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CHILDREN: A CAPITAL GOOD OR A BASE FOR INCOME REDISTRIBUTION POLICIES

by

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Children: A Capital Good or A Base for

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I.   Introduction

In this review we explore the economic implications of various normative perceptions of children, i.e. of various valuations of children. Perhaps, on the lowest end of the spectrum of valuations lies the so-called "Old-Age-Security-Hypothesis". According to this hypothesis, children are not at all valued for their own sake by their parents. The latters view children only as a device for transferring resources from present to future consumption. That is, children's role is to provide security in old age. In this sense, attributable to developing countries, children serve merely as a capital good or as a substitute for pension funds in developed countries.

Since children are under the possession of their parents who do not value them for their own sake, then governmental policies can only affect the demand of parents for children but not the

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welfare of children; in the same way that governmental policies can affect the accumulation of capital but not the "welfare" of capital.

According to this old age security hypothesis, better access to capital markets reduces the demand for children, because children are then less essential as a means of transferring income from present to the future.

Another approach is that of endogenous fertility. By endogenous fertility we mean that parents care about both the numbers and welfare of their children. That is, parents derive a positive utility from having children and from the well-being of these children. Parents respond to economic constraints and opportunities when making devices affecting the numbers and welfare of their children. Society does not directly value children for their own sake, but rather only indirectly as they generate utility to their parents, the sovereign decision-makers in the society. In this sense society values the number and welfare of children no more than it values the quantity of bread in as much as parents derive positive utility from bread. Income redistribution policies in this case are not directly aimed at enhancing the well-being of children. Instead they are designed to raise the welfare of parents. But since parents care about their children, then an extra ECU at the hands of parents is eventually used, at least partially, to raise the welfare of children and, perhaps, their number too.

According to this approach, the role of children allowances, for instance, is to raise the welfare of parents (via the number and welfare of children). Therefore, children allowances are justified as a means to redistribute income only if they raise the welfare of poor parents relatively more than the welfare of rich parents. That is, children allowances are justified only if the number of children is negatively correlated with income, so that the poor have on average more children than the rich.

A third approach is that of exogenous fertility. Parents do not respond to economic constraints and incentives when making decisions affecting the number of their children. Parents care about the welfare of their children and the consumption demand patterns of parents reflect this care. Society does not view children merely as a source of utility for their parents, but rather values them for their own sake. Furthermore, society respects parents' attitude or preferences with respect to their children and lets parents allocate all of the resources available to the family, privately or publicly, among all the members of the family, without attempting to directly allocate economic resources to children. We explore here the implications for income redistribution policies of demand patterns of parents which follow the "demographic scaling" principle, according to which, differences in consumption demands of households of different size can be fully ekxplained by a single variable: the number of "standard adults" in the household.

II. Children As A Capital Good: The Old Age Security Hypothesis

The "old age security hypothesis" views children as a capital good. In the words of Schultz (1974), "children are ...the poor man's capital" in developing countries. Becker (1960) writes that "it is possible that in the mid-nineteenth century children were a net producer's good, providing rather than using income". Neher (1971) and Willis (1980) develop the idea that parents in less developed countries are motivated, in part, to bear and rear children because they expect children to care for them in old age.

The "old age security hypothesis" states that better access to capital markets unambiguously reduces the demand for children, because children are then less essential as a means of transferring income from the present to the future. For instance, Neher (1971) writes that "...the good asset (bonds) drives out the bad asset (children)."

These arguments may be presented in a simple stylized model of child-rearing (See Nerlove et. al. (1985)). Suppose that parents live for two periods. They do not value children for their own sake, so that they have no variable demand for children's consumption. Rather, it is assumed that parents allocate a fixed quantity of consumption of x_1 for each child in the first period, and a fixed quantity of consumption of x_2 in the second period. These fixed quantities are set at either some socially conventional levels or subsistence levels. In the second period, children are

productive and they produce an output of K_2 each. Parents produce by themselves an output of K_1 in the first period. Suppose a capital market does not exist. Then, in old age (the second period), parents' only source of consumption is transfers from their children. The transfer that each child makes to its parents is equal to $K_2 - x_2$, that is the output it produces (K_2) less the consumption (x_2) allocated to it by the parents. Thus, a child is viewed by parents as a capital good in which they invest x_1 in the first period and receive an accumulated total sum of $K_2 - x_2$ in the second period. Thus, the unit return on investment in children is $(K_2 - x_2)/x_1 - 1$.

We now turn to explore the effects of certain economic policies. Suppose first that the government offers a child allowance. Then it effectively reduces x_1 and x_2, the child-rearing costs in the first and second period, respectively. This increases $[(K_2 - x_2)/x_1]$, the unit return on investment in children. As children become a more attractive investment, parents are induced to bring more children.

