

An Analysis of Socioeconomic Factors Associated with Fertility in Vietnam

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Abstract

Socioeconomic factors associated with the fertility level in Vietnam were investigated using the data of 44 provinces derived from the 1989 census. According to simple correlation analysis, variables that significantly correlated with the total fertility rate (TFR) at a 5% risk level, were the proportion married among women of reproductive age ($r=0.634$), the literacy rate among women of reproductive age ($r=-0.796$), the proportion of the urban population ($r=-0.394$), the proportion of women of reproductive age in the labor force ($r=0.349$), the population engaged in primary industries ($r=0.547$), the infant and early childhood mortality rate ($r=0.679$), the percentage of communes with communal health stations ($r=-0.571$), the average age at the first marriage of women ($r=-0.743$) and the sex ratio (male/female) ($r=0.399$).

In multiple regression analysis (stepwise method), four variables were included in the equation as factors with statistical significance. While the literacy rate among women of reproductive age showed a negative relation with TFR ($\beta=-0.499$), the infant and early childhood mortality rate ($\beta=0.338$), the proportion married among women of reproductive age ($\beta=0.283$), and the total migration rate ($\beta=0.174$) showed a positive relation with TFR. These four variables explained 80.0% of the total variance in the observed TFR. These results suggest that the replacement or hoarding theory is applicable to Vietnamese reproductive behavior.

Key words: Fertility, Vietnam, Socioeconomic factors, Infant mortality, Literacy

Introduction

Controlling population growth is critical for the Vietnamese government to realize sound economic development. According to the result of the population census of 1989, the population of Vietnam on 1 April 1989 was 64,412,000, representing an increase of 22% over the total of 52,741,000 at the time of the 1979 census¹⁾. The average annual growth rate of the population during these two years was 2.1 percent. If this rate continues, the average increase will be about 1.2 million persons per year, which in turn means that by the year of 2000, the Vietnamese population will be ranked among the world's largest, that is a population of more than 80 million. This high rate of population growth is an obstacle to the socioeconomic development of Vietnam. At the macro-level, massive population growth requires an increase

in resources for the increased population, stretching limited natural and financial resources, to respond to the increased need for doctors, hospitals, schools, teachers, food production, housing, employment, etc.

The objective of a population policy is not to reduce the population pressure in itself but to achieve sound socioeconomic development. Therefore, a very strict population policy neglecting other socioeconomic aspects is not desirable in the long run. In this report, the author presents some results concerning the relationship between fertility and socioeconomic factors based on the data of 44 provinces, in order to make some suggestions for the future population policy in Vietnam.

Materials and Methods

1. Materials used

For each factor considered, the following data of 1989 were used;

- 1) Economic factors
 - i) Provincial food production: [Data source] Statistical Yearbook(1993)²⁾
- 2) Demographic factors
 - i) Urban population (%), population engaged in primary

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industries (%), population in the labor force among women of reproductive age (%), literacy rate among women of reproductive age (%), population classified as minority (%), total migration rate (%), sex ratio (male/female) for those of reproductive age: [Data source] Completed census result(1992)¹⁾

ii) Total fertility rate, average age at the first marriage, infant and early childhood mortality rate index: [Data source] Detailed analysis of sample results (1991)³⁾

iii) The proportion of women married among those of reproductive age: according to Jains and Bongaats⁴⁾, that is, the proportion married (C_m) weighed by the age-stratified married fertility was used: $C_m = m_i g_i / \sum g_i$, where m_i = proportion of married women at the i^{th} age category and g_i = married fertility at the i^{th} age category.

In the case of g_i , because provincial data were unavailable, the national data were used.

a) Age-stratified proportion married of women: [Data source] Completed census result¹⁾

b) Age-stratified married fertility: [Data source] Detailed analysis of sample results³⁾

3) Public health and medical factors

i) Number of communes with communal health stations in 1990 (%): [Data source] Health statistics of Vietnam-1990-1992.⁵⁾

2. Statistical analysis

Simple correlation analysis was first conducted to investigate relations among 13 factors, following multiple regression analysis to evaluate factors primarily associated with fertility level. The SPSSX statistical package in the computer system of UOEH was used for all of the analyses.

Results

Table 1 shows the basic statistics for variables used in this report. There were considerable differences in each variable among the 44 provinces. The highest total fertility rate (TFR) was observed in Lai Chau province (6.77) and the lowest in Ho Chi Minh City (2.22). Lai Chau was characterized by the highest proportion of married women among those of reproductive age (84.5%), the lowest literacy rate (43.4%), the lowest average age at the first marriage of women (20.4 y), a large population engaged in primary industries (85.6%), a high percentage of minority population (80.6%), a high infant and early childhood mortality index (125: the national average is 100), a low percentage of communities with communal health stations (51.0%) and a high sex ratio (0.941). By contrast, Ho Chi Minh City was characterized by the lowest proportion married among women of reproductive age (60.7%), a high literacy rate among females of reproductive age (96.1%), a high rate of urban population (73.9%), a small population engaged in the labor force among women of reproductive age (61.6%), the lowest proportion engaged in primary industries (14.2%), the lowest infant and early childhood mortality index (75), 100% existence of communal health stations, the oldest average age at the first marriage of women (25.9 y), and a low sex ratio (0.836).

