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Working Paper No. 39

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Revised 9/86

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Barry R. Chiswick**

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Abstract

DIFFERENCES IN EDUCATION AND EARNINGS AMONG RACIAL AND ETHNIC GROUPS: TESTING ALTERNATIVE HYPOTHESES

Barry R. Chiswick

Viewing the United States as comprising many racial and ethnic groups, it is shown that group differences in earnings, schooling and rates of return from schooling are striking and that the groups with higher levels of schooling also have higher rates of return. Some minority groups have higher levels of schooling and earnings than the majority population. It is shown that these data are consistent with a model of the trade-off between quantity and quality of children, but are not consistent with the hypotheses that the primary determinants of schooling level are discrimination, minority group status, differences in "time preference" (discount rates), or "tastes" for schooling. Groups that face a higher price of quantity relative to quality have fewer children and make greater investments in their children's home produced human capital prior to and concurrent with schooling. This raises the rate of return from schooling and hence the incentive for investments in schooling. Thus, groups with a higher price of quantity relative to quality of children appear to have lower fertility; their children have larger rates of return from schooling, and hence higher levels of schooling and higher earnings.

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DIFFERENCES IN EDUCATION AND EARNINGS AMONG RACIAL AND ETHNIC GROUPS; TESTING ALTERNATIVE HYPOTHESES

Barry R. Chiswick

I. Introduction

Until recently, research in the United States on group differences in socioeconomic success, as measured by schooling, occupation, and earnings, was limited to the comparison of blacks and whites. This focus was understandable for two reasons. First, there was an imperative public policy concern with black-white differences and the implications of historical and contemporary discrimination against blacks. Second, since blacks are the largest and most easily identifiable minority, the available data facilitated research on a black-white dichotomy.[1] As a consequence, much of our thinking regarding group differences in schooling and in the implications of schooling for occupational attainment, earnings, fertility and other matters is influenced by the black-white pattern. Under this view racial discrimination (past or present) is assumed to be the primary cause of a variety of unfavorable outcomes, including lower levels of schooling and earnings, and a lower rate of return from schooling, for blacks than for whites.

In recent years, however, there has been a return to the turn-of-the-century interest in the multiplicity of racial and ethnic groups in the U.S. population. This interest is in part a consequence of the civil rights activities of the 1960's and 1970's that raised levels of consciousness regarding ethnicity and restored pride in ethnic identity. It is also a

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[1]Much of the data for early analyses (1950's to 1970's) was in terms of a white-nonwhite dichotomy, but blacks comprise about 90 percent of non-whites.

consequence of the increase in immigration durng the past quarter century, particularly from Latin America and Asia. Data on a variety of racial and ethnic groups are now available and have been studied, with interesting and puzzling patterns emerging.

Within this broader multi-group perspective, Part II examines data on the mean levels of schooling and earnings, and rates of returns from investments in schooling for a variety of racial and ethnic groups. Among adult native-born men, those identified as Jews, Chinese, Japanese, and foreign-parentage blacks have high levels of schooling and earnings, while native-born Filipinos, Mexican Americans, American Indians and native-parentage blacks are far less successful than average. Rates of return are also shown to vary systematically across groups, with the former groups having higher rates than the latter.

Part III discusses these patterns within the context of a model for the supply and demand for funds for investment in schooling. This permits a test of alternative hypotheses. The evidence suggests that demand conditions vary more across groups than do supply conditions. Since demand curves for funds for investment in schooling are higher for those with greater ability, this suggests the hypothesis that there are group differences in family investments in the "quality" of their children.

Part IV develops a simple model for the allocation of parental resources between the quantity and quality of children. It is shown that if in an initial period two groups are of equal wealth but differ in the price of quantity relative to quality of children, successive generations will differ systematically in number, schooling, earnings and rates of return from schooling. If relative prices remain unchanged, these differences may be

reinforcing across generations, resulting in potentially large racial and ethnic group differences even in the absence of discrimination.

Part V examines some evidence with respect to the "quantity/quality" trade-off model. Family background, fertility and female labor force participation are considered. A more favorable family background, in terms of the education and income of parents, fewer siblings with whom to compete for parental time and resources, and more parental time inputs into child care may be responsible for some groups having higher rate of return schedules from schooling and hence for their making larger investments.

Part VI is a summary and conclusion that develops policy implications of the analysis. It should be noted that the analysis does not deny the hypothesis that discrimination limits opportunities for those subjected to it since the two hypotheses are not mutually exclusive. It does, however, point to the importance of also considering the implications of the "quantity/quality" model when designing policy instruments for assisting disadvantaged minorities.

II. Multi-Group Perspective on Schooling and Earnings

Table 1 presents data on earnings and related variables by race and ethnicity from the 1970 Census of Population for adult native-born men.[1] In addition to blacks, the Mexican Americans, Filipinos and American Indians

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[1]The data are limited to native-born men because the analysis is concerned with the socioeconomic adjustment in the U.S. of racial and ethnic groups and seeks to avoid confounding these patterns with the selection criteria of recent U.S. immigration policy. In addition, analyses of earnings for women are far more complex than for men because of the effects of interrupted work histories related to child care activities.

For the purpose of this analysis the 1970 Census is superior to the 1980 Census. Because the 1980 Census did not ask parental nativity or mother

TABLE 1

Earnings, Schooling and Other Characteristics of Adult Native-Born Men by Race and Ethnic Group, 1970 (a)

Race and Ethnic Group	Earnings $ (1969) (1)	Age (years) (2)	Schooling (years) (3)	Rate of Return From Schooling(b) (Percent) (4)	Sample Size(c) (5)
White					
All	9,653	42.7	11.9	7.0	33,878
Native-Born Parents	9,441	41.7	11.9	6.9	27,512
Foreign-Born Parents	10,567	47.1	11.9	7.2	6,366
Jewish(d)	16,176	49.2	14.0	8.0	3,719
Non-Jewish(d)	10,431	47.2	11.7	6.8	57,351
Mexican Origin(e)					
All	6,330	39.5	9.3	5.2	4,949
Native-Born Parents	6,602	38.8	9.7	5.0	2,724
Foreign-Born Parents	6,664	40.3	8.9	5.7	2,225
Black (Urban)					
All	6,126	42.0	9.9	4.4	26,413
Native-Born Parents	6,110	42.0	9.9	4.4	26,137
Forein-Born Parents	7,719	39.0	11.8	6.8	276
Asian					
Japanese	10,272	43.4	12.7	6.5	2,063
Chinese	10,406	41.4	13.1	6.7	627
Filipino	7,173	37.3	11.3	4.5	335
American-Indian(f)	5,593	40.0	9.9	5.4	1,894

-continued-

Table 1 continued

(a) The data are for men aged 25 to 64 in 1970 who worked and had non-zero earnings in 1969. Earnings are defined as wage, salary, and self employment income. The Asian data exlude men in the Armed Forces in 1970, the Jewish/non-Jewish data exclude persons enrolled in school.

(b) Coefficient of schooling from the linear regression of the natural logarithm of earnings in 1969 on schooling, experience, experience squared, marital status dummy variable, geographic distribution, and weeks worked. Geographic distribution is urban/rural and South/Non-South, except for the Asian analysis in which it is Hawaii/California/South/Other Non-South and urban/rural.

(c) The sampling fractions are 1/1,000 for white men, 1/100 for the Mexican, Jewish/Non-Jewish, and black men, and 2/100 for Asian and American-Indian men.

(d) The Jewish-Non-Jewish data are for native born men of foreign parentage, (one or both parents foreign born), where Jews are defined as those reporting Yiddish, Hebrew or Ladino as their mother tongue (language other than or in addition to English spoken in the home when the respondent was a child).

(e) The Mexican analysis is for Spanish surname men living in the five south-western states with either an English or Spanish mother tongue and with parents born in the U.S. or Mexico. Although the data are limited to whites, over 95 percent of the Mexican-origin population was classified as white in the 1970 Census. The schooling coefficient is 4.9 percent for those with a Spanish mother tongue.

(f) Excludes men living in Alaska.

