

# Human Capital Theory: Implications for HR Managers

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*This paper reviews some of the contributions of and challenges to human capital theory. It focuses on the alleged link between earnings and education and experience and on competing explanations for observed earnings differentials by race and by gender. The review concludes that while human capital theory provides some central insights about the supply side of the labor market, the challenges to this theory suggest that the demand side of the market, i.e., the actions of human resource managers, also play a key role in determining earnings and employment. Moreover, these challenges suggest that government policies can be instrumental in effecting a more efficient and equitable use of human resources.*

"IF YOU WANT A GOOD JOB, get a good education." That advice, embodying the essence of human capital theory, is offered daily to school children, adolescents, displaced homemakers, and unemployed workers by parents, teachers, members of the clergy, outplacement counselors, and seekers of public office. Many of these advice-givers, of course, have never heard of human capital theory. Nonetheless, they believe in it deeply. Getting ahead by getting an education has become "the American way," the embodiment of democracy and meritocracy.

Human capital theory says more than simply that educational level is positively correlated with income. It specifies a particular mechanism through which this correlation results: education increases skills, and these in turn increase productivity; higher productivity is then rewarded through higher earnings (Becker, 1964; Mincer, 1974). Human capital theory also proposes a specific rationale for the positive correlation between age and earnings: people who are older earn more because they have more on-the-job experience

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(on-the-job training). As with education, on-the-job experience or "training" is said to make workers more productive and, once again, because they are more productive they are paid more. On-the-job training can provide general human capital (skills and knowledge transferable to other work settings) or specific human capital (skills and knowledge of use only in the particular company) (Becker, 1964).

Becker's contributions generated a fertile outpouring of theoretical supplements and empirical verifications. An annotated bibliography on human capital theory and empirical tests published by Blaug in 1976 contains almost 2,000 entries. Since the publication of Mincer's (1974) human capital regressions, his specification of the earnings function has become the standard for empirical work.

Human capital theory was never hegemonic among economists, however, and theoretical and empirical objections were raised early on (see Thurow, 1972, 1975). The theoretical criticisms have continued and have moved into new territory with respect to earnings differentials by race and gender; the empirical critiques have become more sophisticated. But what is perhaps most fascinating, some recent theoretical insights in other areas of labor economics have made it more and more unlikely that human capital theory can be tested definitively.

This paper reviews two challenges to human capital theory. Stated as questions, these are: (1) Do education and experience raise earnings by raising productivity or are education and experience correlated with earnings as a result of other behavioral relationships?; and (2) To what extent does human capital theory explain earnings differentials by race and by gender? The paper is a summary rather than a full elaboration of the issues raised by these two questions.<sup>1</sup> Moreover, except in a few instances, I omit the relationship of these challenges to other challenges, particularly those concerning the relationship of education to the distribution of income and to the rate of economic growth, the effects of retraining on workers' subsequent incomes, and the effects of preschool education. Nor do I discuss challenges to the new home economics (the theory of the allocation of time between home and labor market, and the theory of marriage and divorce) or to the economics of fertility, both of which are closely related to human capital theory.

I conclude that human capital theory provides us with some central insights about the relationship between education and earnings and the nature of earnings differentials, but that it tends to lose credence when it

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<sup>1</sup> For more complete reviews, see Cain (1976, 1986); Blaug (1976b, 1985); and Willis (1986).

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insists on being the only game in town. Human capital theory is basically a supply-side theory<sup>2</sup> and, as might be expected, demand-side forces are also operative in labor markets and need to be taken into account. Moreover, perhaps more frequently than the theoretician would like, there are feedback effects in the real world and supply and demand factors are not as independent of each other as we would like to pretend.

With respect to human resource and industrial relations managers, a more catholic view of the process of wage determination recognizes managers' propensity to be influenced by institutions and ideology, and their power and agency to act in the employment and pay-setting arena. With respect to public policy, moving away from exclusive reliance on human capital theory provides more scope for considering the extent to which policies such as equal employment opportunity legislation, affirmative action programs, and pay equity arrangements can move us toward a more efficient and equitable use of human resources.

### The Productivity Connection Between Education/Experience and Earnings

The productivity connection between education/experience and earnings has been challenged on several fronts. We review here the criticism of the screening hypothesis, efficiency wage theories, internal labor market theories, and radical theories.

*The screening hypothesis.* The screening hypothesis has several variants; some are based on insights from the theory of statistical discrimination (Phelps, 1972), some on signaling theory (Arrow, 1973; Spence, 1973, 1974), and some on credentialist theory (Thurow, 1972, 1975). In each case, the argument is that education is positively correlated with earnings not because additional education yields higher productivity, but because employers use additional education as a screen, or filter, or signal to hire better-educated workers into jobs that pay more.

The theory of *statistical discrimination* was first put forth by Phelps (1972) with respect to race and sex. It argues that if employers believe that minorities and women are in the long-run less productive than white men, and if employers operate in a world of uncertainty where it is costly to obtain information about the individual productivity of prospective employees, then employers will assume that individual minorities and women have the

<sup>2</sup> In a personal communication, Polachek (1989) indicates that he regards human capital theory not as a supply-side theory but as a reduced form of supply and demand.

presumed lower productivity characteristics of the "average" minority or woman worker. Employers will then either pay women and minorities less or exclude them entirely from employment in a particular occupation. Skin color and gender are used by employers as bases for statistical discrimination both because numerous employers hold preconceived beliefs about the lower average productivity of minorities and women and because information about skin color and gender can be obtained by employers at zero cost.

Extending the theory of statistical discrimination to include education is straightforward. Like beliefs about the relationship between average productivity and skin color or gender, beliefs about the relationship between average productivity and educational level are widespread. Moreover, although obtaining information about educational level is not costless, it is quite inexpensive.<sup>3</sup>

The *signaling models* of Spence (1973, 1974) and Arrow (1973) begin with the proposition that employers may pay higher wages to more educated employees even if education has no effect on productivity. The second assumption is that ability level is correlated with productivity. Thirdly, it is assumed that potential workers with relatively high ability levels can invest more cheaply in education than can employees with lesser ability. For example, if we have in mind cognitive ability, then those with high ability can presumably go through school with less effort and less "pain" than their lower ability classmates. Depending on the cost differential to the two ability groups and the wage premium that the employer offers to higher ability workers, it may be worthwhile for higher ability workers to invest in more education and then "signal" their higher ability (and higher productivity) to employers. If firms find that indeed those with more education are more productive, they will continue to use education as a signal of higher productivity even though education itself has nothing to do with productivity enhancement.

