependent variable which will be conceptualized to explain the fertility behavior in the future is the intention to add more child (1=yes) by current children they already have. In this study, multivariate analysis techniques is used to examine whether Myanmar immigrants are more likely than native women to have add more child. Parity, age group, and duration of living are explanation variables for estimating the intention rate by comparing between immigrants and natives response to add more child. Socio-economic and cultural factors including education, employment, and ability to speak Thai which could affect the estimation are also controlled.

Result of fertility expectation analysis

In table 5, Model 1, we include only one covariate: a dummy variable for migration status (1 = Myanmar immigrants). This model tells us that immigrant women were more likely to add more child than native women. In Model 2, parity and age have the expected relationships to intention to have more child. We control for parity and age group and find remarkable change in these relationships. As expectation, Intention to add more child decreases with parity and age, is higher for Myanmar immigrants with significantly.

The inclusion of duration of living in Model 3 does not significantly alter the relationships between living short and long in Thailand(15 years is the border line of year determination). However, the coefficients show that immigrant women who live shorter tend to add more child than ones who live longer.Education, employment, and ability to speak Thai which are put as the covariate variables in model 4 and these interaction variables in Model 5 are found essentially no change in these relationships.

Table 5 Odds ratio of intention to add more child among women with different migration status, parity, age, and socio-economic and cultural factors, 2001

Explanation variables	1	2	3	4	5	6
Ethnic group						
Native born [a]	-	-	-	-	-	-
Myanmar-2nd	b	1.473***	1.474	1.484	1.770*	1.823*
Myanmar-1st living ≥15yrs.		b	2.453**	2.481**	3.132***	4.098***
Myanmar-1st <15yrs.	2.234***	2.558***	b 2.577*	3.481***	4.477***	5.690***
Myanmar-1st – no report				2.235***	2.864***	3.691***
Parity Parity 0 [a]	-	-	-	-	-	-
Parity 1	.645*	.625*	.626*	.612*	.610*	.606*
Parity 2	.178***	173***	.173***	.170***	.170***	.168***
Parity 3	.087***	084***	084***	.081***	.080***	.080***
Parity 4	.069***	066***	.066***	.063***	.062***	.062***
Parity 5	.063***	059***	.060***	.055***	.056***	.056***
Age group Age 15-19 [a]	-	-	-	-	-	-
Age 20-24	1.433	1.381	.379	1.403	1.407	1.385
Age 25-29	1.032	.987	.986	1.002	1.018	.997
Age 30-34	.756	.739	.739	.758	.782	.771
Age 35-39	.442	.426**	427**	.443*	.460*	.455*
Age 40-44	.216**	208***	208***	.217***	.228***	.226***
Age 45-49	.150***	149***	149***	.154***	.163***	.162***
Education Never [a]					-	-
Some schooling					1.384	1.414
Employment status						
Unemployment [a]					-	-
Employment					.919	1.070
Interaction						
Education x natives [a]						-
Education x Myanmar						.915
Employment x natives [a]						-
Employment x Myanmar						.705
LR chi²		645.07***	652.27***	652.30***	656.10***	659.35***
Df.		12	13	14	15	17
R^2		.2600	.2629	.2629	.2645	.2658
Observations		2171	2171	2171	2171	2171

a = reference group b = constrain to be equal * p < .05 ** p < .01 *** p < .001

The last low of table 5 shows the log-likelihood test scores for dimensions examined in Model 1 through 6. with Model 6 treated as the full model. The test for Model 1 evaluates the importance of migration status; the test for Model 2 evaluates the importance of parity and age; the test for Model 3 evaluate the effect of duration of living which will be investigated the adaptation of fertility behavior. The test for Model 5 and model 6 evaluates the importance of socio-economic and cultural factors. We estimate the log-likelihood tests by adding covariates in each model. The test scores indicate that migration status, parity, and age are the most important sources of differences in intention to add more child (648.66 with 12 degree of freedom). In addition, when we would like to examine whether immigrants adapt themselves on fertility behavior by living duration in destination, the log count is no large change so that they shows small difference of fertility intention between women who live short and long duration in Thailand.

Since immigrants appear to remain their fertility behavior although they spend times living in Thailand which succeed in family planning program. We estimate the intention rate from the model which could illustrate the evidence of fertility behavior adaptation; therefore, Model 3 will be used to estimate the intention rate as equation below:

$$IF_i = \ln(P_i/1-P_i) = \beta_0 + \beta_M(MS) + \Sigma\beta_{pi}(Pa_j) + \Sigma\beta_{Ai}(A_i) + \beta_{DT}(DT) \quad (1)$$

where, F_i = Additional intention rate at parity i

β_0 = constant coefficient

MS = Migration status; 1 = immigrants, 0 = natives,

Pa_i = Parity when I = 0,1,2,...,5

A_i = age group at i, i=1,2, 3,...,7 age 15-19(A_1 =1), 20-24(A_2 =1), 25-29(A_3 =1), 30-34(A_4 =1), 35-39(A_5 =1), 40-44 (A_6 =1), and 45-49(A_7 =1)

DT = Duration of living in Thailand when :

1= living less than 15 years, 0= living equal and more than 15 years

Therefore,

$$Ifi = (.598)+(.939)(MS)+(-.469)(Pa_2)+(-1.754)(Pa_3)+(-2.476)+(Pa_4)+(-2.721)(Pa5)+(-2.824)(Pa6)+(.323)(A_2)+(-.013)(A_3)+(-.303)(A_4)+(-.853)(A_5)+(-1.572)(A_6)+(-1.907)(A_7)+(.388)(DT)$$

From the above equation, the intention to add more child with parity can be estimated and illustrated in three curves shown in figure 4. The result shows migration status differentials in the shape of the intention rate by parity progression function for women aged 15 to 49 in year 2000. The y axis is the intention rate of adding more child among women who are still in the process of parity progression at parity i (x axis). This graph shows that the intention rate declines from parity 0 to parity 5 for both migration status. Differentials in intention patterns can be seen from the extent to which the curves decline by parity. This is not surprising because age and parity are strongly correlated in a population with successful family limitation. Both of immigrants curve of intention rates are higher than natives'. Moreover, the curves

show the evidence of little difference of intention rate between immigrants who live short and long duration. Immigrants who live longer intend to add less child than ones who live shorter.

