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ON THE RELATIONSHIP BETWEEN MIGRATION AND FERTILITY

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1. Introduction

Most of the studies on internal migration and fertility conclude that migration leads to lower fertility. They show that urban in-migrants have lower fertility rates in comparison not only with rural stayers but also with native urbanites (e.g., Macisco, Bouvier and Weller, 1970; Hendershot, 1971 and 1976; Goldstein, 1973; Ro, 1976). Apparently, these findings have formed the basis for the belief that rural-to-urban migration is a good thing insofar as the national goal of fertility reduction is concerned.

The relationship between migration and fertility has been explained by sociologists in the context of the social mobility theory or the assimilation model.[1] Very briefly, the social mobility model posits that the process of rural-to-urban migration is selective of those persons in rural areas who have the aspiration and motivation for upward mobility; such aspiration is often coupled with the preparation and ability to bear the economic and psychic costs involved in migration, as well as cope with the demands of urban life. The assimilation model, on the other hand, assumes that urban in-migrants of average socioeconomic background gradually adapt to city life by acquiring urban characteristics, including the propensity for low fertility.

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[1] These are also referred to as the selection or adaptation model, respectively. To my knowledge, there is yet no economic analysis of the relationship between migration and fertility, except Encarnación's (1977) review of the subject (pp. 333-335).

These two models notwithstanding, there are studies that have come up with conflicting results. Some studies on U.S. data show that urban in-migrants have higher fertility than do native urbanites (Goldberg, 1959; Duncan, 1965; Macisco, 1968). Others reveal that there is no significant difference in fertility rates among migrants and urban natives, as, for instance, in Chile (Tabah and Samuel, 1962)[2] and in Peru (Alers and Appelbaum, 1968); or that the fertility of migrants is higher than that of natives as in Brazil (Iutaka, Bork and Varnes, 1971). Zarate and Zarate (1975) suggest that these inconsistencies may be explained by: (a) the difference in research designs and procedures, (b) the non-use of historical or comparative contexts, and (c) the lack of a systematic framework or organizing scheme.

The purpose of this note is to propose an alternative model of migration and fertility that may help disentangle the conflicting results of earlier studies. The next section presents such a model. Subsequently, the model is tested against Philippine data from the 1973 National Demographic Survey. The concluding section draws a couple of implications for policy and research.

2. An Alternative Model

Consider a "migration cycle" which may be defined as extending from the time before migration up to the time when the migrant family is already fully adjusted to the place of destination. Prior to migration the fertility rate is relatively high (although perhaps generally lower than the rural average) and this would still be reflected on arrival at destination. After arrival the migrant family (especially the wife) experiences dislocation and difficulties, both economic and psychic, which tend to hamper childbearing. Later on after it starts to adjust to the new environment, childbearing becomes easier and the fertility rate goes up as the couple tries to attain its desired fertility.

This model implies that the relationship between fertility and migration status (or exposure to destination) is not linear but rather U-shaped, contrary to that denoted by the social-mobility (or selection) and assimilation (or adaptation) models. Figure A depicts the migration-fertility relationship of this alternative model and compares it with the sociological models.

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[2] By contrast, a later study by Elizaga (1966) shows that migrant women in Santiago, Chile have lower fertility than do natives at practically all ages.

In some sense, the logic of this model derives from the threshold model of fertility and income (education) developed by Encarnación (1973). In that model, fertility rises with better health and nutrition (improved fecundity) occasioned by increasing income (or conversely drops with lower income) up to a certain threshold; thereafter, it starts to fall due, *inter alia*, to the rising opportunity costs of children.

In the present model, which may be called the "migration cycle" model, fertility declines as a result of the economic and psychic hardships caused by displacement, as denoted by segment AB of Figure A-1. This may be a short-run phenomenon lasting up to three years or so. Section BC illustrates the period of adjustment (medium term) to the new environment when childbearing starts to become easier, resulting in rising fertility. It is very possible that, in the long run, with further increases in income and education and fuller assimilation to the urban culture fertility diminishes, following the usual argument, as indicated by the downward-sloping broken line CD.

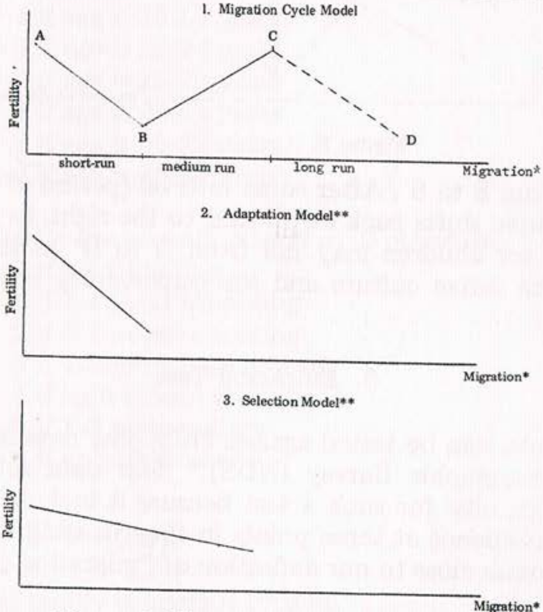

Figure A. Migration-Fertility Relationship

*This may be specified as urban exposure if migration is rural-to-urban, or simply exposure to the new environment of destination.

