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Discussion Paper Series

DESIRED FERTILITY AND MIGRATION
IN LDCs:
SIGNING THE CONNECTION

by

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In this paper we attempt to ascertain the impact on parents' desired fertility of a number of changes likely to increase the returns to the rural-to-urban migration of children. We assume that the demand for children as assets depends upon the extent to which they raise the mean per capita family income, and reduce the uncertainty of per capita family income, and we argue that the effect of rural-to-urban migration possibilities on the optimal number of children depends crucially on the role played by children in their capacity as assets. On the basis of purely theoretical considerations we succeed in determining the likely effect of four out of eight changes in asset attributes. It is hoped that our results also define a fruitful domain for empirical inquiry.

Introduction

Economic theory predicts that changes in one market will invariably affect variables in other closely related markets. Hence, frequently the causes of changes in one market may be traced to events in another. This maxim holds well for demographic phenomena. For example, there are many studies which examine infant and child mortality in an attempt to account for fertility behaviour (e.g., Cochrane and Zachariah (1983)), and examine fertility patterns in an attempt to account for infant and child mortality (e.g., Davanzo, Butz and Habicht (1983), Edmonston (1983)). Many other studies consider the impact of changes in marital patterns on fertility (e.g., Downing and Yaukey (1979), Torrado (1982)) and so on. However, relatively few studies examine the impact of migration on fertility. Those which do, consider the fertility behaviour of migrants, whether or not and to what extent it is affected by migration. (See, for example, Lee and Farber (1985), Massey and Mullan (1984).) However (with only one exception known to us, viz. Stark (1981)), no attempt has been made to systematically examine the effect of the possible future migration of children on parents' demand for children. This is somewhat surprising because in the voluminous literature dealing with the demand for children, elements such as child labour (on farms) and old age support are considered explicitly and repeatedly (see for example the recent "summary of knowledge" by Bulato and Lee (1983)), yet a condition occurring in between these two, when children may be rendering a service as migrants, is not considered at all.

It is our purpose in this paper to pursue the missing investigation. On the basis of purely theoretical considerations we succeed in determining the effect of four out of the eight changes we consider. By elimination we also identify and define the changes which can only be signed through empirical investigation. We should note that one useful result is that our analysis helps to clarify the relationship between risk, familial attitude toward risk and children's role in this context.

We also wish to mention an important externality realized by our analysis: it forces us to think through some of the reasons underlying migration as such, in particular intra-familial relationships. This dividend illustrates again that the study of one demographic phenomenon (in this case - migration associated) fertility enhances our understanding of another, in this instance - migration.

Analysis

Let us begin by assuming that the main rationale for having children is that they serve as assets.¹ The demand for children as assets may emanate from the fact that up to a certain number, they may raise the mean per capita income in the family. This will

¹For a discussion of this assumption, see Stark (1981), Appelbaum and Katz (1983). Of course, we do not claim that the sole basis for the demand for children is their role as assets. However, this particular rationale for having children is especially fruitful in analyzing the impact of migration on fertility.

occur if the expected income of children is greater than that of parents to a sufficient degree such that when the probability that the child will actually chip in with his income to the family budget is multiplied by the expected income of the child, the outcome is greater than the mean income of the parents minus the costs of bringing up the child. In terms of expected per capita family income, the additional child will bring in benefits, provided the above-described inequality holds.

As an alternative, children may be demanded as assets if they reduce the extent of the uncertainty of per capita family income, provided that the family is risk averse. This will occur if the spread associated with each child's income is smaller than the spread associated with the income of each parent (or, looking at the parents as a unit, if the spread in each child's income is smaller than the mean spread associated with both parents' incomes). Alternatively, provided the incomes of children are not perfectly correlated, a sufficient number of children will always ensure that the mean spread of per capita family income will decline (an infinite number of such children will always reduce the spread of per capita family income to zero). However, the number of children required to achieve the point at which additional children necessarily reduce the spread of per capita family income may be so

large that, given cost and biological constraints, it may not be reached.²

The effect of rural-to-urban migration possibilities on the optimal number of children may thus be seen to depend crucially on the role played by children in their capacity as assets. It transpires that if children as assets raise the expected per capita income, then one set of results follows. If, on the other hand, the children's role as assets is primarily in the sphere of risk reduction through asset diversification, then the results are different.

