The Old-Age Security Motive for Fertility

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Despite some interesting speculation and a variety of theoretical work on the subject, the old-age security motive remains among the least thoroughly analyzed motives for fertility. There is widespread disagreement on its importance in developing countries, with Leibenstein (1957, 1975) and others arguing that it is the most important motive while Lindert (1980, 1983) and others consider it negligible. Disagreement on the utility of introducing old-age pension systems is equally wide. Under these circumstances, the dearth of adequate theoretical and empirical analyses on the subject is a serious shortcoming (Stolnitz, 1983). The present paper attempts to identify the conditions under which the old-age security motive should be tested and critically reviews empirical studies on the subject.

The presentation is organized in three sections. The first identifies the conditions under which one would expect the old-age security motive to be important and argues that such conditions are likely to prevail in rural areas of developing countries and especially among women. The second section reviews existing studies and explains why the conclusions they draw are for the most part either irrelevant or misleading. The final section derives some implications for future research.

Conditions under which the old-age security motive could be important

A satisfactory test of the hypothesis that security in old age is an important motivation for fertility would require three steps. First, one would have to measure variations in intensity of the motive. Since motives are not directly observable, this implies the need to proceed indirectly by identifying a priori
circumstances that could be expected to influence the intensity of the motive. Second, one would have to observe fertility behavior in circumstances differing in the intensity of the old-age security motive (or in those factors underlying that motive) while holding other factors as constant as possible. Third, it would be necessary to establish that the causality in any observed relationship actually ran from the old-age security motive to fertility behavior and not vice versa. As will be demonstrated below, the greatest shortcoming of existing studies is with respect to the first step. We turn here to the identification of circumstances in which the motive could be expected to be strong.

To put the issue as simply as possible, old-age security is likely to be an important motive for fertility when the relevant parent is both uncertain about his or her ability to be self-supporting in old age and dubious that there are other more reliable or more effective means of such support than his or her own children.

In what circumstances are these basic conditions likely to coexist? It might be possible to distinguish the necessary and sufficient conditions for the motive to be important and hence to arrive at different counts of the number of such conditions prevalent in different settings. For expository purposes we identify the following eight conditions: (1) underdeveloped capital markets; (2) uncertainty about the accumulation of assets necessary for old age and disability; (3) the absence or inefficiency of private or public old-age and disability insurance programs; (4) confidence in the loyalty of children to their parents; (5) the absence of well-developed labor markets for women and children (nonstandard labor); (6) underdeveloped markets for the goods and services that elderly people consume; (7) the absence of a spouse who is of considerably younger age; and (8) the perception of old age as an appreciable portion of the life cycle. Since some of these conditions have already been identified by others, only their conjunction and their explanation can be regarded as new.

**Underdeveloped capital markets**

When there are profitable and reliable means of accumulating assets for use in old age, children are less necessary for old-age security purposes. While numerous relatively profitable accumulable assets exist in developed countries, and even to a considerable extent in the urban areas of developing countries, rarely do such assets exist in rural areas of developing countries. Aside from children, the available assets in such areas are generally limited to currency, gold, commodities, livestock, land, and structures. Currency is a notoriously bad store of value because of its vulnerability to inflation, theft, and fire. Gold is subject to price uncertainty, theft, and sometimes legal sanctions against its use. Commodities and livestock are generally either not capable of being stored for long periods or are storable only at prohibitively high cost. Land and structures may be somewhat better stores of value, but they too are risky in the sense that they may be overrun by squatters, and subject to other sources of insecurity, to very incompletely defined property rights, and/or to arbitrary
changes in the nature and allocation of those rights over time. Quite frequently, even when these alternative forms of asset accumulation are available and practical, children serve as complementary investments since children can contribute substantially to the security and productivity of such assets.  

Why don’t more satisfactory markets for land, structures, draft animals, agricultural machinery, and other second-hand assets exist? While a number of reasons could be given, an important contributing factor would seem to be the principle of “adverse selection.” Adverse selection arises when the quality of assets varies considerably (as, e.g., in the case of used cars), and asymmetry in information on quality exists between potential sellers and buyers (such that the sellers, i.e., the previous users, alone, are in position to know the quality of the assets, whereas buyers are likely to suspect that those assets for sale are of low quality, i.e., “lemons”).  

Although markets for land, animal traction, structures, and other assets exist, they are usually extremely thin. Moreover, the prices received by the sellers of such assets are reduced by adverse selection and high transaction costs to such an extent as to make their accumulation and subsequent sale quite unsatisfactory as a means of providing security for old age.

Uncertainty about the accumulation necessary for old age and disability

Even if the markets for such capital assets were well developed, complete, and free of adverse selection, of market imperfections, and of transaction costs, still they would offer insufficient protection against insecurity arising from disability and old age. This is because, in general, the individual knows neither the age at which disability or death will occur nor therefore the magnitude of the value of the assets that would have to be accumulated against these eventualities.  

Even in the best of circumstances, accumulation is a poor substitute for insurance.

Absence or inefficiency of insurance programs

While disability, old-age, and life insurance policies are widely available in developed countries and even in urban areas of developing countries, they virtually never exist in rural areas of developing countries, where the risks of disability are perhaps the greatest. It is important to realize, moreover, that the dearth of disability and old-age insurance in such rural areas is no mere accident. Several factors characteristic of such areas tend to undermine the viability of such programs.