Table 2 shows the result of simple correlation analysis. Variables significantly correlated with TFR at a 5% risk were the proportion married among women of reproductive age ($r=0.634$), the literacy rate among women of reproductive age ($r=-0.796$), the proportion of the urban population ($r=-0.394$), the proportion of women of reproductive age in the labor force ($r=0.349$), the population engaged in primary industries ($r=0.547$), the infant and early childhood mortality rate index ($r=0.679$), the percentage of communes with communal health stations ($r=-0.571$), the average age of the first marriage of women ($r=-0.743$) and the sex ratio ($r=0.399$).

Table 3 shows the results of multiple regression analysis

Table 1 Basic statistics of variables used in the analysis (1989)

Variables	Mean*	S.D.	Maximum (Province)	Minimum (Province)
TFR	4.39	0.84	6.77 (Lai Chau)	2.22 (Ho Chi Minh)
CM	75.4%	4.7%	84.5% (Lai Chau)	60.7% (Ho Chi Minh)
LITR	86.9%	12.7%	98.7% (Hai Phong)	43.4% (Lai Chau)
PUP	18.1%	15.3%	91.5% (Ba ria Vung Tau)	4.7% (Song Be)
PLF	84.1%	10.6%	96.7% (Cao Bang)	61.0% (An Giang)
PIP	76.0%	13.6%	87.4% (Ha Giang)	14.2% (Ho Chi Minh)
PMIN	20.3%	28.1%	95.8% (Cao Bang)	0.1% (Thai Binh)
FODP	11.13 (kg)	5.71 (kg)	27.13 (kg) (An Giang)	3.64 (kg) (Ba Ria Vung Tao)
CILDM	103.65	17.19	125 (Lai chau etc.)	75 (Ho Chi Minh etc.)
PCHS	90.0%	14.1%	100.0% (Ho Chi Minh etc.)	45.3% (Lang son)
FMAGE	22.8	0.93	25.9 (Ho Chi Minh)	20.4 (Lai chau)
TMIGR	0.67%	4.37%	17.11% (Dac Lac)	-5.64% (Ha Giang)
SRAT	0.88	0.05	1.03 (Quang Ninh)	0.81 (Thai Binh)

Note: TFR: Total fertility rate, CM: Proportion married among women of reproductive age (%), LITR: Literacy rate among women of reproductive age (%), PUP: Proportion of urban population (%), PLF: Proportion of women of reproductive age in the labor force (%), PIP: Population engaged in primary industries (%), PMIN: Proportion of minority population (%), FODP: Food production per capita (kg), CILDM: Infant and early children mortality rate index (national level is 100 as reference), PCHS: Percent of communes with communal health stations (%), FMAGE: Average age at the first marriage of women (years old), TMIGR: Total migration rate (%), SRAT: Sex ratio among the population of reproductive age

*: Simple arithmetic means were calculated based on the data from 44 provinces.

Table 2 Correlation matrix of variables used in the analysis (1989)

	TFR	CM	LITR	PUP	PLF	PIP	PMIN	FODP	CILD	PCHS	FMAGE	TMIGR	SRAT
TFR	1.000	0.634**	-0.796**	-0.394**	0.349*	0.547**	0.688**	-0.192	0.679**	-0.571**	-0.743**	0.010	0.399**
CM		1.000	-0.435**	-0.493**	0.702**	0.581**	0.630**	-0.285	0.274	-0.345*	-0.902**	-0.221	0.326*
LITR			1.000	0.155	-0.153	-0.299*	-0.742**	-0.008	-0.631**	0.593**	0.651**	0.044	-0.337**
PUP				1.000	-0.528**	-0.920**	-0.161	0.084	-0.317*	-0.020	0.497**	0.447**	0.338*
PLF					1.000	0.564**	0.435**	-0.417**	0.102	-0.230	-0.539**	-0.274	0.133
PIP						1.000	0.312*	0.086	0.426**	-0.121	-0.586**	-0.311*	-0.274
PMIN							1.000	-0.293	0.541**	-0.695**	-0.727**	-0.117	0.435**
FODP								1.000	0.099	0.260	0.173	-0.198	-0.562**
CILD									1.000	-0.489**	-0.407**	-0.164	0.076
PCHS										1.000	0.480*	0.055	-0.392**
FMAGE											1.000	0.211	-0.317*
TMIGR												1.000	0.477**
SRAT													1.000