Suppose next that the government issues bonds yielding a unit return of r. The parents now have an alternative investment for old age security: government bonds. Whether to invest in children or in bonds depends on which yields a higher return. Those parents for whom child-rearing costs (x_1 and/or x_2) are relatively low or the output of children (K_2) is relatively high find the return on

investment in children $((K_2 - x_2)/x_1 - 1)$ more attrattive than the return on bonds (r), and they will continue to invest in children. But those parents for whom child-rearing costs are relatively high or the output of children is relatively low find bonds more attractive than children, and they will reduce their investment in children. That is, they will bring fewer children. Therefore, on average, society will have fewer children. This is the essence of the old age security hypothesis: bonds may be a good substitute for children.

This hypothesis depends crucially on the assumed microeconomics of fertility behavior, that is: that parents do not care about the number or welfare of their children. In order to demonstrate this point, suppose, to the contrary of the assumptions underlying the old age security hypothesis, that fertility is endogenous, that is: parents care about the number and welfare of their children. In this case the introduction of a financial capital market (bonds) as an alternative to children for transferring present to future consumption has a positive effect on the well-being of parents. With a higher standard of living, parents tend to increase their consumption of any commodity that entails utility to them. Both the number and welfare of children are such a commodity when fertility is endogenous. Thus, the demand for children increases and this may dominate the negative substitution effect that a better access to capital markets may

have on the number of children. Thus, the old age security hypothesis may be refuted.

It is worth pointing out that government policy may affect the demand for children, as happened indeed in the case of granting child allowances or issuing bonds, but the welfare of children is unaffected. This is because parents do not value their children for their own sake but rather view them merely as a vehicle for transferring present to future consumption. Therefore, if the government, for instance, offers child allowances, it merely lowers child-rearing costs to the parents in the same way that capital subsidies lower the cost of capital to the business sector. Children, as capital, do not benefit from these allowances. Their parents will continue to allocate to them the same x_1 and x_2 in the first and second periods, respectively, as they did before child allowances were granted.

III. Endogenous Fertility

Endogenous fertility means that parents care about the number and quality of their children. They respond to economic costs and incentives in making decisions about the number and quality of their children. Parents' actions are perceived as the outcome of a constrained optimization process by which they strive to extract the highest possible utility level out of a limited budget. They decide how to allocate their limited budget among many utility-

generating uses: bread, butter, shoes, number of children, improvement of the quality (welfare) of children, etc. To put it differently, parents substitute not only between the quantity and quality of their children but also between the quantity and quality of children, on the one hand, and consumption goods or other commodities (e.g. leisure), on the other hand. In particular, since Schultz (1974) it has been widely recognized that fertility and labor supply interact in a very important way: it is not possible to analyze female labor force participation rates taking the number and age distribution of children in the family as exogenous, nor is it possible to model adequately parents' choices with respect to the number and spacing of their children when the mother's participation decision is taken as given.

This interaction between labor supply and fertility decisions has important implications for income taxation. This is because an income tax system reduces the net wage and, consequently, work incentives; and it usually offers some kind or another of child allowances or deductions and, consequently, reduces the cost of children. Furthermore, the effectiveness of child allowances in achieving egalitarian redistribution goals crucially depends on the correlation between the number of children the the real income (welfare) of parents.

These points can be illustrated in a simple model of endogenous fertility of the Becker-Lewis (1973) type. Suppose that

the utility function of a representative household (u) depends on parents' consumption (c) and labor supply (L), the quality of each child as measured by the expenditure (q) on each child, and the number of children (n), that is: $u = u(c,L,q,n)$. As usual, it is assumed that c, q and n generate positive utility while L generates negative utility or disutility, namely: c, q and n are "goods" while L is a "bad" rather than a "good". If we denote the wage rate by w, then labor income is wL and, in the absence of any government intervention, the household's consumption, fertility and labor supply choices are restricted by a budget constraint, $c + qn = wL$, which limits expenditures on parents' consumption and children (c + qn) not to exceed income (wL).

Now, in the absence of any interaction between fertility and labor supply decisions, the work of Becker and Lewis (1973) shows that an increase in income tends to increase the quality of each child (as measured by the expenditures on her) but to reduce the number of children. That is, parents tend to substitute the quality of children for their number as they become richer. When labor supply and fertility decisions interact, this tendency of richer family to increase the quality and lower the quantity of children is reinforced (see Nerlove et. al. (1984)). This is because child-rearing is time-intensive and therefore a family that earns a higher wage finds it more attractive to increase labor supply, reduce the quantity of the time-consuming commodity, children, and raise its quality.

Under these circumstances, an egalitarian society will find it optimal to grant child allowances, and finance them by a tax on income. This result follows for at least three reasons which reinforce each other. First, income is negatively correlated with the number of children, that is the rich have a smaller number of children than the poor. Hence, the poor who have many children benefit from the child allowances much more than the rich who have only a few children. Second, a child allowance of b reduces the cost of providing quality for children from q to q - b. This tends to increase the quantity of the time-consuming commodity, children, and leave fewer hours for work. Consequently, the income gap between the rich and the poor narrows down. Third, the tax on income effectively lowers the net wage, thereby leading to a decline in labor supply and an increase in the number of children. Consequently, the income gap between the rich and the poor narrows down.