Source: The data are from the 1970 Census of Population, 5 percent and 15 percent questionnaires. For a discussion of the data and the regression equations, see Barry R. Chiswick, An Analysis of the Economic Progress and Impact of Immigrants NTIS PB-80-208879 (1980), Chapters 4, 6, 7, for the white, Mexican, and black male data; Bary R. Chiswick, "The Earnings and Human Capital of American Jews," Journal of Human Resources, Summer 1983, pp. 313-336, Barry R. Chiswick, "An Analysis of the Earnings and Employment of Asian-American Men," Journal of Labor Economics, April 1983, pp. 197-214, and Barry R. Chiswick, "Tables on the Earnings of American Indians," mimeo, 1982.

have lower levels of earnings and schooling than white men. On the other hand, the Chinese and Japanese have higher levels of earnings and schooling than whites, and American Jews have much higher levels of earnings and schooling than other whites.[1] Moreover, among blacks, those with foreign-born parents (primarily of West Indian origin) have a schooling level that matches those of white men and exceeds native-parentage blacks.

Rates of return from investments in schooling are higher for the four minority groups with high levels of schooling than for the less schooled minorities. The statistic in Column 4 of Table 1 is the partial effect of schooling on earnings in a semi-logarithmic earnings function. Under some simple conditions, this partial regression coefficient is an estimate of the rate of return from schooling (see Becker and Chiswick, 1966 or Mincer, 1974, chapter). Although the correlation is not perfect, groups with higher levels of schooling tend to have higher rates of return. In the 1970 Census data, groups with more than 11.5 years of schooling have schooling coefficients at least equal to 6.5 percent, while groups with less than 11.5 years of schooling have coefficients that are less than 6.0 percent. The positive correlation between schooling level and the measure of the rate of return from schooling is even more striking for sub-groups within the three

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tongue, Jews and foreign-parentage blacks cannot be separately indentified. Moreover, there is some evidence of a recent rise in rates of return from schooling for blacks as a result of affirmative action programs temporarily increasing the labor market demand for high-skilled relative to low-skilled blacks (see Smith and Welch, 1986, pp. 85-95).

[1]Jews are defined as second-generation Americans raised in a home in which Yiddish, Hebrew or Ladino was spoken either in addition to or instead of English (see Chiswick (1983b) and Kobin (1983)). Similar patterns emerge in other data files in which Jews can be identified by a question on religion (Chiswick, 1985).

broad racial categories, white, black, and Asian.[1]

This broader perspective on the racial and ethnic composition of the population suggests that the public policy and research questions relevant for the black-white comparison are more complex than has been realized. U.S.-born Jews, Chinese, Japanese, and foreign-parentage blacks in these age cohorts have experienced discrimination in access to higher education and in the labor market. In addition, the Japanese in the Pacific Coast states experienced the disruptions in their schooling and labor market experience arising from the World War II internment. Yet, these groups have achieved a high degree of labor market success while other groups experiencing discrimination did not.

Much of the race and ethnic studies literature focuses on group-specific models and hypotheses and it may be that a separate story is needed for each group. An alternative approach, however, is adopted in this study. A model is developed that can explain (that is, be consistent with) the different patterns of success with a minimum of ad hoc (group-specific) reasoning.

III. Testing Alternative Hypotheses

This section presents tests of alternative hypotheses as to why racial and ethnic groups differ in their levels of educational investment. The hypotheses include different "tastes" for schooling, different time preferences, the diaspora effect, discrimination, and differential investment productivity. The tests are done using a model of the investment decision based on the individual's supply and demand for funds for investment in education.

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[1]It is particularly noteworthy that American Jews have a substantially (and significantly) higher coefficient of schooling than non-Jews. The Jewish coefficient is larger even when there is a statistical control for occupation, including separate variables for high paying professional occupations. Tomes (1983) found a similar pattern for Canadian Jews.

A. Supply and Demand for Funds for Investment

Regardless of the race or ethnic group, a person can be thought of as making decisions on the optimal level of investment of resources, including time and out-of-pocket expenses, in schooling. The supply of funds for investment relates the marginal interest cost of the resources devoted to the investment to the level of the investment. The demand for funds for investment relates the marginal rate of return on the investment to the level of the investment. Optimality for the individual occurs when the marginal interest cost of funds equals the marginal rate of return (Figure I).[1]

The supply curve of investment funds is the marginal interest cost of obtaining funds for investment, including the psychic cost of self-financing investments through lower consumption (see Hirshleifer, 1958).[2] It is upward rising if cheaper sources of funds are used before more expensive sources, as would occur, for example, if federally-subsidized student loans were used before taking out a second-mortgage on the family house. The supply curve is lower, and thus further to the right (greater funds supplied for the same interest cost of funds), for those who have access to cheaper sources of funds. The supply curve would be lower, for example, for the more wealthy who can self-finance the investment than it would be for those who borrow funds from the capital market (Caplovitz, 1963).

The demand for investment funds depends on the marginal rate of return on investments in schooling. It is drawn downward sloping under the assumption

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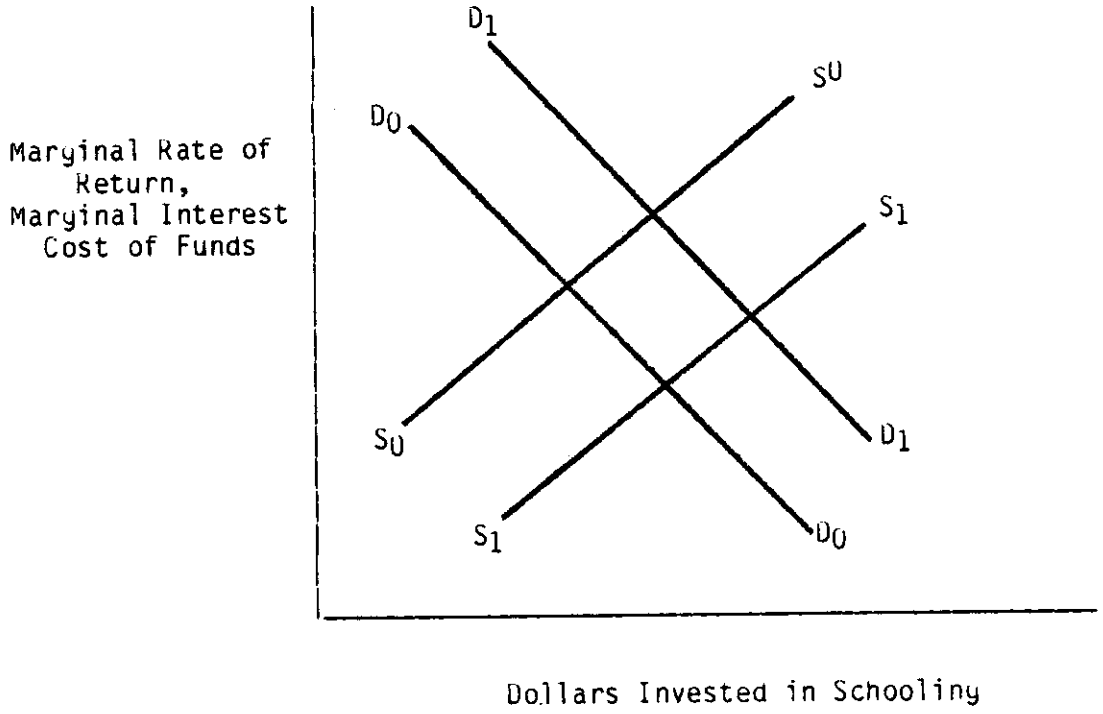
[1]This framework first appeared in Becker and Chiswick (1966) and was developed more fully in Becker (1967).

[2]For two recent attempts at estimating individual rates of time preference, an important determinant of the supply curve, see Fuchs (1982) and Viscusi and Moore (1986).

FIGURE I: SCHEMATIC REPRESENTATION OF SUPPLY AND DEMAND FOR FUNDS FOR INVESTMENT IN SCHOOLING



that beyond some point additional investments command a lower return (see Ben-Porath, 1967). This arises in part because eventually schooling raises productivity in the labor market by more than it raises productivity in acquiring more schooling and, in part, because with more years of schooling there is a decline in the remaining worklife during which the benefits can be received. This demand curve is higher the greater the rate of return on the investment, that is, the greater the benefits from schooling and the lower the cost of acquiring a unit of schooling. As a result, the demand curve is higher for those with greater ability--either innate ability or ability created by greater home produced human capital.