**Also referred to as assimilation and social mobility models, respectively. The curve of the selection model is drawn flatter on the assumption that fertility is already low before migration.

It would seem that sociological models of migration and fertility, such as the adaptation and selection models (Figures A-2 and -3), capture only a segment of the migration cycle, namely, the short-run effect AB or the long-run effect CD (Figure A-1). They do not reflect the medium-run effect BC. Other studies that report higher fertility rates for migrants than non-migrants, as mentioned above, may well be referring to this medium-run effect.[3]

The migration-fertility relationship may alternatively be explained using the standard demand and supply framework, as in Figure B. Migration first shifts the supply curve of children upward

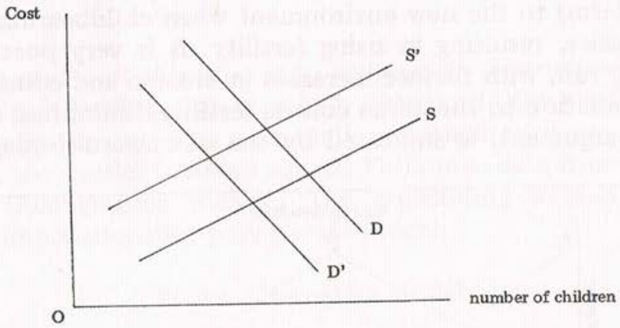

Figure B.

to the left from S to S'. After some interval (period of adjustment), the supply curve shifts back downward to the right. In the long run, the demand for children may fall from D to D' as the household assimilates the urban culture and the opportunity cost of children rises.

3. Empirical Test

The model can be tested against Philippine data from the 1973 National Demographic Survey (NDS).[4] This data set offers us a unique opportunity for such a test because it includes information on place of residence at three points in time in addition to place of birth. This comes close to our definition of "migration cycle."

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[3] It is interesting that Goldstein (1973) finds the fertility of lifetime migrants as not very different from that of non-migrants at destination, but that of five-year migrants to be considerably lower. The former would seem to correspond to point C and the latter to point B of Figure A-1.

[4] The 1973 NDS has been used in a number of economic-demographic studies. For a description of the survey, see, e.g., Pernia (1978).

The relevant sample for the present study consists of single family nuclear-type households, with wife married once, and giving the needed information. These number 2,228 in all. We also test the model for rural/urban origin and destination using smaller sub-samples.

The regression equation is specified as

$$CEB = f\,(AM, AGE_k, ED_n, YN, YX, MIG_m)$$

where :

CEB : number of children born alive;
AM : age of wife at marriage;

AGE_k = 1 if wife is in age group k, 0 otherwise,
k = 4 if age is 15-19 years
5 if age is 20-24 years
6 if age is 25-29 years
7 if age is 30-34 years
8 if age is 35-39 years
9 if age is 40-44 years;

ED_n = 1 if wife has education level n, 0 otherwise,
n = 0 if no schooling
1 if 1-4 years schooling
2 if 5-7 years schooling
3 if 1-3 years high school
4 if high school graduate
5 if 1-3 years college
6 if college graduate;

$YN = \min(0, Y - 2.5)$;
$YX = \max(0, Y - 2.5)$;
MIG_m = 1 if family is migrant type m,
0 otherwise,
m = 0 if non-migrant
1 if 1970-1973 migrant
2 if 1965-1970 migrant
3 if birth-1965 migrant.

The expected sign of m = 1 is positive (corresponding to point A of Figure A-1), that of m = 2 negative (point B of Figure A-1), and m = 3 positive (point C of Figure A-1).

The regression results are presented in Table 1. The control variables (age at marriage, age, education and family income) turn out more or less as expected. At the same time, the migration variables bear out our hypothesis of a U-shaped migration-fertility relationship in all cases, except in the rural-rural case (although about half of the t-values are insignificant). In this latter case the relationship is monotonically upward sloping, which is actually not surprising. For rural-to-rural migration would hardly involve an adjustment problem and the migrant family may immediately improve its lot.[5]

4. Concluding Remarks

The implication of the model is rather intriguing because it challenges the common view that migration invariably leads to lower fertility. It seems that this supposed demographic benefit from migration is more apparent than real. If one views migration in a broader context (as a "migration cycle"), one finds that its relationship with fertility is not as straightforward as often shown by previous studies. These studies usually considered only one migration interval, thus focusing on only one segment of the migration cycle.