Before proceeding to systematically analyze these various effects, however, let us characterize some changes that are likely to increase the returns to migration. We divide these into four categories:

- (a) an increase in the expected income of a child as a migrant;
- (b) a reduction in the spread in the income of a child as a migrant;
- (c) a reduction in the degree of correlation between children's incomes as migrants;

²There are two other possibilities regarding the way in which children provide services as assets: first, it is possible that children both reduce risk and increase expected per capita family income. In this case, of course, the fertility level will be at the biologically possible maximum. Second, children may both raise risk and reduce expected per capita income. In this case, however, there will be no asset demand for children.

(d) a reduction in the degree of correlation between incomes of family members staying in the rural area and incomes of children as migrants.

We shall now proceed to analyze the impact of each of the above changes on desired fertility. In each case, the effect of a change on fertility will depend on whether or not the change increases the marginal utility derived from children where the utility is defined upon per capita income.

Let us begin with an increase in the expected income of a child as migrant. Now, if the main motivation for having children is to increase the expected per capita income, then this change will bring about a family income effect and a family substitution effect, both of which will act to raise fertility. As children are now carrying a higher mean rate of return, there will be a tendency to have more children. This is the family substitution effect. In addition, the family is now better off. Hence, since the main check on the number of children the family has, is in this case the riskiness of children's incomes (recall our assumption that children serve as assets), then under the assumption of decreasing absolute risk aversion,³ the family will be less risk averse and hence desire more children. This income effect thus reinforces the above-mentioned

³The assumption of decrease absolute risk aversion dating back to Arrow (1970) and Pratt (1964) is now almost universally accepted in the economics literature.

substitution effect, and the net effect of the change is to increase fertility.

However, there may be a complicating factor which should be noted. This is the result of the fact that the migrating child is himself better off. This, in turn, may be instrumental in reducing his risk aversion and thus serves to encourage him to break the implicit contract with his family which provides for coinsurance and income sharing (Stark (1983), Lucas and Stark (1984)). Hence, the increase in the expected income of the migrant child in the urban area may act to reduce the probability that he will share his earnings with the rest of his family. Thus the expected income of the migrant times the probability that he will remit or maintain a commitment to remit, etc., may not rise but might actually decline. Of course, if this occurs the above tale is reversed and there will be an income effect and a substitution effect, both of which act to reduce fertility in response to the change in question.

Notwithstanding the comments made in the last paragraph, however, it would seem reasonable to surmise that the family does benefit at least somewhat from the increased income of the individual migrant. This is because over and above other considerations, the migrant is likely to feel altruistic towards his family (and vice versa). To the extent that altruistic acts are a normal good, an increase in expected income per migrant will result, on average, in greater willingness to share income and thus will act as a positive factor in the fertility connection.

If, on the other hand, the main motivation for having children is the risk diversification effect, the results are different. The increase in urban incomes once again exerts an income effect and a substitution effect, but this time in opposite directions. By the substitution effect, children are better assets than before and the demand for children will rise. By the income effect, however, the family, being better off, will be less risk averse. Hence, since in this case the main rationale for having children is risk aversion, the demand for children will be forced down by this effect. The outcome for fertility of the change in migrants' expected income will therefore be ambiguous.⁴

It should be noted that the discussion regarding the motivation of the child-migrant to remit, etc. in this case will not be essentially different from the above. Whether it is or not depends on how children provide reduced risk. If they do so by enabling the family to pool risks, the discussion remains unaltered. If,

⁴Regression results provided by Rosenzweig (1977), who utilizes U.S. aggregate data covering the period 1939-1960, suggest that a rise in the expected income of a child upon leaving the family farm tends to depress fertility. This stems from the postulate that farm children constitute net assets when mature only if they stay and work on the farm, but provide no utility if absent. In the current paper, such a view is rejected as we do not consider it applicable to the LDCs context. In contrast to the U.S., absent children do contribute significantly to family incomes in LDCs; remittances are usually transferred by migrant children, they provide the family with a means of risk diversification, and so on, whereas in DCs where credit and insurance markets are developed, children are not viewed as critical providers of these and related benefits. Obviously, then, changes in parameters which impinge upon the capacity of children in LDCs to furnish such benefits cannot be expected to meaningfully affect the demand for them.

however, children offer a lower risk by possessing intrinsically very low risk attributes then their degree of risk aversion is immaterial. To the extent that they were prepared to remit before, they will be prepared to remit now also, at least as willingly as before.

Let us shift our discussion to change (b), a reduction in the spread in the income of a child accruing from his migration to the urban area. Once again the effect of this change on fertility will depend on the initial motivation for having children.

If the main motivation for having children as assets is the increased per capita income effect, then there are two effects which reinforce each other. The reduction in uncertainty in children's incomes clearly makes children more attractive (or less undesirable) as assets. This activates a substitution effect in favour of more children. In addition, the family is better off so that it will be prepared to take more risks. As children are still (though less) risky, this acts to raise the desired number of children.