The screening hypothesis may be given either a strong or a weak interpretation. The strong version, that schooling does nothing to enhance productivity, and that schools do nothing more than play a filtering role, seems unreasonable (see Blaug, 1985). But the weaker version, that the role of education is, in part, to act as a screen or signal in labor markets where

<sup>3</sup> One question about statistical discrimination that has concerned theorists is its efficiency. One point of view is that in situations of uncertainty it is always efficient for the employer to use information that is costless (or virtually costless, in the case of education). A recent article by Schwab (1986) questions this argument and describes two situations in which employers' use of information based on group data may "exacerbate the labor supply distortions of limited information" (p. 233). Schwab concludes that "an a priori efficiency claim cannot be used to justify statistical discrimination" (*ibid.*).

information about potential productivity is imperfect, seems credible. Why employers should continue to pay more to educated workers once they have had an opportunity to observe employees' actual productivity is best understood in the framework of internal labor market theory (discussed below).

The theories of Phelps, Spence, and Arrow are basically neoclassical in approach. Thurow's (1972) observations about the connections between education and productivity stem from a quite different conception of labor markets. He champions the *credentialist view*, namely that employers believe that higher productivity is a function not of the skills that workers have learned in school, but rather of the amount of capital that employees have to work with, the amount and type of on-the-job training that they receive and, most importantly for the credentialist hypothesis, the ability of the worker to absorb training. Education, according to Thurow, is used by employers as a signal of trainability.

In contrast to human capital theory, which views the employee's education and skills as the major source of his or her productivity, Thurow argues that the major source of an employee's productivity lies with the employer and the type of job that the employer fashions. Several important consequences flow from this way of looking at the sources of productivity. If productivity is based on the way in which employers structure jobs—their level of responsibility, their capital intensity, their promotion possibilities, etc.—and the amount and kind of on-the-job training provided by the employer, then the distribution of earnings among workers depends not upon the educational differential among workers, as human capital theory suggests, but upon the differentials in the kinds of jobs that employers provide. Thurow strongly disagrees with the human capital view that reducing the variance in the educational attainment of the work force will reduce earnings disparity. He argues that to reduce the disparity in the earnings distribution, we need to reduce the number of jobs that have a low level of productivity associated with them. In other words, with respect to income distribution, the ball is in the employers' court.

Thurow postulates that potential employees form a queue in which those with more education are at the front. Over time, as the overall educational level has increased, workers have increased their education merely to hold their place in the queue. But despite a reduction in the variance in educational level, there has not been a corresponding reduction in the variance in earnings.

*Efficiency wage models.* One of the contributions of human capital theory is to explicitly recognize that the labor market, unlike many other markets,

deals with a long-term relationship. This emphasis is especially clear in the discussion of investment in specific human capital. For the theory discerns that, if shared cost-wise by both the employee and the employer, investment in specific human capital reinforces the mutual interest of the two parties in maintaining a long-term employment relationship.

Efficiency wage models challenge human capital theory not with respect to the connection between education and productivity but with respect to the connections between experience and productivity and between productivity and earnings. Efficiency wage models derive from the observation that when employers face high turnover costs or high costs of monitoring worker productivity, they seek to develop wage payment schemes that provide incentives for employees to remain with the firm and to continue to remain maximally productive. One way to do this is to create earnings differentials over time that do not correspond to productivity profiles. That is, employers may pay workers less than their value added during the early years of employment, but pay them more than their value added in later years. During the initial years of employment, the prospect of earning more in later years keeps employees from quitting or risking dismissal by shirking. During the later years, the actuality of earning more than their value added, combined with the knowledge that if they went to a different firm they would have to start at a job that paid only equal to (or perhaps less than) their value added, keeps employees tied to their firm and producing at a high level.

Interestingly, because employers realize a savings in turnover costs and monitoring costs by divorcing the earnings profile from the productivity profile, they are able to increase the lifetime earnings package such that in the early years of employment workers may not be paid less than their value added. The term efficiency wages is derived from the fact that such payment schemes are beneficial not only to employers, but also to workers.

The notion that employees' earnings increase with seniority because of employers' need to provide employee incentives challenges the human capital view that earnings rise with experience (seniority) because they mirror workers' productivity increases that result from their on-the-job training. Moreover, the efficiency wage notion adds to the difficulty of testing human capital theory's proposed connections among on-the-job training, productivity, and earnings because it suggests that even if on-the-job training (seniority) does increase productivity, employer incentive wage schemes may obscure the connection. If empirical tests fail to find a positive correlation between experience (or seniority) and earnings, this does not prove that human capital theory is "wrong." The connection posited by human capital theory may be correct over the entire earnings profile, but it may be eclipsed

by incentive pay considerations at any particular point in time. Moreover, at any point in time, the incentive schemes themselves may increase worker productivity above whatever increases may stem from on-the-job training.

*Internal labor market theories.* Internal labor market theory, as outlined by Doeringer and Piore (1971), stresses the demand rather than the supply side of the market, and particularly employers' structuring of jobs and job clusters. In that sense, it is similar to Thurow's credentialist theory. Internal labor market theory has its origins in Dunlop's (1957) and Livernash's (1957) concepts of wage contours and job clusters and in Kerr's (1954) discussion of the balkanization of labor markets. The basic point that Doeringer and Piore make is that while external labor markets set wages based on supply and demand, internal labor markets set wages based on administrative rules and procedures. These two labor markets are connected through certain jobs which provide ports of entry to the internal labor market. Other jobs in the internal market may be thought of as being on job ladders that rise from the jobs at the ports of entry.

Thus, jobs that are not entry level are not filled from the external market but through promotion and transfer of those who are already employed by the firm (i.e., those in the internal labor market). The wage rates for jobs in the internal labor market are not, therefore, directly affected by competition in the external labor market, although they are certainly indirectly affected. As Doeringer and Piore point out, the degree to which the construct of an internal labor market challenges neoclassical theory (including human capital theory) depends upon the rigidity of the rules of the internal labor market.