In the first place, the geographic dispersion of human settlements, the low level of per capita income and consumption, exchange risk and the costs involved in converting from kind (crops) into cash to buy insurance and then from cash back into kind at the time of receipt of the annuity, all combine to make the transaction costs of such insurance extremely high. Second, given the wide individual variations in health, strength, and life style, and hence also in insurance risk, and the absence of accurate information about even such
basic data as date of birth, the information requirements and transaction costs for identifying appropriate premiums for different individuals are excessively high. This is especially true because of the asymmetry of information: much relevant information is available to the individuals or households buying insurance, but not to the firms selling it. As a result, the costs of instituting individual-specific premiums are prohibitive. In practice, therefore, virtually all insurance programs have to settle for one or two basic premium rates, which of course cannot be appropriate for everyone. In voluntary, private systems, this leads once again to "adverse selection," wherein only those whose insurance risk is actually greater than the premium assigned opt to participate, thereby undermining the long-run viability of the program. By making such programs compulsory, as in several public sector programs, the adverse selection problem can be avoided but at the cost of giving rise to "free-rider" and "moral-hazard" problems. For example, public sector compulsory programs may be prone to pay-as-you-go financing or to misappropriation, mismanagement, and low-yield investment portfolios. All of these factors compound to raise serious doubts among the participants in such programs whether old-age and disability annuities will actually be delivered when they are needed. Especially in rural areas, the long history of broken promises on the part of government to rural residents leads the residents to anticipate that the programs are unlikely to deliver.

The high information and transaction costs underlying these adverse-selection and moral-hazard problems apply to formal insurance programs, but not to traditional family insurers. Indeed, family and household insurers are likely both to have excellent information on the relevant insurance risks and to be in a better position to monitor, penalize, and thereby minimize behavior of the moral-hazard and free-rider varieties. Further, since intergenerational transfers within extended households are usually provided in kind, the transaction costs and exchange risks can be minimized and perhaps even eliminated.

**Loyalty of children to their parents**

The system of intergenerational intrahousehold transfers provides a potentially efficient mechanism for combining capital accumulation with insurance. Nevertheless, the system can be relied upon by parents for old-age and disability protection only if the loyalty of their children is assured. In most traditional cultures the care of elderly parents by children is an important cultural norm. Such norms are typically maintained by assessing strong sanctions against those who deviate from them and by offering rewards for those who adhere to them. Once the norms are inculcated, individual preference functions are affected. Individuals come to feel pride and satisfaction in being able to fulfill their obligations to their parents.

Notably, the most important locus for loyalty training is the household itself, and the most important dispensers of such training are usually women. In part, this is because they shoulder most of the responsibility for managing household activities and in part because (as explained below) it is they who
have most to gain from such loyalty training. Loyalty training, moreover, is likely to be more successful when it is unencumbered either by formal education or by close affective bonds between children and their spouses, and when the first three conditions identified above are met, as they usually are in rural areas of developing countries. Parents who have migrated to urban areas can help simulate such conditions by sending their children to live with their rural grandparents.

Neither perfect adherence to such norms nor the complete assurance of child loyalty is required for the old-age security motive to be important. The frequently heard complaints by elderly parents about the insufficiency of the services received from their children may simply be another means of inducing greater flows of such services. Further, it need not be the case that the expected transfers from children should more than compensate for the direct and indirect costs of raising children. Hence, as Willis (1978, 1979) has emphasized, studies showing that children do not always transfer as much to their elderly parents as the latter would like, and/or that the rate of return to children is negative (Enke, 1960; Lindert, 1980, 1983), need not imply that the old-age security motive for investing in children is unimportant. To the contrary, a low or even negative rate of return to children may be indicative of the importance of the old-age security motive in the absence of better mechanisms for satisfying that motive (Cain, 1983; Edlefsen and Ranney, 1984).

Modernization and development introduce various forces that tend both to reduce the strength of the traditional norms of family and community, and to erode loyalty. This erosion process, however, is typically very gradual. Moreover, because of substantial differences in personalities, in environmental conditions, and in random events across households and their dynamic interaction over time, the rate of breakdown of such norms and the degree of children’s loyalty to their parents are difficult to predict. Nevertheless, the onset of such forces and hence of decreased loyalty of children to their parents could be expected to be hastened by educational opportunities, extrahousehold employment opportunities, the size, instability, and growth of the community, restrictions on parental discretion over inheritance, decreased wealth or diminished importance of those forms of wealth to which children are strong complements, and the degree of penetration of nontraditional influences from the mass media. Although the strength of these loyalty-eroding influences varies from place to place and over time, children are likely to remain loyal to their parents longer in rural areas than in urban areas and longer in developing countries than in developed countries.