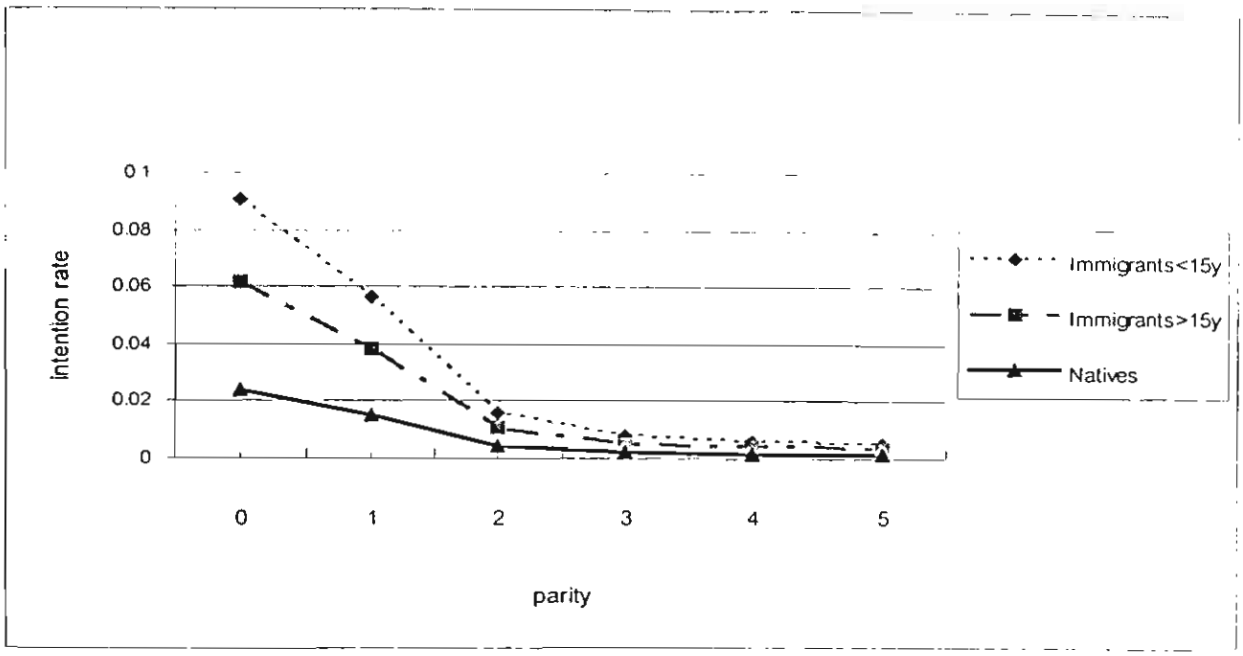

Figure 4 Intention to have more child by parity

Conclusion

To examine the hypothesis of assimilation, fertility patterns of immigrants who have lived in Thailand more than 15 years and those who have lived in Thailand equal or less than 15 years are compared to natives. A fifteen-years duration of living in the destination is employed because of the distribution of duration in the sample, and because this duration should be sufficient to illustrate evidence of assimilation. Fertility assimilation pattern is hypothesized to occur through the social environment shaping fertility norms and attitudes of immigrants in the new society. Event History Analysis and logistic regression are used to

investigate the hypothesis. Ten years observation periods of birth intervals of parity one through parity five are the dependent variables, and Hazard functions derived from the analysis are used to construct multivariate life table controlling for socio-economic, cultural, and timing factors. Logistic regression analysis is also method used to predict intention to have more child in the future.

Multivariate analysis by logit regression shows that, socio-economic, cultural, and timing factors do not have significant effects. Some variables, including intermarriage and duration of living in Thailand have negative impacts on birth probabilities. Birth intervals within the ten years observation period and migration status are found to statistically impact on the probability of proceeding to the next parity. The appropriate model is used to estimate Hazard functions for constructing life tables of five parities in three periods among the three groups of women defined in the analysis. Probabilities of having next birth are graphed to examine the fertility adaptation pattern.

The analysis of fertility expectation by asking the intention to have more child shows that immigrants, who live shorter and longer, curve of intention rates are higher than natives'. The curves also show the evidence of little difference of intention rate between immigrants who live short and long duration.

Therefore, the hypothesis of an assimilation pattern of fertility adaptation is rejected as the findings from the graphical presentation do not support an assimilation fertility adaptation

pattern. The evidence shows that there are significantly different fertility patterns between natives and immigrants, but that there is no statistically difference between the two groups of immigrants. However, the graphs show some evidence of decline in the probability of immigrants who have lived in Thailand for a long period of time proceeding to higher parities. In addition, immigrants who live longer intend to add less child than ones who live shorter.

The multivariate analysis of birth order and period effects confirmed the finding of a difference of fertility patterns between immigrants and natives. Immigrants still have high fertility, compared to natives, even after living in Thailand for more than 15 years. The results suggest that immigrants retain their ethnic identities and associated attitudes related to family size even though that moved to Thailand and share the same legal rights, environment, and public health service as other members of the host society.

Discussion and Recommendation

From this study a number of important findings have emerged. These findings are useful for immigrant policy-making purposes and for population projections. However, in making recommendations on policy it is important to keep in mind that the migrants live, work, and interact with the Thai people. Increasing numbers of immigrants, both legal and illegal, are in the labour market and resident on the border and this is an issue of national security.

The immigrants have come from a country of turbulent political and economic change and uncertain living situation where human rights are often not respected. The host,

Thailand, has provided a better life, such as working opportunities, a more secure living situation, and health services. Moreover, recent cabinet resolution provides citizenship for children who are born in Thailand. Permanent residency requirements and may interact with a reluctance to limit family size in order to survive in Thailand through obtaining citizenship for that Thai born children.

According to the findings that immigrants have high fertility, low contraceptive use, a high intention to have more births, and a relatively low level of unmet need, in Thailand, it is important that demographers and policy makers note the desire for a large family size even in a context of economic stress, conflict and human rights abuses. The high value of children affects motivations for future fertility. Children may be valued as economic assets because parents may think that children can contribute financially to household. The value of children as old-age insurance may also motivate immigrants to add more children under an uncertain living situation. Living away from their home country may also encourage a continuation of high fertility in order to sustain ethnic identity. Children are a tie to the past and they help provide continuity of identity.

The finding from this study is recommended that the government seriously and broadly promote family planning for immigrants, especially for women of early reproductive age. The high level of fertility and low level of contraceptive use among young immigrant women suggest that this is an important target group. Young immigrants from Myanmar have entered Thailand and have experienced none or little of the family planning attitudes and

programs experienced by the members of Thai communities. The commitment of immigrants to maintaining ethnic norms of family building in Thailand is an important implied finding from this study. Immigrants may be more pronatalist because they want security in their in old age and because citizenship could be obtained for their new-born children. Therefore, any role of family planning in intervention programs may be difficult. Family planning services need not only to be made available and accessible, but legal force, and support for knowledge and attitude changes is also required. The small family size should be encouraged for improving their life, such as healthy for women and their children, as well as good living by taking care of their children without economic pressure.

In addition, for demographers, the projection of the immigrant population can probably be undertaken using the fertility derived from this study if demographers have the other components of population change available to them for this population. The age specific fertility rates and the total fertility rate measured from this study show both the high level of fertility and the pattern of fertility. However, the future is hard to predict but we may still speculate on the effect of multiculturalism or biculturalism on family formation and childbearing patterns. Norms favouring a strong family that includes children as a prerequisite for security and fulfilling life and identity seem to be maintained by Myanmar immigrants after they leave their home country. The small difference in fertility levels by length of time spent in Thailand can be used by demographers in selecting terminal levels and alternative series of completed fertility for birth cohorts of women who will reach childbearing ages in the future. From the

results of this study, it may be concluded that the 'low series' could be used for fertility assumption in the component method of projections of the immigrant population.

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Appendix

Table A1 Total Fertility Rate among Thai women and Myanmar women from various sources.

Year	Total Fertility Rates		Sources of data:
	Myanmar	Thailand	
1973	6.26[1]	5.04[5]	1. United Nations
1983	5.27[1]	2.56[5]	2. Central Statistical Organization,
1985	3.55[2]	2.20[7]	Myanmar
1986	3.54[2]	2.06[6]	3. Myanmar Fertility and Reproductive
1987	3.57[2]	1.93[7]	Health Survey, Department of
1988	3.58[2]	1.76[7]	Population, Myanmar
1989	3.58[2]	1.85[7]	4. World Bank
1990	3.56[2]	2.17[6]	5. The 1980 Population and Housing
1991	3.57[2]	2.2[8]	Census , the Whole Kingdom, National
1992	3.55[2]	2.2[8]	Statistic Office, Thailand
1993	3.53[2]	2.2[8]	6. The 1990 Population and Housing
1994	3.50[2]	2.1[8]	Census , the Whole Kingdom, National
1996	3.48[3]	2.0[8]	Statistic Office, Thailand
1998	3.10[4]	2.1[8]	7.Thailand Demographic and Health
			Survey, 1988
			8. College of Population Studies

Table A2 Quasi-life table of women having first birth, natives, immigrants living equal or less than 15 years and more than 15 years, 1970-1980