On the other hand, if the main motivation for having children is risk reduction, then (somewhat surprisingly) we have, once again, two effects opposing each other. Since children are a more attractive asset, there will be increased demand for them by the substitution effect. However, since the family is better off, it will be less risk averse, a factor which will act to reduce the

number of children, thus leaving the net outcome ambiguous.

It should be noted that in this case the probability that a migrant child will reduce or sever his remittances, insurance obligations, etc., is larger than in the case of increased expected urban income (case (a)). This is because, to the extent that given that one major motivation for remittances is risk aversion--purchase from the family of future insurance--the reduction in the risk the migrant faces and the resultant decrease in his risk aversion (emanating from the assumption of decreasing absolute risk aversion) will both act to reduce the probability of remittances, etc. To the extent that this is an important factor, therefore, the reduction in urban income uncertainty is less likely to cause an increase in fertility than the increase in the expected urban income.

Let us now examine the effect of a reduction in the correlation between the incomes of children as migrants. Clearly, this has the effect of reducing the spread of income associated with children so that the family effects are similar to the ones described in our examination of (b).

The difference between (b) and (c) centers, however, on the effect of the change on the migrating children themselves: the individual migrating child is, by himself, no less prone to risk, because in the current case the decline in risk occurs only as a result of pooling. In view of this, as a result of the decreased

correlation between urban incomes, the individual migrant will have less motivation to opt out of the implicit contract with other migrating siblings. He may, however, have some motivation to reduce his participation in pooling with the part of the family which is back in the rural area, since he can achieve reduced risk without them by pooling with other migrating children. To the extent that this is so, this effect will exert a downward pressure on desired fertility, though as per our above discussion this factor may be of lesser importance than the altruism effect.

Turning to (d), the effect of a reduction in the correlation between migrants' urban incomes and the rest of the family's rural incomes is clearly beneficial to the family and enhances the value of children in their role as risk diversifiers. Once again, if children's role is that of risk diversification there will be two opposing effects--a substitution effect for more children and an income effect for fewer children. If, however, children are perceived mainly as expected income raisers, then both the substitution effect and the income effect will act to raise the desired number of children.

Turning to the effect of this change on the degree of commitment of migrant children to the income pooling agreement, it seems unlikely to be reduced and, indeed, may even increase with this change. The obvious reason for this is that by pooling incomes

with his rural family, the migrant is now more efficiently able to reduce his risk. Individually without income sharing, however, he would be no better off than before. The reduction in rural/urban income correlation thus reduces the motivation for individual migrants to break their implicit contract with the family and is thus likely to strengthen the family and income effects discussed above.

The following table provides a summary of our results.

Change	Motivation for Having Children	Income Effect	Substitution Effect
(a) An increase in the expected income of a child as migrant	Increased expected income	(+)	(+)
	Reduced risk	(-)	(+)
(b) Reduction of the spread in the income of a child as a migrant	Increased expected income	(+)	(+)
	Reduced risk	(-)	(+)
(c) Reduction in the correlation between children's incomes as migrants	Increased expected income	(+)	(+)
	Reduced risk	(-)	(+)
(d) Reduction in the correlation between children's incomes as migrants <u>and</u> the incomes of the parents	Increased expected income	(+)	(+)
	Reduced risk	(-)	(+)

Conclusions

Looking at children as assets, we have attempted to sign the effect of a change in two "asset attributes": higher expected income and lower risk. Our analysis seems to support the view that when the motivation for bearing and rearing a child and having him migrate is attainment of higher expected income per family member, all favourable changes discussed by us tend to increase the asset demand for children, hence desired fertility. (The outcome is, of course, reversed when the changes are unfavourable.) The changes we have examined are an increase in the expected income of a child as migrant and alternative risk reduction changes attained through children's migration. However, when the motivation for bearing and rearing children is attainment of lower income risk, the total effects of none of these same changes can be signed. For example, even if a child becomes a more effective risk diversification device, it is impossible to predict that more children will be desired (as the income effect may outweigh the substitution effect). To underline our results even more sharply, note that when there is an increase in the spread in the income of a child as a migrant then, even if the motive for having children is that they act (via migration) as risk-reduction devices, the demand for them may increase--a positive income effect induced result (a Giffen-type response). Hence, under such circumstances it is clearly false to anticipate lower rural-to-urban migration. As we have shown

elsewhere, the relationship between migration and risk can be quite complicated and warrants non-conventional predictions. (See Katz and Stark (1984).) The risks of making forecasts in this area are still fairly high.

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