Absence of markets for nonstandard labor

Whereas markets for regular labor (i.e., full-time male labor) are close to universal, markets for part-time and nonstandard labor—for example, for children after school or for women when not caring for their children—are far from ubiquitous. The extent of development of markets for nonstandard labor
varies considerably. Extrahousehold employment opportunities for such labor are also likely to vary by region, by occupation, and by social status or caste. Since wage rates and hence independent earnings are affected by the regularity and intensity of employment experience (Mincer and Polachek, 1974), and in most societies females have the primary responsibilities for child rearing activities, female employment tends to be less regular and female wage rates tend to be considerably below those of males. This is especially so in rural areas. As a result, the existence and rate of remuneration of part-time and other employment for women are relevant to the old-age security motive for fertility because they affect the extent to which wives are likely to be employed during marriage and the extent to which they can be self-supporting during widowhood. Where such opportunities are relatively well developed—as is frequently the case in urban settings, where domestic service, clerical, sales, and professional opportunities for women are widely available—old-age security is likely to play a lower role in fertility. But in rural areas, where part-time employment opportunities outside the home are rare, women are likely to remain more dependent on their husbands and subsequently on their children than their urban counterparts.22

**Underdeveloped markets for the goods and services that elderly people consume**

Even if viable, efficient, and dependable means of asset accumulation and forms of old-age insurance could be found, access to them would be of little use if the goods and services that the elderly consume directly are not purchasable in the desired form and at reasonable prices. Getting products from market to home is likely to be a major problem for the elderly, especially in rural areas of developing countries. Consumer durable goods, like automatic washers and driers, dishwashers, and garbage disposal units, and more basic public goods like potable water and sewage systems, are seldom available to rural developing country households. Without such conveniences, satisfying the daily subsistence needs of the elderly in rural areas of developing countries is no simple matter.21 The required activities are time consuming and laborious. Even if the necessary manual labor could be purchased in the labor market, its efficient and dependable provision would require coordination and supervision that the elderly or disabled may be unable to provide. Servants can be trained but there are almost always more serious questions of their efficiency, loyalty, and dependability than in the case of children, grandchildren, and other family members.24

It would not be surprising, therefore, to find the old-age security motive for fertility to be particularly strong in conditions characterized by the lack of well-developed markets for the goods and services that elderly people consume.

**Absence of a young spouse**

The need for children for support during old age and disability could be reduced if an adult were free to take on a much younger spouse, as for example in a
second marriage or in situations in which polyandry and polygyny were allowed.25

By and large, married women are much less likely than married men to have younger spouses. Three reasons may be given for this. First, women tend to be several years younger than their husbands at first marriage.26 Second, life expectancy at adult ages tends to be considerably greater for females than for males.27 Third, societal rules generally make it easier for men to divorce and remarry than women. Even aside from the last factor, the typical wife in developing countries can expect to outlive her husband by 5 to 14 years.28 Therefore, while husbands are largely taken care of during their old age by their younger wives, wives must anticipate relatively long periods of widowhood (Cain, 1982). Given also the commonly imposed restrictions on women’s extrahousehold employment and inheritance, mothers are likely to be considerably more dependent on their children for support during their old age than fathers, especially in rural areas of developing countries.29

Perception of the relative importance of old age

Obviously, old-age security can be an important factor in human behavior only if old age is considered relevant to the human life cycle. In the least developed countries, especially where life expectancy, even of those over age 10 years, is extremely low, old age may simply not be a relevant concern. The least developed countries may, therefore, not be the best places to conduct tests of the importance of the old-age security motive. However, in between the least developed countries and the developed countries, where other necessary conditions are violated, there is a wide range of developing countries where such tests may be relevant.

One factor that may tend to make it more difficult to construct strong tests of the old-age security motive for fertility is that several of the preceding explanations for its importance may apply to other possible motivations for fertility and for the direction of parent–child transfers. For example, some of these conditions coincide with the initial (or what could be called the "exploitation") stage in Caldwell’s theory of wealth flow reversals and demographic transition (Caldwell, 1977, 1982); others, such as the absence of insurance, are shared with Cain’s (1981, 1983) more generalized theory of high fertility as a response to multiple risks. Nevertheless, once the conditions of each such explanation are carefully laid out, differences would no doubt be apparent, making it in principle possible to distinguish between these theories in empirical tests.30

Existing empirical studies and their limitations

While one might well presume that greater old-age insecurity would increase the demand for children and hence increase fertility, consideration should be
given to several possible offsetting influences, for example: greater horizontal extension of households might substitute for children; the quality of children might substitute for the quantity of children; and the wider spacing of children might significantly reduce the number of children required to provide any given level of old-age support. Likewise, the introduction of a formal old-age pension system might have “goal-recognition” effects and numerous other positive effects on fertility. As a result, the direction of the direct effect on fertility of the introduction of a pension system cannot be determined a priori. A considerable portion of its overall effect on fertility, moreover, would presumably occur only indirectly, mediated by effects on household structure, age at marriage, labor force participation, and on savings, investment, and wealth. Hence, the fertility effects could again be either positive or negative. Although the presumption remains that on balance the effects of the introduction of formal old-age insurance programs on fertility would be negative, in fact neither the direction nor the magnitude of the overall effect can be determined without detailed empirical studies. We turn now to a review of existing empirical studies.

