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The Impact of Formal Education on Managerial Career Attainment

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Abstract

This study explored the role of formal education in career attainment and how this role has changed over time. The study encompassed years of education, subject of degree, timing of degree conferral, and quality of educational institution. The personnel records of an internal labor market large US based company were examined. Two cohorts of managers were studied in the firm. One cohort contained 540 managers, and the second cohort contained 968 managers. These managers all entered the firm in the same year and have stayed with the same firm. Education was found to have a positive effect on career attainment for both cohorts. While the selectivity of the university was related to career attainment for the cohort that entered the firm first, it was not significant for the cohort that entered the firm most recently. Results indicated that possessing a master's degree and majoring in business were positively related to managerial career attainment in an internal labor market.

Keywords: careers, education, internal labor market
The Impact of Formal Education on Managerial Career Attainment

The positive relationship between education and career attainment is widely accepted (Gattiker & Larwood, 1988; Jaskolka, Beyer, & Trice, 1985; Judge, Cable, Boudreau & Bretz, 1995; Psacharopoulos, 1985, Whitely, Dougherty, & Dreher, 1991). However, there are few studies focusing specifically on the role formal education plays in career attainment. The press has popularized conflicting economic studies concerning the impact of a college education on wages. In the late eighties and early nineties, studies were showing that a large percentage of Americans with four-year college degrees were working in jobs paying what had been regarded as high school wage rates (Hecker, 1995). More recently, studies show that a college degree is associated with higher earnings (Larkins, 2001; Pearlstein, 1996; Scheetz, 1995).

Economists have often studied the rate of returns to education (James & Alsalam, 1993; Larkins, 2001; Psacharopoulos, 1985; Sicherman, 1991), and labor economists have found that the returns from educational attainment in terms of pay and promotions are significant (Psacharopoulos, 1985). Most of these studies have focused on the quantity of education (James & Alsalam, 1993). These positive attributes of education are attributed to the human capital model which posits that individuals will be paid on the basis of their productivity. Individuals can decide upon their productivity by the effort and investment they make in their human capital and organizations will reward these investments (Becker, 1964).

Organizational studies have often utilized human capital theory when exploring career attainment (Becker, 1964; Blaug, 1976; Mincer, 1974). Individuals make investments in their own human capital to improve their future career paths. Education is often used to illustrate investments individuals make in themselves, and education is included in virtually all career attainment studies. Early organizational
studies often looked at leaders and compared where they went to college. For example, Pierson (1969) studied leaders found in the Dictionary of American Biography in America and found a small number of schools had produced a large number of these leaders. And, Useem and Karabel (1986) studied top managers from 208 large US corporations and found it was important to have a bachelor’s degree from a top ranked college or a master’s degree in business to move into top corporate management. A top law school degree was an alternative pathway to the top. In past studies, the positive effects of education have been attributed to years of education, quality of educational institution attended, or subject of studies.

In recent years, education may be playing a more important role in career attainment than it has in the past. Whereas in the past many corporate top executives never attended college (Taussig & Joslyn, 1932), today a substantial proportion possess graduate degrees (Useem and Karabel, 1986). There are no studies investigating if the impact of education on career attainment has changed over time. This study will explore the role of education in career attainment and changes in this role over time and will examine years of education, subject of degree, timing of degree conferral, and quality of institution attended.

EDUCATION IMPACT

Quantity of Education

Although it is generally believed that education is positively related to managerial career attainment (Gattiker & Larwood, 1988; Jaskolka, et al., 1985; Judge et al., 1995; Psacharopoulos, 1985; Spilerman & Lunde, 1991; Useem & Karabel, 1986, Whitely et al., 1991), some studies have shown the contrasting result that education is not related to managerial career attainment (Gerhart & Milkovich, 1989; Powell & Butterfield, 1994). And, although the July 2002 US Census Bureau touted
that in the late 1990s the average high school grad was earning $18,900, the average college graduate was earning $45,400 and the average graduates with a professional degree averaged $99,300, some claimed that there may be a correlation without causation (Day & Newberger, 2002, Seligman, 2002). In other words, education might not be the direct cause of the salary differentials. The correlation could exist because intelligent people want more education, and employers are interested in hiring intelligent individuals (Seligman, 2002).

A positive relationship between career attainment and education would result in employees with bachelor’s degrees having higher career attainment than employees without bachelor’s degrees. This positive relationship would also result in employees with master’s degrees obtaining higher career positions than employees whose highest educational degree is a bachelor’s degree. Master’s degrees have been found to have a large positive effect on promotion probabilities and also on the rate of salary increases (Spilerman & Lunde, 1991; Wise, 1975). Judge et al. (1995) found managers with bachelor’s degrees earned substantially less than managers with master’s degrees. Degrees above masters have also been found to add significantly to future earnings (James and Alsalam, 1993). This suggests that career attainment will be positively related to number of years of schooling. Our first three hypotheses explore the expected positive relationship between education and career attainment.