As with any other investment, funds are allocated to investments in schooling only as long as the marginal rate of return is greater than or equal to the marginal interest cost of these funds. Thus, optimal investment requires that the marginal interest cost of funds equals the marginal rate of return on the investment.

Group differences in investment in schooling may arise from differences in demand conditions, from differences in supply conditions, or from a combination of the two. An examination of group differences in schooling levels and rates of return from schooling can provide some insight on whether supply curves or demand curves vary more across race and ethnic groups. If demand conditions vary more than supply conditions (e.g., demand curves D_0D_0 and D_1D_1 and supply curve S_0S_0 in Figure I), groups with higher levels of schooling would tend to have higher rates of return. If supply conditions vary more than demand conditions (e.g., demand curve D_0D_0 and supply curves S_0S_0 and S_1S_1 in Figure I), groups with greater investments would tend to have lower rates of return. The remainder of this section uses the model of

the supply and demand for investment funds to test alternative hypotheses regarding group differences in investment in education.

B. Differences in Supply Conditions

It is often said that the high level of schooling of the Chinese, Japanese, Jews, and foreign-parentage blacks arises from a greater preference or "taste" for schooling or from a higher value placed on future consumption compared with current consumption. By implication, the groups with lower levels of schooling do not have such preferences for schooling or do not place as high a current value on future outcomes.

To be other than tautological, a mechanism must be described through which these "taste" factors operate. If there is a "taste" for schooling, perhaps determined by cultural, historical or other factors, part of the returns are in the form of consumption benefits rather than pecuniary income. Thus, even if the pecuniary benefits and costs of schooling are the same, groups for whom non-money consumption benefits are important will be willing to invest more funds at any given interest cost. Similarly, groups with a lower time preference for current consumption will supply funds at a lower interest cost. Thus, these two hypotheses imply a supply of funds schedule that is further to the right for the Chinese, Japanese, Jews, and foreign-parentage blacks. Then, if demand conditions do not vary across groups, these four groups would have the observed high levels of schooling. They would also be expected to have lower rates of return from schooling.

A variant of the "taste hypothesis" often applied to Jews is the "diaspora hypothesis." A population which feels insecure in its present residence, either for current or historical reasons, would prefer investments

in portable and transferable assets. Portable means that the assets can be easily moved from place to place, and transferable means that the assets are nearly equally productive in all locations. To the extent that human capital is more portable and transferable than other forms of capital a diaspora population, always fearful of another uprooting, would attach a larger implicit risk premium on non-human capital. The result would be a greater supply of funds for human capital investment and a smaller supply of funds for less portable and/or less transferable investments (e.g., land or plant and equipment). While this implies a higher level of schooling, it also implies a lower rate of return on the investment in schooling.[1]

The empirical relationship between the level of schooling and rates of return suggests that group differences in the supply curve for investment funds vary less than group differences in the demand curve of funds.[2] The simple versions of the taste for schooling, discount rate and diaspora hypotheses are therefore not consistent with the data.

C. Discrimination

Group differences in demand conditions (marginal rates of return) may arise from discrimination in access to schooling and discrimination in the labor market. Discrimination in access to schooling will lower schooling levels. Discrimination in the labor market against a group will generally lower rates of return from schooling. For example, even if labor market

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[1]For a more detailed discussion of the diaspora hypothesis with regard to American Jews, see Chiswick (1985).

[2]It is assumed that the rankings of average and marginal rates of return are the same across groups.

discrimination results in the same percentage fall in earnings for all levels of schooling, the rate of return is lowered.[1] And, discrimination in access to schooling and in the labor market is the usual explanation given for the lower measured rates of return from schooling received by blacks (Smith and Welch, 1986).

While discrimination may "explain" why schooling levels and rates of return from schooling are lower for some minority groups, it cannot be used to explain the high levels of schooling and rates of return of other groups that have also experienced discrimination.

D. Productivity of Schooling

An alternative hypothesis considers group differences in the productivity of schooling. Conceptually, this can arise from greater efficiency in acquiring units of skill from a given amount of schooling or from being more efficient in

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[1]This arises from the assumption that the private direct (out-of-pocket) costs of schooling do not decline with discrimination. If the increase in earnings due to extra schooling is constant throughout a very long worklife, the rate of return from schooling may be written as:

$$r = \frac{W_1 - W_0}{C_0 + C_d}$$

where W_0 and W_1 are the earnings potential without and with the schooling, C_0 is the foregone earnings cost of schooling and C_d is the direct costs. If labor market discrimination reduces earnings by the factor k (where $0.0 < k < 1.0$) regardless of the level of schooling, the rate of return (r') for the group discriminated against is:

$$r' = \frac{(1 - k)(W_1 - W_0)}{(1 - k)(C_0) + C_d} < r.$$

Therefore, wage discrimination which is neutral with respect to skill level lowers the rate of return from schooling.

applying these skills in the labor market.[1] It is important to emphasize that group differences in the productivity of schooling are consistent with all racial and ethnic groups having the same distribution of genetically determined ability. Rather, differences in productivity may arise from differences in out-of-school human capital formation (prior to or concurrent with schooling), and trade-offs that influence the quality of schooling received by members of the group.

If group differences in the productivity of schooling vary by more than group differences in the supply of investment funds, a positive relation would appear between levels of schooling and rates of return from schooling. This approach is consistent with not only the observation that some minority groups have low levels of schooling and rates of return, but also that some others have high values for both schooling and its rate of return. Indeed, although the hypotheses discussed in this section are not mutually exclusive, the schooling productivity hypotheses is the only one that is generally consistent with the observed pattern.

IV. The Quantity/Quality Model of Fertility

This section develops the quantity/quality fertility model as applied to racial and ethnic groups.[2] In Generation I the adults in two racial or ethnic

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[1]Skill need not be viewed as homogeneous. A useful distinction (see, Schultz, 1975) is between "worker skills" -- efficiency in performing a task -- and "allocative skills" -- efficiency in decision making. Groups may differ in the worker/allocative composition of their skills. If so, since allocative skills command a higher pay-off during periods of greater disequilibrium in the economy (e.g., when there is a more rapid rate of economic change), group differences in rates of return from schooling would be a function of the state of the economy.

[2]The economic approach to the analysis of the quantity and quality of

groups, A and B, are alike in all respects, differing only in the exogenously determined relative price of quantity and quality of children. The price effects imply differences in fertility and investments in child quality that create group differences in the skill and per capita earnings of adults in Generation II. If these price effects persist, they may be intensified by the income effect. As a result, fertility, schooling and income differences are "transmitted" from generation to generation.

Families with a given endowment of resources will consume some portion of these resources through having and raising children. With no moral or ethical judgments implied, the term "quality" is used to refer to the expenditure of resources per child, while quantity refers to the number of children. Resources do not refer solely to out-of-pocket expenditures for such items as food, clothing, music lessons, and so on, but also include the value of the parental time devoted to child care. It is assumed that children are time intensive and that the time intensity involved in the production of "child services," particularly that of the mother's time, is greater if the parents have a larger number of children, rather than the same number of higher quality children.

While child quality cannot be measured directly, in principle inputs into the production of child quality (out-of-pocket expenditures and parental time) can be measured. Proxy measures of the consequences of child quality, such as, performance on standardized tests, schooling level, occupational attainment and earnings, can also be measured. Higher child quality would be expected to result in a steeper gradient of relative earnings with respect to measured

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children is most richly developed in Becker (1981), especially chapters 5 and 6.

years of schooling. That is, because of the complementarity of various types of human capital, greater home-produced child quality would be expected to raise the productivity of, and hence the rate of return from, schooling.[1] Thus, higher child quality would appear as a higher marginal rate of return (or demand) schedule in Figure I.

Race and ethnic groups may differ in the extent to which they substitute quality for quantity of children. Group differences in the perceived prices that would induce a smaller number of higher quality children may, for example, arise from a higher earning potential (value of time) of women or the higher marginal cost of larger housing units in urban areas.[2] On the other hand, a higher psychic cost of birth control (e.g., social ostracism, feeling it is "wrong") associated with certain religious beliefs would tend to be responsible for a larger number of children, each of a lower quality.

