

# Family Economics and Macro Behavior<sup>†</sup>

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It is tempting to use the audience captured by a presidential address to pontificate about the sad state of economics. You probably will conclude that I have surrendered to the temptation. But I do recognize that my good luck in becoming president of our Association does not automatically endow me with commanding wisdom over all of economics. I will do my best to stick to my knitting. And for many years much of my research has been directly toward investment in human capital and the understanding of family behavior.

Modern economists neglected the behavior of families until the 1950s. Since then economic analysis has been used to explain who marries whom and when (if ever) they divorce, the number of children and investments in each child's human capital, the extent and timing of labor force participation by married women, when elderly parents rely on children for support, and many other family choices. A fair conclusion, I believe (need I remind you of my biases?), is that the economic approach contributes important insights toward explaining the large decline in birth rates during the past 100 years, the rapid expansion in the labor force participation of married women after the 1950s, the explosive advance in divorce rates during the past two decades, and other major changes in the family. Family economics is now a respectable and growing field.

Yet perhaps because family economics is a new field, only a small literature considers the implications for other parts of economics. The family is such an important institution that progress in understanding how it behaves is justification enough for any discipline. But most economists, including the audience here, are not particularly concerned about family behavior. Your interest must be stimulated through a demonstration that its study helps in the analysis of other problems.

In this address I try to maintain your interest by exploring the contribution to macroeconomics from the progress in family economics. This is a challenge not only because macro behavior is a central part of economics but also because its link to the family may seem remote and unimportant. By macroeconomics I mean the analysis of economywide behavior. Much of the time is spent on long-term economic growth, although I also discuss short and long cycles in economic activity, and the interaction between overlapping generations through Social Security, transmission of inequality, and in other ways.

Of course, one paper even by a macro expert cannot do justice to these topics, and I do not pretend to be such an expert. My purpose is to help you recognize that many conclusions in these and presumably other macro areas change radically when family choices get the attention they deserve. I apologize for the technical nature of some of the discussion that may seem out of place in a presidential address.

## I. The Malthusian and Neoclassical Models

In considering the relation between economic growth and the family, it is natural to begin with Thomas Malthus's great contribution. Although usually called the Malthusian theory of population growth, a more appropriate name is the Malthusian theory

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of wages and average income. His first monograph, subtitled "With Remarks on the Speculations of Mr. Godwin, M. Condorcet, and Other Writers," begins with an objection to the conclusion of these writers that the economic position of mankind will continue to improve over time. In the process of rebutting their arguments, Malthus develops his famous theory of population growth and reaches much more pessimistic conclusions about the long-term economic prospects of the average family.

You will recall that the Malthusian model assumes diminishing returns to increases in the level of population—that is, to increases in employment—when land and other capital are fixed. The analytical heart of his model (I am not concerned with the details of what he actually said) is consistent with constant returns to the scale of labor and capital, as long as the capital stock, including usable land, does not respond to changes in wages and interest rates.

The response of fertility and mortality to changes in income determine the Malthusian supply of population. Population grows more slowly when wages are low because the average person marries later and thereby has fewer children (the preventive check on population), and also because deaths increase when families are poorer (the positive check). Historical studies indicate that the effect of the economy on age at marriage was considerably greater, at least in Europe, than was its effect on death rates (see Ronald D. Lee, 1987b, pp. 450–51). Therefore, I will ignore the positive effect and consider only the preventive check through changes in the number of children.

The long-run equilibrium wage rate is found at the point on the positively inclined population supply curve where the average family has two children. The economy's production function then determines the stationary level of population that is consistent with this long-run wage rate. There is no presumption that this equilibrium wage is at the subsistence level, especially if the positive check through death rates is not important. In this model tastes for marriage and children, not vague notions of subsistence, determine long-run wages.

