

Modelling Gender Preference: Regional Perspectives on Sex Ratio at Birth in Vietnam

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Description of the topic

From Albania to China, several countries in the world experience unbalanced Sex Ratio at Birth. In Vietnam, the phenomenon is very recent, but increases extremely rapidly since 2006. Currently, the national sex ratio at birth is almost 112 boys for 100 girls, and exceeds 120 in several provinces. In Vietnam, the rising proportion of male to female births is directly linked to prenatal sex selection, that is abortion of female foetuses. It results from the combination of three factors (Guilmoto, 2009): expanding access to ultrasonography and abortion in both urban and rural areas (*supply factor*), low fertility level increasing the risk of remaining « sonless » (*squeeze factor*) and preference for sons (*demand factor*).

Important regional disparities exist in the statistics of birth masculinity, which are partly associated with differences in fertility and prosperity levels. However, discrepancies in son preference appear to be the decisive factor. Kinh, the predominant ethnic group in Northern Vietnam, presents a patrilineal and patrilocal descent system, partly akin to the Chinese cultural pattern (Bélanger 2002, 2006; Haughton 1995). Women strive to legitimize their status by giving birth to a male child, who possesses an essential role in worshipping ancestors, thus ensuring family cohesion and Vietnamese society stability (Scornet, 2000; Bélanger, 2006; Barbieri & Bélanger 2009). However, in Southern Vietnam, a major part of the Kinh group is composed of descendants from other ethnic groups that follow more bilateral kinship rules and marital residence. Bilaterality is a typical feature in Southeast Asia (Liljestrom & Lai, 1991; Bélanger, 2000). The progressive expansion of Vietnamese (and Chinese) people in Khmer and Cham territories, known as the « South Marching » (*Nam tiến*), started only in the seventeenth century.

Thus, this paper aims at modelling fertility behaviours and gender preference, through the probability for a woman to have third child, according to the sex composition of the previous children. Results show that Northern Vietnam presents a very strong preference for sons, linked to a patriarchal descent system, while mixed offspring is privileged in the South, since cultural mixing of bilateral Khmer and matrilineal Cham people, with Kinh population traditionally patrilineal, developed through centuries.

Data and research methods

The parity progression ratio at parity n is the proportion of women with n births who have an additional birth, according to the sex of the previous children. Unlike variables on fertility intentions related to the sex of children, this indicator allows measuring excess fertility in the absence of a son, and shows “revealed” son preference. Using Kaplan Meier estimates and Cox regression analyses, this paper describes regional variations of gender preference, and compares the distinct effects of several characteristics (rural/urban area, level of education, socio-economic status, ethnicity).

Statistics analysed in this paper are derived from the “long form” questionnaire of the 2009 Population and Housing Census of Vietnam, a 15 percent sample which represents a database of 14,177,590 persons (3,692,042 households). Parity progression ratios are calculated from a reconstructed sibling’s population of 2,219,017 children (cf. Guilmoto, 2012). Each sibling is

attributed a birth rank, a *dummy* variable corresponding to the presence or absence of a younger sibling, and a third variable corresponding to the sex composition of siblings, including him and older siblings only (« boys only », « girls only », « mixed offspring »). Then only children aged 0 to 10 are assessed, to avoid censored cohorts where one or more sibling(s) already left the household.

Preliminary findings (examples)

Table 1. Proportion of couples having a third child, according to the sex composition of previous children (Kaplan-Meier estimates)

Regions	Sex composition of siblings			Ratio 2G/2B	Ratio M/2B	Observations
	2 boys	2 girls	Mixed			
Northern Midlands and Mountain Areas	25.5%	57.9%	25.1%	2.27	0.98	164,961
Red River Delta	11.4%	56.6%	17.1%	4.96	1.50	155,824
North Central Areas & Central Coastal Area	32.9%	60.9%	34.4%	1.85	1.04	188,354
Central Highlands	46.3%	68.7%	46.8%	1.48	1.01	73,088
South East	27.2%	40.6%	23.9%	1.49	0.88	72,119
Mekong Delta	26.3%	37.4%	19.6%	1.42	0.75	141,155
Vietnam	26.9%	54.4%	26.7%	2.02	0.99	795,501

Table 2. Probability of having a third child according to sex composition of siblings, Red River Delta (Cox regression)

Variables	Hazard Ratio	Std. Error	z	P>z	[95% Confidence Interval]	
<i>Ref. Rural area</i>	0.53***	0.01	-30.15	0.00	0.51	0.55
Urban area						
Level of education max.	0.92***	0.00	-23.58	0.00	0.92	0.93
Socio-economic status	0.88***	0.01	-16.65	0.00	0.87	0.90
<i>Ref. Kinh</i>	1.85***	0.06	20.40	0.00	1.74	1.96
Ethnic minority						
<i>Ref. 2 boys</i>						
1 boy + 1 girl	1.55***	0.04	18.23	0.00	1.48	1.62
2 girls	6.18***	0.14	79.73	0.00	5.91	6.47

Through Kaplan-Meier estimates, we calculate the proportion of couples having a third child, according to the sex composition of previous children (table 1). Ratios comparing couples having two boys and couples having two girls show that the latter are always more likely to have a third child. However, this ratio is much higher in the Red River Delta than in Southern Vietnam. In order to control different factors influencing the probability of having a third child (here in the Red River Delta, table 2), we used Cox regression. Though all factors significantly influence this probability, the stronger factor is sex composition of previous children: couples having two girls are 6 times more likely to have a third child than couples having 2 boys, all things being equal (living area, level of education, socio-economic status, ethnicity).