Natives

ti	h(t)	dx	lx	sx	px
			1000		
0	0.3510	350.9562	649.0438	0.6490	0.3510
1	0.2293	148.8419	500.2019	0.5002	0.4998
2	0.1680	84.0346	416.1674	0.4162	0.5838
3	0.1355	56.4101	359.7573	0.3598	0.6402
4	0.1183	42.5637	317.1936	0.3172	0.6828
5	0.1097	34.8107	282.3829	0.2824	0.7176
6	0.1063	30.0091	252.3737	0.2524	0.7476
7	0.1055	26.6321	225.7416	0.2257	0.7743
8	0.1056	23.8281	201.9135	0.2019	0.7981
9	0.1045	21.0951	180.8184	0.1808	0.8192
10	0.1005	18.1748	162.6436	0.1626	0.8374

	Immigrants living ≤15					Immigrants living >15				
ti	h(t)	dx	lx	sx	px	h(t)	dx	lx	sx	px
			1000					1000		
0	0.5494	549.371 1	450.6289	0.4506	0.5494	0.5143	514.3064	485.6936	0.4857	0.5143
1	0.3590	161.764 5	288.8645	0.2889	0.7111	0.3361	163.2234	322.4701	0.3225	0.6775
2	0.2630	75.9661	212.8984	0.2129	0.7871	0.2462	79.3910	243.0791	0.2431	0.7569
3	0.2122	45.1725	167.7260	0.1677	0.8323	0.1986	48.2842	194.7949	0.1948	0.8052
4	0.1852	31.0630	136.6630	0.1367	0.8633	0.1734	33.7736	161.0214	0.1610	0.8390
5	0.1718	23.4775	113.1854	0.1132	0.8868	0.1608	25.8965	135.1249	0.1351	0.8649
6	0.1664	18.8286	94.3568	0.0944	0.9056	0.1557	21.0436	114.0813	0.1141	0.8859
7	0.1652	15.5865	78.7704	0.0788	0.9212	0.1546	17.6419	96 4394	0.0964	0.9036
8	0.1652	13.0153	65.7551	0.0658	0.9342	0.1547	14.9177	81.5217	0.0815	0.9185
9	0.1635	10.7537	55.0014	0.0550	0.9450	0.1531	12.4813	69.0404	0.0690	0.9310
10	0.1573	8.6539	46.3474	0.0463	0.9537	0.1473	10.1695	58.8709	0.0589	0.9411

Output จากโครงการวิจัยที่ได้รับทุนจาก สกว.

ผลงานตีพิมพ์ที่ได้รับทุนจาก สกว. คือ

1. **บทความที่ได้รับการตีพิมพ์ในวารสารทางวิชาการระดับนานาชาติ** ซึ่งเป็น Bilingual Journal คือวารสารวิจัยประชากรและสังคม (Journal of Population and Social Study) 1 july 2002
โดย น.ต.หญิง งามลมัย ผิวเหลือง

บทความชื่อ

Current and Future Fertility: Comparison of Natives and Immigrants in Kanchanaburi Province, Thailand

2. **การนำผลงานวิจัยไปใช้ประโยชน์**

รางวัลวิทยานิพนธ์ชมเชยสาขาสังคมวิทยาจาก สำนักงานคณะกรรมการวิจัยแห่งชาติ ปี ๒๕๔๖

ชื่อผลงาน (ภาษาไทย) "การปรับตัวของภาวะเจริญพันธุ์ของผู้ย้ายถิ่นสตรีต่างชาติในจังหวัดกาญจนบุรี ประเทศไทย"

ชื่อผลงาน (ภาษาอังกฤษ) Adaptation of Fertility Behavior Among Immigrants Women in Kanchanaburi Province, Thailand

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" **ผลงานวิจัยเรื่องนี้** มีความดีเด่นในเรื่องการได้องค์ความรู้ใหม่ทั้งผลการวิจัย และระเบียบวิธีในการประยุกต์ใช้เทคนิควิเคราะห์ในการคาดประมาณข้อมูลของแรงงานข้ามชาติกระแสใหญ่สู่ภาคอุตสาหกรรมประเทศไทย และทราบแบบแผนการเปลี่ยนแปลงเกี่ยวกับการเจริญพันธุ์ และการย้ายถิ่นซึ่งสามารถใช้ผลการวิจัยประยุกต์ใช้เกี่ยวกับนโยบายของผู้ย้ายถิ่นข้ามชาติ ซึ่งเป็นประโยชน์แก่ประเทศชาติต่อไป"

3. **การเสนอผลงานในที่ประชุมวิชาการระดับนานาชาติ** ของ International Union of Scientific Study of Population Conference 2002 เมื่อ June 11, 2002

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ผลงานชื่อ

Fertility Behaviour Adaptation among Women Living at the Thai-Myanmar Border of Kanchanaburi Province, Thailand

บทความสำหรับเผยแพร่

บทความสำหรับเผยแพร่

Intention for more birth and contraceptive use among native Thai and Myanmar immigrant women

Introduction

The differences in development level, culture, and fertility between Thailand and Myanmar are also examined in this study. Socio-economic and cultural factors have been observed to affect fertility, and are the motivational aspects of reproductive behavior. Patterns of family formation such as family size, parity, and birth order differ from culture to culture and from place to place (Omran et.al. 1976). In host countries of migrants, the socio-economic status differentials between migrants and non-migrants may also contribute to "cultural lag" in the adoption by immigrants of the reproductive health behavior of natives. Cultural lag in this sense is the time lag between availability and accessibility of modern birth control methods (Johnson 1960 cited by United Nations 1973).

. Interest in social and demographic change among immigrants from Myanmar in Thailand stems from the fact that both legal and illegal migrants are found in large numbers within Thailand and along the borders. Estimates of the numbers of immigrants from Myanmar in Thailand, excluding displaced persons living in camp, are approximately one million people (The Registration Administration Bureau 1999). They are spread out along the border of provinces of Thailand, working as legal and illegal migrants, and spending their daily lives and working with Thais. The numbers of those people, both documented and undocumented, have been increasing over the past decades. The government has recently initiated the new programme in some provinces that provide family planning services to immigrants (Caouette et al. 2000). The growth of the non-thai population in Thailand comes from immigration, births, and naturalisation by intermarriage with Thai; however, little research has been conducted on the fertility behavior of immigrants. The study of fertility behavior and the adaptation of this behavior that occurs will provide valuable demographic data for population projections at the local level and will also contribute to understanding the family building patterns of immigrants in Thailand.

There is limited research on the demography of Myanmar although it is the most important neighbouring country (Chutitranon 2000), and it has had a close relationship with Thailand for a long period. More importantly, there is no research that has been undertaken on the fertility of immigrants from Myanmar to Thailand. Therefore, the objectives of this study are to study contraceptive use pattern, and to examined fertility expectation, in order to predict the strength forward of the fertility behavior explanation among immigrants.

This study will be valuable for providing important information to demographers for conducting population projections of the Myanmar population in Thailand. These results will be useful for policy makers in population, education, community development, government and national security policy towards migrants from Myanmar.

Profile of immigrants from Myanmar in Thailand:

The generally accepted estimate of the numbers of Myanmar migrants in Thailand is approximately one million people (Archavanitkul et al. 1997). Immigrants from Myanmar, principally Karen, Mon and other ethnic minorities from highland areas, began crossing into Thailand in significant numbers in 1959, during the political struggle in what was then called Burma. Most of these migrants have since been granted work permits and at least temporary residency.

Flows continued as political unrest in Myanmar intensified, the 1980s saw very larger flows of persons displaced over the border, while increasing gaps in development levels between Myanmar and Thailand saw a surge of undocumented migration into Thailand during the 1990s. Since many migrants are in Thailand illegally, it is difficult to determine how migrants are distributed within Thailand, how many live along the borders, and how many penetrate deeply into the country. According to the Thai policy, many of the migrants can be identified as both displaced persons, refugees from threats of war, and migrants worker (illegal migrants). Also, many of those fleeing Burma are not allowed to stay in refugee camps, while others who move from these camps are recognized only as migrant workers.