Indirect tests

Following the pioneering empirical study of the issue by Friedlander and Silver (1967), most studies have used international cross-section data to determine the extent to which variations in social security participation across countries can explain the intercountry variations in fertility rates. Not surprisingly (because of differences in data sets, measures of the relevant variables, and the methods used), the results of these studies vary. Some of the earlier studies, such as those of Friedlander and Silver (1967), and Kelly, Cutright, and Hittle (1976), found surprisingly little or no relation between the old-age pension participation variables and various measures of fertility, especially in developing countries. More recent studies, such as those of Entwisle and Bollen (1981), Entwisle and Winegarden (1981), and Hohm, Galloway, Hanson, and Biner (1984), which allowed for longer lags in the effect of social security participation on fertility behavior and introduced nonlinear control variables for both the level of development and the extent of family planning, have generally found significant negative relationships. Entwisle and Winegarden, moreover, obtained evidence of a reinforcing feedback from low fertility to the expansion of the depth and breadth of coverage of and participation in old-age security programs. Like most international cross-section studies, however, the results of these studies are probably sensitive to the inclusion or exclusion of a few countries with rather extreme values of the social security and fertility variables.

In light of the conditions identified in the previous section for a strong old-age security motive, however, these international cross-section studies seem largely irrelevant in the sense that participation in social security programs has thus far been confined to developed countries and to urban areas of developing countries, where few of the necessary conditions for the importance
of the motive are satisfied. This irrelevance is largely due to the fact that the preceding studies contain little or no variation across the sample with respect to social security coverage in the relevant portion of the population, namely the rural population.

Four studies, although using the same cross-section methodology, overcome this weakness by focusing on rural areas of developing countries, and indeed on regions in which the conditions identified in the previous section are clearly satisfied. Two of these, DeVany and Sanchez (1977, 1979) and Nugent and Gillaspy (1983), use state and county cross-section data for Mexico. Sanchez (1984) uses rural data from the United States. Finally, Cain (1981, 1983) uses a cross-section of four villages in India and Bangladesh.

While the DeVany and Sanchez study was not explicitly directed to the old-age security motive for fertility, it is nevertheless relevant inasmuch as its authors argued that, because of (a) the incompleteness of land markets, (b) the existence of excess demand for land and hence of land rationing, and (c) the insecurity of land ownership, the presence of children provides parents with land-retention benefits and frees parents from having to remain on the land at all times. Hypothesizing that the land-retention and other benefits of children to their parents would be greater for those living on ejidal land (which cannot be bought or sold) than for those on privately owned land, DeVany and Sanchez used cross-section data from the Mexican population census of 1970 to show that, even after controlling for infant mortality, female labor force participation, income, and education, both fertility and marriage rates were positively related to the share of ejidatarios in the agricultural work force, thereby supporting their hypothesis.

Since in practice the restrictions on the leasing-out of land by ejidatarios were not well enforced, since certain credit institutions had been developed especially for providing credit to ejidatarios, and since privately held land was also very insecure because of the threat of invasion by squatters (thereby giving children a land-enhancing value even on private land), the rationale for expecting especially high fertility among ejidatarios at that time would seem questionable. Nevertheless, DeVany and Sanchez's findings deserve attention.

More in the tradition of the earlier international cross-section studies, Nugent and Gillaspy (1983) and Sanchez (1984) have focused on the effects on fertility of the introduction of old-age and disability benefits in social security programs, in the former case in Mexico and in the latter case in the rural United States. In rural Mexico since the early 1960s, the social security program has covered some farmers and rural workers, in particular those involved in sugarcane cultivation, but not others. The Nugent and Gillaspy study focused on a cross-section of 34 counties in the principal sugarcane-growing area of Mexico, the Papaloapan River Basin. Measuring participation in the program by the proxy variable $s/(1 + s)$, where $s$ is the share of income from sugar in total agricultural income, Nugent and Gillaspy found that changes in fertility between 1960 and 1970 across counties were negatively related to the size of the social security proxy variable.
The findings of this study, however, are qualified by the following shortcomings: (a) the small size of the sample, (b) the sensitivity of cross-section results to the inclusion or exclusion of observations with extreme values, (c) the possibility of selectivity bias if people wanting smaller families choose to live in sugarcane-growing areas so as to be covered by social security, (d) the possibility that the effects attributed to the old-age security program were in fact due to the promotion of birth control, which in recent years at least (though supposedly not at the time of the study in 1970) has become a component of the program, and (e) the possibility that insufficient controls were used for the level of development and other variables.

In the case of the United States, the extension of Social Security coverage to rural areas occurred primarily in the 1950s. Sanchez (1984) focused on changes in fertility rates between 1950 and 1960 in the United States in general and the state of West Virginia in particular. Using the same specification of the fertility relationship as Nugent and Gillaspy, Sanchez found a similar negative relationship between changes in fertility and the proxy for change in Social Security coverage. However, when additional controls, such as the level of income per capita, were introduced, the sign of the coefficient representing the effect of the Social Security variable changed from negative to positive. The interdependencies that exist between the level of development and the pervasiveness of social security programs makes it difficult either to be sure of the correct specification or to isolate the effect of one such variable from another.

The most intriguingly simple and straightforward empirical test of the hypothesis is found in Cain’s 1981 study. As noted above, Cain has stressed that the insecurity that characterizes rural areas of developing countries is by no means limited to old age and disability. Indeed, calamitous events, such as the destruction or confiscation of property, unexpected labor shortages, bad weather and other sources of crop failure, wars, local insurrections, crime, and so on, can occur at any age. Because children can offer a degree of protection against virtually all such sources of insecurity, the presence of these sources could be expected to contribute to high fertility.