Let us assume there are two racial or ethnic groups, A and B, that do not inter-marry. In Generation I the two groups are assumed to be alike in all respects, including number of individuals and level of utility. The two groups differ only in the price of quantity relative to the price of quality. To take an extreme example, Group A is urbanized (higher cost of space, poorer

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[1]The complementarity of types of human capital does not detract from the higher marginal cost of larger housing units in urban areas.[1] On the other observation that at the margin they are also substitutes. That is, at the margin, more of one type of human capital (e.g., higher quality home produced human capital) can offset deficiencies in other types of human capital (e.g., low quality of formal schooling).

[2]Group differences in the value of time of women may arise from differences in schooling or in location. Cardwell and Rosenzweig (1980), for example, show that the earnings of women relative to men varies systematically with the industrial structure of the metropolition area. The earnings ratio is lower in metropolitan areas that have more male intensive industrial structures.

job opportunities for children, better job opportunities for women), the women are educated (high value of time of child care providers), and there are no psychic or other costs associated with fertility control.[1] For Group B all of these conditions are just the opposite. Group A has a higher cost of quantity and a lower cost of quality of children than Group B, as shown schematically in Figure II.

Although in Generation I the two groups are equally wealthy, that is, they have the same level of utility, their different relative prices imply a different quantity/quality trade-off. Group B, for whom numbers of children are inexpensive, has more children and, because of the budget constraint, invests less in each child (although perhaps more in total) than Group A (Figure II).[2]

In the second generation, Group B is now more numerous--on the average each member of Group B has more siblings than each member of Group A. However, the average skill level and hence the average earnings in Group B is less than that in Group A. Following conventional practices for measuring economic welfare, in the second generation Group B is poorer than Group A.[3]

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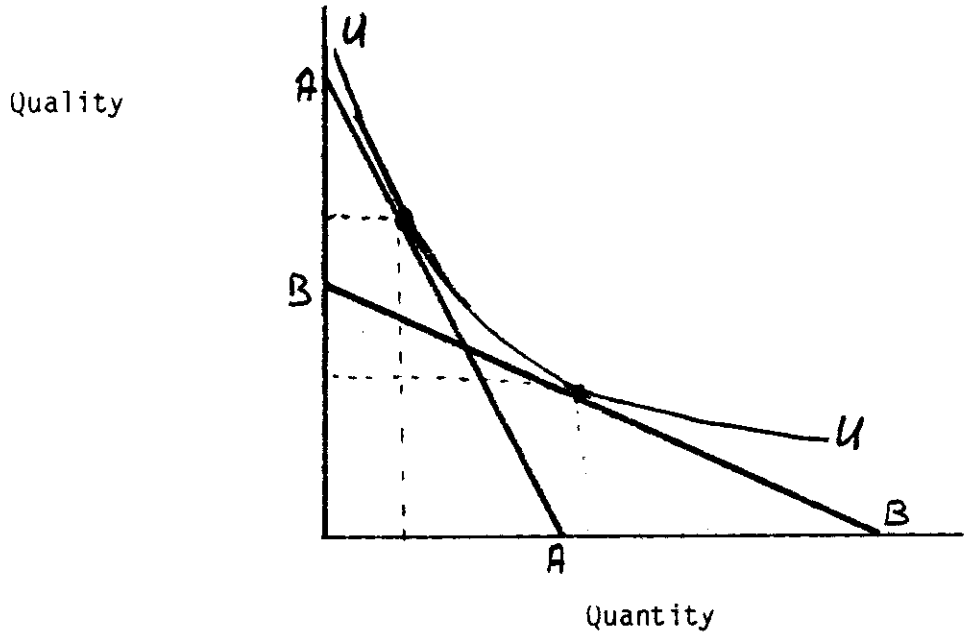
[1]A higher cost of fertility control implies more children. The larger the number of children the greater the cost of raising average child quality. Hence the cost of fertility control effects the relative price of quantity and quality of children.

[2]In addition, a larger number of siblings implies greater intra-family time spent interacting with other children rather than with adults (parents). This apparently has adverse effects on child quality. See Zajonc (1976).

[3]Conventional procedures do not attribute welfare to an individual from having a larger number of siblings. "Sibling services" are the stream of benefits received from the existence of and consumption by siblings. If sibling services were included as an argument in the utility function it would not be obvious whether Group A or Group B had the higher level of economic welfare.

Figure II

Schematic Representation of the Determinants of the Optimal Quantity and Quality of Children



U : Indifference curve for Groups A and B.

AA : Budget line for Group A,

BB : " " " " B,

Let us assume that the initial conditions that generated differences in the relative prices of quantity and quality for Groups A and B do not change from generation to generation.[1] Then, the relative price effects would encourage greater fertility and less investment in child quality per child when the second generation is making its parenting decisions.

There is, however, an additional consideration relevant for the second generation that was absent in the first generation's decision making. The difference in the skills and earnings between Groups A and B in the second generation implies a wealth effect as conventionally measured. In some respects investment in "child services" may be thought as investment in a consumer durable similar to other durables (e.g., houses, cars, boats). There is an income elasticity of demand for both the quantity and quality dimensions. For most consumer durables, and apparently for "child services" as well, the income elasticity of demand for quality exceeds the income elasticity of demand for quantity. That is, as incomes rise the percent increase in expenditures (quality) per unit exceeds the percent increase in the number of units.

In one important respect, however, "child quality" appears to differ from more conventional consumer durables. A household may purchase an expensive brand new $20,000 Cadillac and an old $500 VW, but it is less likely to make investments in their own children that vary so sharply. The difference

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[1] If the relative price difference in Generation I arose from the higher value of time of the mothers in Group A due to a higher schooling level, the quantity/quality fertility decisions will result in their daughters also having a higher value of time. Other determinants of relative prices, such as geographic location and psychic costs of fertility control, may change only slowly from generation to generation.

arises, of course, because the utility of the children can be expected to enter the parent's utility function. Thus, parents are more likely to devote a similar amount of time reading to and playing with each child, rather than devoting nearly all of their child-care time and other resources to some children while virtually ignoring their other children.[1]

Then, if higher income parents demand higher quality children as a consequence of the wealth effect, the marginal cost to them of an extra child is greater than for lower income parents (Becker and Lewis, 1973). This higher price of quantity tends to reduce the number of children, offsetting part or all of the favorable effects of higher income (i.e., the pure income effect) on the number of children. To the extent that there are fewer children, higher quality children are less expensive, and quality will increase.

These arguments imply both price effects and perhaps also income effects which encourage a larger number but a lower quality of children in the second generation in Group B compared to Group A. As a result, in Generation III each member of Group B has more siblings and cousins but a smaller level of human capital and lower earnings than those in Group A.

In this quantity/quality fertility model, as a consequence of initial exogenous price differences among racial and ethnic groups, a process is set into motion in which group differences in fertility, skill formation, rates of return and earnings are created and are transmitted from generation to

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[1]There does not appear to be a literature on the distribution among children in the family of parental child care time or direct expenditures. Research on bequests, however, suggests that parents try to equalize their children's consumption by making larger bequests to their children with less income. See Tomes (1982).

generation. This provides an alternative framework for the analysis of racial and ethnic group differences that abstracts from discrimination.

V. Application of the Quantity/Quality Model

The quantity/quality model of fertility as applied to racial and ethnic groups suggests that fertility rates, female labor supply and wealth in one generation are relevant variables for analyses of group outcomes in the next generation. Historical data on racial and ethnic minorities in the U.S., other than blacks, are very scarce. This section pulls together data on these variables for the numerically small racial and ethnic groups considered in Table 1. In some instances contemporary data must be used. However, if response effects do not vary sharply from generation to generation for given racial and ethnic groups, contemporary patterns would be reflecting historic patterns.

A. Family Background

Data are not readily available by race and ethnic group on the income or education of the parents of the current adult population. If it is assumed that there are 30 years from one generation to the next, the cohorts of adults in the United States in 1940 constitute the parent generation of the native-born adult cohorts in 1970.

Educational attainment data for males from the 1940 Census of Population (Table 2) can be compared with the educational attainment of U.S.-born members of the same race and ethnic group in the 1970 Census to discern intergenerational patterns. As would be expected, most groups with relatively high educational attainments in 1970 had parents with higher than average

TABLE 2

Median Years of Schooling of
Males Age 25 and Over by Race, 1940

Race	Total	Native-Born	Foreign-Born
White	8.4	8.6	7.3
Black	5.3	5.3	7.6
Urban	6.5	5.5	7.7
Japanese	8.8	12.2	8.3
Chinese	5.6	6.2	5.3
Filipino	7.4	(a)	(a)
American Indian	5.7	5.7	(a)
All Races	8.3	-	-

(a) The sample size for the foreign-born is too small for a comparison by nativity. Persons born in the Philippines were considered native-born in the 1940 Census.