The long-run wage is stable in the Malthusian model when shocks push the system out of equilibrium. For example, if an infectious disease destroys much of the population, as the Black Death destroyed perhaps 25 percent of certain European populations during the fourteenth century, the decline in population raises the marginal productivity of labor. The resulting rise in wages encourages families to marry earlier and have more children. Population begins to grow and its increase over time lowers wage rates back toward equilibrium. Ultimately, this dynamic process restores both the wage rate and the level of population to their long-run levels.

If the amount of usable land increases, wages rise and that stimulates higher birth rates. Again, the growth in population continues to lower wage rates until eventually the long-run wage is restored. However, population is permanently higher because the amount of land is greater.

This example brings out that the equilibrium wage is more immune to shocks in the Malthusian system than is the level of population. Indeed, if tastes are stable over time—the Malthusian model, along with George Stigler and myself (1977), assumes *de gustibus non est disputandum*—and if technology does not continue to improve, the equilibrium wage rate remains fixed by the point on the stable supply curve where the typical couple has two surviving children. The Malthusian model does help some in explaining very long-term changes in European wage rates prior to the nineteenth century (Lee, 1987b, gives a good analysis of the evidence). People evidently married earlier when wages were above the equilibrium level and married later when they were below.

It is ironic that Malthus's first essay on population was published in 1798 at the close of the eighteenth century. Although his system was accepted by many leading economists of the nineteenth century (see John Stuart Mill, 1848, Book I, ch. X), events after publication were not kind to the theory. Fertility eventually fell sharply rather than rose as wage rates and per capita incomes continued to advance during much of

the nineteenth and twentieth centuries in the United States, Western Europe, and Japan.

The contradiction between the theory and events explains why most economists during the first half of this century showed little interest in explaining long-term trends in income and population. But the subject is too important to remain neglected, and Robert Solow, David Cass, and others developed the neoclassical growth model in the 1950s and early 1960s. This model incorporates two major advances over the Malthusian model. Each person maximizes utility that depends on present and future consumption. More important is the recognition that changes in the capital stock respond to rates of return on investments. Unfortunately, the neoclassical model also takes a sizable step backward from Malthus by assuming that fertility and other dimensions of population growth are independent of wages, incomes, and prices.

I trust that the basic properties of a simple neoclassical model are familiar. What may not be generally appreciated is that despite the different assumptions, the analytic structures of the neoclassical and Malthusian models are quite close and many of their implications are similar. If technology and preferences do not change over time, both models have stable steady-state levels of per capita income. The neoclassical equilibrating mechanism works through changes in the rate of investment, while the Malthusian mechanism works through changes in the rate of population growth. To illustrate, if the capital-labor ratio exceeds its steady-state level, the rate of return on capital is below and the wage rate is above their steady-state levels. In the neoclassical model this discourages investment, which lowers the capital-labor ratio over time (with exogenous population growth). In the Malthusian model this encourages population growth, which also lowers the capital-labor ratio over time (with exogenous investment in capital). We have seen that a shock to population in the Malthusian model has no effect on the level of population or per capita income in the long run. Similarly, in the neoclassical model a shock to the capital stock (perhaps wartime destruction of capital) has no long-run effect

on the aggregate capital stock or per capita income.

The persistent growth in per capita incomes during the past two centuries is no easier to explain within the neoclassical framework than within the Malthusian. Of course, the neoclassical model postulates exogenous technological progress to "explain" continuing growth in per capita incomes, but the need to rely on "exogenous" progress is a confession of failure to explain growth within the model. Moreover, the Malthusian model can equally well postulate exogenous progress to "explain" persistent growth.

## II. The Family and Economic Growth

After a short while the economics profession became disenchanted with the neoclassical model, presumably because it too did not help in understanding progress. The excitement reflected in hundreds of papers that extended and elaborated this model in the 1950s and 1960s gave way during the past fifteen years to a lack of interest in the analytics of growth that is a little reminiscent of the situation during the first half of the century.