The argument of efficiency wage theorists, that one way in which management increases company loyalty and reduces turnover is by holding out an earnings carrot for long-service workers, is familiar to internal labor market theorists. For one way in which such a carrot is provided is by promoting long-service workers into high-on-the-ladder, high-paying jobs.

Internal labor markets give human resource/industrial relations managers great power, for they decide not only how much on-the-job training to provide and how to share the costs with workers (the relatively narrow range of decision-making power accorded to managers in human capital theory), but also which jobs are assigned to which job ladders, how wide or narrow the earnings differentials are between job ladder "rungs," how much, if any, cross-over there is among job ladders, and which jobs to redesign and which to contract out (see Osterman, 1984).

Although human capital theorists, if pushed, might agree that human resource/industrial relations managers are important players in labor markets,

the theory itself generally ignores power issues. Since markets are competitive, it is "the market" rather than human agents who have power (see Brown, 1988), for it is in "the market" that employers must compete for workers. If there are powerful agents in the human capital framework, these are the workers, who choose how much and what type of education and on-the-job training they wish to undertake. Interestingly, efficiency wage theorists, although they are usually neoclassical economists, assign more power to managers and place more emphasis on managerial decision-making than do human capital theorists.

Internal labor market theory also helps reconcile some inconsistencies raised by other labor market hypotheses. For example, as noted earlier, one question often asked about the long-term effects of the screening hypothesis is: If employees have been on the job for some time and employers are no longer uncertain about their performance, and if educational attainment is unrelated to productivity, why do employers continue to favor better-educated workers by paying them higher wages? In an internal labor market, the screening done at the time of hiring affects not only the initial job and wage level of the employee, but also his or her entire career at the firm. The initial employment decision determines the job ladder on which the employee enters. Thus, unless the firm provides for cross-over among ladders, if only better-educated workers are placed on ladders that contain the high-paying jobs, only better-educated workers will be found in high-paying jobs. Indeed, given the operation of internal labor markets, despite the longevity of job tenure of less-well-educated workers, employers will have little opportunity to learn of these workers' potential ability to perform in high-paying jobs. Of course, to the extent that initial hiring decisions are made not only on the basis of educational level but also on the basis of race and gender, employers also will not learn of the potential of minorities and women for higher paying jobs. Thus, screening or statistical discrimination, when practiced in the context of an internal labor market, reverberates throughout employees' work lives. Those with relatively low levels of education will be in jobs which have been structured to have low productivity.

*Radical theory.* Bowles and Gintis (1975, 1976) propose a completely different interpretation of the link between productivity and education. Unlike the adherents of the screening hypothesis, they believe that education does increase productivity. Bowles and Gintis argue, however, that the link between education and productivity is not skill acquisition, as the human capitalists maintain, but the reproduction of the class structure of society. That is, schools teach students from the working class those skills and behaviors that are useful in working-class occupations, but they teach middle-



and upper-class students skills and behaviors needed to assume leadership roles in society.

Like Thurow, Bowles and Gintis are dissatisfied with the human capital notion that the distribution of income is determined only by differences in the characteristics of the labor supply. They emphasize that the demand side of the labor market, particularly "macroeconomic considerations, market structure, technical change, and economic dualism" (1975, p. 81) are important in determining the distribution of income. Moreover, they maintain that mechanistic laws of supply and demand are not sufficient bases for predicting the effect of more widespread education on the distribution of earnings or income; what is being taught in schools must be examined as well. They believe it is foolish to expect that more widespread education will lower income disparity when the lessons that schools teach are precisely the opposite; in their view, schools teach that economic inequality is legitimate, indeed desirable.

More recent work on education in the radical tradition argues that education may not reproduce class norms as faithfully as Bowles and Gintis suggest (see Carnoy [1981] for a review). It may be that not only does the base (the workplace structure) affect what goes on in the superstructure (the schools), but that schools may operate as agents for changing the workplace. For example, the ideology of political democracy and equality presented to students in school may lead employees to demand more "voice" at the workplace (see Hirschman [1970] on the concept of voice). Unless these demands are met, employers may find that worker productivity declines. Indeed, Freeman and Medoff (1984) maintain that the opportunity that unions provide for worker "voice" is one reason why union workers have higher productivity than nonunion workers. If more education makes worker productivity contingent upon the opportunity for employees to exercise "voice" at the workplace, then once again the relationship between education and productivity is made more complex and more dependent upon management behavior.

### Empirical Tests

Attempts to test the tenets of human capital theories or those of its critics with respect to the productivity link between education and earnings and between experience and earnings have not been numerous—mainly because of the difficulty in obtaining measures of productivity. The work reviewed below provides a sense of the kinds of tests done recently, the general "ferment" in the field, and the continuing absence of resolution or consensus.

*Productivity, experience, seniority, and earnings.* Medoff and Abraham's tests of the link between productivity and earnings are the best known. Their first study (Medoff and Abraham, 1980) used performance ratings by immediate supervisors as the measure of productivity and looked at data on education, experience, productivity, and earnings for about 7,600 white, male, full-time managers and professional employees in two U.S. manufacturing companies. Their findings were at variance with the human capital (on-the-job training) model. They found that although experience and earnings were positively correlated, the relationships between experience and productivity were either zero or negative. Medoff and Abraham's (1981) second study yielded similar findings. Using longitudinal data from a large U.S. manufacturing company for about 8,000 full-time, white, male managers and professionals, they found that for those who remained in a particular grade level, relative earnings increased, but relative productivity (performance rating) fell over time.

Medoff and Abraham speculated that skill obsolescence and boredom might be responsible for the decrease in productivity over time.<sup>4</sup> They also pointed out that the absence of a relationship between productivity and earnings may nonetheless be consistent with firms' long-run profit maximization. For example, as noted in the above discussion of efficiency wages, both employers and employees may benefit by divorcing the short-term link between productivity and earnings.<sup>5</sup> Moreover, it is important to remember that to the extent that productivity increases are brought about by specific on-the-job training that is financed solely by the employer, one would not expect, according to human capital theory, to find the productivity increases reflected in earnings.