Source: U.S. Bureau of the Census, Sixteenth Census of the United States: 1940, Population, Characteristics of the Nonwhite Population by Race, Washington, D.C., 1943, Table 6, p. 34.

U.S. Bureau of the Census, Sixteenth Census of the United States: 1940, Population, Nativity and Parentage of the White Population, General Characteristics, Washington, D.C. 1943, Table 31, p. 271.

educational attainment. Relative to whites, the Japanese and even foreign-origin blacks had "high" levels of education in 1940 and 1970. On the other hand, American Indians and native-born blacks had low levels in both periods. The relative position of Filipinos declined, while that of the Chinese showed a dramatic increase over the three decades.

Data are not separately reported in the published volumes from the 1940 Census of Population for persons of Mexican origin. Data from the 1930 Census of Population, however, suggest that Mexican Americans were much less wealthy than either the Chinese or Japanese.[1]

There are some data that permit a comparison of the skill level of turn-of-the-century Jewish immigrants with other European immigrants. The 1909 survey conducted by the Dillingham Immigration Commission (1911 report), records of the immigration authorities, and the 1920 Census of Population are the major sources. The data suggest that the Jewish immigrants were of a higher level of skill (as defined by occupational status), had a higher literacy rate, and had higher earnings than other immigrants from Eastern and Southern Europe, but not in comparison with immigrants from Northwestern Europe

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[1]Although there are no published data on education, income or occupation for Mexican Americans, a special supplement in the 1930 Census provides comparative statistics on the value of homes and monthly rent for four "racial" minorities, the Mexicans, American Indians, Chinese, and Japanese (U.S. Bureau of the Census, 1933, pp. 5-6 and Table 29, p. 201). This can be used as a proxy for wealth. The median value of owned nonfarm homes in urban areas was less than $1,500 for both native-born and foreign-born Mexicans (specific value not reported), compared with $2,477 for the American Indians, $5,204 for the Chinese, and $4,909 for Japanese. For rural nonfarm homes only the Japanese ($1,991) had homes with a median value in excess of $1,500. For rented nonfarm homes in urban areas the monthly rental was less than $15 for both native-born and foreign-born Mexicans, $20.54 for American Indians, $30.41 for the Chinese, and $29.45 for the Japanese. For rural areas only the Chinese ($17.34) paid more than $15 in monthly rent.

or the native born (Carpenter, 1927, pp. 283-292, Kahan, 1978, Higgs, 1971). American Jews have made considerable gains in their educational and occupational attainment relative to the native-born population (Chiswick, 1985).

These patterns point to the importance of the intergenerational transmission of wealth in the form of schooling. They also suggest that there are changes in relative educational status from generation to generation. The intergenerational effect and the changing relative positions may be the result of quantity/quality fertility and child care decisions.[1]

B. Fertility Patterns

To determine whether group differences in educational attainment are consistent with a quantity-quality trade-off model it would be desirable to have data on the mean number of siblings by group for the current cohort of adults. These data are not available directly, but a useful proxy would be the fertility rate for the group at about the time the current cohort was born. Although black-white fertility comparisons are abundant, historical data for less numerous racial and ethnic groups are still scarce. The data that can be used are instructive. They suggest that there was an inverse relationship between number of children and the average educational attainment of these children.

According to Rindfuss and Sweet, "There are two distinctly different age patterns of fertility. American Indians, Mexican Americans, blacks, and whites

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[1]This is consistent with the finding among whites of an inverse relation between parental ability and the number of children born. The negative effect is stronger (i.e., larger and more highly statistically significant) for the measures of mother's ability than it is for father's ability. For a recent study see Rutherford and Sewell (1986) and the references therein.

begin their childbearing early and reach their peak level of fertility by their early twenties. Among these four groups, blacks have an earlier pattern than the other three. The Chinese-Americans and the Japanese-Americans, on the other hand, begin their child bearing substantially later and do not reach their peak level of child bearing until their late twenties" (Rindfuss and Sweet, 1977, p. 145). The later age of child bearing among the Chinese and Japanese women is related to a later age at first marriage.[1]

A later age at first marriage for women is associated with higher levels of schooling both overall and schooling attainment after marriage (Alexander and Reilly, 1981).[2] Hence, a later age at first marriage would be associated

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[1]Median age at first marriage by age and by race and ethnic group for women, as reported in the 1970 Census of Population:

Race and Ethnic Group	Age in 1970		
	45-54	55-64	65-79
White	21.7	22.1	22.1
Mexican Origin[a]	21.3	21.2	21.2
Black	21.2	21.4	21.5
American Indian	20.7	21.0	20.9
Japanese	24.4	21.8	21.1
Chinese	22.2	20.2	20.0
Filipino	23.2	23.2	22.1

[a]Five southwestern states.

Source: U.S. Bureau of the Census, 1972, Tables 1, 5, and 10

The later age at first marriage of Chinese and Japanese women is a characteristic of the 1970 cohort of middle-aged women, but not of aged Japanese and Chinese women. The very high age at first marriage of Japanese women aged 45 to 54 in 1970 (age 17 to 27 in 1942) may be due to the disruption of ordinary life during the World War II internment.

[2]Using data from the National Longitudinal Survey Youth Sample, Michael and Tuma (1985) find that among white, black and Hispanic young women a later age of entry into motherhood is associated with having been raised in an intact family (i.e., with both parents) and with fewer siblings. The implication is that greater investments in child quality result in a later age for the start of the woman's own childbearing.

with greater investments in child quality and fewer children, in part because of a reduced period of exposure to child bearing and in part because of the implications of delayed marriage for schooling attainment.

Figure III shows total fertility rates by year for 1955 to 1969 for six race and ethnic groups.[1] Although earlier fertility data would be more desirable, they apparently do not exist. Note that the fertility rates in Figure III are virtually the inverse of the level of schooling.[2] In descending order, Mexican Americans, American Indians, and blacks have higher fertility rates than whites, whereas the Chinese and especially the Japanese have lower fertility rates.[3] The group differences in fertility rates in the mid-1950s

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[1]There is a debate in the literature as to whether race and ethnic differences in fertility can be explained solely by differences in "characteristics" or whether there is an independent effect of minority group status. The advocates of the latter approach have various hypotheses, some of which imply a positive minority status differential and some of which imply a negative differential. See Bean and Marcum (1978), and the Rindfuss-Johnson-Marcum-Lopez and Sabagh exchange and the references therein, in American Journal of Sociology, (1980).

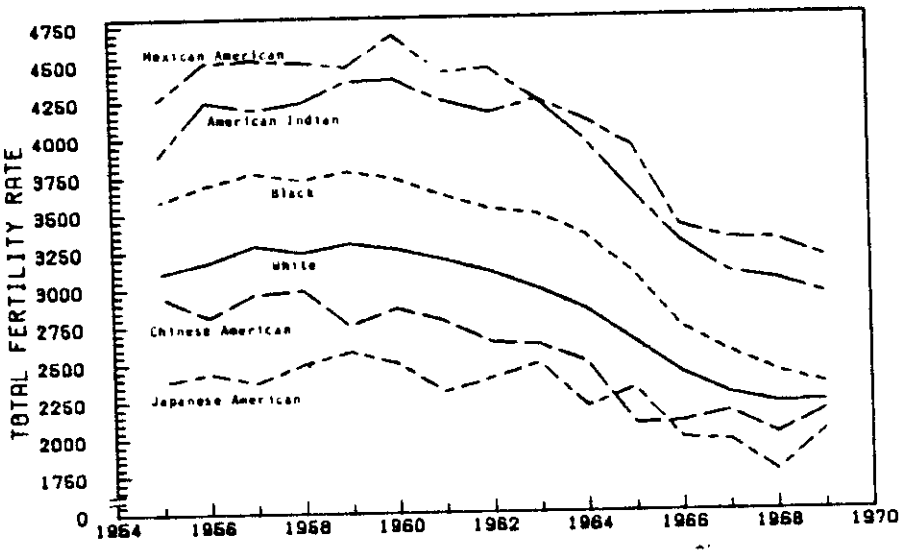
[2]Leiberson uses data from the 1910 Census of Population to show that foreign-born women from Southern and Eastern Europe had a larger number of children than blacks in the North. The extent to which this represented the high pre-immigration fertility of older immigrant women is unclear. By the 1960 Census, older women (age 45-54) of Southern and East European origin (first-and second-generation Americans) had a smaller number of children ever born than nonwhites of the same age living in the North, with the exception of Italian immigrant women (Leiberson, 1980, pp. 193-198). This implies an inverse relation between schooling and fertility when comparing blacks with first and second generation white Americans.