Hypothesis 1: Career attainment will be positively related to years of education.

Hypothesis 2: Career attainment will be positively related to possession of a bachelor’s degree.

Hypothesis 3: Career attainment will be positively related to possession of a master’s degree.

Quality of Education

There has been very little empirical research on educational quality. The quality of the institution attended is often theorized to affect career attainment by increasing the student’s human capital. Useem
and Karabel (1986) identify three ways in which an educational institution may increase an individual’s human capital. The three categories are knowledge acquired, personal and network ties, and prestige. A high quality institution should increase a student’s knowledge, and it may also provide the student with personal and network ties depending on the prestige of the university (Kanter, 1977).

There are many explanations offered as to why quality of educational institution is positively related to career success. High quality institutions may be more likely to admit high quality students and may teach them more than lower quality institutions (Useem & Karabel, 1986; Wise, 1975). Quality of education is often thought to be a “signal” which managers use when making hiring and promotion decisions (Addison & Siebert, 1979; Rosenbaum, 1989; Spence, 1973; Spilerman, 1986). Judge et al. (1995) found that graduating from an Ivy League school increased managers’ salaries. Studies of corporate leaders have shown that a large proportion of these leaders come from a few top ranked schools (Swinyard, Floyd & Bond, 1980), and rate of promotion and salary have been found to be positively related to selectivity of college attended (Ehrenberg, 1989; Judge et al., 1995; Wise, 1975). Conversely, James and Alsalam (1993) did not find a relationship between college selectivity and returns to education in a sample of 1,321 males from the National Longitudinal Study.

Our next two hypotheses explore the impact of college selectivity on career attainment.

Hypothesis 4: Career attainment will be positively related to the selectivity of college attended.

Hypothesis 5: Career attainment will be positively related to attendance at a top 20 university.

Subject of Education

The college majors most often associated with greater career attainment are engineering and business (a graduate degree in law also has been found to have a positive association with career attainment) (Swinyard et al., 1980; Useem & Karabel, 1986). In a study of 4,617 exempt employees
hired in one firm between 1976 and 1986, an engineering major accounted for 22% of the pay gap between men and women while a business major did not explain the pay gap (Gerhart, 1990). In a study on returns to education, engineering and business majors received the highest returns—30 to 40 percent higher than education majors (James & Alsalam, 1993). Spilerman and Lunde (1991) found engineering major to be positively associated with promotion rate.

Hypothesis 6: Career attainment will be positively related to majoring in engineering and business.

Timing of Degree

When in their careers employees obtain their degrees may influence the value of their degree. The impact of the timing of a degree on managerial career attainment has not been studied. However, universities and organizations have consistently developed plans to help employees return to school while working. These students are usually required to take courses on weekends or in the evening. Organizations encourage this and many pay for the degrees. These degrees are seen as investments employees make in their human capital and also as an indication that these employees are acquiring skills specific to the organization. We would expect employees to be rewarded for completing degrees while working, and we therefore propose the following exploratory hypothesis.

Hypothesis 7: Career attainment will be positively related to completion of a degree after entering a firm.

As stated earlier, education may be more important to career attainment recently than it has been in the past. However, there is not enough information about this to predict a relationship. The study will explore if the impact of education on career attainment has changed over time.

METHODS
Data Site

The research site is a large US based international company with personnel widely dispersed across the US. It is in the service industry and employs over 200,000 people. The firm utilizes an internal labor market. All employees enter the firm at low levels and are promoted from within. The firm has a low turnover rate of less than 4%. The company's organizational structure has the shape of a pyramid with a reasonably wide base so that most people cannot be promoted.

Sample

Two cohorts will be studied. By studying cohorts we are able to assume that all other conditions facing the employees were the same. In 1972, 540 managers entered the firm in 1972 and in 1982, 968 managers entered the firm. These two cohorts will comprise the sample. By choosing the cohort that entered in 1982, we ensured that a sufficient time span would have passed to detect variance in career attainment. The addition of the 1972 cohort allowed us to observe if formal education had a different effect in the previous decade. Information on the managers was obtained from the firm's computerized record system. The information covers the complete work history within the firm of each individual. The demographics of the sample are as follows: 10% of the managers are female, 83% are white, 10.5% African-American, 4.4% Hispanic, 1.6% Asian-American, and .5% are American Indians.

