

TABLE 4.—NUMBER OF RETIREES REPORTING OTHER ANNUAL (NONWAGE) INCOME, AVERAGE OTHER ANNUAL (NONWAGE) INCOME, AND STANDARD DEVIATION OF AVERAGE BY LEVEL OF SCHOOL COMPLETED, AGE, AND RACE, 1965

Level of school completed and age	White			Nonwhite		
	Number	Mean	Standard deviation	Number	Mean	Standard deviation
Less than 8 yr.:						
35 to 44 yr.	930	116	501	176	197	513
45 to 54 yr.	1,811	163	670	218	125	396
55 to 64 yr.	2,244	333	962	123	278	765
65 yr. or more.....	1,194	1,066	1,942	119	606	947
9 to 11 yr.:						
35 to 44 yr.	1,652	115	538	204	125	412
45 to 54 yr.	3,012	168	607	228	127	426
55 to 64 yr.	2,132	356	1,191	84	134	378
65 yr. or more.....	773	1,291	3,072	31	650	657
12 yr.:						
35 to 44.....	7,983	223	8,964	377	114	385
45 to 54 yr.	12,454	256	8,089	409	153	568
55 to 64 yr.	2,554	378	1,344	92	179	472
65 yr. or more.....	593	1,414	2,200	19	716	892
13 to 15 yr.:						
35 to 44.....	3,251	194	749	96	248	636
45 to 54 yr.	6,893	266	891	180	201	649
55 to 64 yr.	1,880	507	1,263	51	136	668
65 yr. or more.....	717	2,227	5,226	14	987	1,122
16 yr.:						
35 to 44 yr.	487	354	859	9	92	202
45 to 54 yr.	1,716	632	1,897	36	121	404
55 to 64 yr.	883	1,092	2,208	18	326	792
65 yr. or more.....	529	3,307	5,532	6	827	1,462
17 yr. or more:						
35 to 44 yr.	352	361	938	8	100	162
45 to 54 yr.	1,939	573	1,353	36	269	577
55 to 64 yr.	1,266	1,335	2,763	11	1,475	2,832
65 yr. or more.....	576	3,626	5,056	5	3,138	4,968

Source: Office of the Assistant Secretary of Defense (Manpower), Compensation and Career Development Directorate

TABLE 5.—NUMBER OF RETIREES REPORTING MONTHLY EXPENDITURE AT COMMISSARY, AVERAGE MONTHLY EXPENDITURE AT COMMISSARY, AND STANDARD DEVIATION OF AVERAGE BY LEVEL OF SCHOOL COMPLETED, AGE, AND RACE, 1965

Level of school completed and age	White			Nonwhite		
	Number	Mean	Standard deviation	Number	Mean	Standard deviation
Less than 8 yr.:						
35 to 44 yr.	1,177	53	40	228	48	37
45 to 54 yr.	1,927	45	38	245	45	36
55 to 64 yr.	2,292	36	35	136	42	34
65 yr. or more.....	1,242	26	31	126	38	31
9 to 11 yr.:						
35 to 44 yr.	2,071	55	40	279	56	35
45 to 54 yr.	3,221	48	38	258	48	35
55 to 64 yr.	2,178	41	36	99	48	33
65 yr. or more.....	808	35	33	34	42	30
12 yr.:						
35 to 44 yr.	10,947	60	39	601	56	35
45 to 54 yr.	13,833	55	38	472	50	35
55 to 64 yr.	2,679	46	36	105	43	35
65 yr. or more.....	616	36	34	21	38	27
13 to 15 yr.:						
35 to 44 yr.	4,362	66	37	147	60	36
45 to 54 yr.	7,736	62	37	202	59	35
55 to 64 yr.	1,972	51	36	53	48	35
65 yr. or more.....	734	36	34	15	40	29
16 yr.:						
35 to 44 yr.	669	69	37	13	73	30
45 to 54 yr.	1,996	61	37	41	54	23
55 to 64 yr.	956	47	37	19	57	23
65 yr. or more.....	541	33	33	6	31	34
17 yr. or more:						
35 to 44 yr.	519	67	38	13	62	35
45 to 54 yr.	2,252	60	38	43	65	35
55 to 64 yr.	1,357	46	37	13	44	38
65 yr. or more.....	587	31	33	5	18	17