Cain compared three villages in Maharashtra and Andhra Pradesh States of India with one village in Bangladesh. The Bangladesh village was characterized by considerably greater risks than any of the Indian villages. All villages were poor, but the Indian villages had better sources of credit and stronger lateral relations within extended family households than the Bangladesh village, allowing Indian villagers to adjust to calamities more easily than Bangladesh villagers. Fertility rates have remained high in the Bangladesh village but were low and falling in the Indian villages. Cain attributed the differences in fertility in part to the differences in risk and in risk-coping institutions between the two groups of villages. Since women were particularly limited in their ability to cope with such risks in the Bangladesh village because local Islamic practice and tradition excluded them from market activities, they were more dependent on children for support, especially during widowhood,
than their Indian counterparts. As evidence of the consequences of the greater risks in Bangladesh, Cain showed that a higher percentage of widows without surviving sons were forced to sell their land, or, if they did not possess land, became destitute in the Bangladesh village than in the Indian villages.

As interesting and intuitively plausible as the generalized risk hypothesis is, more work is needed to spell out the form that each of the different sources of risk would take and the way in which children relate to such risks. It is by no means obvious that all such risks would be reduced by the presence of children. For example, in the case of localized bad weather or civil strife, the presence of (especially young) children, by reducing geographic mobility, might raise (rather than lower) exposure to risk. However, the main shortcoming of Cain’s study is that it provided essentially only two data points—the two groups of villages—thereby making it difficult to distinguish between the effects on fertility of each of the different kinds of insecurity (in particular, old-age insecurity and insecurity at younger ages) and the many other factors that may have varied between the two groups of villages.

Direct tests

All of the preceding studies are inferential and indirect; and they use aggregate data, which are far from ideal in testing relationships that are microeconomic in nature and that, more broadly, apply to individuals rather than to groups. Several important studies are both more direct and based on micro-level interviews. The one such study that has received greatest attention is that of Vlassoff and Vlassoff (1980). The Vlassoffs’ study was based on a questionnaire consisting of a number of questions related to old-age security addressed to a sample of 357 ever-married men in a rural village in Maharashtra State, India. From the following series of observations and inferences drawn from them, the Vlassoffs concluded that old-age security was unimportant as a motive for fertility.

First, the Vlassoffs argued that the prevalence of joint residence of adults with their parents and/or with their children, rather than being viewed as motivated by the need for support during old age, should be seen only as a stage in the life cycle of the family. Second, “because of the long [time] interval between fertility and security received from sons in old age,” they argued that the present value of such benefits could never have been large enough to affect fertility (p. 488). Third, from responses to their questionnaire indicating that elderly men seldom retire, become senile, or stop working (even if they live with their sons), they concluded that “the magnitude of old-age security in agricultural, less developed societies is, therefore, extremely limited” (p. 498). Fourth, from responses indicating that even the older men interviewed seldom “reflected upon” (p. 491), “thought about” (Table 3, p. 492), or “were pessimistic about” (p. 493) their old-age security, they concluded that further doubt should be cast “upon the role of subsequent filial support in motivating fertility decisions” (p. 498). Finally, since village men
willingly allow (some of) their sons to migrate to urban areas, frequently say that they had provided their own fathers with better support than the limited support they were receiving from their sons (p. 495), and feel more secure if they are wealthier, the Vlassoffs suggested “that economic resources, not an abundance of sons, are relevant factors, that determine security in old age” (p. 499).

In a number of important respects, however, careful consideration of their inferences in light of the conditions identified in the first section of this paper reveals some potentially important flaws in the supporting arguments. While a detailed, step-by-step critique of the Vlassoffs’ analysis would require more space than is available here, the most significant flaws can be explained briefly.

First, with respect to joint or extended household residence, while it is true that most households in rural areas of developing countries tend to follow a well-defined life cycle, other research has shown that both systematic variations in such patterns and the basic pattern itself can be explained in part by the old-age security advantages of such living arrangements.

Second, as pointed out in the preceding section, in the absence of better alternatives for resolving old-age insecurity, even definitive evidence (lacking in this case) of the negative present value of benefits parents expect from their children at old age—for example as calculated at age of marriage—is not necessarily inconsistent with the importance of the old-age security motive for high fertility.

Third, the Vlassoffs’ findings that few men retire (whether or not they live with their sons), are senile, enjoy much leisure, express worry about old age, are without any tangible assets, say they receive considerable support from their children, or prohibit their sons from living and working elsewhere, in no way contradict the importance of the old-age security motive. To the contrary, and as noted in the previous section, most of these observations, such as that men work until they no longer possibly can, should be seen as evidence of the transaction-cost, moral-hazard, and adverse-selection advantages of the traditional intrahousehold system of providing insurance against old-age insecurity. Likewise, the facts that men accumulate land and other assets and allow some of their sons to work and live away from home are all aspects of and evidence of strategies to reduce old-age insecurity that are complementary to the receipt of support from children. The Vlassoffs failed to distinguish between what they observed, namely the paucity of actual transfers or support from children, and what is relevant to old-age security: the expectation of such support when it is needed.

Finally, as should be clear from the previous section, even if the Vlassoffs were correct in their conclusion that rural men are not preoccupied with old-age security, the hypothesis that it is important in explaining fertility behavior, household structure, and other phenomena should not yet be rejected. It is women, rather than men, who would be expected to be more subject to the
old-age security motive for high fertility. The Vlassoffs have chosen an in-
appropriate sample for their analysis—males instead of males and females.