[3]For the period 1957-59, the ratios of the group fertility rate to the white fertility rate were:

Chinese	0.89	Mexican American	1.37
Japanese	0.76	American Indian	1.30
		Black	1.15

These data are from Rindfuss and Sweet (1977), p. 93.

FIGURE III: TOTAL FERTILITY RATES FOR SIX RACIAL OR ETHNIC GROUPS: 1955-1969



Source: Ronald R. Rindfuss and James A. Sweet, Postwar Fertility Trends and Differentials in the United States, New York: Academic Press, 1977, p. 90.

varied by age. Among young women (ages 19-24 years) the Japanese and Chinese had much lower fertility rates than whites and much lower rates than the three high fertility groups.[1] Among older women (age 30-44 years) the ranking is the same but the differences are smaller (Rindfuss and Sweet, 1977, p. 92).

Analyses of Jewish-nonJewish fertility differences over the past century suggest a consistent pattern of lower fertility among Jews in the U.S., Canada, Eastern Europe and Western Europe, even when the analysis is limited to those living in urban areas (Goldscheider, 1967). A study of contractive practices in the U.S. during the 1930's "indicates that a higher proportion of Jews used contraceptives, planned their pregnancies, used more efficient methods of birth control, and began the use of contraception earlier in marriage than Protestants and Catholics" (Goldscheider, 1967, p. 198). Becker (1981, p. 110), citing different studies, reports that "the Jewish birth rate was 47 percent below the average birth rate in Florence at the beginning of the nineteenth century; Jewish marital fertility was 20 percent below Catholic fertility in Munich in 1875."

Data from the March 1957 Current Population Survey, the only Census Bureau household survey to include a question on religion, can be used to examine differences in fertility between Jews and others (U.S. Bureau of the Census, 1958a and no date). The number of children ever born is smaller for Jewish

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[1]It is interesting that in the late 19th and early 20th century the Japanese and Chinese in their countries of origin had quite different fertility experiences. Nakamura and Miyamoto (1982) show that the Japanese attained a high degree of fertility control in the "premodern" period, while the Chinese maintained high fertility rates. They attribute the divergent pattern, in part, to differences in the family systems, a hierarchical feudal system based on non-partible inheritance in Japan and a more egalitarian system based on partible inheritance in China.

women, even among the cohort of older women.[1] The smaller number of children ever born for Jewish women could arise from lower lifetime fertility and a later age for the onset of bearing children. Jewish women apparently have a somewhat later median age of first marriage; 21.3 years for Jewish women and 20.3 for all women (U.S. Bureau of the Census, no date, "Tabulations...", Note to Table 5). The primary effect, however, appears to be the lower lifetime fertility.

C. Female Labor Force Participation and Private Transfers

For the same level of fertility, a higher female labor force participation rate implies greater family money income but less parental time with children. Both greater family money income and more parental time with children would be expected to result in higher quality children. The net impact on child quality of the trade-off of money for mother's time is not clear a priori.[2] Mother's time in child care would generally be most productive in raising child quality during the pre-school and early schooling years when children are "time intensive."[3] However, during adolescense and at older ages

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[1]Number of children ever born per 1,000 women 15 to 44 years, standardized by age, and women age 45 and over for Jewish and all women, 1957:

	Age 15-44 Years		Age 45 Years and Older
Religion	All	Ever Married	
Jewish	1,184	1,598	2,218
All Women	1,677	2,188	2,798
All women-urban	1,504	2,009	- -

The data are from U.S. Bureau of the Census, (no date) "Tabulations" Table 10 and U.S. Bureau of the Census (1958b), Table 40, p. 41.

[2]Imperfect substitutes for parental time can, to some extent, be purchased in the marketplace.

[3]For analyses of time inputs in child care by mothers and the effects of home investments on the children's achievements, see Leibowitz (1974(a) and 1974(b)), Gronau (1976), Hill and Stafford (1974, 1980) and Hunt and Kiker

when children are "goods intensive" mother's time may be most productive if she engages in market work and uses the earnings to purchase market inputs for the children (college, trips to Europe, food and shelter while obtaining on-the-job training, etc.).

Several studies include a comparison of racial and ethnic group differences in the effect of the presence of children in the home on female labor supply, both overall and when other variables, including schooling and other family income, are held constant. Although these studies use contemporary data the estimated regression coefficients may be reflecting more fundamental behavioral responses that do not vary across generations within a group.

Four studies of black white differences in female labor supply are noteworthy. Bell (1974) used the Survey of Economic Opportunity, Sweet (1973, pp. 82-87 and pp. 96-103) the 1960 Census of Population, Lehrer and Nerlove (1981) the 1973 National Sample of Family Growth, and Reimers (1985) the 1976 Survey of Income and Education. All four studies find a greater labor supply by black women and a smaller depressing effect of the presence of young children on their labor supply.[1]

Reimers (1985) also reports a reduced form employment equation for Mexican-origin women. For children under age 12, she finds a smaller

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(1981). These studies find that time devoted to child care, particularly educational care such as playing, reading and talking, rises with the level of parental education. Other studies have found that greater parental time inputs (measured by mother's labor supply and marital status as a proxy for one- or two-parent households), raise the schooling and earnings of the child. See, for example, Fleisher (1977), Krein (1984) and Stafford (1985). Unfortunately, time budget studies for the U.S. have sample sizes that are for too small for studies of racial and ethnic group differences in time inputs into child care.

[1]For example, in Bell's (1974) study the partial effects (t-ratios in

depessing effect of children on labor supply for Mexican-origin than for non-Hispanic white women and the difference is larger the younger the age of the children.[1] There is no differential effect for children age 12 to 17.

A smaller depressing effect of children on female labor supply is not a universal characteristic of minority groups. A study of white women using 1970 Census data examined Jewish-nonJewish differences in labor supply, overall and when other variables are the same (Chiswick, forthcoming). Children under age 18 in the household have a greater depressing effect on labor supply for Jewish

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parentheses) are:

Children	Full Time Participation		Part or Full Time Participation	
	Black	White	Black	White
Children under Age 4 (Dummy Variable)	-13.7 (-6.3)	-17.5 (-12.4)	-14.7 (-6.3)	-23.1 (-14.2)
Number of Children Under Age 18	-1.23 (-2.8)	-4.7 (13.7)	-1.9 (-4.1)	-3.6 (-9.5)

The control variables include the woman's age, schooling, number of times married, location, other family income and husband's weeks not worked.

[1]The regression coefficients (standard errors in parenthesis) are:

Age of Children	White Non-Hispanic	Mexican	Black Non-Hispanic
Less than 6	-0.431 (0.029)	-0.318 (0.039)	-0.196 (0.026)
6-11	-0.235 (0.023)	-0.064 (0.030)	-0.043 (0.018)
12-17	-0.115 (0.018)	-0.116 (0.025)	-0.109 (0.015)

The control variables include the women's age, education, nativity, marital status, and spouse's age, education and nativity, and other family income among other variables. Most of the Mexican-origin women are native born. See Reimers (1985).

women.[1] As a consequence, Jewish women with children at home are less likely to work than non-Jewish women, and the difference is greater the younger the children. Among women with school age children who work, the Jewish women are more likely to work part time and part year. But, Jewish women without children at home (no children under 18 years) have a greater labor supply than non-Jewish women.