Fortunately, a more relevant growth model is available through combining the best features of the neoclassical and Malthusian models and by adding a focus on investment in knowledge and skills. The neoclassicists are right to emphasize endogenous capital accumulation and utility maximization. Malthusians are right to stress the response of fertility and other components of population growth to changes in the economy, and that these responses can greatly influence economic change.

I will sketch out a modified neoclassical model where parents choose both the number of children and the capital (human or physical) bequeathed to each child. Parental altruism or "love" toward children provides a powerful framework for the analysis of both the quantity and so-called quality of children. Altruism means that the utility of parents depends on the utility of each child. The assumption of altruism is realistic for the vast majority of families, although parent-child interactions are determined also

by other motives. Presumably, the altruism per child is negatively related to the number of children, so that an additional child lowers the utility per child to parents in the same way as (please excuse the analogy) an additional car lowers the utility per car.

Such altruism is easily grafted onto the neoclassical utility function by letting parents' utility depend on their own life-cycle consumption and separately on their degree of altruism per child, the number of children, and the utility of each child. This formulation has the important implication that preference for parents' relative to children's consumption (so-called time preference) is not exogenous but rises as the number of children increases.

The resources available to parents from the capital they inherit and labor earnings are spent either on own consumption, on the costs of rearing children, or on transfers to children of human and other capital. Since child rearing is time intensive, the cost of rearing children is positively related to the value of parents' time. Income per capita would rise between the parents' and the child's generations if the total capital bequeathed to each child exceeds the capital inherited by each parent.

Parents choose optimal values of their own consumption, the number of children, and capital transferred to each child while taking into account the cost of rearing children and the dependence of their utility on the utility of children. This analysis has many implications for the behavior of fertility that Robert Barro and I explore elsewhere (see 1987 and 1988). Here I concentrate on a few that alter implications of the neoclassical model about capital accumulation and growth.

If the number of children demanded by the typical family is positively related to the income of parents (the Malthusian assumptions), or at least if it is not strongly negatively related, then this model also has stable steady-state levels of the capital-labor ratio and per capita income. But these steady states depend on variables that change the demand for children.

One example is the consequences of an extended but temporary decline in income and productivity—perhaps due to the dis-

organization induced by a lengthy depression. In the neoclassical model this has no long-run effect on either per capita or aggregate income. In our modified model an extended decline in productivity can permanently lower *aggregate* income because birth rates may fall when productivity, wages, and interest rates fall. Recall the sharp decline in birth rates during the Great Depression.

Just over a decade ago, Barro (1974) showed that a dose of family economics radically alters traditional conclusions about the effects of budget deficits on private savings. For example, deficits to finance Social Security payments tax future generations to support the elderly. Altruistic parents who leave bequests to their children do not seek an intergeneration redistribution of incomes, so they would increase their bequests to offset the effect on children of future taxes. If these families are common, Social Security payments and other public expenditures financed by taxes on future generations would not have much effect on private savings. This is the so-called Ricardian equivalence theorem.

A larger dose of family economics gives more radical implications in some respects but also has more conventional implications for the relation between Social Security and savings. Various comments on Ricardian equivalence emphasize that some families do not leave bequests; I will discuss these families in Section IV. Development economists have long recognized that parents value children who provide support during old age. A Social Security system that replaces child support of parents with public support raises the net cost of children to parents (not to society) since they are no longer as useful to elderly parents. As a result, a Social Security system tends to reduce the demand for children. Social Security also reduces the demand for children by parents who do not receive support but provide bequests. The net cost of children to these parents also increases when they raise bequests to offset the effect of Social Security taxes on children.

For reasons given earlier, a lower demand for children raises the capital bequeathed to each child. Therefore, Social Security and other public transfers between generations would *raise* private savings *per child*, and as

a result, raise wage rates and the capital-labor ratio in the next generation. Yet total private savings of the present generations would fall, as in a conventional life-cycle analysis with no bequests, if the decline in fertility exceeds the greater saving for each child.