Another study of the experience-productivity relationship, although based on a special population and hence less generalizable than the work of Medoff and Abraham, is by Maranto and Rodgers (1984). These authors looked at 191 claims processed by 20 field investigators in the wage and hour division of a midwestern state department of labor and related the investigators' level

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<sup>4</sup> In addition, they raised the possibility that opportunity for promotion may complicate the experience-productivity relationship (Medoff and Abraham, 1984). If the most productive workers are promoted to higher job levels, then we would expect to find a negative correlation between number of years in a particular grade and productivity. That is, the estimated effect of experience on performance will be biased downward. However, as Medoff and Abraham point out, under such circumstances the estimated effect of experience on earnings will also be biased downward.

<sup>5</sup> Medoff and Abraham also suspect that worker beliefs about "just" compensation (e.g., that older workers should be paid more) may play a role in producing a positive relationship between experience and earnings that is not based on a positive relationship between experience and productivity.

of experience to a measure of their productivity—the fraction of the wages that an employer allegedly owes an employee which the investigator is able to collect. They found that at least during the first six years on their jobs, investigators' productivity was positively related to the length of their experience.

In addition to the difference in their measures of productivity, one possible reason for the disparity between Medoff and Abraham's results and those of Maranto and Rodgers is the difference in the mean levels of experience in their samples—15 to almost 20 years versus five years.

Abraham and Farber (1987) have recently looked at the relationship between seniority and earnings. Using a sample of male household heads who participated in the Panel Study of Income Dynamics (PSID), they selected workers in nonunion, blue-collar occupations and in nonunion, professional, technical, and management occupations. They used a hazard function to estimate job duration and concluded that there is only a small average return to seniority in excess of the average return to overall labor market experience. They found that workers in jobs of long duration earn more throughout their jobs than workers in short-term jobs and speculate that the correlation between seniority and earnings may result, in part, from the fact that workers with high seniority are better workers, are in better jobs, and/or are in jobs in which their own skills are particularly well-matched to the demands of the job.

*Efficiency wages.* Empirical work by Lazear and Moore (1984) expands upon the efficiency wage complication of the productivity/earnings link posited by human capital theory. The authors compared the age-earnings profiles of wage and salary workers with those of the self-employed. Since self-employed workers do not need to provide anti-shirking incentives to themselves, they provide a control group. Lazear and Moore found that the age-earnings profile is considerably steeper for wage and salary workers than it is for the self-employed, indicating that the desire to provide incentives is an important factor in the steepness of age-earnings profiles for wage and salary workers. The relative importance of on-the-job training and incentives in determining the steepness of the profile for wage and salary workers depends upon the assumptions made about the similarity and differences between wage and salary workers and the self-employed.

*Screening.* Comparisons of the self-employed and wage and salary workers have also been used to test the relative merits of human capital theory and the screening hypothesis. (See Wolpin [1977] and Riley [1975, 1979] for earlier efforts.) Tucker (1985), using data from the 1981 Wave XIV of the

PSID, compared about 2,800 private sector employees with about 300 self-employed workers. In separate earnings regressions for the two groups, the coefficients on the education variable (number of years of formal schooling completed) were statistically significant for both groups, and "slightly higher" (.077 versus .068) for the self-employed. This finding supports human capital theory rather than the screening hypothesis. Tucker also found that, contrary to the predictions of the screening hypothesis, the percentage endowment contribution of education is greater for the self-employed than for employees. Finally, again contrary to the screening hypothesis, the self-employed received a greater percentage contribution from the difference in the education coefficients.

- \* One problem with both Tucker's study and Lazear and Moore's is endemic to any study using earnings data for the self-employed: the percentage of total income from unincorporated business that is to be considered labor income and the percentage to be considered a return to capital is an arbitrary decision. The fact that the  $R^2$  in Tucker's earnings regression for the self-employed was so much lower than the  $R^2$  in the regression for the employed (.277 versus .488) may indicate that some of the so-called earnings of the self-employed was really profit or rent.

A second difficulty is possible sample selection bias. Some self-employed workers may be self-employed because they invested too little in education relative to their ability and wish to be in a situation where screening by prospective employers (but not, of course, by potential customers) is unimportant. If this is the case, the distribution of the education-ability relationships is different across the two populations, and the self-employed no longer represent an adequate control group for testing the effects of education and experience on earnings.

Although Tucker does not discuss his findings with respect to experience, they are interesting in light of Lazear and Moore's work. In Tucker's earnings regressions, the coefficient on experience is higher for employees than for the self-employed (.0058 versus .0035). (The coefficient is significant for employees but not for the self-employed.) This suggests that some of the return to experience for the employed may be due to employer incentive schemes.<sup>6</sup>

<sup>6</sup> The earnings regressions from which these experience coefficients are derived also include a dummy variable equal to 1 if the employee or self-employed individual received nonacademic training prior to 1980. This dummy variable was significant for employees, but not for the self-employed.

*Internal labor markets.* Efforts to test the relative power of human capital theory and internal labor market theory generally consist of comparing earnings regressions that include only human capital variables with earnings regressions that include only "structural" variables and seeing which set explains a larger percentage of the variance in earnings. Recently, however, three more ecumenical papers (Maxwell, 1987; Hartog, 1987; Rao and Datta, 1985) have suggested three different methods of combining supply and demand-side variables.

Maxwell uses data on 5,000 "older" men from the National Longitudinal Surveys and Rosenberg's (1979) classification scheme for primary sector and secondary sector jobs. She finds that in jobs with high wages, job security, and mobility on promotional ladders (i.e., primary sector jobs), human capital variables, particularly level of educational attainment, have the greatest influence on earnings. In secondary jobs, on the other hand, education is one of the weakest significant variables in the regression. Variables with stronger effects are SMSA residence and structural characteristics of the job, particularly whether or not current and initial jobs were in heavily unionized industries. Being black had a significant negative effect on earnings for those in the primary sector, but it had no significant effect in the secondary sector. Also, having had one's longest job working for the government had a significant negative effect on earnings for those currently working in the primary sector; it had a significant positive effect on earnings for those currently working in the secondary sector.