The previous study I also explored the comparison of the current fertility pattern and level between natives and Myanmar immigrants in the same area during 1996-2000 (Peailueang, 2002). The result shows the estimate of ASFR in every age group of natives is

lower than that of immigrants. The total fertility rate of natives (1.65) is significantly lower than that of immigrants' (3.19).

Fertility situation in Myanmar

There are various tribes of people in Myanmar. The life style and culture towards family building among them are difference in courtship and marriage. However, for Myanmar identities, no pattern obligation about family size and childbearing except Buddhist beliefs of both groups of people and large extended family size implied in their social structure.

As in many developing countries, demographic data are very limited in Myanmar. The country indicates a high fertility society from the last two censuses, with the fertility level is about 6.26 in 1973 and 5.27 in 1983 (United Nations, 1967 cited by Win Thint 1991), but with subsequent declines to 3.48 in 1996 (Myanmar Department of Population 1997) and 3.1 in 1998 (World Bank, 1999). This current fertility levels are significantly higher than those of Thai women, as replacement fertility level has existed in Thailand since 1990 (see table 1 in appendix). Myanmar pursued a pro-natalist policy from 1948 to 1991, and still encourages childbearing. The use and sale of condoms were not legalized until 1993 (Caouette et al. 2000), however contraceptive methods, i.e. spills, injections and condoms are available through various channels (Win Tint 1991) and widespread in almost all regions and various classes of people (Myint 1991). A study conducted in 1989, reported the occurrence of unwanted pregnancies, and high rates of abortion, maternal and infant mortality (Hla Pe, et al. 1992 cited by Caouette et al. 2000) due to low quality of contraceptive methods and an inadequate health service (Caouette 2000). The official "birth spacing" policy, the contraceptive programme of the Myanmar government, has been implemented to meet the high demand for contraceptives throughout the country. However, there remain problems of access as a result of poor health service management quality.

The Study area: Kanchanaburi province

Kanchanaburi is the Thailand's third largest province, covering an area of 19,486 square kilometres and about 200 kilometres west of Bangkok. The provincial area is mountainous and borders Myanmar to the west (see figure 1 in appendix). There are countless unofficial crossing points as government controls which are difficult to maintain

because of the mountainous and jungle terrain in this area. Most of immigrants inhabit both sides of the border and maintain linguistic, cultural and family ties across the border. Some of the immigrants have lived in Thailand for a long time and have interacted with all aspects of Thai culture.

Agricultural activities are mainly performed and also some mineral site in numerous mountains. Kanchanaburi is a province which has a large numbers of immigrants from Myanmar who come to live in Thailand and work for varying periods of time. Data available of Kanchanaburi in 1994 show 90,633 of Myanmar labour including Mon, Karen, and Burmese who have various reasons of immigration and status of entering. The province of Kanchanaburi consists of 13 districts (amphoe). Four Amphoe ; Amphoe Saiyok, Amphoe Thongpha phum, Amphoe Sangkhlaburi, and Amphoe Srisawat are the research site of this study because these districts have the large number of immigrants from Myanmar living in Thai communities and also has some living in their own communities along the border.

Literature Review

'Motivations for childbearing cannot in themselves explain behavior without reference to the social environment....' (Leon 1980 cited by Weeks, 1996:132). Therefore, human behavior and social environment are considered to be inter-related. (Queralt 1996; Weeks 1996). Application of these theories to migrant adaptation in this study involves understanding a process where immigrants undergo adaptation or adjustment to their new environment through adjusting to the new physical and social environment, learn how best to negotiate everyday life, and integrate to extent that their demographic behavior becomes increasingly similar to that of the native population (Schoenmaeckers, et.al. 1999; Weeks 1996; Ford 1990; Bach 1981; Queralt 1996).

Theory of assimilation is also stated in this study. Assimilation is a process of interpretation and fusion in which persons and groups acquire the memories, sentiments and attitudes of other persons or groups and, by sharing their experience and history, are incorporated into them with a common cultural life. After a period of contact with the native born population, the characteristics of the immigrant population should approach the characteristics of the native born population (Ford 1990). In a general theory of assimilation, individuals moving from one environment to another carry with them a set of behaviors,

values, etc. which they acquire through socialization at the place of origin. Upon entry into the new environment at the place of destination, these characteristics are subject to change as the individual adapts to structural, cultural and psychological conditions (Bach 1981).

The map of Kanchanaburi province

Four districts of the study area

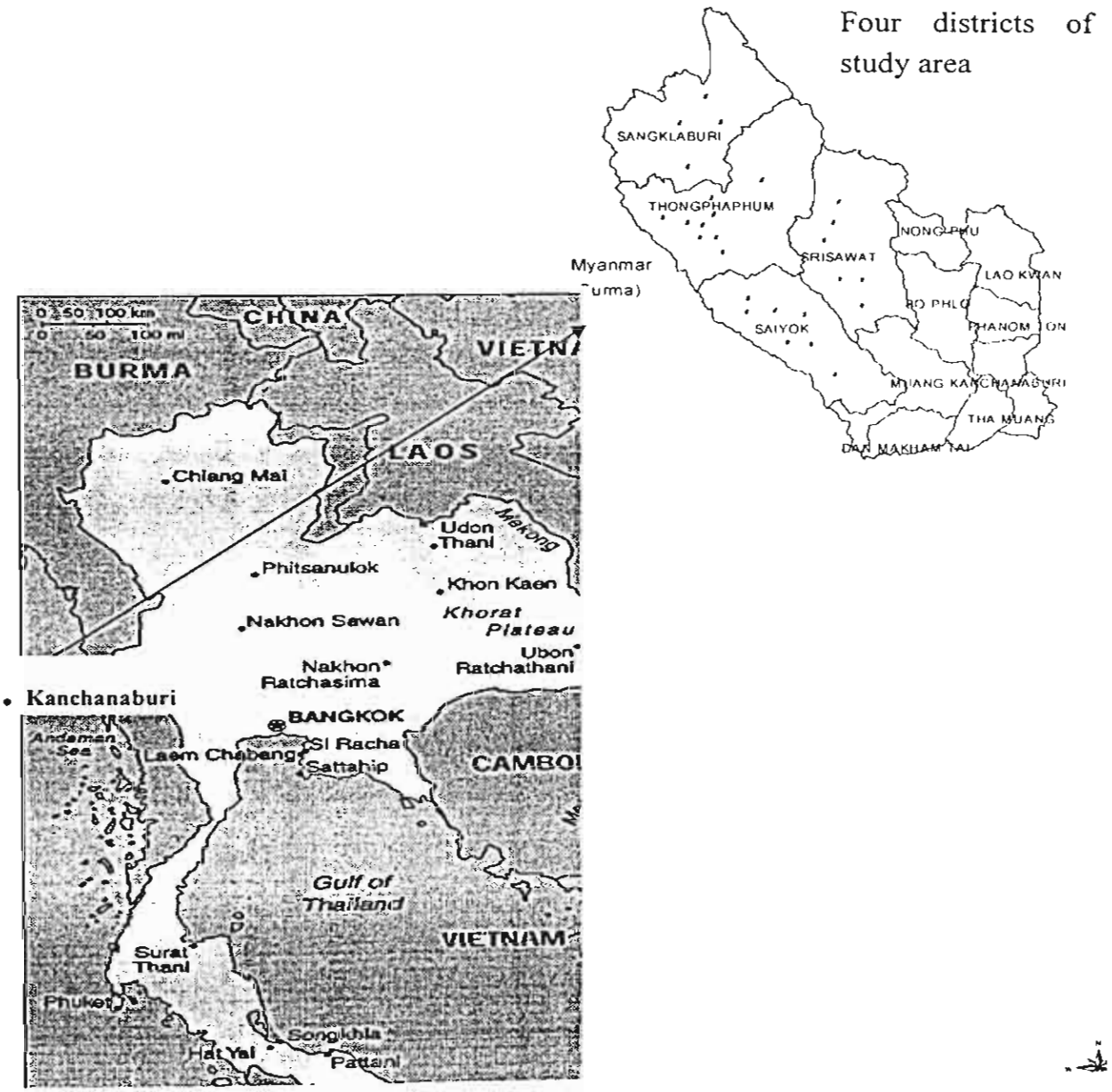

Figure 1 The map of Thailand and the study area in Kanchanaburi province

Exclusion from the host society is a situation where immigrants are kept separate from most members of the host society and are maintained in separate enclaves or ghettos. This contrasts, with multiculturalism or biculturalism where immigrants retain their ethnic communities but share the same legal rights as other members of the host society. Immigrants able to negotiate completely two or more cultures, the mainstream culture of the society and the individual's own culture(s), so that they can set of their own values, beliefs, lifestyles, and behavioral expectations (Queralt 1996).