Consider next an example from tax incidence. A tax on income from capital initially lowers after-tax returns and discourages investment. In the neoclassical model, capital then falls over time until the after-tax rate of return again equals the given rate of time preference. In public finance jargon, a tax on capital would be fully shifted in the long run.

A difficulty with this conclusion is the neoclassical assumption that fertility is fixed, which is especially inappropriate for very long-term changes in incidence. Fertility would fall as capital fell in response to the tax if fertility is positively related to per capita income. A fall in fertility lowers preference for present consumption and raises the demand for investment in each child through the interaction between the quality and quantity of children. Then the equilibrium after-tax rate of return must also fall, and the tax on capital is only partially shifted even in the long run.

The conclusion is more radical if fertility is negatively related to per capita income (for reasons discussed next). Fertility then increases when the stock of capital falls. Since the increase in fertility lowers investment per child, the equilibrium after-tax rate of return would have to increase. That is, we have the paradox that a tax on capital is eventually shifted by more than 100 percent! Let me assure the theorists that this strange result does not violate the second-order conditions.

Does a negative relation between fertility and per capita income imply that children are an "inferior" good (to use the economist's infelicitous language)? The answer is no because the cost of rearing children increases when the capital-labor ratio and per capita income rise since wage rates and the value of parents' time spent on children rise along with the capital-labor ratio. Fertility would fall if the positive effect on fertility of an increase in income is weaker than the nega-

tive effect due to the rise in cost. The substitution effect often dominates the income effect in rich countries, for child care in these countries requires considerable time and energy of parents.

If fertility is negatively related to per capita income, an increase in the capital-labor ratio above its steady-state level would reduce fertility and thereby encourage more investment per child. The capital-labor ratio would continue to increase over time if this positive effect on investment dominates the negative effect of a lower rate of return. Consequently, a negative relation between fertility and per capita income can destabilize what is otherwise a stable steady state (see the formal analysis in Robert Tamura, 1986).

Demographers have long been aware that fertility eventually declines as a country develops. Less well appreciated (although see the earlier literature by R. R. Nelson, 1956; Robert M. Solow, 1956, pp. 90-91; S. C. Tsiang, 1964, and others on low-level "traps") is that a negative relation between a country's fertility and its income can destabilize a steady-state equilibrium and cause a protracted period of rising per capita incomes. However, although a decline in fertility is an important stimulus in early stages of development, it alone cannot explain sustained growth over a century or longer. In the absence of other forces, a growing economy with neoclassical production functions but without continuing technological progress eventually moves to a stable steady state with low fertility and high per capita incomes.

A promising approach to sustained growth that complements the role of fertility builds on the special properties of education and other learning. The important property for this purpose is that investments in education and other human capital are more productive when past investments are larger. That is to say, accumulation of knowledge and skills in the past eases the acquisition of additional knowledge. The mastery learning concept in education pedagogy uses this property to organize the teaching of mathematics and other subjects to children (see Benjamin S. Bloom, 1976). Such a production technology implies that rates of return

on investments in human capital may not fall and may even rise as the stock of human capital grows.

Perhaps it was reasonable in Malthus's time to neglect investments in human capital, but there is little excuse for the neglect in neoclassical growth theory. Modern economies spend enormous amounts on education and other training of children, and parents' investments in children are a far more important source of an economy's capital stock than are bequests or the life-cycle accumulation of physical capital. Dale Jorgenson and Barbara Fraumeni (1987) estimate that human capital comprises over 70 percent of the total capital stock in the United States. This estimate may be too low because it does not include the contribution of human capital to output in the household sector (the authors do try to estimate household output). Seventy percent may be higher than the true fraction because it makes no allowance for the contribution of "raw labor" to output. I would guess that the true ratio of human capital to the total capital stock may be as high as 90 percent or as low as 50 percent. Of course, even this lower percentage signifies a large contribution. The neglect of human capital in wealth and income accounts greatly distorts comparisons of savings propensities and the accumulation of wealth.