Hartog's (1987) use of human capital and job variables is more integrative than Maxwell's. He develops a model of an allocation process where individuals with particular levels of education are matched with jobs with particular levels of difficulty, and he emphasizes that earnings are determined by both the supply and the demand side of the market. Hartog uses data for 14,000 workers sampled from the Dutch Wage Structure Survey of 1979. The data come from firms, not from individuals, and the firms were asked to rank the job level of each individual in the survey across nine categories based on "activities performed, taking into account the necessary education or knowledge, the difficulty and the degree of responsibility."

For the sample as a whole, and for each educational level, an F test rejects the hypothesis that job level does not add to the explanatory power of a human capital regression including seven educational level dummies, age, age squared, length of experience with present employer, and gender. That is, job level matters for determining earnings even after human capital and gender are taken into account. Similarly, for the sample as a whole and for each job level, an F test rejects the hypothesis that educational level does not add to the explanatory power of the regression. In all but two job levels,

earnings vary positively with education.

Hartog's findings do not support the human capital view that job level doesn't affect earnings. He does not find that for individuals with given levels of education and experience, the labor market equates earnings across jobs. Nor do his findings provide support for Thurow's notion that earnings adhere to particular jobs regardless of the incumbent's educational attainment or length of experience. Hartog's results affirm that earnings are prices and that prices are set by both the supply and demand sides of the market.

Rao and Datta (1985) use data drawn from the 1980-1981 annual report of one of the largest manufacturing companies in India. According to Rao and Datta, all private Indian companies are legally required to include an appendix in their annual report which provides information on all full-time employees who earn \$3,750 or more per year. Information must be provided on the following: "name, age, educational qualifications, gross income, total experience (in years) and hierarchic status" (p. 68). The company studied had 32 hierarchical levels.

Rao and Datta model the interactions of human capital and hierarchical levels as a recursive system. In the first equation, hierarchy is a function of schooling and experience. In the second equation, earnings are a function of schooling, experience, and estimated hierarchy. Thus, hierarchy is seen as an intermediate variable "to channel the transmission effect of schooling and experience onto earnings" (p. 75). The earnings regression that includes estimated hierarchy explains about three-fourths of the variance in earnings. The earnings regression that does not include a variable measuring hierarchical level explains about half of the variance in earnings. This finding indicates the usefulness of combining supply and demand side variables when looking at the determinants of earnings.

*The radical theory.* The Marxist contention that education affects earnings primarily by reproducing class divisions is difficult to test. Researchers have examined the effects of family background variables on earnings after human capital and job variables have been accounted for, but this provides only a partial test since part of the theory's contention is that education socializes working-class students to accumulate less human capital. Nonetheless, this partial test does seem to confirm aspects of the radical theory. For example, Kiker and Heath (1985), using data on individuals whose families have been part of the PSID longitudinal data base, found that family background variables exert significant indirect effects on the earnings of both black and white men. The meritocracy has not yet arrived.

*Summary.* Human capital theory, and the criticisms leveled against it, contribute to our understanding of the positive relationship between education and earnings. Part of the reason why those who are better educated earn more than those who are not stems from the skills training and consequent productivity increase derived from their education. But those who are better educated earn more also because of their relatively higher class background and because their education gives them entry to job ladders containing the more desirable and higher paying jobs.

Similarly, some of the positive relationship between job experience and earnings results from increases in productivity as a result of on-the-job training; but some comes from employer-designed pay schemes aimed at reducing employee turnover and shirking. And some derives from the fact that workers with high seniority may be "better" workers to begin with, may be in better jobs, or may be in jobs where the job requirements and their own characteristics are particularly well-matched.

#### Human Capital Theory and Earnings Differentials by Race and Gender

There are substantial earnings differentials by race and gender in the American work force. Table 1 presents these differentials for 1981 for year-round, full-time workers. The causes of these race and gender differentials (and the causes of changes in them) continue to be subjects of considerable, and often acrimonious, controversy.

Human capital theory argues that race and gender differentials are explained by differences in the supply side of the market, namely differences in worker productivity, and particularly by differences in education and experience. The challenges to human capital theory argue that the differentials are due to the demand side of the market—particularly discrimination, to interactions among ideology, demand and supply, and to political movements. Lastly, proponents of alternative theories see employers as having power to set wages and to determine the gender and racial designations of occupations.

These differences are more than academic. The way in which one views the causes of the earnings differentials and the power that one attributes to employers versus potential employees directly affects one's views of appropriate public policies to remediate the differentials. All economists agree that earnings differentials *ought* to reflect productivity differentials; human capital theorists think they already do. Critics of the human capital theory think they do not. Thus, critics support such public policy initiatives as equal employment legislation, affirmative action, and pay equity (comparable worth).

TABLE 1  
EARNINGS RATIOS OF YEAR-ROUND, FULL-TIME, U.S. WORKERS, 1981

<i>Black/White and Hispanic/White Earnings Ratios by Gender</i>			
	Blacks/Whites	Hispanics/Whites	
Men	.69	.72	
Women	.90	.87	
<i>Female/Male Earnings Ratios by Race and Ethnicity</i>			
	Whites	Blacks	Hispanics
	.58	.76	.70
<i>Female/Male Earnings Ratios by Gender and by Race and Ethnicity</i>			
	White women/White men	Black women/White men	Hispanic women/White women
	.58	.53	.50

Source: U.S. Bureau of the Census, Current Population Reports, Series P-60, No. 137, *Money Income of Households, Families and Persons in the United States: 1981*, Washington, D.C.: U.S. Government Printing Office, 1983, Table 55.

*The human capital view.* Human capital theory contends that the earnings differential between minority men and white men results from the corresponding differentials between the two groups in both the quantity and quality of their educations. The decline in the earnings differential, especially the black/white male differential, is said to be the result of the narrowing of educational attainment between white and black men and an improvement in the quality of black men's education relative to that of white men. As firm believers in the meritocracy, human capital theorists expect that when blacks (or other minorities) increase the quantity or quality of their education, the initial return that they obtain on that education will be the same as the one received by whites. And minorities' opportunity to obtain on-the-job training will be the same as for whites. Thus, the policy conclusion for human capital theorists is very straightforward: to further reduce the earnings differential, continue to improve black educational attainment and quality relative to that of whites.