Concept approaches to immigrant fertility

Migration and fertility have been considered to conceptualize that they are inter-related in various pattern. Migration has been identified as having a disruptive effect on fertility. The period just before migration, as people plan for their move, is a time of lower than expected fertility. Then, a lag occurs that is often overcome by accelerated (catch-up) fertility once migrants are established at their destination, or "catch-up" time after migration is complete (Ribe and Schultz 1980). Immigrants may actually adopt the norms, values, behavior and life styles, such as family size, and value of children, of the mainstream culture. It is assumed that migrants will undergo changes in fertility attitudes and behavior after migration as they gradually adapt to the new socio-economic, cultural, and physical environment at their destination (Hervitz 1985). The adaptation theory postulates that, over time, the fertility of immigrants moves from the level they brought with them to the level characteristic of the native-born at the destination, because the socio-economic characteristics of the migrants converge with those of people in the adopted home. Based on an assimilation model, with increasing duration of residence in a new area immigrants should experience assimilation into the labour force, a decrease in residential segregation and a decrease in fertility levels (Ford 1990).

The innovation, diffusion, and cultural perspectives can also be employed to explain how people make rational choices about their behavior. People may adopt technology and may change attitudes and behavior. Therefore, this perspective may explain fertility behavior in which innovation may be attitudinal and behavioral, such as deciding that two children is the ideal family size and then utilizing means to achieve that number of children (Weeks 1996). The belief of the "two-children family size" can diffuse through contact with natives.

Previous studies relate to immigrant fertility adaptation

The literature on immigrant fertility includes a debate on whether immigrant fertility adjustment should be explained in a framework of fertility assimilation or in a model of fertility disruption. Some research suggests that the motivations behind migration also determine fertility (Hendershot 1971 cited by Brockerhoff and Yang 1994). In all countries there is a tendency for integration to extent that demographic behavior of migrant populations becomes increasingly similar to that of the native population (Schoenmaeckers, 1999). It assumed that migrants will undergo changes in fertility attitudes and behavior after migration as they gradually adapt to the new socioeconomic, cultural, and physical environment at their destination (Hervitz 1985).

Fertility adaptation in terms of assimilation has occurred in the case of immigrants to countries such as Yugoslavia in Europe (Parris 1982), immigrants in Australia (Abbasi-Shavazi and McDonald 2000), and immigrants in Germany (Mayer and Riphahn 2000). Studies have also been made of the impacts of international migration on delayed childbearing (Carlson 1985; Schoenmaeckers, et al. 1999). Immigrants move toward more modern behavior in destination countries, and this can include an increase in the age at first marriage, and a delay of childbearing as a result of later marriage. The delay may also be due to desires to limit family size by using modern contraceptives (Schoenmaeckers, et al. 1999).

Some U.S. studies suggest a temporary disruption may occur in the receiving country due to the migration event (Jasso and Rosenzweig 1991). U.S. census observed in 1970s-1980s data showed that the arrival during the 1970s of large numbers of immigrants from countries with high fertility had higher fertility on average than native-born women (Blau 1992; Jasso and Rosenzweig 1991).

While some scholars have investigated the process of adaptation of the first-generation migrants to the place of destination with lengthening duration of residence, some studies show that, post-migration, some migrant groups have maintained fertility behavior similar to that of their home countries. Evidence of cultural maintenance was observed in the fertility of Greek Australians. Both first and second generations have displayed similar patterns to Greeks in Greece, perhaps indicating a continuity of cultural influence of the country of origin in Greek communities in Australia. They are able to maintain the culture and fertility behavior of their parents' generation and, on the other hand, adapt to the host society. This is the essence of multiculturalism (Abbasi-Shavazi and McDonald 2000) or biculturalism.

Fertility Expectation: Fertility expectation or the intention to have additional fertility refers to the intention of having additional births. It is also another useful fertility indicator, as it indicates what women who are presently of childbearing period might intend to do in the future. Asking women about the number of births they intend to have in the future provide information that is useful for estimating completed fertility rates. A fertility study by Westoff in 1999 conclude that "the proportion of women reporting that they want no more children has high predictive validity and is therefore a useful tool for short-term fertility forecasting" (Weeks, 1996). This method gives reasonably accurate results for women who are near the end of their reproductive years of life, but the results for younger women must be treated more cautiously (Campbell, 1983).

Conceptual Framework

Socio-economic and cultural factors are considered broadly as factors that strongly influence fertility. The duration of stay in the receiving country is an indicator that can affect the fertility outcomes of immigrants. These factors work as the environmental context of shaping attitudes, norms and values of people in society. Since lengthy birth interval may inhibit fertility, the events that occur prior to the end of the last segment are very important issues. Women who survive beyond the 10^{th} year, as well as the inverse of the survival function; that is the probability of having birth, will determine fertility patterns. Therefore, an independent variable in this analysis is the birth interval, which is the number of women-years of exposure. The dependent variable is the dichotomous variable of fertility behavior state within the ten years of the observation period. Women aged 15-49 who state of 'having birth' (yes or no) within 10 year of observation period are uncensored in lexis diagram. Migration status is the most important variable that will be used to determine fertility behavior adaptation, and duration of living in the destination is the other variable used examine whether immigrants fertility behavior is significantly different. Socio-economic and cultural variables will be used as control variables in the study. Migration status is defined as immigrants and natives, while duration of living in the destination will be categorized into two groups, including "immigrants who have lived in the destination equal and less than 15 years", and "immigrants who lived in the destination more than 15 years". Fifteen years is an appropriate length for women who moved to Thailand after they were born as by then they have entered reproductive ages.

The socio-economic variables that be used to examine factors affecting fertility patterns are education, land holdings, and employment status. Cultural variables that will be examined are intermarriage and language use. Language use refers to Myanmar immigrant women who can speak the Thai language.

The variables that be used to predict the fertility expectation are parity and additional children. **Parity:** Parity refers to number of live births per woman. Parity is assessed by calculating the number of children born alive reported by women age 45-49. Parity is used to calculate the parity progression ratio, therefore, women of this age group will represent women who have completed their fertility. **Additional children:** Additional children refers to the number of births that women who are presently of childbearing state that they intend to have. Women aged 15-49 are assessed by self-reported of number of additional children they want.

Fertility Expectation refer to the state of having more child while immigrants living in Thailand. Fertility expectation will be examined in order to predict the strength forward of the fertility behavior explanation among immigrants. It will be measured by the number of births that women who are presently of childbearing state that they intend to add more child over time spent living in Thailand due to various factors.

Hypothesis

Hypotheses in this study are derived from theoretical approaches, previous studies, and empirical evidence. The sociological perspective suggests that, human behavior and social environment are inter-related and immigrants adapt or adjust to their new environment. In addition, the family planning program in Thailand has succeeded across the country and has contributed to replacement level fertility that was attained 1990. Thai women have strong norms and attitudes on limiting family size. The Thai culture, and cohesive community exist in a context without the fear of war and political stress that is evident in Myanmar. In order to survive the economic and psychological stress in their destination, Myanmar immigrants should adapt their behaviors, especially fertility limitation. Thus, they should acquire knowledge of family planning services and decide to control their fertility.