It is worth mentioning that with endogenous fertility, unlike the case studied in the preceeding section, policies that affect parents' welfare necessarily affect childrens' welfare (quality) as well, because parents care about their children. Therefore, income redistribution policies which are aimed at reducing the inequality between rich and poor parents necessarily narrow also the gap between the well-being of children of rich parents and children of poor parents.

IV.   Exogenous Fertility and Equivalence Scales

Let us now consider the case in which fertility is exogenously given. By this we mean that parents' choice concerning the number of children is unaffected by economic variables. Such an assumption is certainly plausible in the short-run and it has also some appeal in the long-run as well. Parents care about their children, a care which is explicitly reflected in their consumption demand patterns. An increase in the real income of the household manifests itself in the standard of living of all the members of the household, parents and children alike.

Whether parents extract or do not extract positive utility from the welfare (well-being) or the number of their children is irrelevant for society. The latter values directly children for their own sake and not merely as an argument in their parents' utility function. Therefore, in designing its economic policies, the society ignores any utility or disutility from the number or quality of children that parents may extract or suffer as a result of these policies. Only the direct effects of these policies on children's welfare are taken into account by society.

This attitude of society towards children is best illustrated via a simple example as follows. Suppose families A and B earn 30,000 ECUs each, but family A has only one child while family B has two children. Under the endogenous fertility approach adopted in the preceeding section, one should argue that the two families

are equally well off. It is true that the larger family (B) has to allocate the 30,000 ECUs among more members than the smaller family (A), but it was a free and sovereign decision of family B itself to have more children. Family B so decided bacause apparently it enjoys having more children, even at the expense of lowering the level of physical consumption afforded to each member of the family. To put it differently, family B could have decided to have only one child, exactly as family A, in which case it would have enjoyed the same per capita consumption level as family A. By choosing to have two children, family B obviously reveals to the society that it enjoys its larger family status as it would have enjoyed a smaller family status. Therefore, families A and B are equally well-off. Thus, even an egalitarian government should not attempt to redistributute income from family A to family B.

However, the approach undertaken in this section is different. It states that children have their own value in the eyes of society. The children of family B are most likely to be less well-off than the child of family A. The fact that having more children makes the parents of family B happier does not necessarily make the children of family B happier, if they have to give up consumption. The society therefore views family B less well-off than family A and redistributes income from family A to family B, if it has egalitarian objectives.

Nevertheless, the society respects the consumption demand patterns of the parents. The government does not make direct transfers to children but rather to the family. The heads of the family, the parents, make the decision as to how to allocate government transfers among the members of the family.

The structure of redistribution policy depends on how differences in family size manifest themselves in the consumption patterns of households of various sizes. One of the most common procedures of incorporating demographic variables in general and household size in particular into demand systems is that called "demographic scaling" (see Pollak and Wales (1978, 1980, 1981) and references therein). This method employs the idea of "equivalence scales" or "standard adults" in explaining the differences in demand patterns caused by household size differences.

This method can be explained as follows. Consider a family of just one member, an adult person. It has its own consumption patterns. These are considered to be the consumption patterns of one "standard adult" (the "standard family"). Now, it is assumed that a family of i members behaves (with respect to consumption demands) as a family of n_i standard adults. That is, the family of i members spends on each commodity n_i times what the standard family spends, that is: it behaves like n_i standard families. It is usually assumed that some economies of scale in consumption exist, so that n_i is less than i. For instance, a family of four members

has less than four standard adults: it consumes less than four times what the standard family consumes.

This approach has some straightforward, interesting implications for income redistribution policies (see Balcer and Sadka (1986)). Let us adopt the "ability to pay" principle of taxation, according to which tax liability is based upon the ability of the taxpayer to pay the tax. This ability is measured by income. Since a family of i members behaves in the marketplace as n_i standard families, then its ability to pay is only $1/n_i$ of what the ability of the standard family to pay is. Thus, the optimal design of the structure of taxation calls for a straightforward provision for inter family redistribution as follows.

In order to calculate the tax liability of a family, calculate first the gross (i.e., before tax) income per standard adult of that family. Next, the tax liability per standard adult is calculated in accordance with the tax schedule applying to the standard family. This liability is then multiplied by the number of standard adults in the family in order to arrive at the total tax liability of the family.

A simple numerical example can clarify how this provision works. Suppose that the tax schedule imposes a tax liability of 2,000 ECUs on a standard family with a gross income of 10,000 ECUs, leaving this family with a net income of 8,000 ECUs. Consider now a four-member family with a gross income of 35,000 ECUs and suppose

that the number of standard adults in a family of four people is 3.5. Then the per-standard-adult gross income of this family is 10,000 ECUs and hence the per-standard-adult tax liability is 2,000. The total tax liability is then 3.5 x 2,000 = 7,000 ECUs. Total net income is 35,000 - 7,000 = 28,000 ECUs which is 28,000 : 3.5 = 8,000 ECUs per-standard-adult.

In conclusion, this provision for inter-family redistribution ensures that families with equal per-standard-adult incomes before tax end up with equal per-standard-adult incomes after tax, irrespectively of their sizes. In this way, some notion of horizontal equity ("equal treatment of equals") is achieved.

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