Source: Office of the Assistant Secretary of Defense (Manpower), Compensation and Career Development Directorate

APPENDIX C

MEAN WEEKS WORKED IN 1965 OF WHITE RETIREES BY LEVEL OF SCHOOL COMPLETED AND AGE

Age in 1965	Years of school completed					
	Less than 8	9 to 11 yr.	12 yr.	13 to 15 yr.	16 yr.	17 or more yr.
35 to 44 yr.-----	42.8	44.9	45.2	45.8	40.5	42.3
45 to 54 yr.-----	40.0	42.9	43.9	44.6	42.5	43.5
55 to 64 yr.-----	31.4	33.2	34.9	34.1	31.9	36.5
65 or more yr.-----	8.1	9.5	12.2	12.8	12.2	9.3

Source: Office of the Assistant Secretary of Defense (Manpower), Compensation and Career Development Directorate.

APPENDIX D

COEFFICIENTS AND STANDARD ERRORS OF DUMMY VARIABLES USED IN THE ANALYSIS

	Dependent variable							
	L ₁	L ₁	L ₂	L ₂	L ₁ /1-L ₁	L ₁ /1-L ₁	L ₂ /1-L ₂	L ₂ /1-L ₂
Age dummies:								
45 to 54 yr.-----	0.0033	(.0446)	-----	-0.0145	-----	*-0.6368	*-0.2936	†-0.8393
				(.0675)		(.2383)	(.1652)	(.2350)
55 to 64 yr.-----	*-0.0639	-.0506	-----	-.0637	†-0.1555	†-2.066	†-.9983	†-2.728
	(.0330)	(.1170)		(.1772)	(.1876)	(.6251)	(.3199)	(.6166)
65 yr. or more.-----	*-0.4242	-.3865	-----	-.3495	-----	†-4.472	-----	†-4.392
	(.1190)	(.2421)		(.3664)		(1.293)		(1.275)
Education dummies:								
9 to 11 yr.-----	-----	.0066	-----	-.0039	.2775	.03178	-----	*-.0493
		(.0376)		(.0569)	(.2339)	(.2006)		(.1979)
12 yr.-----	.0227	.0399	†0.0812	.0310	*.6967	†.02005	†.4498	*.0711
	(.0133)	(.0579)	(.0217)	(.0874)	(.2998)	(.3092)	(.1288)	(.3050)
13 to 15 yr.-----	-----	.0313	†.0599	-.0198	†1.210	†-.1700	*.3245	†-.5387
		(.1045)	(.0241)	(.1582)	(.4607)	(.5583)	(.1479)	(.5507)
16 yr.-----	*-.0793	-.0327	-----	-.1196	1.159	-1.156	-----	-1.469
	(.0312)	(.1703)		(.2577)	(.6963)	(.9094)		(.8970)
17 yr. or more.-----	*-.0930	-.0399	-----	-.1708	†.8244	-1.195	-.4491	-1.542
	(.0369)	(.1723)		(.2608)	(.8664)	(.9202)	(.3114)	(.9076)

†Significant at the 0.01 level (2-tail test).

*Significant at the 0.05 level (2-tail test).

THE EFFECT OF NONVESTED PENSIONS ON MOBILITY: A STUDY OF THE HIGHER EDUCATION INDUSTRY*

BY MELVIN LURIE**

Examining the higher education industry, this study tests the view that nonwage benefits such as nonvested pensions have resulted in the immobilization of labor. Separation experiences of institutions having vested and nonvested plans are compared, the data showing that, in the aggregate, faculty in institutions of higher education do not seem to allow their mobility decisions to be influenced by losses in pension plan equities.