Only recently have growth models begun to appreciate the potential of the learning-by-having property of human capital for generating sustained growth in per capita incomes (see Paul Romer, 1986; Robert E. Lucas, Jr., 1988; and Robert G. King and Sergio Rebelo, 1986; pioneering earlier work includes Kenneth J. Arrow, 1962; Yoram Ben-Porath, 1967; Hirofumi Uzawa, 1965; and Sherwin Rosen, 1976). Kevin M. Murphy and I are developing an analysis that combines such a human capital technology with unskilled labor, physical capital, and endogenous fertility that results from altruism. (See Gary S. Becker, 1971, pp. 204, 207–208, for an earlier effort to combine human capital, unskilled labor, and physical capital.) Our model has a "Malthusian" equilibrium where per capita income is constant and low and fertility is high. However, if this equilibrium receives big enough technology and other

shocks—good luck may be required—the economy takes off toward a perpetual growth equilibrium with a decline in fertility and increased investment per child. Knowledge continues to grow through its embodiment in additional human capital.

Family economics is critical to the analysis since choices about number of children and investments in each child's human capital helps determine whether the economy ends up at a "good" (i.e., growth) equilibrium or at a "bad" (i.e., Malthusian) equilibrium. Obviously, we do not have the full answer to economic growth—public policies, conglomeration effects, and other considerations are surely important—but I do believe that our story contributes a sizable part of the answer.

### III. Short and Long Cycles

Let me now turn briefly to the relation between family behavior and cycles in aggregate output and other variables. For centuries marriages, births, and other family behavior have been known to respond to fluctuations in aggregate output and prices. In an early use of regression analysis in the social sciences, G. Udny Yule (1906) demonstrated that English marriages and births in the nineteenth century moved together with the business cycle. Subsequent studies showed that higher order as well as first births, divorce rates, and possibly the labor force participation of secondary workers all fluctuated procyclically in many countries (see, for example, Becker, 1960, and Morris Silver, 1965). Birth rates in the United States apparently became countercyclical after many married women entered the labor force. Children are cheaper during recessions because the value of time spent on children by working mothers is low then (see William P. Butz and Michael P. Ward, 1979). Investments in education and other human capital are much less procyclical than investments in physical capital also because the foregone value of time spent in school is cheaper during bad times (Linda N. Edwards, 1975).

Of course, none of the competing macro models of business cycles—be they Keynesian, monetarist, neoclassical, or real—rely

on family behavior to cause business cycles. However, declining population growth was a major cause of the secular stagnation feared by Alvin H. Hansen (1939) in his presidential address to our Association almost fifty years ago. Family behavior may play more than a negligible role even in generating ordinary business cycles. For example, an increase in the labor supply of married women or young people when household work or school becomes less attractive can induce cyclical responses in aggregate output and other variables. Cycles started by shifts in labor supply induce a negative relation between wage rates and aggregate output over business cycles. This would help explain why cyclical fluctuations in real wages appear to be less positively related to cyclical fluctuations in aggregate output than is implied by business cycles models that emphasize the demand side.

Although family behavior presumably has only a small part in the generation of ordinary business cycles, it is likely to be crucial to long cycles in economic activity. Malthus claimed that family choices cause long-term fluctuations in the economy through the lagged effects first of marriages on births and then of births on the size of the labor force (see Maw Lin Lee and David Loschky, 1987). Modern demographic analysis generates long cycles in population growth rates through the relation between aggregate fertility and the age distribution, and perhaps also between fertility and the size of a cohort (see, for example, James C. Frauenthal and Kenneth E. Swick, 1983, and Ronald Lee, 1987a). In our modified Malthus-neoclassical model, family choices cause long cycles not only in population growth, but also in capital, output, and other variables if the elasticity of the degree of altruism per child with respect to the number of children declines as families get larger, a reasonable assumption. Fertility and per capita income then fluctuate in generation-long cycles whenever the economy is disturbed away from the steady state (for a proof, see Jess Benhabib and Kazuo Nishimura, 1986).