Note: Abbreviations are the same as in Table 1

*: $p < 0.05$, **: $p < 0.01$

Table 3 Result of the multiple regression analysis of factors associated with TFR (Stepwise method, $P_{in}=0.05$, $P_{out}=0.10$)

Variables	Coefficient	Beta	Multiple R	R squared*
LITR	-3.2844	-0.499	0.840	0.698
CILD	0.0165	0.338	0.866	0.736
CM	5.0804	0.283	0.892	0.776
TMIGR	0.0334	0.174	0.907	0.800

Note: Abbreviations are the same as in Table 1

*: Adjusted

(stepwise method: $P_{in}=0.05$, $P_{out}=0.10$). Four variables were included in the equation as factors with statistical significance. Among them, the literacy rate among women of reproductive age showed a negative relation with TFR ($\beta = -0.499$). By contrast, the infant and early childhood mortality rate index ($\beta = 0.338$), the proportion of married women among those of reproductive age ($\beta = 0.283$), and the total migration rate ($\beta = 0.174$) showed a positive relation with TFR. According to the determinant coefficient, these four variables explained 80.0% of the total variance in the observed TFR.

Discussion

First of all, one should be careful when interpreting the present results. As this study is an ecologic one based on macro-level data, results cannot be totally applicable to the individual level. It is necessary to do further analysis at the micro-level to fully clarify determinants of the reproductive behavior of the Vietnamese.

According to the present results, the literacy rate among women of reproductive age, the infant and early childhood mortality rate, the proportion of married women among those of reproductive age, and the total migration rate were associated with the fertility level. The literacy rate among women is considered to be an important factor concerning the accessibility to and availability of information and methods regarding family planning. This factor is also related to the social status of women in each society. The higher the literacy rate, which corresponds to the high school attendance rate, the greater the possibility of

women being involved both in secondary and tertiary industries. This, in turn, elevates the degree of economic independence of women. All these factors will contribute to elevate the marriage age of woman and thereby shorten the reproductive period. This hypothesis is supported by a number of previous reports⁶⁻¹¹.

In industrialized countries, the percentage of women in the labor force is considered to have a negative impact on fertility, because women who want to continue to work outside the home are required to reduce the burden of taking care of their children¹². In the case of the newly industrializing countries, most female workers are engaged in primary sector occupations such as agriculture. In this type of labor, because women can also perform household duties, they are not pressured to reduce the number of children. On the contrary, they might be required to bear more children who will be able to help them as members of the labor force. Therefore, in the case of such countries, female work does not always have a negative impact on fertility, and simple correlation analysis frequently shows a positive relation¹³. In the present analysis also, a significant positive correlation was observed between the proportion of women of reproductive age in the labor force and the population engaged in primary industries.

There is controversy regarding whether the infant and early childhood mortality rate is directly associated with the fertility level both in the industrialized countries and in industrializing countries¹⁴⁻¹⁹. Most previous results support the positive relationship between infant mortality and fertility, except for a few reports which denied a positive relationship¹⁸. However, according to the results of research carried out by Phi Van Ba concerning the attitude of peasants regarding social life in the rural Vietnamese community, the typical Vietnamese family wants to have more than three children in order to depend on them in their old age²⁰. Because of their bad experiences during the past war, they show a strong fear of not having any surviving children who can support them in old age. Therefore, the replacement or hoarding theory¹⁵ is likely to be applicable to Vietnamese society. Similar results have been observed in other East Asian societies. For example, Heer and Wu reported that the number of sons alive was the most important factor influencing the number of children desired in their field study in Taiwan¹⁵.

Table 4 shows the ten leading causes of morbidity and mortality of children under 15 years old⁵. Most of the causes of

Table 4 The 10 leading causes of morbidity and mortality of children under 15 years old in 1992 (reported by 60 provincial hospitals, per 100,000 inhabitants)

Morbidity		Mortality	
1 Acute bronchitis	80.00	Cerebro-meningeal hemorrhage	1.27
2 Pneumonia	77.74	Pneumonia	1.08
3 Other protozoal intestinal & unidentified intestinal diseases	74.89	Other forms of heart diseases	0.99
4 Hemorrhagic fever	40.14	Malaria	0.93
5 Angina & Naso-pharyngitis	26.09	Respiratory tuberculosis	0.87
6 Malaria	24.55	Viral hepatitis	0.69
7 Other viral diseases	20.81	Other cerebro-vascular diseases	0.55
8 Other respiratory diseases	18.20	Other digestive diseases	0.51
9 Bacillary dysentery	17.69	Intracranial injury	0.43
10 Other infectious diseases	17.59	Viral meningitis	0.42

Source: Health Statistics of Vietnam 1990-1992, Ministry of Health, Hanoi, 1993

infant mortality were infectious diseases, especially malaria, dengue fever, and infectious diarrhea. Behind this high mortality rate due to infectious diseases lies the problem of malnutrition. According to research conducted by the National Institute of Nutrition, over fifty percent of the Vietnamese children under 5 years old are in a situation where immediate nutritional supplementation is required²¹⁾.