In the past two decades, the American labor force has taken an increasing share of its income in the form of nonwage benefits. The impact of this change on the long-term voluntary quit rate has been regarded by many economists¹ as detrimental to the economy. Some of the reasons for this view have been summarized by A. M. Ross in this way:

"It is said that seniority systems, health and welfare plans, and negotiated pensions have chained the worker to his job; that the adaptability and flexibility of the labor force are being sacrificed; and that a new industrial feudalism is being built. The crux of the problem, it is held, is that the worker can no longer afford to quit his job."²

Ross, however, after studying the movement of quit rates in manufacturing industries from 1910 to 1956 dissented from the majority view and concluded that "little evidence can be found for the proposition that labor resources have become immobilized."³

The quit rate series computed by Ross showed that the two major causes of quit rate variation were the business cycle and the dislocations of war. Since Ross' interest was limited to the trend of quit rates, he removed the effect of the business cycle from his analysis by considering only years in which the rate of unemployment was between 3 and 6 percent of the civilian labor force. Furthermore, he omitted from his analysis the war periods, 1917-20 and 1942-47. With the remaining years, he estimated that the monthly quit rate in manufacturing had decreased from an average of 6.2 percent for the years 1910-12, 1920, and 1923, to an average of 1.5 percent for the years 1949-50 and 1954-56.

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¹ For example, see Ewan Clague, "Long Term Trends in Quit Rates," *Employment and Earnings*, December 1956, vol. 3, p. vii.

² A. M. Ross, "Do We Have a New Industrial Feudalism," *American Economic Review*, vol. 48, December 1958, p. 903.

³ *Ibid.*, p. 918.

If the data had shown that a sharp decline in quit rates had occurred only in the years following World War II, one could argue that non-wage benefits were indeed chaining the worker to his job. But Ross shows that the sharpest decline in quit rates occurred during the middle 1920's, when non-wage benefits were a small fraction of total benefits. According to Ross, the decline in quit rates in the 1920's was due to a sharp drop in immigration, to an increase in the skill composition of the labor force, and to the adoption by management of the human relations approach to personnel administration. The continued decline in quit rates from the 1920's through the 1950's is explained by Ross primarily in terms of the spread of unionism, the aging of the labor force, and the greater stability of manufacturing employment.

Ross' conclusions rest largely on a period comparison of quit rates in American manufacturing industries over four decades. This series was pieced together from three sources and, as Ross readily admits, "there are grave difficulties in using the available time series for comparative purposes."⁴ Since Ross' conclusions run counter to my expectations and apparently to those of most economists, it seemed appropriate to evaluate the same question that Ross has raised using a different method and different data. Instead of the hypothesis that all non-wage benefits reduce mobility, I restricted my hypothesis to the one non-wage benefit that is considered the major deterrent to mobility—the pension system; instead of testing by time series, I tested by cross-section analysis; and instead of studying all manufacturing industries, this study is restricted to one industry and that industry happens to be in nonmanufacturing.

The crucial factor determining cost of movement under alternative pension plans is the extent to which the plan is vested in the employee. There are three predominant kinds of vesting arrangements. The first is a fully vested plan with immediate vesting—this plan guarantees the employee immediate equity in his pension, based on all of the employer's contributions in the employee's behalf, should his employment be terminated, voluntarily or involuntarily, before he reaches retirement age. The second is a nonvested plan—this plan allows the employee to withdraw only his contribution to the pension system (in some instances without interest) if his employment is terminated before he reaches retirement age.⁵ These plans represent the extremes in terms of their cost effects on an employee's propensity to move. A third type of pension plan with an intermediate cost effect is a deferred vesting plan; such plans become vested after an employee meets specified prerequisites, such as a minimum length of service with the firm or a minimum age or both.

To do the kind of industry study of employee mobility described above, one needs an industry: (1) In which there are many firms having pension systems; (2) for which information is available concerning the extent to which these pensions are vested; and (3) in which there is almost an equal distribution of firms with fully vested and nonvested plans. In a study of 300 selected pension plans in American industry in 1958, Koladrubetz found that, although vesting was provided in 174 plans, only one of these plans provided for immediate,

⁴ *Ibid.*

⁵ If the plan is noncontributory, then the employee receives nothing upon termination of his employment before retirement age is reached.

full vesting.⁶ The majority of "vested" plans (154) provided for deferred vesting, with 75 percent of the plans specifying a prerequisite of either 10 or 15 years of service. On the basis of this study I concluded that one was unlikely to find a manufacturing industry with a large enough number of immediate, fully vested plans to allow a comparison to be made between mobility under contrasting vesting schemes. Among nonmanufacturing industries, only the higher education industry was found to have the kind of vesting distribution of pension systems that would allow an interfirm cross-section analysis to be made.