Research is in progress on the impact of children on the labor supply behavior of U.S.-born Chinese, Japanese and Filipino women. Using 1970 Census and 1980 Census data, Chamnivickorn (1986) shows that other things the same, Filipino women have a greater labor supply than Chinese and Japanese women. The presence of young children in the home has a smaller depressing effect on labor supply of the Filipino women.[2]

A few studies have examined racial and ethnic group differences in private income transfers (in cash or in kind) received by young adults from

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[1]The partial effects (t-ratios in parentheses) are:

Independent Variable	Labor Force Participation		Percent of Weeks Worked		Hours Worked per Week	
	Non-Jewish	Jewish	Non-Jewish	Jewish	Non-Jewish	Jewish
Children in the family under 6	-0.138 (-34.8)	-0.264 (-11.5)	-0.117 (-33.7)	-0197 (-9.6)	-4.598 (-31.4)	-6.913 (-8.3)
Children in the family 6-18	-0.037 (-18.1)	-0.062 (-5.9)	-0.041 (-22.9)	-0.070 (-7.5)	-1.60 (-21.4)	-2.861 (-7.5)

Separate regression for Jewish and non-Jewish women controlling for age, education, marital status, location, and other family income. The data are from Chiswick (forthcoming), Table 1.

[2]With Japanese women serving as the benchmark, the partial effects (t-ratios in parentheses) are:

other family members, primarily their parents. Other things the same, blacks and Hispanics receive less private transfers than whites, but among whites Jews receive more than nonJews (Catsipius and Robinson (1981) and Chiswick and Cox (1986)). These transfers can be viewed as a mechanism through which parents can increase the schooling and on-the-job training, and hence "child quality," of their young adult offspring. Greater transfers from parents to young adult children appear to be made the higher the average rate of return on education received by the group.

The analyses of female labor supply and private transfers suggest that the parents in racial and ethnic groups with a higher rate of return schedule from schooling make greater investments in their children's human capital

Independent Variable	1970 Census			1980 Census		
	Labor Force Part.	Weeks Worked (Percent)	Hours Worked	Labor Force Part.	Weeks Worked (Percent)	Hours Worked
Chinese:						
Children Under 6	0.0804	0.0636	1.992	-0.0017	0.0312	-1.157
	(1.88)	(1.60)	(1.11)	(-0.06)	(-1.15)	(-0.94)
6 to 18	0.0026	0.0059	-0.119	-0.0110	-0.0191	0.744
	(0.12)	(0.28)	(-0.13)	(-0.50)	(-0.88)	(0.75)
Filipino:						
Children under 6	0.1050	0.0689	1.853	0.0553	0.0526	4.877
	(2.36)	(1.66)	(0.99)	(1.91)	(1.83)	(3.72)
6 to 18	0.0066	0.0216	0.244	0.0118	0.0151	0.415
	(0.27)	(0.95)	(0.236)	(0.49)	(0.63)	(0.38)

Pooled regressions for U.S. born Chinese, Japanese and Filipino women also controlling for age, education, marital status, location, other family income, and number and age of children. Samples sizes are 1,493 (1/100 sample) for the 1970 Census and 9,894 (1/20 sample) for the 1980 Census. See Chamnivickorn (1986).

through greater inputs of mother's time when the children are young and greater private transfers when they are young adults. These are also low fertility groups. Thus, they appear to be substituting quality for quantity of children.

VI. Summary and Conclusion

This paper has been concerned with racial and ethnic group differences in schooling, earnings and rates of return from schooling among the native-born population of the United States. The sharp differences in these variables are not easily explained by appealing to discrimination against minorities. Some minorities that have experienced discrimination have high levels of schooling, earnings and rates of return (e.g., Chinese, Japanese, Jews, foreign-parentage blacks), while other have low levels (e.g., native-parentage blacks, Mexican Americans, American Indians, Filipinos). This does not mean that discrimination in access to schooling and in the labor market has not played an important role. What it does imply is that other factors, operating separately or interacting with discrimination, are also relevant.

The ethnic studies literature frequently includes two simple "taste" hypotheses: They are that the highly educated minorities have a cultural taste or preference for schooling or that they place a higher value on future relative to present consumption (lower discount rate) than do the groups with low levels of schooling attainment. These hypotheses imply a negative relation between schooling level and rates of return from schooling. Empirically, however, there tends to be a positive relation between the level of schooling and the rate of return from schooling across the race and ethnic groups. The tastes for schooling and discount rate arguments are therefore not consistent with the data.

The data suggest that group variations in the rate of return schedules from schooling are greater than variations in the interest cost of funds schedules. Group variations in rates of return arise from differences in the ability to convert the schooling process into earnings. These differences may be a consequence of parental investments (implicit and explicit) in the home-produced components of child quality. Although it is difficult to obtain the most appropriate data for a rigorous testing of the hypotheses, it does appear that members of the successful minorities had parents with higher levels of schooling, they had fewer siblings to compete for parental time and other family resources, and their mothers were less likely to work when young children were in the household.

A positive relationship between educational attainments across generations reflects the intergenerational transmission of human wealth. There has, however, been some realignment. During the past few decades the relative educational level has been rising for two low fertility groups, the Chinese and Jews, and declining for a high fertility group, the Filipinos.

The inverse relation between schooling attainment and family size implies a trade-off of quality for quantity of children. The trade-off may arise from differences in relative prices. Children are more expensive the higher the average child quality that is demanded, the higher the value of time of women in the labor market, and the higher the out-of-pocket cost of children. Therefore, groups with more highly educated women and living disproportionately in major metropolitan areas (e.g., Jews, Chinese, Japanese and foreign-born blacks) may have substituted quality for quantity of children. Price differences may also arise from the fundamental differences that serve to define ethnic groups. For example, groups with religious beliefs that raise the psychic cost of fertility

control (e.g., Mexican Americans and Filipinos) have a larger number of children, and as a consequence make smaller investments of parental time and resources per child.

Mothers' time may be used in providing child care or in generating money income in the labor market. Both activities may generate higher child quality. Greater time investments in child care during the pre-school and early schooling years when children are "time intensive" and greater market work during later years when children are "goods intensive" would appear to be optimal. Empirically, the data suggest that among the successful minorities women have lower labor force participation rates, even after controlling for their higher level of education and husband's income, and fewer children. Perhaps more important, however, the relative difference in participation rates is greater when there are pre-school children present in the home.

If race and ethnic group differences in educational attainment and earnings are to a considerable extent a consequence of family decision making, rather than a consequence of direct discrimination in the educational system or in the labor market, group differences in educational attainment and earnings are likely to be more intractable than had been believed. Public policy can influence the quantity-quality trade-off through lowering the cost of birth control. Other public policies have more ambiguous effects. Income transfer programs (welfare) expand the family's opportunity set, but an offsetting factor is that these programs raise family income in proportion to the number of children rather than the investments made in the children's human capital. Greater public expenditures to improve the quality of schooling also subsidize the number of children. The subsidization of quantity may be an unavoidable consequence of attempts to improve child quality.

The hypotheses developed and tested in this paper must be viewed as preliminary. Much more needs to be known about the quantity-quality trade-off and why it appears to vary systematically across race and ethnic groups. This information will play a crucial role in the development of more effective public policies to promote higher levels of schooling and home produced human capital among members of disadvantaged minority groups. This study does suggest, however, that ad hoc explanations for each group may not be necessary. Rather there is a relatively simple model that can explain the fertility, human capital investments and labor market outcomes for the wide range of racial and ethnic groups that comprise the U.S. population. .

REFERENCES

Alexander, Karl L. and Reilly, Thomas. (1981), "Estimating the Effects of Marriage Timing on Educational Attainment: Some Procedural Issues and Substantive Clarifications," American Journal of Sociology, July 1981, pp. 143-56.

American Journal of Sociology, (1980) September, pp. 372-385. Articles by Rindfuss, Johnson, Marcum, and Lopez and Sabagh.

Bean, Frank D. and Marcum, John P. (1978), "Differential Fertility and the Minority Group Status Hypothesis: An Assessment and Review," in Frank D. Bean and W. Parker Frisbie, eds., The Demography of Racial and Ethnic Groups, Academic Press, 1978, pp. 189-211.

Becker, Gary S. (1967), Human Capital and the Personal Distribution of Income, Woytinsky Lecture No. 1, Ann Arbor, Michigan, University of Michigan Press, 1967.

_____. (1981), A Treatise on the Family, Cambridge: Harvard University Press, 1981.

Becker, Gary S. and Chiswick, Barry R. (1966), "Education and the Distribution of Earnings", American Economic Review, May 1966, pp. 358-69.