In the case of Vietnam, as in other East Asian societies, special consideration should be given to Confucian tradition when considering reproductive behavior. Confucianism is a doctrine which highly values family origins and respects filial piety, parental care and the worship of ancestors. It also demands that each individual secure continuation of the family name. A couple is considered as only a link in a chain of generations and is responsible for its continuation. In particular, a couple is required to have at least one son, because the doctrine lays a strong emphasis on male progeny. It is believed that only a male child can ensure the continuation of this lineage by practicing ancestor worship and ensuring the continuation of the bloodline. A man is considered the personification of the lineage of his clan. Confucianism teaches that death does not mean a complete end of existence. On the contrary, one still exists and can be worshiped by his descendants if the lineage is properly maintained. If a man dies without male progeny, his whole lineage, including his ancestors and his unborn descendants would die with him. Confucianism, therefore, regards the fact that a man has no male progeny as the most serious filial impiety. A Confucian proverb says: "Having a single son means that you have a descendant, while having even ten daughters does not." Therefore, under the pressure of the Confucian tradition, a couple tries to have children to the extent that they can assure themselves that they will have at least one living son. There is no doubt that this cultural factor explains in part the high fertility rate observed in rural areas, and it explains why birth control in Vietnam is not merely a technical and economic problem, but also a socio-cultural problem.

The Vietnamese government has set the target of its population policy as 1.8 per cent growth per year. It will be possible to attain this goal if they continue the present strict population policy. Furthermore, social changes along with the current economic development will contribute to a decrease in fertility. For example, it is not easy for urban dwellers to have more than two children because of high living costs in the city. After the introduc-

tion of the new market policy, the urban population is increasing gradually (19.2% in 1979, 19.9% in 1989, 20.2% in 1992)²⁾. This urbanization process alone could reduce the population pressure. Furthermore, the new market policy stresses the development of light industries such as textile production and food processing, where the most important labor force is young women. This industrial strategy also will contribute to decrease the fertility rate through an increase of the celibacy rate among the young female workers. Finally, the change in social beliefs among the Vietnamese (especially the decline of the influence of Confucianism belief in the modern society of Vietnam) will reduce the psychological pressure to have more boys.

However, there is a possibility that the fertility rate will increase in the near future because of the normalization of the sex ratio. According to simple correlation analysis, the sex ratio has a positive correlation both with the fertility and the proportion of married persons. In the current situation, the ratio is abnormally low because of the long history of wars and the emigration of male workers after the unification of the nation. However, this ratio is rapidly being normalized along with the stabilization of the society. Therefore, there is a possibility that the proportion of married persons and fertility will increase.

So far as strategies to regulate the population growth are concerned, the Vietnamese government actually employs a very strict limitation on reproductive behavior. For example, if a woman in public service has her third child, she may be automatically fired. This kind of policy could be effective in the short run. However, more integrated socioeconomic development programs are needed to cope with future problems. As the author has already mentioned, socioeconomic development has some fertility-regulating effects. If the current population policy is successful, and if actual economic development continues, Vietnamese society will become an aging society at a very rapid pace. In this type of society, because the aged will not be able to depend totally on their one or two children for their livelihood, the government has to prepare a special social system to support them. Actually, the government has tried to introduce a social security system for employees of the public sector and large companies²²⁾. However, it seems to be difficult to extend this program to the total population, because of the lack of appropriate programs to gather sufficient financial resources (i.e., a general taxation system).

Finally according to simple correlation analysis, the percentage of communes with communal health stations showed a nega-

tive correlation with TFR. Communal health stations play an important role in providing primary health care services for the population. It is at these stations that the rural population comes into contact with modern health services, including family planning services. Therefore, the observed negative correlation is quite reasonable. These stations are almost entirely funded by the community they serve, and staffed by auxiliary medical professionals, i.e., assistant doctors, assistant nurses and assistant pharmacists. The community builds the station, pays the salary of the staff and buys drugs from the government. Thus, the volume and quality of services widely varies according to the financial capacity of the local government. After the introduction of the new market policy, the Vietnamese economy has been expanding at the national level. However, under the current policy, invest-

ments from foreign countries have been concentrated in already developed areas and, as a result, economic inequality between urban and rural areas is increasing. Thus, while urban health facilities are receiving greater financial allocations, the communal health stations in rural districts quietly deteriorate, resulting in the difficulty of implementation of family planning activity. Wrong evaluation of priorities and maldistribution of health resources are major problems facing Vietnam. To properly cope with the population problem, resources must be allocated properly to reduce geographical inequality.

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