Before embarking on costly programs of social policy, the benefits of
which are uncertain, governments or other institutions frequently attempt con-
trolled experiments with pilot applications of the relevant policies. However,
despite the shortcomings of the existing studies of the effect of old-age pen-
sions, and the obvious applicability of experimental techniques in studying
their effects, no such experiments have yet been carried out on old-age pen-
sions. The only experiment that is related, however indirectly, to the issue at
hand is that with respect to a “No-Birth Bonus Scheme” (NBBS)38 offered
to married women on selected South Indian tea estates beginning in 1971. The
results of this experiment were reported by Ridker (1980).

The women in the study were located on 18 tea estates, divided into
three groups: three estates on which the NBBS was offered along with a
comprehensive maternity, child care, and educational welfare program, which
aimed at promoting the quality instead of the quantity of children; nine estates
on which only the latter program was initiated; and a control group of six
estates on which neither program operated. Records were kept on approximately
1,000 women in each of the three groups of estates. The results indicated that
between 1971 and 1977 all three groups experienced a decline in the crude
birth rate and an increase in contraceptive use. The changes in the control
group, however, were in keeping with the national trends in India, whereas
in the other groups the trends were accentuated, especially in the group offering
both programs.

Notable shortcomings of the study are (1) the limited representativeness
of the sample,39 (2) the failure to take into account possible prior affiliation
with an existing old-age pension fund, (3) the less than optimal ways in which
the schemes were implemented and administered,40 (4) the exclusion of all
statistics other than group means and of all differences between groups other
than educational levels, (5) the insufficient length of the time period studied,
and (6), at least for current purposes, the study’s limited relevance to the old-
age security motive. Nevertheless, despite the shortcomings both in the study
and in the experiment itself (explained in Ridker, 1980), the considerably
sharper reduction in the crude birth rate in the pension-type dual-program group
than in the other groups is certainly deserving of consideration and continuing
investigation.

Still another source of direct evidence concerning the old-age security
motive is what people say about it in interviews. Among the countries where
surveys involving interviews, sometimes limited to a tribal subpopulation, have
turned up the importance of children as sources of old-age security are: In
Africa, Botswana (Mueller, 1979), Egypt (Kelley, Khalifa and El-Khorazaty,
1982), Ghana (Caldwell, 1966; Mendonsa, 1977), Kenya (Kabwegyere, 1977;
Moore, 1978), Morocco (Maher, 1974), Niger (Faulkingham, 1977), Nigeria
(Caldwell, 1974, 1982; Adepoju, 1977; Okore, 1977; Orubuloye, 1977), South
Africa (Nag, 1962), Sudan (Galal el Din, 1977), West Africa (Soyinka, 1977); in Asia, Bangladesh (Cain, 1981), China (Lang, 1946; Parish and Whyte, 1978; Wolf, 1983, 1984; and Wolf and Huang, 1980), India (Nag, 1962; Mandelbaum, 1974; Babu, 1979; Vatuk, 1980a, 1980b; and Nugent, Kan and Walther, 1983, p. 53), Indonesia (Hull and Hull, 1977; Nag, White and Peet, 1978), Japan (Arnold et al., 1975; and Smith, 1977), Korea (Arnold et al., 1975), Malaysia (Nugent, Kan and Walther, 1983, p. 54), Nepal (Nag, White and Peet, 1978, p. 299), Philippines (Arnold et al., 1975), Solomon Islands (Keesing, 1970), Sri Lanka (Nag, 1962), Taiwan (Wolf, 1972), Thailand (Knodel, Havanon and Pramualratana, 1984), Yemen (Katzir, 1983); in Latin America, Mexico (van Keep and Rice-Wray, 1975; Ryder, 1976); as well as in Greenland (Hoebel, 1974) and Yugoslavia (Simic, 1978).

This brief list of studies in which the old-age security motive has been alleged to be of considerable importance in fertility behavior is certainly incomplete. Undoubtedly, it could be extended considerably.

Since the sample selection procedures used in many of these studies are not described and in many cases probably left much to be desired, it is difficult to know what to make of such evidence. A more systematic and comprehensive investigation of the importance of the old-age security motive for children in a variety of countries is found in the Value of Children Project. The second phase of this project involved detailed, in-depth interviews with some 29,403 married young adults in nine countries: two highly developed, West Germany and the United States; one somewhat developed, Singapore; and the rest less developed, Indonesia, Korea, Philippines, Taiwan, Thailand, and Turkey. Each respondent was asked to indicate, using a three-point scale, the importance of each item in a long list of reasons for valuing children. The results, reported in Kagitcibasi (1982, Table 1, p. 34), reveal the following conclusions: (a) the old-age-security value of children is seen as great in developing countries but not in developed countries; (b) in every country—developed and developing alike—a higher percentage of women than of men give old-age security as a very important reason for having a child; (c) the same is true of the old-age value of children as the “reason for wanting another child” in all countries except Taiwan (perhaps because of its rapid development in recent years); (d) male children are generally regarded as more important sources of old-age support than female children.