It would seem that after offering a temporary relief of the fertility problem, migration tends to aggravate the problem. Although this may not be considered a sufficient argument against migration, what it implies for policy is to hasten the period of adjustment (or shorten the medium term) for migrants so that sustained fertility decline can occur sooner than otherwise. This is no controversial prescription since government-sponsored social services (e.g., education, health and family planning services) should be provided the poor, who include most migrants.

Finally, an obvious implication for further research is to test the model with longitudinal data[6] so that it can become more predictive. Likewise, testing the model against data on other countries should strengthen or weaken our confidence with the model.

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[5] Some support for this conjecture is lent by Oey's (1975) study of Javanese migrants to Lampung (as cited in Encarnación, 1977).

[6] In this case the fertility variable will not be defined as CEB but fertility rate per a given time period.

Table 1 — Regression Results of Migration Cycle Model: Philippines NDS 1973

Variable	All Cases	Rural-Urban	Urban-Rural	Urban-Urban	Rural-Rural
AM	−0.2618	−0.2323	−0.2776	−0.2256	−0.2781
	(−28.0052)	(−14.5966)	(−20.6338)	(−11.9287)	(−20.5045)
AGE_5	1.4030	1.6157	1.4537	1.1780	1.3342
	(7.1328)	(4.4636)	(5.3144)	(2.7220)	(5.2534)
AGE_6	3.0376	3.1571	3.0398	2.8370	3.0167
	(15.5958)	(8.8216)	(11.1716)	(6.5469)	(11.9912)
AGE_7	4.5493	4.5254	4.7135	4.0961	4.6565
	(22.9532)	(12.4637)	(17.0730)	(9.3585)	(18.1239)
AGE_8	5.6049	5.2362	6.0081	4.6702	5.9885
	(26.2364)	(13.4361)	(20.0000)	(9.9506)	(21.5644)
AGE_9	6.5596	6.8063	6.6610	5.9619	6.6415
	(26.7558)	(15.3218)	(19.4514)	(10.8722)	(20.5308)
ED_1	0.0566	−0.0657	0.2399	0.3512	0.0718
	(0.4146)	(−0.2500)	(1.4131)	(1.1902)	(0.4235)

Table 1 (Continued)

Variable	All Cases	Rural-Urban	Urban-Rural	Urban-Urban	Rural-Rural
ED_2	−0.0451 (−0.3414)	0.0670 (0.2625)	0.0385 (0.2342)	0.2419 (0.8358)	−0.0248 (−0.1501)
ED_3	−0.1910 (−1.2385)	0.0018 (0.0063)	−0.2022 (−0.9538)	0.3456 (1.0863)	−0.2866 (−1.3421)
ED_4	−0.3970 (−2.3754)	−0.3074 (−1.0538)	−0.4602 (−1.7209)	0.1272 (0.3932)	−0.3305 (−1.2714)
ED_5	−0.2243 (−1.0362)	−0.1942 (−0.5267)	0.0660 (0.1780)	−0.0440 (−0.1138)	0.0144 (0.0354)
ED_6	−0.3631 (−1.8433)	−0.4093 (−1.2225)	0.1244 (0.3571)	−0.2470 (−0.6902)	0.0573 (0.1748)
YN	0.1225 (2.7790)	0.0721 (0.8937)	0.1298 (2.1384)	0.1114 (1.2644)	0.1470 (2.4930)
YX	−0.0296 (−1.5612)	−0.0074 (−0.2376)	−0.0544 (−1.8799)	−0.0132 (−0.4208)	−0.0654 (−2.2031)

Table 1 (Continued)

Variable	All Cases	Rural-Urban	Urban-Rural	Urban-Urban	Rural-Rural
MIG_1	0.1969 (1.5837)	0.1947 (0.8955)	0.4655 (1.7647)	−0.2833 (−1.2028)	0.1258 (0.4871)
MIG_2	−0.0934 (−0.9242)	−0.0451 (−0.2588)	−0.0446 (−0.2287)	−0.6139 (−3.0702)	0.2171 (1.0228)
MIG_3	0.3827 (4.8864)	0.2439 (1.8326)	0.3302 (1.8449)	−0.0919 (−0.4492)	0.5973 (5.0140)
Constant	5.5339	4.8792	5.6132	4.9380	5.7796
$\bar{R}^2$	0.4994	0.4404	0.5433	0.4277	0.5376
N	2,228	760	1,035	563	1,144

Note: t-values are in parentheses underneath regression coefficients.

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