Table 3. Probability of having a third child according to sex composition of siblings, Red River Delta (Cox regressions)

Variables	Sex composition of siblings	Hazard ratios	Std. Error	z	P>z	[95% Confidence Interval]	
Urban	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	1.40***	0.09	5.48	0.00	1.24	1.58
	Two girls	5.75***	0.33	30.15	0.00	5.13	6.45
Rural	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	1.58***	0.04	17.46	0.00	1.50	1.66
	Two girls	6.28***	0.16	73.88	0.00	5.98	6.59
Low SES	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	1.45***	0.07	7.41	0.00	1.31	1.59
	Two girls	4.47***	0.22	30.90	0.00	4.06	4.91
Median SES	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	1.47***	0.06	9.01	0.00	1.35	1.59
	Two girls	5.91***	0.24	44.04	0.00	5.46	6.39
High SES	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	1.67***	0.06	14.21	0.00	1.55	1.79
	Two girls	7.30***	0.25	58.39	0.00	6.83	7.80
Primary school	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	1.37***	0.10	4.52	0.00	1.20	1.57
	Two girls	3.46***	0.24	17.69	0.00	3.02	3.98
Secondary school	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	1.54***	0.04	18.16	0.00	1.47	1.62
	Two girls	6.16***	0.14	79.67	0.00	5.89	6.44
High school	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	1.57***	0.08	9.00	0.00	1.42	1.73
	Two girls	7.56***	0.36	42.95	0.00	6.89	8.29
Kinh	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	1.56***	0.04	17.55	0.00	1.48	1.64
	Two girls	6.47***	0.16	77.73	0.00	6.17	6.78
Tay	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	1.58	0.51	1.44	0.15	0.85	2.96
	Two girls	5.42***	1.65	5.54	0.00	2.98	9.86
Muong	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	1.60	0.65	1.15	0.25	0.72	3.54
	Two girls	6.89***	2.66	5.00	0.00	3.23	14.69
Other Ethnic Minorities	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	1.44***	0.11	4.62	0.00	1.23	1.68
	Two girls	3.30***	0.27	14.39	0.00	2.81	3.89

This table is a summary: one Cox regression has been calculated for each variable and its corresponding hazard ratios, and controlled by all other variables. For example, when controlled by level of education, socio-economic status and ethnicity, in urban areas of the Red River Delta, couples having two girls are almost 6 times more likely to have a third child than couples having two boys. This table allows us to see the effect of each variable on gender preference for offspring, all things being equal.

Thus, in the Red River Delta, couples prefer having two boys than two girls or one child of each sex. This is true for both urban and rural areas, and for every level of education, socio-economic status and ethnicity. It is always highly significant, except for Tay and Muong people having mixed offspring.

However, the preference for sons increases with level of education and socio-economic status. This result seems counterintuitive, as reasons for son preference in Vietnam are often described as traditional (transmission of family name, ancestors' worship). However, a plausible hypothesis would be that richer people have more to "lose" when they don't have any son to inherit. Moreover, preference for sons appears stronger in rural than in urban areas, and for Kinh and Muong people.

Table 4. Probability of having a third child according to sex composition of siblings, Mekong Delta (Cox regressions)

Variables	Sex composition of siblings	Hazard ratios	Std. Error	z	P>z	[95% Confidence Interval]	
Urban	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	0.76***	0.03	-6.47	0.00	0.70	0.76
	Two girls	1.46***	0.06	8.64	0.00	1.34	1.46
Rural	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	0.73***	0.01	15.96	0.00	0.70	0.73
	Two girls	1.54***	0.03	21.68	0.00	1.48	1.54
Low SES	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	0.73***	0.02	14.42	0.00	0.70	0.73
	Two girls	1.45***	0.03	16.52	0.00	1.39	1.45
Median SES	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	0.78***	0.04	-5.22	0.00	0.71	0.78
	Two girls	1.67***	0.08	10.78	0.00	1.52	1.67
High SES	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	0.73***	0.03	-7.93	0.00	0.68	0.73
	Two girls	1.65***	0.06	12.77	0.00	1.53	1.65
Primary school	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	0.75***	0.02	-8.95	0.00	0.71	0.75
	Two girls	1.35***	0.04	9.19	0.00	1.27	1.35
Secondary school	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	0.74***	0.01	17.25	0.00	0.71	0.74
	Two girls	1.52***	0.03	23.16	0.00	1.46	1.52
High school	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	0.82***	0.04	-4.35	0.00	0.75	0.82
	Two girls	1.76***	0.08	12.16	0.00	1.61	1.76
Kinh	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	0.74***	0.01	15.86	0.00	0.71	0.74
	Two girls	1.59***	0.03	24.01	0.00	1.53	1.59
Khmer	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	0.71***	0.04	-6.87	0.00	0.64	0.71
	Two girls	1.05	0.06	0.93	0.35	0.94	1.05
Other Ethnic Minorities	<i>Ref. Two boys</i>	<i>1</i>	-	-	-	-	-
	Mixed	0.94	0.15	-0.42	0.68	0.68	0.94
	Two girls	1.81***	0.30	3.52	0.00	1.30	1.81

In the Mekong Delta, mixed offspring is always preferred, and having two daughters increases the probability of a third child. However, hazard ratios are much smaller than in the Red River Delta, which points out lower son preference. For example, Kinh people having two girls in the Mekong Delta are 1.6 times more likely to have a third child than parents of two boys, while they are 6.5 more likely in the Red River Delta.

This paper will analyse hazard ratios for each Vietnamese macro-region, as well as several provinces chosen for their specific characteristics (matrilineal ethnic minorities, normal sex ratio at birth or highest imbalance, etc.). Contextualised with ethnographic studies, it will portray the variety of gender preferences in Vietnam, in order to better apprehend the variations of SRB imbalances.

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