With respect to the gender earnings differential, the human capital story is somewhat different, because on average men and women already have the same quantity of education.<sup>7</sup> Human capital theory interprets the gender earnings differential as stemming from women's own choices: (1) the choice

<sup>7</sup> It is sometimes difficult to assess whether they have the same quality, especially at the tertiary level, because so often men and women have been educated in different fields.



to obtain less education of the type that has a high payoff (e.g., scientific or technical education) (Polachek, 1978); (2) holding type of education constant, the choice to obtain jobs that have low levels of on-the-job training but high initial starting salaries; and (3) the choice to withdraw from the labor force periodically in order to raise children (Mincer and Polachek, 1974). Polachek, in a series of articles (see Polachek [1987] for a summary), has argued that in determining their desired level and type of education and on-the-job training, women choose education for occupations that will minimize the penalty for intermittent labor force participation.

The treatment of minority women in such theorizing is curious. Comparing the earnings of black women or Hispanic women to *white* men shows that these earnings differentials are the lowest (see the bottom row of Table 1). Yet human capital theory does not deal specifically with the double disadvantage of minority women as compared to white men. The theoretical work on minority women asks either why they earn less than *minority* men, in which case the explanation has to do with women's "choices"; or it asks why they earn less than white women, in which case the explanation has to do with quantity and quality of education (see Malveaux and Wallace [1987] for further discussion of this issue).

Human capital theorists think that women are paid less than men in part because women (allegedly) have different utility functions than men. This causes women not only to seek different types of education than do men, but also to seek different kinds of jobs, even if they have the same education that men have. Filer (1986) has suggested that men seek to maximize income over their lifetime (constrained only by their own talents and ambition), but that women may also be interested in other objectives, such as the social aspects of their work, or the physical surroundings of their job. And, according to Becker (1985), women may be more interested than men in finding jobs that allow them to "conserve" some of their energy for housework.

Another aspect of women's lower earnings is their higher quit rates. Goldin (1986) has suggested that one of the reasons why women's age-earnings profiles are rather flat is that because of women's higher quit rates employers find it hard to structure efficiency wage contracts for them. Without such contracts, it is costly for employers to monitor their potential shirking. Consequently, employers concentrate women in occupations where such contracts are not important.

The absence of much slope in women's age-earnings profiles is also discussed by Mincer and Polachek (1974). In their view, the profiles' flatness stems from women's *expected* discontinuous labor force participation, which leads them not to invest in much on-the-job training because they don't

expect to be in the labor market long enough for such training to pay off, and from women's *actual* discontinuous labor force participation, which causes their labor force skills to depreciate.

With respect to policy, human capital theory is quite clear—"if it ain't broke, don't fix it." Some human capital theorists are in favor of public policies designed to increase the availability of child care and to change the tax disincentives to married women's labor force participation (Polachek, 1989). However, despite the existence of a large female/male earnings differential, human capital theorists' belief that the gender differential springs from women's own choices leads these theorists to support the status quo. To try to increase the female/male earnings ratio through public policy would, in their view, interfere with the efficient allocation of resources now being performed by labor markets.

*Discrimination.* The most important alternative explanation for the race and gender earnings differentials is that there is discrimination in the labor market; i.e., employers provide lower earnings to minorities and women even when they have the same productivity characteristics as white men. The discrimination may be of the "statistical" type discussed earlier, which attributes no ill motives to employers, but stems from employers' "rational" behavior in the face of uncertainty; or it may be "taste" discrimination, resulting from prejudice on the part of employers, employees, or customers (Becker, 1957).<sup>8</sup> Taste discrimination may operate directly on the earnings differential or it may be channeled into occupational segregation, where minorities or women are excluded from higher paying jobs and crowded into those that pay less.

Internal labor market theory is compatible with the concept of discrimination. Indeed, in their original elaboration of the theory, Doeringer and Piore (1971, p. 133) state: "Internal labor markets...are designed intentionally to 'discriminate'.... Sometimes the discrimination is an incidental by-product of distinctions made for other purposes.... In other cases, race is a significant consideration in decisions affecting entry, internal allocation, and wages."

Those who subscribe to the segmented labor market hypothesis also view race and gender discrimination as "expected." Unlike the internal labor market, which divides jobs into those that compete in the external market (ports of entry jobs) and those that do not, the segmented labor market divides jobs into those in the primary sector that have high wages, good

<sup>8</sup> It is ironic, and a tribute to his own powers of analysis, that the framework for the two leading competing explanations for the earnings differentials both come from Becker.

promotion prospects, good working conditions, stability of employment, and due process with respect to work rules, and those in the secondary sector which do not have these characteristics (Doeringer and Piore, 1971). In fact, however, the two schema come from the same authors and there is considerable overlap between jobs in the internal labor market and those in the primary sector.

*An interactive explanation.* Hartmann (1976), Strober (1984), and Strober and Arnold (1987) have argued that occupational segregation is neither a supply-side phenomenon nor simply a result of employer discrimination, but stems from the interaction of patriarchal ideology and the operation of the job market. In particular, Strober suggests that because of a widespread societal belief that men should provide financial support for their families, employers give men first choice of occupations. To do otherwise would be to court costly disapproval from colleagues, family, and community as well as from customers and male employees.

Because the job market is segregated by race and educational level, not all men get first choice of occupations. Rather, within race and educational categories, men are permitted to choose before women do. Men choose those occupations that are relatively more attractive, where attractiveness is based on income, working conditions, and opportunities for advancement. Women choose occupations, too—but only after men have made their choices. Because men choose first and prefer those occupations that are higher paying, the female/male earnings differential emerges directly from the process of occupational segregation.

The gender designations of occupations rarely change because men actively keep women out of "their" occupations and men rarely have any interest in moving into lower paid, and lower-status, female occupations. When occupations do change their gender designation, as, for example, in teaching and banktelling, it is because the occupation has become less attractive to men and men either leave the occupation or fail to increase their numbers.

*The radical view.*<sup>9</sup> Radicals think that earnings differentials are mainly a reflection of power differentials between blacks and whites and between men and women in the society at large and that the differentials change in

<sup>9</sup> See Amsden (1980) for a discussion of the differences in world view among neoclassical, institutional, and radical economists. Reich (1988) argues that the categorization of labor market theories into neoclassical, institutional, and radical is deficient, and he suggests that the three categories should instead be conservative neoclassical, liberal neoclassical, and radical-institutional. Or, better still, he thinks the last category should be political-economic. I am sympathetic to his concerns. Such a delineation would better recognize that institutional

response to political movements (see Reich, 1981). In the radical view, one important reason why employers have pay differentials by gender and race and segregate the work force by gender and race is to prevent solidarity among employees.