VARIABLES

Dependent Variable

Career Attainment Level. Career attainment is defined as the highest managerial level an employee had reached in 1993. There are 10 organizational levels in the organization. Level 10 is the CEO. Levels 4-10 are managerial levels. There were 27,141 managers in the firm in 1993. Levels 4 and 5 are considered lower level managers and there are 24,866 managers (91.63% of all managers) in these two levels. These are the supervisors in the firm. Level 6 are middle level managers. These are the
departmental managers in the firm. There are 1,592 (5.87% of all managers) middle level managers in
the firm. Levels 7-9 are the top level managers in the firm and there are 683 (2.5% of all managers) in
this category. These encompass regional managers and vice-presidents of the corporation.

Independent Variables

Quantity of Education was measured using three variables that corresponded to Hypotheses 1 through 3 respectively. The first variable indicated the number of years of education beyond high school each manager had. The assignment followed in defining education is a fairly standard one (Spilerman & Lunde, 1991): A value of zero indicated a high school education or less, associate's degree was given the value two, bachelor's degree was assigned four and so on. A second dummy variable was used with a value of one indicating that the manager had a bachelor's degree. And, a third dummy variable was used with a value of one to indicate that a manager had a master's degree.

Quality of Education was measured using two variables that corresponded to Hypotheses 4 and 5 respectively. One variable was the selectivity of the college as reported in “ARCO’s The Right College”. The ARCO rating is based on average SAT scores of entering freshmen, relative secondary school class ranking of entering freshmen, and percentage of applicants who are offered admission. Each university receives a rating from 1 to 6, with six being most competitive. The rating of the university from which the executive's highest degree was granted was used. A second variable also was used to indicate whether or not the employee had attended one of the top 20 ranked schools in the United States. The list of these schools was compiled from past studies (Coleman, 1973, Peterson, 1992; Pierson, 1969, Useem & Karabel, 1986).

Two dichotomous variables were used to explore the role of college major on career attainment. A value of one indicated if the employee had a degree in engineering or business. Dichotomous variables
were also used to illustrate the obtainment of a degree after entering a firm. A value of one indicated the employee had obtained a bachelor’s degree after entering the firm and if they had obtained a master’s degree after entering the firm.

Control Variables

Entering age. Age has been reported to be both positively and negatively related to career attainment. Studies have found that as managers become older they are less likely to be promoted to top managerial ranks (Rosenbaum, 1989). Other studies have found age indicates human capital investments, and therefore older people will be seen as having more experience and will be promoted to top managerial positions (Rosenbaum, 1984). Entering age will be used as a control variable in this study to control for the impact of age on career attainment.

Entering level. Although most employees in this firm enter at a low level, it was important to control for their entering level.

Gender. Women have been found to have more education than men in the same jobs but still make less money than the men (Gerhart & Cheikh, 1991). Gender and race may be used by managers as a signal when making promotion decisions (Martin, Harrison & Dinitto, 1983). It has been found that male executives prefer to promote other men to leadership positions because they prefer peers who are similar to themselves (Hellwig, 1985). Empirical evidence reveals low representation of women in management (Hartmann, 1987), and within management, representation of women is far lower in the upper echelons of organizations than in lower management (Shenhav, 1992). Selective advancement patterns based on gender have been demonstrated in the literature (Baron, Davis-Blake & Bielby, 1986), and previous research has suggested that organizational promotion policies favor men over women (Carlson & Swartz, 1988; Cox & Nkomo, 1991; Judge et al., 1995; Kanter, 1977). This leads
to women and minority members having lower career attainment than their cohorts. Gender is a
dummy variable with a value of one assigned to female.

Race. Returns to education for Blacks have been found in the past to be greater than the returns for
Whites (Welch, 1973). Race also is often highly correlated with organizational positions with empirical
evidence revealing low representation of Blacks in management (Ibarra, 1992; Killingsworth &
Reimers, 1983). Representation of Blacks tends to be far lower in the upper echelons of organizations
than in lower management (Shenhav, 1992). Black managers have been found to experience restricted
advancement opportunities (Judge et al., 1995; Nixon, 1985). Research has found that racial minorities
are not given the same opportunities in organizations as other employees (Ilgen & Youtz, 1986).
Studies have shown that minority managers received lower promotability assessments and performance
ratings from their supervisors than White managers (Cox & Nkomo, 1991; Greenhaus, Parasuraman &
Wormley, 1990). A dummy variable for race was included in the model. It has a value of zero assigned
to White and one is assigned to Black, Native American, Asian American or Hispanic.