An even more comprehensive study—at least in terms of sheer numbers—is that of 173 surveys on “Knowledge, Attitude, and Practice” of family planning undertaken between 1950 and 1970 in various parts of the world. As reported by Mathew (1975, p. 103), parents’ “evaluation of children as the source of family strength and the economic anchor of the family and sons as the security against old age” was the major motive for desiring children.41

Of course, this is not to say that old-age security is the dominant motive or that people who mention this motive in interviews may not be attributing to it what are closely related but nevertheless distinct kinds of motives. By the same token, however, other motives mentioned in such interviews, such
as "survival," "viability," the "desire for survival of the family line," and "prestige," may well be proxies or guises for the old-age security motive.

Suggestions for further research

The prima facie evidence in the form of what people, and especially women, say about the old-age security motive for fertility suggests that the motive may be very strong. On the other hand, indirect (behavioral) evidence concerning what happens to fertility-related behavior, such as transfers from children to parents, household living arrangements, and labor force participation, and to fertility itself as the depth, breadth, and coverage of old-age pension programs and/or of other substitutes for support from children vary from one situation to another over time and space, is weak and often contradictory.

One obvious reason for the weakness and inconsistency of the behavioral studies is that in virtually no case was the study undertaken and the data collected and used for purposes of testing the importance of the old-age security motive. Even considering all the studies reviewed in the previous section, the old-age security motive remains the least explored motive for fertility. There is a need for additional, more systematic, and more special-purpose empirical studies.

A second reason for the weakness of the indirect evidence provided in existing empirical studies is that these studies have often not been conducted in situations where one would expect the old-age pension motive to be strong, namely in rural areas of developing countries and especially among women. Among the countries where old-age pension programs have been introduced into rural areas that might be suitable for future studies are Argentina, Brazil, Costa Rica, and Mexico in Latin America, Tunisia in North Africa, and Malaysia and Sri Lanka in Asia.

A third weakness of the existing studies is that the results have usually been sensitive to the extent to which and the manner in which controls for the level of development have been introduced. The sensitivity of the results to these minor differences in the specification of the relevant regression equations is in large part attributable to the small size of the samples used and the close correlation between the pervasiveness of old-age pension systems and the level of development in aggregate data of the type used in international or inter-community cross-section analyses.

Ideally, to distinguish among the various direct and indirect ways in which the old-age pension motive could affect fertility, the data to be collected should pertain to individual households or even to individuals within households. The sample size should be sufficiently large so as to afford the opportunity to isolate the old-age pension effects from the effects of such variables as community, ethnic group, level of development, and knowledge of and access to contraceptive techniques. The data collection effort should also be repeated at several points in time so as to allow the analyst to distinguish between those effects that would be apparent in comparing different individuals.
or groups (as in a pure cross-section analysis referring to a given point in time) and those that would be observed in a given individual or group over time.

In view of the wide variety of pension programs that could be considered, each of which might have different results, experiments with various old-age pension schemes along the lines of the no-birth bonus scheme reported by Ridker (1980) should be considered.

Notes

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1 For examples of a strong advocacy of old-age pensions for rural areas of developing countries see Mauldin et al. (1974) and Tinbergen (1980).


4 For a vivid and historically important example of the relevance of adverse selection in rural markets see Greenwald and Glasspiegel (1983).

5 Parsons (1977) has persuasively argued this point.

6 For evidence see Sauvy (1972), Schulz (1981), and United States, Department of Health and Human Services (1984). Parsons (1984b) points out that even in developed countries disability insurance tends to be undersupplied. The importance of this condition for reliance on children is stressed by Kuznets (1979).

7 The free-rider problem arises as people try to avoid paying for the system unnecessarily. Free riding undermines the long-run viability of a system. It is of course more of a problem in rural areas, where, because individuals are more dispersed and much poorer, insurance premiums are more difficult to collect than in urban areas, where payroll deduction and other premium collection programs can be used.

8 The moral-hazard problem arises when the knowledge that one is insured by such a program induces one to engage in behavior that is subject to higher insurance risk. Hence, the moral-hazard problem, which is more likely to arise when the insurer is distant from the insured both in geographic and in personal terms, also tends to undermine the viability of disability and old-age insurance programs. The moral-hazard problem can be reduced by close monitoring, but that is likely to be prohibitively expensive when it has to be done by agents.

9 See, for example, Mesa-Lago (1983) and Zschock (1983).

10 For a more comprehensive treatment of these difficulties see Ben-Porath (1980), Pollak (1982), and Parsons (1984b).

11 Rather than having to adopt arbitrary retirement ages or standards of qualification for disability, the household, which has at its disposal a large variety of incentive mechanisms, can encourage members to work as hard and as long as they can. Persons who, to formal insurance programs, would qualify as totally disabled, in the household insurance context can be encouraged to work part time. This minimizes the magnitude of the transfers required, and makes the household a particularly efficient source of old-age and disability insurance.

12 For some interesting examples see Caldwell (1977).


14 Another reason is that women are more dependent on their children than men and hence have more to gain from providing loyalty training (see Maher, 1974; Vélez, 1978; Moore, 1978).
15 For evidence see Smith (1962), Goode (1963), Oppong (1973), and Sanchez (1976).