### Empirical Findings

*The black/white male earnings differential.* There is widespread agreement that the black/white male earnings differential has narrowed over time; the disagreement arises over the timing and causes of that narrowing. After laboriously constructing and analyzing earnings data for blacks and whites over the period from the Civil War to 1940, and also examining microdata for the 1940–1980 Censuses, Smith (1984) and Smith and Welch (1988) conclude that the human capital argument best explains the convergence of the black/white male earnings differential.

Keifer and Philips (1988) formulate a regression model of Smith's estimates of black/white men's earnings differentials for the 1890–1930 period and compare it to two other regressions, one containing institutional variables and no human capital variables and one containing both institutional and human capital variables. The institutional variables, which were used to measure changes both in labor market institutions and in societal institutions, include the percentage of black men in the rural South and the intensity of racial repression, measured by the number of black lynchings per year. Keifer and Philips also added two dummy variables for 1970 and 1980 to proxy the existence of equal opportunity legislation and affirmative action programs during that period. The human capital model explained about 60 per cent of the variance in the black/white male earnings differential over time, the institutional model about 30 per cent. In the model combining both sets of variables, the human capital variables did not achieve statistical significance. Thus, Keifer and Philips conclude that the institutional model provides a better explanation than the human capital model of the narrowing of the black/white male earnings differential over time.

Reich (1988) argues that the most important lessons regarding the black/white male earnings differential over time derive from examining differences in the periods when the differential narrowed and when it did not. Such an approach indicates what kinds of activities are likely to be successful in

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variables can be either labor market variables or societal variables, or both. Also, in terms of policy, institutional economists and radical economists often make the same recommendations. On the other hand, most institutional economists do not use the Marxist framework for their analyses, and it seems worth preserving that distinction in the categories that we use.

further narrowing the differential. Reich concludes that political movements are the most important explanatory variables in determining the degree to which the black/white male differential narrowed over time.

*The female/male earnings differential.* As indicated in Table 1, in 1981, among full-time, year-round workers, women's annual earnings were 59 per cent of men's. In 1981, among all full-time workers (regardless of weeks worked), women's usual weekly earnings were 65 per cent of men's. Recent work by Blau and Beller (1988), which uses earnings of all workers and corrects them for time inputs and selectivity bias, indicates that during the seventies the female/male earnings ratio increased for whites by between 9 and 17 per cent (the latter figure includes the correction for selectivity bias) and for blacks by 11 per cent. A decomposition of this increase indicates that change in the educational attainment between men and women did not play much of a role in increasing the female/male earnings ratio. Change in the return to educational attainment contributed to a decline in the female/male earnings ratio, especially among whites. The increase in women's potential experience (age) relative to men's made a small contribution to the decline in the earnings ratio for both whites and blacks. For whites, change in the return to potential experience contributed to a decline in the earnings ratio and the total effect of potential experience (the effect of the change in means plus the effect of the change in coefficients) was to contribute to a decline in the earnings ratio. For blacks, the total effect of experience was to contribute (slightly) to an increase in the ratio.

Also contributing to a decline in the female/male earnings ratio was the total effect of variables reflecting the gender composition of occupations. Blau and Beller (1988) found that "although women increased their representation in male jobs and integrated jobs, the return to such employment decreased for women relative to men" (p. 528). Outweighing the effects of changes in education, potential experience, and the gender composition of occupational variables, however, were the effects of decreases in the constant term in the regression, which Blau and Beller interpret as a decline in discrimination over the period, and a decrease in the gender differences in the return to being married with spouse present and, for whites, in the effect of children on earnings.

In spite of the authors' ambitious and painstaking work, the implications of their findings for human capital theory and its critics are not clear and illustrate the problems involved in testing the alternative explanations of earnings differentials.<sup>10</sup> First, because of the lack of available data, the

<sup>10</sup> Blau and Beller make it very clear that their work is not designed to test the alternative explanations (p. 518).

experience variable is not truly an experience variable but a measure of potential experience, i.e., age. Next, the constant term may be considered to proxy discrimination, but in fact it is simply a measure of all the variables not included in the equation. Finally, although the variable measuring the gender composition of an occupation is interpreted by institutionalists as an institutional variable, it is interpreted by human capital theorists as a human capital variable, a measure of the extent to which women have chosen occupations that do not penalize them for intermittent labor force participation. These difficulties in interpretation render the verdict on the explanatory power of the alternative theories a loud and clear "draw."

If empirical resolution of the central debate remains elusive, somewhat greater success has been achieved around the edges. For example, Madden (1987) looks at workers displaced in 1983 and compares their salary losses to a control group who were not displaced during that year. She hypothesizes that if after controlling for education, experience, and length of service, women invest less in specific human capital than men, then women would be expected to incur lower wage losses than men as a result of displacement. However, if women workers face discrimination after being displaced, they would be expected to earn less than their male counterparts who had equivalent pay in their original jobs, are equivalently qualified, and engaged in equivalent amounts of search. Madden found that women experienced a greater wage loss than men as a result of displacement and she suggests that these results score a point for the discrimination explanation.

The argument that women are paid less because they work less intensively than men has been seriously undercut by analysis of the Michigan time-use data, which show that, as compared to men, women spend less time in coffee breaks and regularly scheduled work breaks, less time relaxing at work, and less time at lunch. After adjusting the female/male earnings ratio for time spent in breaks and relaxing, Stafford and Duncan (1980) find that the ratio decreases by three percentage points (from .62 to .59). That is, the ratio usually quoted understates the actual differential because women's work intensity is greater than men's.

Similarly, Blau and Kahn (1981) and Osterman (1982) have shown that it is incorrect to assume that women's lower earnings are caused by their higher quit rates. Rather, it may be that women's higher quit rates are caused by their low earnings and poor prospects for promotion. Blau and Kahn found that holding constant occupation and industry, women's quit rates are no higher than men's and in some instances are lower. Osterman demonstrates that women's quit rates are lower in industries with a high prevalence of affirmative action plans than they are in other industries.