Analysis

Correlation coefficients between all variables were computed. To examine multivariate effects,
hierarchical multiple regression analysis was conducted. The control variables were entered first as a
group. The independent variables were then entered as a group (Cohen & Cohen, 1983). Career
attainment was regressed on the control variables and the hypothesized predictor variables.

RESULTS

Bivariate correlations, means and standard deviations for all variables are presented in Table 1.

| Insert Table 1 about here | 11 |
There were four correlations which required examination: years of education and having a bachelor's degree (.83); years of education and having a master's degree (.38); obtaining a bachelor's degree after entering the firm and having a bachelor's degree (.74); and obtaining a master's degree after entering the firm and having a master's degree (.81). To prevent problems due to these high correlations two models were used in the regression analysis. Years of education was used along with obtaining bachelor's and master's degrees after entering the firm in model 1. Model 2 omitted those three variables and included having a bachelor's and master's degree. Since, it was important to examine the relative contributions of these variables, hierarchical regression analysis was performed, and the results are shown in Table 2.

In both models, the overall regression equation was significant. Model 1 accounted for 23% of the variance in managers' career attainment for the 1972 entrants and 13% of the variance for the 1982 entrants. Model 2 accounted for 22% of the variance in managers' career attainment for the 1972 entrants and 14% of the variance for the 1982 entrants.

For the 1972 entrants hypothesis 1 was not supported. Years of education was not related to the career attainment of the managers. Years of education was positively related to career attainment for the 1982 entrants, supporting hypothesis 1 for this group of managers. The results of having a bachelor's degree are similar to years of education. Hypothesis 2 was not supported for the 1972 entrants while it was supported for the 1982 entrants. Having a bachelor's degree was not related to career attainment for the 1972 entrants but it was positively related to career attainment for the 1982
entrants. Having a master’s degree was positively related to career attainment for all managers supporting hypothesis 3.

Hypothesis 4 received only partial support. Career attainment was positively related to the selectivity of college attended for the 1972 entrants in models 1 and 2 while it was not related to the career attainment of the 1982 entrants. Hypothesis 5 was not supported. Attending a top 20 university was not related to career attainment for any of the managers.

Career attainment was positively associated with majoring in business for all managers in both models supporting hypothesis 6. Majoring in engineering was only related to career attainment in model 2 for the 1972 entrants. Obtaining a master’s degree or bachelor’s degree after entering the firm was not related to career attainment for any of the managers. Hypothesis 7 was not supported.

The results for the control variables were as expected. Entering level was positively related to career attainment. Entering age was negatively related to career attainment in models 1 and 2 in 1972, but were positively related to career attainment in models 1 and 2 in 1982. Gender was not related to career attainment while race was negatively related to career attainment for all managers in both models.

DISCUSSION

The results for quantity of education suggested that education is becoming more important than it was in the past. The findings of hypothesis 1 show that while it was not important for employees entering in 1972, by 1982 it had become important for employees to advance into managerial positions. The results for hypothesis 2 again provide support for the hypothesis that education is becoming more important for career attainment. While having a bachelor’s degree was not important for the 1972 entrants, by 1982 it was important to the career attainment of these managers. The impact of having a master’s degree does not appear to have changed over time. Having a master’s degree was important
for career attainment for both groups of managers. To more fully explore the impact of quantity of education on managerial career attainment future research needs to explore the effects of other variables such as an employee’s GPA in college, an employee’s rank in graduate school, various industries, and further evidence from different companies supporting the increasing importance of education.

The results for hypothesis 4 and 5, regarding quality of education are surprising. While selectivity of college was important for the 1972 entrants, no evidence of this effect was found for the 1982 entrants, indicating that selectivity of school may no longer be important to career attainment. The non support of hypothesis 5 also supports this idea. Attending one of the top 20 schools in the country was not related to career attainment for any of the managers. Although there has not been much empirical research on the quality of education and the results did not support a positive relationship between selectivity of college and career attainment in this organization, future research is warranted. This firm is in the service industry, and people work their way up the ranks. This effect may change with industry. Also, selectivity of college may become more important in firms that are not internal labor markets. In addition, the methods of measuring quality of education have always been called into question. There are many lists of the top 20 schools in the country and only rarely do these lists completely agree.