In the 1920s, the Russian economist Nicholas D. Kondratieff claimed that capitalist economies exhibit long-term fluctua-

tions of about fifty years' duration in output and prices (see Kondratieff, 1935). Simon Kuznets (1958) later argued that long-term fluctuations only last about twenty years. If long cycles of the Kondratieff or Kuznets type exist—we will need another 200 years of data to determine whether they do exist or are just a statistical figment of an overactive imagination—they almost certainly will depend on fertility and other family decisions that biologically require a long time to implement.

#### IV. Overlapping Generations

The intrinsic risks faced by the elderly, sick, and unemployed are surely no greater in rich countries like Germany and the United States than in poor countries like China and India, nor do these risks rise as a country develops. Yet the first large-scale Social Security program was introduced by Germany a mere 100 years ago. China, India, and numerous other countries still have only modest programs that exclude many of their old people. We take publicly financed schools for granted, but they were unimportant until the latter half of the nineteenth century. Public and private programs that protect against the consequences of illness and unemployment are even newer and less common than Social Security and public schools.

Throughout history the risks faced by the elderly, young, sick, and unemployed have been met primarily by the family, not by state transfers, private charity, or private insurance. Children usually cared for elderly or infirm parents, the unemployed looked to their families for temporary support, and parents have spent much time, money, and energy to rear and train their children. Despite the rapid growth of Social Security payments in the past few decades, almost 20 percent of women aged 65 and over in the United States still live with their children.

The altruism and love of parents, children, spouses, and other relatives have helped protect family members against the hazards of childhood, old age, and other risks. When altruism is insufficient—unfortunately, it often is—what sociologists call social norms

frequently emerge that pressure children, parents, spouses, and other relatives into helping out family members in need. In addition, family members use their frequent interaction with one another to raise the level of guilt experienced by a member when he or she does not help out.

The formal analysis of the interaction among overlapping generations began with Paul A. Samuelson's brilliant paper in 1958. This spawned an enormous literature that continues up to the present. Although Samuelson had relevant obiter dicta about social compacts, altruism, and family obligations, his model and that of most of the subsequent literature assumes that each person enters the analysis as a young adult without personal connections to older cohorts. A long review of overlapping generation models in the recent *New Palgrave Dictionary* (see John Geanakoplos, 1987) has no discussion whatsoever of familial relations between members of overlapping generations. I claim that the neglect of childhood and of the intimate relations among parents, children, husbands-wives, and other family members misled these studies sometimes into focusing on minor problems and diverted attention away from some important consequences of the overlapping of generations (the discussion in the next few paragraphs draws partly on Becker and Murphy, 1988).

One example of the emphasis on unimportant problems is the concern with the plight of older people when there are few durable assets that can finance consumption at old age. In an influential literature on the demand for money, the social role of money is even attributed to a durability that enables older people to finance consumption by selling to the next generation money accumulated when young (see, for example, Thomas Sargent, 1987, ch. 7, and Neil Wallace, 1980). Yet when anthropologists study simple societies that do not have money or other durable assets, they find that old people finance their consumption mainly by relying for support on children and other kin. Indeed, children have been an important resource and money balances an unimportant resource of the elderly in prac-

tically all societies, whether simple or complicated.

General equilibrium theorists are concerned about the continuum of equilibria, inefficiency, and other problems that arise in models where overlapping-generations persist indefinitely into the future (see, for example, Geanakoplos, 1987, or Timothy J. Kehoe, 1987). Although these problems would not completely disappear, I conjecture that they would be much less important if overlapping-generations models incorporated the informal trades and assistance available to parents, children, and other members of the same family.

Ever since Plato's *Republic*, philosophers have worried about whether parents invest sufficiently in the health, skills, and morals of their children. Overlapping-generations models usually neglect childhood and concentrate on savings by young adults and their trades with old adults. The treatment of children by parents not only is so important in its own right, but it also greatly influences the relations between older and younger adults (Allan Drazen, 1978, is one of the few earlier studies that recognizes the importance of investments in children for overlapping-generations models.)