DATA AND METHODOLOGY

To make a cross-section analysis of the mobility (herein defined as voluntary separations) of employees in firms with vested as contrasted to employees in firms with nonvested pension plans in the higher education industry, one needs (1) data to classify pension plans in American colleges and universities according to the extent of vesting; (2) data on the voluntary separation rates of faculty, by institution; and (3) data to standardize the sample—that is, to hold "constant" the impact on voluntary separation rates of factors other than the extent of vesting.

Greenough and King's study of pension plans in American colleges and universities furnishes a description of the vesting provisions in most institutions of higher education (hereafter, IHE).⁷ The voluntary separation rates of faculty, by institution, have, to my knowledge, never been collected; therefore, these data were secured by mailed questionnaires. Data to standardize the sample were drawn from higher education source books, of which the U.S. Office of Education's annual Education Directory was the most useful. Section 1 of the appendix contains a detailed discussion of the collection and use of the data.

To standardize the sample, a deflation procedure was used; that is, I divided the voluntary separation rates of one academic rank of faculty by the rates of another rank of faculty in the same institution. If, in a given institution, a factor (other than the extent of vesting) affects the average separation rate of faculty in the four academic ranks in the same direction and in approximately the same amount, then the deflation process provides a method of minimizing the effect of this factor on relative (interfirm) separation rates. Section 2 of the appendix is devoted to a more complete treatment of the methodology used.⁸

THE EFFECT OF NONVESTED PENSION PLANS ON FACULTY SEPARATION RATES

What predictions can be made about the voluntary separations of faculty under vested and nonvested pension plans? Voluntary separation under a fully vested pension plan is almost without financial

⁶ W. W. Koladrubetz, "Vesting Provisions in Pension Plans," *Monthly Labor Review*, vol. 82, July 1959, pp. 745-746.

⁷ W. C. Greenough and F. P. King, *Retirement and Insurance Plans in American Colleges*, New York, 1959.

⁸ For a similar use of the deflation procedure, see M. Lurie, "The Effect of Unionization on Wages in the Transit Industry," *Journal of Political Economy*, vol. 69, December 1961, p. 562.

cost; for the faculty member, if he moves, receives during his retirement years a sum representing the contributions of his employer as well as his own contributions for the years of covered service (plus accumulated interest). The nonvested plan, however, imposes a heavy financial burden on the faculty member who leaves an institution before retirement age.

Estimates of the financial cost of movement under a nonvested system are given in table 1. It is clear from these data that the financial cost of leaving an institution with a nonvested plan increases at a decreasing rate with years of covered service; and that, after 15 years of service, for example, the cost of moving to another position becomes large enough (\$4,997 lump sum or \$333 annually to retirement age) to cause a senior faculty member to deliberate carefully before departure and, in some cases, to decide against leaving.⁹

TABLE 1.—FINANCIAL COST OF MOVEMENT UNDER A NONVESTED PENSION SYSTEM¹

Age individual leaves nonvested plan	Net additional sum needed by individual to make up for lost pension benefit	Same as column (2) except on annual basis to age 65
(1)	(2)	(3)
35.....	\$561	\$28
40.....	2,020	116
45.....	4,997	333
50.....	9,458	781
55.....	16,742	1,925
60.....	26,881	5,725

¹ Assume salary scale as follows:

30 to 34.....	\$5,000
35 to 39.....	7,500
40 to 49.....	10,000
50 to 65.....	12,000

Notes: The net additional sum needed by a faculty member to buy the same retirement benefits that he would have received had he not moved is given in columns (2) and (3). Column (2) is the lump-sum figure and column (3) is the annual amount he would have to pay until retirement age is reached (assumed to be 65). The costs of movement under a nonvested system have been determined in the following manner: first, I assumed an age of entry into the pension system (age 30), a salary scale, a contribution rate (5 percent), and an interest rate (3 percent); second, I computed the total pension income lost; third, the total pension income lost was converted to the single sum needed to replace the lost benefit; and fourth, I subtracted from the lump-sum cost, the amount of the individual's contribution returned on leaving the pension system (computed at 3 percent compound interest).