The reasons above lead to the main hypothesis of this study : Number of additional children among immigrants are the same as natives.

Methodology

Data source

The data employed to achieve the objectives of this study consist of two sources, employing both primary and secondary data. The secondary data is taken from the survey of the Kanchanaburi project of the first round (2000). This survey was implemented by the Institute for Population and Social Research, Mahidol University, Thailand. The primary data is an additional module of migration history asking only women aged 15-50 years old in relevant villages in the second round of the Kanchanaburi survey. This study uses data from 25 villages from the four districts (amphoe) of Sangklaburi, Tongphaphume, Saiyok, and Srisawat. These four districts are "the restricted areas for displaced persons (The Registration Administration Bureau 1999).

Data on intention for additional children is not available in the Kanchanaburi project data for 2000. In the second round of data collection for the project, in 2001, data on whether women wanted more children was collected. The question is "Do you want to have more children? If "still want" how many children do you expect to have?"

The number of women included in the analysis depends on the data source and the study objectives. The total numbers of women interviewed in the first round was 4,295. However, 3,354 women aged 15-49 are the population used for analyzing the fertility levels and patterns for the first objective. For the second and the third objectives, 2,946 ever married women aged 15-49 are used for analyzing fertility behavior and adaptation patterns. Nevertheless, only 337 of immigrant women are included in the fertility adaptation analysis. For analyzing the intention to have additional children and estimating the "unmet need", data in the second round is analyzed from 2,246 ever married women aged 15-49 is employed. In addition, new immigrants living in the selected area are also included in this part of analysis which consisted of 701 cases altogether.

Contraceptive Prevalence

The rapid decline in fertility rates in Thailand since the early 1970s, which are now stabilizing at or below the replacement level, is due in large part to the extensive use of contraception by Thai women. However, we know little about the contraceptive practice of immigrant women, particularly immigrants from Myanmar, a country of low quality of family planning service and high fertility (Caouette, Archavanitkul, and Pyne, 2000). This part of analysis will use contraceptive use data to explore fertility adaptation patterns. In particular, I

examine whether the efforts of the family planning program diffuse to the immigrant communities along the border.

Patterns of current contraceptives use by method, age group, and migration status are presented in table 1. The table reveals large differences in contraceptive prevalence between native and immigrants women in the year 2000. Overall, native women show a higher level of use (60 percent), compared to only 38 percent of immigrant women using contraceptives. The proportion of immigrants who are currently using contraceptive is lower than expected. The average proportion of married women currently using contraception in countries with TFR of about 3 should be between 50-60 percent (Bongaarts, 1978: 122). The proportion of contraceptive use is calculated for married women aged 15-49 while TFR is calculated by all women aged 15-49 and therefore includes single women in the measure. It may be that higher proportions of immigrants compared to natives are delaying their marriage or not marrying. Other possible explanations for the discrepancy between TFR and contraceptive use levels are: high rates of abortion and high levels of spousal separation.

Native women aged 15-19 (17 percent) have lower levels of contraceptive use than do immigrant women (21 percent). These groups are women in their early reproductive period, just married, and at the start of childbearing plan. Native women probably plan to have children early after being married, therefore, some of them who married at age 15-19 have not used any contraceptive. Another large difference in contraceptive use is that the proportion of use of natives age 45-49 is about 53 percent while for immigrants it is only about 17 percent. Immigrants in this older cohort probably have little experience of contraception while native women have been exposed to methods for a long period. Female sterilization is the method most frequently used by women in this cohort for both natives and immigrant women (31 percent and 11 percent respectively). These women are in the latter stages of their reproductive life and they had the plan to stop having more births.

Natives aged 30-34 and 35-39 (72 and 73 percent respectively) have higher levels of use than other age groups, while immigrants aged 30-34 (53 percent) have the highest levels of use among immigrant cohorts. This result suggests that natives plan to stop or delay births after their twenties as they may be concerned about their health and their children. Based on the background of immigrants in the study area, immigrants age 30-34 are the largest group. The high use of contraception in this age groups, compared to other age groups, may result from migration disruption and adoption of modern family planning attitudes in their destination. They may confront economic stress and diffusion of innovation of family

planning, therefore, labor force participation or working with natives in the destination may motivate them to control their births.

Table 1 Percentage distribution of women in reproductive years practicing contraception by current method, according to migration status and age group

Natives (N=2676)

Methods	Ages							
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
Female sterilization	0.3	2.9	9.8	17.6	28.3	31.3	30.9	17.8
Male sterilization	0.0	0.0	0.2	0.4	0.7	1.7	3.3	0.9
Norplant	0.3	2.5	3.4	5.7	2.4	4.0	0.7	3.0
Injectable	5.3	19.1	21.0	18.3	14.5	11.7	4.9	14.1
IUD	0.3	2.2	1.1	1.5	1.9	2.5	2.0	1.6
Pills	11.5	30.5	28.1	26.3	23.3	17.9	9.1	21.6
Condom	0.3	0.6	0.9	1.7	1.0	0.5	1.0	0.9
Withdrawal	0.0	0.0	0.9	0.2	0.0	0.0	0.0	0.2
Safety period	0.0	0.0	0.0	0.4	0.2	0.5	0.7	0.3
Others	0.0	0.3	0.0	0.4	0.7	0.3	0.7	0.3
Total of using	18.0	58.1	65.5	72.6	73.1	70.4	53.1	60.7
Not using	82.0	41.9	34.5	27.4	26.9	29.6	46.9	39.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Immigrants (N=678)

Methods	Ages							
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
Female sterilization	0.0	0.9	3.1	11.9	12.8	18.0	11.3	8.1
Male sterilization	0.0	0.0	0.0	0.0	0.9	1.3	0.0	0.3
Norplant	0.0	1.8	0.8	0.9	1.8	1.3	1.4	1.2
Injectable	3.3	14.2	14.0	16.1	12.8	7.7	2.8	11.4
IUD	0.0	6.2	3.1	5.1	2.8	3.9	0.0	3.4
Pills	16.7	10.6	17.8	18.6	8.3	7.7	1.4	12.2
Condom	0.0	0.9	0.8	0.0	0.9	0.0	0.0	0.4
Withdrawal	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.2
Safety period	1.7	0.0	0.0	0.9	0.0	0.0	0.0	0.3
Others	0.0	0.9	0.8	0.0	0.0	0.0	0.0	0.3
Total of using	21.7	35.4	40.3	53.4	40.4	41.0	16.9	37.8
Not using	78.3	64.6	59.7	46.6	59.6	59.0	83.1	62.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The leading contraceptive method is the pill for both natives and immigrants (22 percent and 12 percent respectively). Female sterilization is the second most widely used method among native women, accounting for 18 percent of all use, followed by the injectable and Norplant (14 percent and 3 percent respectively). Natives age 20-24 and 25-29 prefer the pill more than do other age groups (30 percent and 28 percent respectively). For immigrants, the second most widely used methods is the injectable followed by female sterilization (11 percent and 8 percent respectively). This result may support the idea discussed above about postponing of childbearing by using temporary contraceptive methods. Immigrants use the injectable instead of female sterilization because they may plan to have more children in the future. The IUD is also some used by a small proportion of immigrants and natives (3 percent and 3 percent respectively). Use of other methods is so low as to be of no importance.

Fertility Expectation Analysis

For further investigation, Logistic Regression are also the methods used to predict intention to have more child in the future.