I cannot do more on this occasion than present the bare bones of an analysis of how families respond to the demands of both old age and childhood. The analysis is straightforward when altruistic parents leave bequests to their children. The combination of altruism and bequests eliminates any difficulties in financing the wealth-maximizing investment in children's health, training, and other human capital. For if the marginal rate of return on additional human capital exceeds the rate on assets, both parents and children would be better off with additional capital. Parents can save less to offset the negative effect on their consumption of greater spending on their children's human capital, and they can reduce bequests to offset the effect of lower savings on consumption at old age.

Bequests also partly insulate parents from many risks of old age. The opportunity to draw on bequests provides an annuity-like



protection against an usually long life and other risks of old age. For example, parents who live longer than expected reduce bequests to help finance consumption in the additional years. If bequests are not a large part of children's assets, bequests can give elderly parents excellent protection against various hazards, and yet changes in bequests do not have much influence on children's welfare. In effect, children help support their parents in old age, although their support is not fully voluntary.

The analysis is less simple when parents do not leave bequests, perhaps because they are not very altruistic or because they expect their children to be better off than they are. These families tend to underinvest in children and underprotect parents against the hazards of old age because bequests are not available to finance investments and old-age support.

Social norms, feelings of guilt, and similar mechanisms may greatly moderate the degree of underinvestments and underprotection. They can induce even selfish parents to invest in children and selfish children to care for sick or poor parents. Economists neglect concepts like norms and guilt because no one really knows how they evolve. Moreover, sociologists (perhaps I should say "we" sociologists since I am now officially also a sociologist) are too prone to use norms as a *deus ex machina* to explain behavior that is difficult to explain in other ways. Nevertheless, there can be little doubt that norms and other intangible mechanisms do greatly affect the relations between family members in many societies, although presumably, they do not work as well as bequests in linking generations together.

Parents in richer countries have more resources to spend on children and to protect against the hazards of old age. Why then have public expenditures on both the young and old grown rapidly during the 100 years as western countries as they have become richer? One reason is that social norms are weaker in the anonymous urban communities of industrial countries where elderly parents often live far from adult children. A more analytically tractable reason is the high rates of return in modern industrial societies

on investments in the health and training of children. Recall my discussion of the role of human capital in economic development. Parents are eager to finance profitable investments in children called for by economic development, as long as they can draw on gifts and bequests that they would give to children. But gifts and bequests would become nil in many families that invest a lot in their children. These families would underinvest in children, particularly when pressure from norms is weak. The growth in public support of schooling and other investments in children as countries develop would then appear to be mainly a response to the positive effect of economic development on the benefits from human capital.

Since families that do not leave bequests are vulnerable to the hazards of old age, it is not difficult to understand why public expenditures on Social Security and medical care for the elderly have also grown rapidly in industrial countries. However, you may be surprised to find out that public expenditures on the old have not been at the expense of the young. Since 1940 in the United States, the ratio of expenditures per child under age 22 to expenditures per adult age 65 or over has hardly changed. Our analysis that combines investments in human capital with old-age support does explain why expenditures on the old and young grew in tandem. By contrast, the popular view of generation fighting—that public expenditures on the elderly grew rapidly because the old became politically powerful as they became more numerous—cannot explain why expenditures on children grew just as rapidly.

The overlapping-generation framework is also a natural one to consider inequality and the transmission of wealth and poverty across generations. Families help perpetuate inequality because children inherit abilities and other "endowments" from parents. Moreover, parents are the major source of the assets and human capital of children. This enormous influence of the family led my esteemed teacher, Frank H. Knight, to claim that "where the family is the social unit, the inheritance of wealth, culture, educational advantages, and economic opportunities

tend toward the progressive increase of inequality..." (1935, p. 50).

