Spatial Variation of the One-Child Policy and Child Nutritional Status in the Reform-Era China, 1993-2000

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Extended Abstract

One of the purposes of the one-child policy in China is to improve child well-being. The government has taken strenuous efforts to ensure that couples limit their fertility in exchange for high "quality" children – "*you-sheng you-yu*" or "*shao-sheng you-sheng*" ("give birth to fewer children, but give them better care and education"). The rationale behind this policy is that more resources would be available at both the community and household levels for children, and that children with fewer siblings will garner more resources and hence will be better off with respect to physical and intellectual development.

Since the initiation of the one-child policy in 1979, child health has dramatically improved: child malnutrition, measured by height-for-age, for example, dropped from 31.4 percent in 1992 to 14.2 percent in 2000 (World Bank 2002). However, while these improvements overlap with the implementation of the one-child policy, the extent to which they are due to this policy is not clear. Over the same time period, there are other factors, such as economic development, that may be responsible for the improvement of child health. On the

other hand, contrary to popular perception, the one-child policy does not always mandate one child, especially outside cities. Rather, policy varies locally. Couples may be allowed to have two children, a second birth or only one child, depending on where they reside. Thus, given the astonishing improvement of child health, how much can be attributable to the one-child policy? Do spatial variations of the one-child policy affect child outcome? What are the mechanisms by which the one-child policy affects child health?

This paper examines the effect of spatial variations of the one-child policy on the nutritional status of children 0 to 6 years of age over the period 1993 to 2000 in China using the China Health and Nutrition Survey. Specifically, I will use policy variations in 1993 to predict child height-for-age, weight-for-age and weight-for-height in 2000. I use the 1993 survey as the basis because preschool children in 2000 were born after 1993, making the causality between the policy and child nutrition clear. I assess three different measures simultaneously because each measure may present unique underlying forces or mechanisms that generate different child nutritional status. I explore a broad range of factors related to child physical growth at the community, household, and individual levels. More importantly, I include direct measures of the one-child policy, drawing on local variations, to make inferences about policy effects above and beyond economic development.

While the temporal changes of the one-child policy has been well documented and studied, few studies have examined the consequences of spatial variations of the one-child policy for children beyond family formation. The spatial variations of policy is important because it directly determines local population size, family structure, and sibship composition. These, in turn, affect the amount of resources available to each individual child at community and household levels and thereby child outcome. My study focuses on the variation of the one-

child policy at the community level. To my knowledge, it is one of the few examinations of consequence of the one-child policy for child nutrition that include direct local measures of the one-child policy. In doing so, my study goes beyond the overwhelming focus on micro-level comparison of children with certain characteristics associated with current research and captures both the indirect, micro-level (sibsize) effect and macro-level effect on child nutrition. My modeling would allow me to partition the overall variability in child nutrition into a part which is attributable to provinces and communities, a part which can be attributable to households and a part which can be attributable to individual child. My model also allows me to make inference about the one-child policy effect above and beyond economic development.

I draw on data from the China Health and Nutrition Survey (CHNS), a panel data, to assess the effect of the spatial variation of the one-child policy on child nutritional status. The survey draws a sample from nine provinces including, from northeast to southwest, Heilongjiang, Liaoning, Shangdong, Henan, Jiangsu, Hubei, Hunan, Guizhou, and Guangxi. The sample is drawn using a multistage, random cluster process. Counties in each province were stratified by income (high, middle, and low) and four counties in each province were randomly selected using a weighted sampling scheme. In addition, the provincial capital and a lower income city were selected. Villages and townships within the counties and urban and suburban neighborhoods within the cities were selected randomly. Some 190 primary sampling units consisted of 32 urban neighborhoods, 30 suburban neighborhoods, 32 towns, and 96 villages. Households in each province were selected using a stratified multistage cluster design that included approximately 20 households in each of some 190 urban and rural communities.

The nine provinces in the survey areas are considerably different from each other in climate, dialect, demography, infrastructure and economic index. Of particular interest for me

is the spatial variation of the one-child policy. A preliminary analysis of the CHNS indicates that the eight provinces in the 1993 survey differ substantially in policy strength. Table 1 depicts that, among those provinces, Jiangsu has the strictest policy: couples in the 22 communities surveyed are only allowed to have one child under normal circumstances. In contrast, approximately four fifths of couples in the 24 communities surveyed in Hubei are allowed to have a second birth or two children. Also, couples in Hunan do not practice a two-child policy, while couples in Guizhou do not practice a girl-exception policy. The one-child policy also varies by local economic development level, measured as a percentage of population engaging in agriculture, as Table 2 illustrates. A higher percentage of population in agriculture indicates a lower development level. As it shows, among the 70 communities with one fourth of the population in agriculture, over 85 percent implement a strict one-child policy but less than two percent implement a two-child policy. In contrast, in communities with more than half of the population engaging in agriculture, over 60 percent implement a more relaxed policy. Child nutritional status also varies across province, communities, development levels, and the strictness of the one-child policy.

Table1. The Strictness of the One-child Policy by Province, 1993

Provinces	One-child Policy	Girl-exception Policy	Two-child Policy	N
Liaoning	43.48	47.83	8.70	23
Shangdong	56.25	37.50	6.25	16
Henan	75.00	20.83	4.17	24
Jiangsu	100.00	0.00	0.00	22
Hubei	20.83	45.83	33.33	24
Hunan	62.50	37.50	0.00	24
Guangxi	37.50	45.83	16.67	24
Guizhou	75.00	0.00	25.00	24

Source: China Health and Nutrition Survey, 1993

Table 2. The Strictness of One-child Policy by % of Population in Agriculture, 1993

Agriculture	One-child Policy	Girl-exception Policy	Two-child Policy	N
<=25%	85.71	12.86	1.43	70
25-50%	48.72	35.90	15.38	39
51-75%	34.62	38.46	26.92	26
>75%	39.13	43.48	17.39	46

Source: China Health and Nutrition Survey, 1993

I use the 2000 survey to get child information and household background, and adds to it community information from the 1993 community surveys. Information from different surveys will then be merged together to construct a lagged cross-sectional file. My sample includes 759 individual children aged 0-6. Among those, 38 percent are stunted (height-for-age), 18 percent are wasted (weight-for-height), and 8 percent are underweight (weight-for-age). I examine stunting, wasting, and underweight simultaneously because they reflect different underlying forces. Stunting is an indicator of a long-term chronic malnutrition; wasting is a measure of acute recent malnutrition, and underweight reflects stunting and wasting together.

My next stop is to conduct a multilevel and multivariate analysis to make inference about the effect of local variations of the one-child policy on child nutritional status.