16 Affective bonds can be undermined through parental control over the timing of marriage and the choice of marriage partners. Generally, parents will have incentives to arrange marriages of their children at very young ages so as to undermine the possibility of husband–wife bonds that could interfere with loyalty to parents. The criteria that parents use in the choice of marriage partners quite naturally differ substantially from those their children would apply. For evidence on the importance of arranged marriages in rural areas of developing countries see Lang (1946), Soyinka (1977), and Knodel, Havanon, and Pramusalatana (1984).

17 Indeed, uncertainty about child loyalty or a low rate of return on children may in certain circumstances make high fertility more necessary than it would otherwise be.

18 The greater the extent to which parents directly control the employment opportunities of their children, the easier it should be for them to induce loyal behavior from their children. The greater the availability of extrahousehold employment opportunities, the more difficult it should be for parents to induce loyalty. Likewise, the more agricultural land that the parents possess even in the presence of outside employment opportunities, the more attractive intrahousehold employment should appear to children and hence the more loyal behavior that parents should be able to induce.

19 In small, stable communities, disloyalty can be easily detected and communicated, making it difficult for disloyal children to obtain desirable spouses, employment, credit, and communal help when needed. The detection of and the assignment of penalties for disloyalty are obviously more difficult to accomplish in large communities and in communities characterized by substantial in- or outmigration.

20 The more land and other property that is potentially inheritable, the more children are likely to want to qualify for inheritance by being loyal. Inheritance rules can of course influence the importance of the inheritance motive for loyalty. For example, in those societies where inheritance is prescribed along lateral lines (i.e., among siblings) the inheritance motive for loyalty of children will be dissipated. Likewise, even where inheritance follows the traditional patterns of patrilineal or matrilineal descent, if the heir is predesignated by law—e.g., when primogeniture, ultigeneriture, or bequest-sharing are mandated—parents are in a less favorable position to induce loyalty, even if they have considerable property (Habakkuk, 1955; Goody, 1972; Parsons, 1983, 1984a; Berkner and Shaffer, 1978).

21 As Goldstein and Beall (1981) and Strange (1983) point out, however, the relationship is not necessarily linear. For example, in very remote areas that are far from employment opportunities, outmigration of children may limit their ability and propensity to care for elderly parents.

22 Notably in at least one rural society where the sex roles are reversed and women are the breadwinners, children play virtually no role in old-age support and care (Cho, 1979).

23 See, for example, Vatuk (1980b, 1981).

24 See Nag, White, and Peet (1978) and Ben-Porath (1980).

25 For example, among the Tiwi of North Australia, where polyandry and polygyny are possible, both men and women take younger spouses for the specific purpose of providing for care during old age and disability (Hart and Pilling, 1960). Where polygamy is practiced in Africa, sometimes the wife asks her husband to take on another younger wife to help take care of her. Other examples arise in those societies, e.g., in parts of rural Iran, where the institutions of levirate and sororate are relatively common. In the levirate a man, usually a younger brother, may be obliged to marry his older brother's widow. In the sororate a younger sister may be obliged to marry her older sister's widower.

26 According to data taken from Smith (1980) and the United Nations Demographic Yearbook for 1976 and 1981, the age differential between husbands and wives at first marriage ranges from a low of less than two years for Brazil to a high of nine years for Kuwait (Nugent, Kan, and Walther, 1983, Table 1.1).

27 In this case the differential ranges from a low of less than one year for India and Nepal to a high of six years for several Caribbean
and Latin American countries (Nugent, Kan, and Walther, 1983, Table 1.1).

28 See Nugent, Kan, and Walther (1983, Table 1.1).

29 Where formal old-age security programs exist, they typically provide systematically fewer and smaller benefits to women than to men (as demonstrated, e.g., by La-roque, 1972; US Department of Health, Education and Welfare, Social Security Administration, 1973; Gelber, 1975; Task Force on Women and Social Security, 1978; Ben Israel, 1979; Voirin, 1982; and Oppong, 1982).

30 For example, Caldwell’s exploitation theory posits a high fertility motive for the male head of household, not for the wife-mother for whom, as suggested above, the old-age security motive would be important. Likewise, with respect to Cain’s theory, empirically it should be possible to compare the explanatory power (with respect to variations in fertility rates over time and space) of factors like instability in crop yields, wage rates, agricultural incomes, and the like with that of various proxies for the importance of old-age and disability risk.

31 Numerous references to such effects are contained in Nugent and Gillaspy (1983).


33 In part, this adjustment is made in order to avoid ambiguity in the direction of causation for which the authors have quite correctly criticized other studies.

34 Note also that Nugent and Gillaspy (1983), using data for a different region of Mexico, found the relationship between inter-temporal changes in fertility and changes in the ejidal share of total landholdings to be insignificant (but positive).

35 In particular, the roles of asset accumulation and of children in relation to such assets would need to be carefully considered in the case of each such risk.

36 For greater detail, the reader is referred to Datta and Nugent (1984).


38 While a no-birth bonus scheme is quite different from an old-age pension scheme, the fact that the no-birth bonus was to be paid into an account that was usable only upon “retirement”—in this case the end of the fertile portion of the woman’s life cycle—gave it a character that was a combination of an old-age pension system and a bonus scheme.

39 Unusually high percentages of the population on such estates are members of the Christian religion and of tribal minorities.

40 Many people on the estates were left uncertain about their participation, the nature of the benefits, and the purpose of the program.

41 See also Bulatao (1979).

42 See United States, Department of Health and Human Services (1984).

References


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