Abilities and other endowments regress downward from parents to children in successful families where parents earn a lot, and they regress upward in unsuccessful families where parents earn little. The poor underinvest in each child also because they have larger families and less stable marriages. Therefore, children from poorer families tend to earn more than their parents but below the average of their generation, and children from richer families tend to earn less than their parents but above their generation's average.

Earnings depend not only on endowments but also on investments in human capital. Our earlier analysis implies that richer families do not tend to underinvest in their children's human capital because these families leave gifts and bequests. Poorer families do tend to underinvest in children because they are not likely to leave gifts and bequests. The poor underinvest in each child also because they have large families and less stable marriages. Therefore, the relation between the earning of fathers and sons in richer families would depend mainly on the relation between endowments, while the relation between earnings of fathers and sons in poorer families would depend also on the degree of underinvestment in children. Put differently, without offsetting government subsidies to investments in the human capital of poorer children, low earnings would be more persistent across generations than high earnings—the so-called "culture of poverty" across generations would exceed the "culture of privilege."

In every country with data that I have seen—this includes the United States and several European countries (see Table 1 in Becker and Nigel Tomes, 1986), a few Asian countries, and some Latin American countries (James J. Heckman and Joseph V. Hotz, 1986, consider the evidence for Panama)—earnings strongly regress to the mean between fathers and sons. Probably much less than 40 percent of the earnings advantages or disadvantages of fathers pass to sons, and few earnings advantages or disadvantages

survive three generations. Evidently, abilities and other endowments that generate earnings are only weakly transmitted from parents to children. This tendency to go from "shirtsleeves to shirtsleeves" in three generations began long before industrialization and government support of education and other human capital. The fourteenth Arab historian and philosopher, Ibn Khaldûn said (I owe this reference to my wife, Guity Nashat), "Prestige is an accident that affects human beings. It comes into being and decays inevitably.... It reaches its end in a single family within four successive generations." (1958, p. 279)... "As a rule, no dynasty lasts beyond the [span] of three generations." (p. 343)

In all these countries, low earnings as well as high earnings are not strongly transmitted from fathers to sons, and Knight's claim about family life causing growing inequality is inconsistent with the evidence. Still, data for both the United States and England do appear to confirm the implication of our theory that low earnings persist more than high earnings across generations (see W. Stanley Siebert, 1987). Of course, *incomes* of the rich regress down more slowly between generations than do their *earnings* because rich children receive gifts and bequests from parents (see Becker and Tomes, 1986, Table 2).

## V. Concluding Remarks

I was attracted to the family by its obvious importance in all countries, no matter what the economic system or stage of development. People spend much of their time in a dependency relation—toward parents when children and toward grown children in old age—marriage is a crucial step for most people, children absorb time, energy, and money from their parents, divorce often causes economic hardship and mental depression, and so forth. Economic studies of the family are growing at a steady pace and they are influencing the way other social scientists look this fundamental institution.

The economic analysis of family behavior stimulated the development of techniques

and prospectives that already has affected many parts of microeconomics, especially agricultural and labor economics, but also the study of industrial organization and preference theory. For example, the treatment of marriage as a sorting of men and women into small "partnerships" through a reasonably efficient marriage market influenced the analysis of how workers and managers are allocated to different firms. Viewing divorce as a joint decision by husbands and wives based largely on information gathered from living together encouraged some studies of employment separations to blur the analytical distinction between quits and layoffs and to emphasize the information about working conditions and productivity gathered from on-the-job experience.

The message of this address, however, is not the importance of the family per se, even though family welfare is the principal goal of a well-run economic system. Nor that analytical techniques developed to understand family choices are valuable in other parts of economics. The message is that family behavior is active, not passive, and endogenous, not exogenous. Families have large effects on the economy, and evolution of the economy greatly changes the structure and decisions of families. I illustrated how families and the economy interact through a discussion of economic growth and other issues in macroeconomics. A heightened awareness of the interaction between economic change and family choices will hasten the incorporation of family life into the mainstream of economics.

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