Table 2 Name, abbreviation and category of variables using in estimate hazard function

Variable name	Abbreviation	Categorized
State of having more child	I	1= Yes, 0 = No
Age group	A	age 15-19(A_1 =1), 20-24(A_2 =1), 25-29(A_3 =1), 30-34(A_4 =1), 35-39(A_5 =1), 40-44 (A_6 =1), and 45-49(A_7 =1)
Migration status:	MS	1 = immigrants 0= natives
Myanmar Generation	G	1st = first Myanmar generation (born in Myanmar) 2nd = second Myanmar generation (born in Thailand)
Parity	Pa	Parity when i= 0,1,2,...,5
Duration of Living in Thailand	DT	1 = equal or less than 15 years 0 = more than 15 years
Education	Ed	1 = some schooling, 0 = never
Employment	Em	1 = employment 0 = unemployment
Language use	Lg	1= Myanmar Speaker, Others=0

Dependent variable which will be conceptualized to explain the fertility behavior in the future is the intention to add more child (1=yes) by current children they already have. In this study, multivariate analysis techniques is used to examine whether Myanmar immigrants are more likely than native women to have add more child. Parity, age group, and duration of living are explanation variables for estimating the intention rate by comparing between immigrants and natives response to add more child. Socio-economic and cultural factors including education, employment, and ability to speak Thai which could affect the estimation are also controlled.

Result of fertility expectation analysis

In table 3, Model 1, we include only one covariate: a dummy variable for migration status (1 = Myanmar immigrants). This model tells us that immigrant women were more likely to add more child than native women. In Model 2, parity and age have the expected relationships to intention to have more child. We control for parity and age group and find remarkable change in these relationships. As expectation, Intention to add more child decreases with parity and age, is higher for Myanmar immigrants with significantly.

The inclusion of duration of living in Model 3 does not significantly alter the relationships between living short and long in Thailand(15 years is the border line of year determination). However, the coefficients show that immigrant women who live shorter tend to add more child than ones who live longer.Education, employment, and ability to speak Thai which are put as the covariate variables in model 4 and these interaction variables in Model 5 are found essentially no change in these relationships.

importance of migration status; the test for Model 2 evaluates the importance of parity and age; the test for Model 3 evaluate the effect of duration of living which will be investigated the adaptation of fertility behavior. The test for Model 5 and model 6 evaluates the importance of socio-economic and cultural factors. We estimate the log-likelihood tests by adding covariates in each model. The test scores indicate that migration status, parity, and age are the most important sources of differences in intention to add more child (648.66 with 12 degree of freedom). In addition, when we would like to examine whether immigrants adapt themselves on fertility behavior by living duration in destination, the log count is no large change so that they shows small difference of fertility intention between women who live short and long duration in Thailand.

Table 3 Odds ratio of intention to add more child among women with different migration status, parity, age, and socio-economic and cultural factors, 2001

Explanation variables		1	2	3	4	5	6
Ethnic group							
Native born [a]		-	-	-	-	-	-
Myanmar-2nd		b	1.473***	1.474	1.484	1.770*	1.823*
Myanmar-1st living ≥15yrs.				2.453**	2.481**	3.132***	4.098***
Myanmar-1st <15yrs.		2.234***	b 2.558***	b 2.577*	3.481***	4.477***	5.690***
Myanmar-1st – no report					2.235***	2.864***	3.691***
Parity	Parity 0[a]	-	-	-	-	-	-
	Parity 1	.645*	.625*	.626*	.612*	.610*	.606*
	Parity 2	.178***	173***	.173***	.170***	.170***	.168***
	Parity 3	.087***	084***	084***	.081***	.080***	.080***
	Parity 4	.069***	066***	.066***	.063***	.062***	.062***
	Parity 5	.063***	059***	.060***	.055***	.056***	.056***
Age group	Age 15-19[a]	-	-	-	-	-	-
	Age 20-24	1.433	1.381	.379	1.403	1.407	1.385
	Age 25-29	1.032	.987	.986	1.002	1.018	.997
	Age 30-34	.756	.739	.739	.758	.782	.771
	Age 35-39	.442	.426**	427**	.443*	.460*	.455*
	Age 40-44	.216**	208***	208***	.217***	.228***	.226***
	Age 45-49	.150***	149***	149***	.154***	.163***	.162***
Education Never [a]						-	-
Some schooling						1.384	1.414
Employment status							
Unemployment [a]						-	-
Employment						.919	1.070
Interaction							
Education x natives [a]							-
Education x Myanmar							.915
Employment x natives [a]							-
Employment x Myanmar							.705
LR chi²			645.07***	652.27***	652.30***	656.10***	659.35***
Df.			12	13	14	15	17
R^2			.2600	.2629	.2629	.2645	.2658
Observations			2171	2171	2171	2171	2171

a = reference group b = constrain to be equal * p < .05 ** p < .01 *** p < .001

The last low of table 3 shows the log-likelihood test scores for dimensions examined in Model 1 through 6. with Model 6 treated as the full model. The test for Model 1 evaluates the

Since immigrants appear to remain their fertility behavior although they spend times living in Thailand which succeed in family planning program. We estimate the intention rate from the model which could illustrate the evidence of fertility behavior adaptation; therefore, Model 3 will be used to estimate the intention rate as equation below:

$$IF_i = \ln(P_i/1-P_i) = \beta_0 + \beta_M(MS) + \Sigma\beta_{pi}(Pa_j) + \Sigma\beta_{Ai}(A_i) + \beta_{DT}(DT) \quad (1)$$

where, F_i = Additional intention rate at parity i

β_0 = constant coefficient

MS = Migration status; 1 = immigrants, 0 = natives,

Pa_i = Parity when I = 0,1,2,...,5

A_i = age group at i, i=1,2, 3,...,7 age 15-19(A_1 =1), 20-24(A_2 =1), 25-29(A_3 =1), 30-34(A_4 =1), 35-39(A_5 =1), 40-44 (A_6 =1), and 45-49(A_7 =1)

DT = Duration of living in Thailand when :

1= living less than 15 years, 0= living equal and more than 15 years

Therefore,

$$\begin{aligned} Ifi = {} & (.598)+(.939)(MS)+(-.469)(Pa_2)+(-1.754)(Pa_3)+(-2.476)+(Pa_4)+ \\ & (-2.721)(Pa5)+(-2.824)(Pa6)+(.323)(A_2)+(-.013)(A_3)+(-.303)(A_4)+ \\ & (-.853)(A_5)+(-1.572)(A_6)+(-1.907)(A_7)+(.388)(DT) \end{aligned}$$

From the above equation, the intention to add more child with parity can be estimated and illustrated in three curves shown in figure 2. The result shows migration status differentials in the shape of the intention rate by parity progression function for women aged 15 to 49 in year 2000. The y axis is the intention rate of adding more child among women who are still in the process of parity progression at parity i (x axis). This graph shows that the intention rate declines from parity 0 to parity 5 for both migration status. Differentials in intention patterns can be seen from the extent to which the curves decline by parity. This is not surprising because age and parity are strongly correlated in a population with successful family limitation.

Both of immigrants curve of intention rates are higher than natives'. Moreover, the curves show the evidence of little difference of intention rate between immigrants who live short and long duration. Immigrants who live longer intend to add less child than ones who live shorter.