Becker, Gary S. and Lewis, H. Gregg (1973), "On the Interaction Between Quantity and Quality of Children," Journal of Political Economy, Supplement, March 1973, Part II, pp. s.279 - s.288.

Bell, Duran (1974), "Why Participation Rates of Black and White Wives Differ," Journal of Human Resources, Fall, pp. 465-479.

Ben-Porath, Yoram (1967), "The Production of Human Capital and the Life Cycle of Earnings", Journal of Political Economy, August 1967, pp. 352-65.

Caplovitz, David (1963), The Poor Pay More: Consumer Practices of Low-Income Families, Free Press, 1963.

Cardwell, Lucy A. and Rosenzweig, Mark (1980), "Economic Mobility, Monopsonistic Discrimination and Sex Differences in Wages," Southern Economic Journal, April, pp. 1102-1117.

Carpenter, Niles (1927), Immigrants and Their Children--1920, Washington: U.S. Bureau of the Census, 1927.

Catsiapis, George and Robinson, Chris (1981), "The Theory of the Family and Intergenerational Mobility: An Empirical Test," Journal of Human Resources, Summer, pp. 313-336.

Chamnivickron, Suchittra (1986), "Labor Supply and Fertility Among Asian American Women," University of Illinois at Chicago, mimeo.

Chiswick, Barry R. (1980), An Analysis of the Economic Progress and Impact of Immigrants, University of Illinois at Chicago, June 1980. Report submitted to the Employment and Training Administration, U.S. Department of Labor, NTIS No. PB. 80-200454.

_____. (1985), "The Labor Market Status of American Jews: Patterns and Determinants," American Jewish Year Book, 1985, New York: American Jewish Committee, pp. 131-153.

_____. (1983a), "An Analysis of the Earnings and Employment of Asian-American Men", Journal of Labor Economics, April, pp. 97-214.

_____. (1983b), "The Earnings and Human Capital of American Jews," Journal of Human Resources, Summer, pp. 313-336.

_____. (fothcoming), "Labor Supply and Investment in Child Quality: A Study of Jewish and NonJewish Women," Review of Economics and Statistics.

_____. and Cox, Donald (1986), "Inter Vivos Transfers and Human Capital Investments," mimeo.

Fleisher, Belton M. (1977), "Mother's Home Time and the Production of Child Quality," Demography, May, pp. 197-212.

Fuchs, Victor R. (1982) "Time Preference and Health: An Exploratory Study" in Victor R. Fuchs, ed. Economic Aspects of Health, Chicago: University of Chicago Press, pp. 93-120.

Goldscheider, Calvin (1967) "Fertility of the Jews" Demography, Spring pp. 196-209.

Gronau, Reuben (1976), "The Allocation of Time of Israeli Women," Journal of Political Economy, August, Supplement, pp. S201-S220.

Higgs, Robert, (1971) "Race, Skills and Earnings: American Immigrants in 1909", Journal of Economic History, June 1971, pp. 420-428.

Hill, C. Russell and Stafford, Frank (1974), "Allocation of Time to Pre-School Children and Educational Opportunity," Journal of Human Resources, Summer, pp. 323-43.

_____ and _____ (1980), "Parental Care of Children: Time Diary Estimates of Quantity, Predictability and Variety," Journal of Human Resource, Spring pp. 220-239.

Hirshleifer, Jack (1958), "On the Theory of Optimal Investment Decisions", Journal of Political Economy, August, pp. 329-52.

Hunt, Janet C. and Kiker, B. F. (1981), "The Effect of Fertility on the Time Use of Working Wives," Journal of Consumer Research, March, pp. 380-387.

Kahan, Arcadius (1978), "Economic Opportunities and Some Pilgrim's Progress: Jewish Immigrants from Eastern Europe in the U.S., 1890-1914", Journal of Economic History, March, pp. 235-255.

Kobin, Frances E. (1983), "National Data on American Jewry, 1970-71: A Comparative Evaluation of the Census Yiddish Mother Tongue Subpopulation and the National Jewish Population Survey," in U. O. Schmelz et al. eds., Papers in Jewish Demography, 1981, Jerusalem, Hebrew University, pp. 129-43.

Krein, Sheila Fitzgerald (1984), "Education and Earnings of Young Men: Effects of Living in a Single-Parent Family," University of Illinois at Urbana-Champaign, mimeo.

Lehrer, Evelyn and Nerlove, Marc (1981), "The Impact of Female Work on Family Income Distribution in the United States: Black-White Differentials," Review of Income and Wealth, pp. 423-431.

Leibowitz, Arleen (1974a), "Education and Home Production", American Economic Review, May, pp. 243-50.

Leibowitz, Arleen (1974b), "Home Investments in Children," Journal of Political Economy, Supplement, March, Part II, pp. s.111 - s.131.

Lieberson, Stanley (1980), A Piece of the Pie: Black and White Immigrants Since 1880, Berkeley: University of California Press, 1980.

Michael, Robert T. and Tuma, Nancy Brandon (1985), "Entry into Marriage and Parenthood by Young Men and Women: The Influence of Family Background" Demography, November, pp. 515-544.

Mincer, Jacob (1974), Schooling, Experience and Earnings, New York: NBER, 1974.

Newport, Frank (1979), "The Religious Switcher in the United States," American Sociological Review, August, pp. 528-552.

Nakamura, James I. and Miyamoto, Matao (1982), "Social Structure and Population Change: A Comparative Study of Tokagawa Japan and Ch'ing China", Economic Development and Cultural Change, January, pp. 229-269.

Reimers, Cordelia (1985), "A Comparative Analysis of the Wages of Hispanics, Blacks and Non-Hispanic Whites" in George Borjas and Marta Tienda, eds., Hispanics in the U.S. Economy, New York: Academic Press, pp. 27-75.

Rindfuss, Ronald R. and Sweet, James A. (1977), Postwar Fertility Trends and Differentials in the United States, New York: Academic Press, 1977

Rutherford, Robert D. and Serwell, William H. (1986) "Intelligence and Family Size Reconsidered," Center for Demography and Ecology, Unversity of Wisconsin at Madison, January, mimeo.

Schultz, T.W. (1975), "The Value of the Ability to Deal with Disequilibrium", Journal of Economic Literature, September, pp. 827-46.

th, James P. and Welch, Finis R. (1986), Closing the Gap: Forty Years of Economic Progress for Blacks, Santa Monica, Calif: Rand Corp., February.

ord, Frank P. (1985), "Cognitive Skills of Gradeschoolers: Does Parental re Realty Matter?", University of Michigan, April, mimeo.

weet, James A. (1973), Women in the Labor Force, New York: Seminar Press.

Tomes, Nigel (1982), "Inheritance and Inequality Within the Family: Equal Division Among Unequals, Or Do the Poor Get More?" University of Western Ontario, memeo, January.

_____. (1983), "Religion and the Rate of Return on Human Capital: Evidence from Canada", Canadian Journal of Economics, February, pp. 122-138.

U.S. Bureau of the Census (1933), Fifteenth Census of the United States: 1930, Population, Special Report, Foreign-Born White Families by Country of Birth of Head with an Appendix Giving Statistics for Mexican, Indian, Chinese, and Japanese Families, Washington: U.S. Government Printing Office.

_____. (1943), Sixteenth Census of the United States, Population, Characteristics of the Non-White Population by Race, Washington: U.S.

Government Printing Office.

_____. (1958a), "Religion Reported by the Civilian Population of the United States: March 1957", Current Population Reports-Population Characteristics, February 2, Series P. 20, No. 79.

_____. (1958b), Statistical Abstract of the United States: 1958, Washington: U.S. Government Printing Office.

_____. (1973), 1970 Census of Population, Subject Report, Age at First Marriage, Washington: U.S. Government Printing Office.

_____. (no date), "Tabulations of Data on the Social and Economic Characteristics of the Major Religious Groups, March 1957", Washington, D.C., mimeo.

Viscusi, W. Kip and Moore, Michael J. (1986) "Rates of Time Preference and Valuation of the Duration of Life," Northwestern University, mimeo.

Zajonc, R. B. (1976) "Family Configuration and Intelligence" Science, Vol. 192, April 16, pp. 227-235.