The question to be considered here, however, is not whether it is more costly to move under a nonvested pension plan (for it clearly is), but whether faculty consider this cost a major obstacle to their mobility. If they do, in fact, act like *Homo Economicus*, then, other things equal, voluntary separation rates will be lower in IHE with nonvested plans as compared to separation rates in IHE with vested plans. Of course, the crucial problem in this study and all cross-section studies is whether the comparison is made with "other things equal." As indicated earlier, the methodology of correcting for the effects of other factors is discussed in the appendix, section 2.

The age of faculty is one of the factors discussed in the appendix as having an impact on separation rates; for it is clear that mobility

⁹ Few components of faculty income other than pensions have the distinctive feature of increasing in value with increased employment. Life insurance, hospitalization, surgical, and major medical plans can be bought by the mobile professor at most IHE at about the same price. The rewards and privileges forthcoming to senior staff for long-time loyalty and service, although often not quantifiable, undoubtedly reduce the mobility of professors. But this kind of immobility is likely to be distributed randomly among all IHE: or, at least, we do not expect that general academic immobility will be associated with the fact that an institution has a vested or nonvested pension system.

decreases with advancing age. The age distribution of faculty, by institution, was not available to me. Hence, academic rank was used to approximate the value of this variable. Academic rank was also used as a surrogate for the length of service of faculty. If age and seniority do vary systematically with rank, the deflation process will eliminate their effects on relative separation rates. However, we would like to eliminate only the effect of age—for, only by varying the length of covered service can we bring to the surface the differential effects on voluntary separation rates of vested and nonvested pension plans.

A one step computation was used that allowed the length of service to vary, and at the same time allowed for the correction of the effects of other factors by the deflation of the average separation rate of one academic rank of faculty by the rate in another rank in the same institution. To accomplish both ends, three ratios of average separation rates for each IHE were computed: full professor/associate professor, full professor/assistant professor, and full professor/instructor.¹⁰ Since the denominators represent fewer years of covered service than the numerators, the values of each of these ratios should be less than unity; and in each of the 437 IHE studied, the ratios were less than one. Furthermore, the ratios were arranged with decreasing covered service in the denominators; therefore, the values of the ratios should decrease and, indeed, they did.

The test of the hypothesis that nonvested pension systems reduce the voluntary separation rates of university professors may now be made by comparing, for given lengths of service, voluntary separation rates in vested and nonvested IHE. If the vested ratios are larger than the nonvested, the hypothesis is supported; if smaller, the hypothesis is rejected.

TABLE 2.—VOLUNTARY SEPARATION RATES, ACCORDING TO LENGTH OF COVERED SERVICE, IN VESTED AND NONVESTED INSTITUTIONS OF HIGHER EDUCATION, 1959

Relative covered service ¹	Vested	Nonvested	Ratio of vested to nonvested
	(1)	(2)	(3)
Professor or associate professor.....	0.311	0.526	0.591
Professor or assistant professor.....	.272	.273	.996
Professor or instructor.....	.135	.156	.865

¹ As measured by academic rank.

As is shown in table 2, the ratios of separation rates in nonvested IHE exceed those in vested IHE in each of the three measures of covered service.¹¹ Thus, the hypothesis appears to be rejected, and it must be concluded that, for the higher education industry as a whole, nonvested pension systems do not hinder mobility. As indicated in the introductory section, this is the same conclusion reached by Ross after studying quit rates in American manufacturing industries.

¹⁰ The ratios involving instructor and assistant professor are probably less reliable than those involving associate professor. For, in the lower ranks, it is not always easy to distinguish between a voluntary and an involuntary separation. Say you are an assistant professor and you know that you will not receive tenure when this decision is made next year; therefore, you resign this year. This separation would probably be recorded as voluntary. Thus, there is some overstatement of voluntary separation rates at the lower ranks.