Results regarding the subject of education indicate a need for further research in this area. The strength of the positive relationship between managerial career attainment and majoring in business is not surprising given the assumed importance of majoring in business on managerial career attainment. The lack of support regarding engineering majors may require further study. The importance of major may change by firm and industry.
The results regarding the timing of degree were not as expected. Obtaining a degree after entering a firm was not related to career attainment. Universities have always advocated the benefits of obtaining a degree to students who may already be in the work force. These results must be investigated further. Today many firms will only reimburse students for degrees that are related to their job. It may be that those working students who are pursuing a degree related to their job may experience a positive effect for the degree while others pursuing more general degrees do not. Also, it may be that a person has to change companies in order to reap the career benefits of obtaining additional education. There may be other reasons for the lack of support for this hypothesis, and we recommend that this issue be explored further.

This study also had some interesting findings with regards to the control variables. As would be expected, entering level was positively related to career attainment. Entering age was negatively related to career attainment only for the 1972 entrants. This may be interpreted as showing that the company has stopped negative discrimination based on age. However, it could also just be a result of the 1972 entrants being older than the 1982 entrants. This firm should explore this finding in more detail. The finding that gender was not related to managerial career attainment in this firm was surprising, because only a small percentage of managers in this firm are women. Since being a minority employee does seem to be negatively related to career attainment in this firm, the firm may need to explore their treatment of minorities.

The results of this study indicate the need for other firms to investigate the impact of education on career attainment. The firm is extremely large, employing over 200,000 people, and there are only a small number of firms of this size in the US. However, the firm has many stated similarities to other self-labeled internal labor-market firms. Studies of other firms could explore the generalizability of
these results across firms. A meta-analytical study on the relationship between education and career attainment would perhaps help to elucidate this issue.

The data obtained for this study is unique as the use of occupational records allows a more detailed analysis of an actual internal labor market organization. Another unique opportunity presented by this data was the ability to include women and minorities in the data base. The majority of career studies and theories have focused on the careers of White men, and the small number of women and minorities in management has often precluded their inclusion in studies of career attainment (Brown, 1990; Forbes & Piercy, 1991; Rosenbaum, 1984). Also, this study allowed for a longitudinal look at the changing role of education in relationship to career attainment. In summary, the results of this study may be considered an important step in exploring the impact of formal education on managerial career attainment.
REFERENCES


TABLE 1
Means, Standard Deviations, and Correlations

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>s.d.</th>
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<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
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<td>1. Entering Age</td>
<td>23.47</td>
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<tr>
<td>2. Entering Level</td>
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<td>.40**</td>
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<td>3. Gender *</td>
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<td>.12**</td>
<td>.08*</td>
<td></td>
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<td>4. Race *</td>
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<td>-.05</td>
<td>.01</td>
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<td>5. Years of Education</td>
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<td>1.67</td>
<td>-.07**</td>
<td>.40**</td>
<td>-.05</td>
<td>-.03</td>
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<td>6. Bachelor's Degree *</td>
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<td>-.03</td>
<td>-.09*</td>
<td>-.02</td>
<td>-.02</td>
<td>.83**</td>
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<td></td>
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<td>7. Master's Degree *</td>
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<td>.09**</td>
<td>.10**</td>
<td>.01</td>
<td>-.02</td>
<td>.38**</td>
<td>.22**</td>
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<td>8. Bachelor's After Enter</td>
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<td>-.23**</td>
<td>-.09*</td>
<td>-.01</td>
<td>-.19**</td>
<td>.74**</td>
<td>.03</td>
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<td>.32**</td>
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<td>.01*</td>
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<td>-.04</td>
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<td>-.08*</td>
<td>-.04</td>
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<td>.20**</td>
<td>.14**</td>
<td>-.07*</td>
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<td>12. Selectivity of School</td>
<td>.94</td>
<td>1.39</td>
<td>.09*</td>
<td>.15**</td>
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<td>-.05</td>
<td>.15**</td>
<td>.02</td>
<td>.15**</td>
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<td>.09*</td>
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<td>.02</td>
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<td>13. Top 20 School *</td>
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<td>-.03</td>
<td>-.04</td>
<td>.13**</td>
<td>.14**</td>
<td>.06*</td>
<td>.15**</td>
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<td>.01</td>
<td>.03</td>
<td>.18**</td>
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* p<.05, ** p<.01

1 Means for these dummy variables indicate the proportion of observations that are coded 1.
### TABLE 2

Results of Regression Analysis

<table>
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<tr>
<th>VARIABLE</th>
<th>1972 Beta</th>
<th>1972 R^2</th>
<th>1982 Beta</th>
<th>1982 R^2</th>
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<td><strong>CONTROL VARIABLES</strong></td>
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<td></td>
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<tr>
<td>Entering Level</td>
<td>.21**</td>
<td>.22**</td>
<td>.29**</td>
<td>.31**</td>
</tr>
<tr>
<td>Entering Age</td>
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