Finally, there has been some closure on the issue of the size and duration

of the penalty women pay for intermittent labor force participation. Corcoran, Duncan, and Ponza (1984), using PSID data, find that women who leave the labor force have lower real earnings when they return than they did at the time they dropped out. As predicted by human capital theory, in the first few years back at work, their wages tend to rise. The overall loss from having dropped out seems to be small. On the other hand, in managerial and certain professional jobs, the penalty for dropping out can be quite large. For example, see Strober (1981) regarding the penalty for MBAs.

*Occupational segregation.* The debate about the causes of occupational segregation remains heated, as evidenced in the exchanges between the two leading protagonists, Polachek and England.<sup>11</sup> England *et al.* argue that the human capital view, that women prefer to forego investment in on-the-job training and instead take jobs with high starting salaries, is not confirmed in the empirical literature: "No analysis has found the higher starting wages in female occupations that the theory predicts; to the contrary, starting wages are lower in female than male occupations requiring the same education" (p. 545). Nor, they insist, does research confirm that predominantly female occupations have lower depreciation rates than do male occupations for women who have dropped out of the labor force. England *et al.* also provide disconfirming evidence for Filer's (1986) contentions that women choose jobs that are less onerous than the ones that men choose and that part of the reason why men earn more than women is that men receive "compensating differentials" for the more onerous aspects of their work. England *et al.* find that even after holding constant skill demands and working conditions (in addition to human capital variables), those who work in occupations with more women earn less.

Polachek argues that human capital theory is nonetheless vindicated because human capital variables explain about half of the variance in the female/male earnings differential while the per cent female in an occupation explains only 5 per cent. He also thinks that for econometric reasons the variable per cent female is not a good proxy for the degree of intermittency of employment associated with particular occupations.

A different type of evidence in favor of the institutional explanation of wage differentials is found in Gregory *et al.* (1989), whose work compares changes in the female/male earnings ratio between 1969 and 1976 in Australia, Great Britain, and the United States. Over that period, the American earnings ratio remained constant but the Australian ratio increased by 30

<sup>11</sup> Polachek and England review the issues in their latest papers (Polachek, 1987; England *et al.*, 1988).

per cent and the British ratio increased by 20 per cent. The authors conclude that human capital variables do not explain the differences in the behavior of these ratios. Rather, the differences are explained by the fact that in Australia and Great Britain wages are set more centrally and in both countries specific policies for increasing the female/male earnings differential were adopted during the period under consideration.

Strober's work on occupational segregation is less directly critical of human capital theory. Using microdata from the 1960, 1970, and 1980 Censuses, Catanzarite and Strober (1988) construct a measure of occupational attractiveness to white men. The measure is a ratio in which the numerator is white men's actual mean earnings in an occupation and the denominator is the earnings that would be predicted based on the mean human capital of white male occupational incumbents. Human capital is represented by number of years of education, hours worked, age, and age squared. Separate measures of attractiveness are calculated for each of the Census years.

Catanzarite and Strober find that in all three years there was a positive correlation between the attractiveness of an occupation and its percentage of white male incumbents. Moreover, except for black men in 1980, where the correlation between attractiveness and the percentage of black men was insignificant, in all three years the measure of occupational attractiveness was significantly *negatively* correlated with the percentage of black women, white women, and black men. The authors also found that over the 20-year period there was no change in the degree of positive correlation between attractiveness and white men's occupational representation. And, except for black men between 1970 and 1980, there were no changes in the negative correlations between attractiveness and the percentage representation of black women, white women, and black men. Catanzarite and Strober argue that these results suggest that white men are at the head of a labor "queue" and that the degree to which they are pre-eminent did not change during the 1960-1980 period. The findings are consistent with the argument that white men are given first choice of occupations and that they choose those occupations that are high in attractiveness relative to other occupations.

### Conclusion

What economists learn from a reappraisal of human capital theory depends upon their separate world views. Although economists consider their discipline a science, there is a good deal of "belief" involved in the profession. Because of the difficulty of designing and carrying out empirical tests that definitively "prove" one theory or another, several theories continue in contention over long periods of time. Empirical work that seems convincing



to one denomination often has no persuasive power for another. Not surprisingly, then, the debates are often characterized by the half-full/half-empty syndrome. If human capital variables explain half of the variance in an earnings regression, the human capital advocates cheer for the victory of the human capital variables. On the other hand, opponents of the human capital view, institutionalists as well as radicals, are quick to point out that half of the variance in earnings is explained by variables other than education and experience.

Scholars often make their mark in academia by becoming associated with a particular position and entering into frequent doctrinal debates while stubbornly defending their particular orthodoxy. After all, to the extent that academics measure their own and others' success by the number of entries in the citation index, it pays not necessarily to be right, but to be clearly identified with a particular position and then to be attacked and to counter-attack frequently. Academics often gain little from seeking commonalities among denominations or building bridges across sects.

Managers, on the other hand, gain success from making "good" decisions, from incorporating valuable insights into their decision-making regardless of the particular school of thought from which the insights derive. Managers are rewarded for integrating ideas. With respect to decisions about recruitment and hiring, setting wage differentials, and achieving desired employee tenure, human resources and industrial relations managers have much to learn from both human capital theorists and from their critics.

For managers, there are two key lessons to be learned from this review. The first is that human capital theory is basically a supply-side theory, and that, as all economists are taught (although the retention on this point is often brief), prices are determined by demand as well as supply. Human capital theory by itself explains some of the variance in earnings, but not all of it. The second lesson issues from the institutionalists, and especially the internal labor market theorists: managers have real power. Firms operate under certain economic constraints, but wages are not set simply by impersonal market forces. Moreover, from a public policy point of view, managers probably have less to fear from government "interference" in wage setting than they perhaps imagine. Affirmative action processes often turn out to be good business practice and even pay equity adjustments seem to be compatible with employers' continued economic strength.

The U.S. economy is likely to face a labor shortage in the not-too-distant future and it will become more important than ever to fully utilize existing labor. Human resources and industrial relations managers will need all of the insights they can get from existing theories and empirical work as they begin to restructure jobs, provide in-house training, and place women and

minority men into occupations and jobs that have been closed to them. For their part, economists who study labor markets and education will have much to learn from the behavior of managers and workers under these new labor market conditions.