¹¹ The sample of IHE underlying table 2 consists of 339 colleges and 98 universities; i.e., all of the IHE that supplied separation rates except 88 IHE with deferred vesting or vested pension systems adopted after 1951.

Another way of looking at the data is in terms of column (3) of table 2, which is computed by dividing the vested separation rates in column (1) by the nonvested rates in column (2). Column (3), "faculty sensitivity ratio," measures faculty sensitivity to losses in retirement equity resulting from voluntary departure under a nonvested pension system. If the faculty sensitivity ratio is less than one, as the three ratios are in table 2, then faculty do not consider equity losses in their retirement fund as an impediment to their mobility; a ratio exceeding one would indicate the converse. Subsequent tables present relative separation rates in terms of faculty sensitivity ratios.

SUBDIVISIONS OF SAMPLE

We now turn to subdivisions of this sample to see whether the hypothesis continues to be rejected. The subdivision method allows comparisons to be made between separation rates of more homogeneous classes of IHE. Some of these subclasses, however, contain a small number of observations. Therefore, there may be large sampling error present. The faculty sensitivity ratios for "colleges" and "universities" separately are presented in table 3.¹² These data show that there is a marked difference in the attitudes of college and university faculties in willingness to consider pension equities as a casual factor in their mobility decision. Although the sensitivity ratios of college faculties continue to be less than unity, indicating that voluntary separation rates in nonvested colleges exceed those in vested colleges, the ratios for university faculties are substantially greater than unity and, in addition, they are uniform for the three lengths of service considered. Thus, among faculty in "universities," the extent to which a pension plan is vested appears to be one of the factors considered when the decision is made as to whether or not to resign.

TABLE 3.—FACULTY SENSITIVITY RATIOS, ACCORDING TO LENGTH OF COVERED SERVICE, IN VESTED AND NON-VESTED COLLEGES AND UNIVERSITIES, 1959

Relative covered service	Colleges	Universities
Professor/associate professor.....	0.418	1.293
Professor/assistant professor.....	.884	1.226
Professor/instructor.....	.698	1.269

How can this differential behavior between "college" and "university" faculty be explained? We can only speculate. I suspect that colleges and universities attract faculties with different mobility sensitivities because of different product-mixes; i.e., colleges produce primarily higher education, while universities produce higher education and research. Monetary success in higher education depends to some extent on actual mobility or the threat to move; and this mobility depends in turn largely on the reputation acquired in research and publication as contrasted to teaching. The faculty member with substantial

¹² Same sample as in table 2.

investment in his research training knows in advance that his opportunities to further his research potential and to use it for advancement will be greater in a university than in a college. On the other hand, the faculty member without research potential will probably choose to be employed by a college for he knows that his market power will be low and mobility for him will not offer large rewards. One might argue then that the university faculty member, on the average, has a propensity for mobility and, if he finds himself in, or is clever enough to choose, an institution with a vested pension plan, he might very well take advantage of the chance to make a costless change; the college teacher, however, has little inclination to move and, therefore, will probably be indifferent to the extent to which his pension plan is vested. Even if the pension is vested, the college teacher may not take advantage of this feature.

TABLE 4.—FACULTY SENSITIVITY RATIOS, ACCORDING TO LENGTH OF COVERED SERVICE, IN COLLEGES AND UNIVERSITIES, BY TYPE OF CONTROL, 1959

Relative covered service	Colleges		Universities	
	Privately controlled	Publicly controlled	Privately controlled	Publicly controlled
Professor/associate professor.....	1.547	(1)	4.688	0.654
Professor/assistant professor.....	.986	0.010	1.975	1.648
Professor/instructor.....	.609	.002	2.279	1.014

¹ No voluntary separations at rank of associate professor among publicly controlled vested colleges.