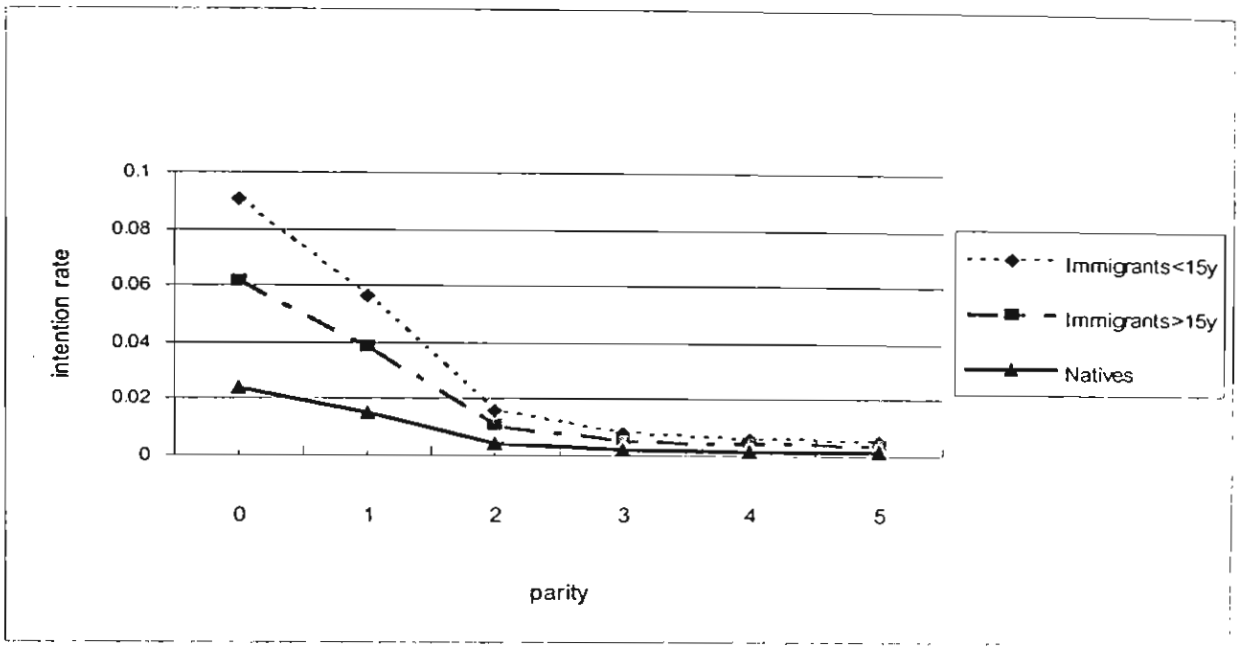

Figure 2 Intention to have more child by parity

Conclusion and discussion

To examine the hypothesis fertility expectation fertility patterns of immigrants who have lived in Thailand more than 15 years and those who have lived in Thailand equal or less than 15 years are compared to natives. A fifteen-years duration of living in the destination is employed because of the distribution of duration in the sample, and because this duration should be sufficient to illustrate evidence of adaptation pattern is hypothesized to occur through the social environment shaping fertility norms and attitudes of immigrants in the new society. Logistic regression analysis is method used to predict intention to have more child in the future.

Contraceptive prevalence of native and immigrant women in the year of 2000 is very different. Overall native women have higher level of contraceptive use than do immigrant women. The leading method for almost all age groups of both natives and immigrants is pills, which are available through various channels. Natives prefer female sterilization from age 30-34 while immigrants still widely use injectables. The results indicate that immigrants use

temporary contraceptive method more than do natives because immigrants may want to space their birth rather than stop childbearing.

The analysis of fertility expectation by asking the intention to have more child shows that immigrants, who live shorter and longer, curve of intention rates are higher than natives'. The curves also show the evidence of little difference of intention rate between immigrants who live short and long duration.

Therefore, the hypothesis of fertility expectation rejected as the findings from the graphical presentation do not support an fertility adaptation pattern. The evidence shows that there are significantly different fertility patterns between natives and immigrants, but that there is no statistically difference between the two groups of immigrants. However, the graphs show some evidence of decline in the probability of immigrants who have lived in Thailand for a long period of time proceeding to higher parities. In addition, immigrants who live longer intend to add less child than ones who live shorter.

The multivariate analysis of birth order and period effects confirmed the finding of a difference of fertility patterns between immigrants and natives. Immigrants still have high fertility, compared to natives, even after living in Thailand for more than 15 years. The results suggest that immigrants retain their ethnic identities and associated attitudes related to family size even though that moved to Thailand and share the same legal rights, environment, and public health service as other members of the host society.

Discussion for policy maker

From this study a number of important findings have emerged. These findings are useful for immigrant policy-making purposes and for population projections. However, in making recommendations on policy it is important to keep in mind that the migrants live, work, and interact with the Thai people. Increasing numbers of immigrants, both legal and illegal, are in the labour market and resident on the border and this is an issue of national security.

The immigrants have come from a country of turbulent political and economic change and uncertain living situation where human rights are often not respected. The host, Thailand, has provided a better life, such as working opportunities, a more secure living situation, and health services. Moreover, recent cabinet resolution provides citizenship for children who are born in Thailand. Permanent residency requirements and may interact with a

reluctance to limit family size in order to survive in Thailand through obtaining citizenship for that Thai born children.

According to the findings that immigrants have high fertility, low contraceptive use, a high intention to have more births, and a relatively low level of unmet need, in Thailand, it is important that demographers and policy makers note the desire for a large family size even in a context of economic stress, conflict and human rights abuses. The high value of children affects motivations for future fertility. Children may be valued as economic assets because parents may think that children can contribute financially to household. The value of children as old-age insurance may also motivate immigrants to add more children under an uncertain living situation. Living away from their home country may also encourage a continuation of high fertility in order to sustain ethnic identity. Children are a tie to the past and they help provide continuity of identity.

The finding from this study is recommended that the government seriously and broadly promote family planning for immigrants, especially for women of early reproductive age. The high level of fertility and low level of contraceptive use among young immigrant women suggest that this is an important target group. Young immigrants from Myanmar have entered Thailand and have experienced none or little of the family planning attitudes and programs experienced by the members of Thai communities. The commitment of immigrants to maintaining ethnic norms of family building in Thailand is an important implied finding from this study. Immigrants may be more pronatalist because they want security in their in old age and because citizenship could be obtained for their new-born children. Therefore, any role of family planning in intervention programs may be difficult. Family planning services need not only to be made available and accessible, but legal force, and support for knowledge and attitude changes is also required. The small family size should be encouraged for improving their life, such as healthy for women and their children, as well as good living by taking care of their children without economic pressure.

In addition, for demographers, the projection of the immigrant population can probably be undertaken using the fertility derived from this study if demographers have the other components of population change available to them for this population. The age specific fertility rates and the total fertility rate measured from this study show both the high level of fertility and the pattern of fertility. However, the future is hard to predict but we may still speculate on the effect of multiculturalism or biculturalism on family formation and childbearing patterns. Norms favouring a strong family that includes children as a prerequisite for security

and fulfilling life and identity seem to be maintained by Myanmar immigrants after they leave their home country. The small difference in fertility levels by length of time spent in Thailand can be used by demographers in selecting terminal levels and alternative series of completed fertility for birth cohorts of women who will reach childbearing ages in the future. From the results of this study, it may be concluded that the 'low series' could be used for fertility assumption in the component method of projections of the immigrant population.

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Appendix

Table A1 Total Fertility Rate among Thai women and Myanmar women from various sources.

Year	Total Fertility Rates	
	Myanmar	Thailand
1973	6.26[1]	5.04[5]
1983	5.27[1]	2.56[5]
1985	3.55[2]	2.20[7]
1986	3.54[2]	2.06[6]
1987	3.57[2]	1.93[7]
1988	3.58[2]	1.76[7]
1989	3.58[2]	1.85[7]
1990	3.56[2]	2.17[6]
1991	3.57[2]	2.2[8]
1992	3.55[2]	2.2[8]
1993	3.53[2]	2.2[8]
1994	3.50[2]	2.1[8]
1996	3.48[3]	2.0[8]
1998	3.10[4]	2.1[8]

Sources of data:

1. United Nations
2. Central Statistical Organization, Myanmar
3. Myanmar Fertility and Reproductive Health Survey, Department of Population, Myanmar
4. World Bank
5. The 1980 Population and Housing Census , the Whole Kingdom, National Statistic Office, Thailand
6. The 1990 Population and Housing Census , the Whole Kingdom, National Statistic Office, Thailand
7. Thailand Demographic and Health Survey, 1988
8. College of Population Studies

Table A2