Table 4 presents sensitivity ratios for colleges and universities subdivided by type of control. In the five situations where comparisons can be made, the sensitivity ratios in privately controlled IHE are substantially greater than those in publicly controlled IHE. There is, however, large sampling error in these estimates, for only a small fraction of publicly controlled IHE have vested pension plans. The university sample probably gives more accurate results because the percentage of vested universities that are publicly controlled and the percentage of nonvested universities that are privately controlled are somewhat larger than in the college sample.¹³ Also the universities have fewer factors affecting voluntary separation rates than the colleges.¹⁴ It appears from the data in table 4 that the mobility decision of faculty in privately controlled colleges and universities is more readily influenced by equity losses in pension systems than the mobility decision of faculty in publicly controlled colleges and universities.

¹³ Among colleges, 91 percent of those that are privately controlled have vested pension systems; among universities, 80 percent of those that are privately controlled have vested pension systems.

¹⁴ A much smaller percentage of universities are affiliated with church groups and very few universities have faculties predominantly female or Negro. In the sample of 98 universities, six are affiliated with religious groups (one Protestant and five Roman Catholic), thus the influence of religious control on separation rates cannot be large. The largest percentage of female faculty among universities is at the University of Hawaii where 35 percent of the total faculty are women. No information is available on the percentage of Negro faculty in universities but this figure is assumed to be small. It is probable, therefore, that neither sex nor the race composition of faculty in particular universities is large enough to affect relative separation rates.

TABLE 5.—FACULTY SENSITIVITY RATIOS, ACCORDING TO LENGTH OF COVERED SERVICE, IN PUBLICLY CONTROLLED UNIVERSITIES, BY TYPE OF CONTROL AND REGIONAL LOCATION, 1959

Relative covered service	Publicly controlled	
	South	Non-South
Professor/associate professor.....	0.185	0.514
Professor/assistant professor.....	.600	1.020
Professor/instructor.....	(¹)	.648

¹ No voluntary separations among instructors in vested southern universities.

The data can be further subdivided to pick up the attitudes of other subsections of faculty toward movement under nonvested pension systems. Continued subdivision, however, reduces the sample so that the results become less reliable. One more subdivision is, however, made in table 5 to find out whether faculty in southern universities are as mobile as faculty in nonsouthern universities.¹⁵ Type of institution and control of institution are held constant. The faculty sensitivity ratios seem to indicate that nonsouthern faculty are more aware of the financial costs of moving under nonvested systems than their southern colleagues.

The calculated choice of faculty may also explain differences in faculty sensitivities toward vesting that appear to be based on control of and regional location of IHE. Again, if a faculty member desires research opportunity and anticipates mobility, he may choose privately as opposed to publicly controlled IHE and may prefer being employed in nonsouthern rather than southern IHE. Thus, the faculty with the most effective market power are likely to be employed in vested universities that are privately controlled and located in the non-South; the faculty with the least market power are likely to be employed in nonvested colleges that are publicly controlled and located in the South.

Let us now turn to the data on faculty salaries. The USOE salary survey for 1959-60 supplied the average salary,¹⁶ by academic rank, for each IHE (over 1,400) that responded to their questionnaire. From these data, I took the salaries, by rank, for those IHE that also responded to my questionnaire.¹⁷ I weighted the salary in each rank by the number of faculty in the rank for each IHE, and, after classifying each institution as vested or nonvested, was able to compute a weighted vested and nonvested salary by rank for all IHE, and for colleges and universities separately.¹⁸

These data are presented in table 6. The absolute salary differentials between all vested and nonvested IHE are not large nor are the differentials in the same direction. Our interest, however, lies with the ratios of salaries; for, if the deflation process is to be effective in eliminating salary differentials as a factor explaining relative voluntary separation rates, these ratios must be similar in vested and nonvested IHE. The salary ratios for all IHE suggest that there is vol-

¹⁵ There were 17 southern universities, of which only one had a vested pension system; there were 45 nonsouthern universities, of which 12 had vested pension systems.

¹⁶ U.S. Office of Education, "Higher Education Planning and Management Data, 1959-60," Washington, D.C., 1961.

¹⁷ Among the colleges, 250, or 74 percent, of my sample were present in the USOE salary data; among the universities, 79, or 81 percent, of my sample were present.

¹⁸ Copies of the original salary runs supplied by W. Robert Bokelman of USOE made this computation possible.

untary movement from nonvested to vested IHE; thus, the relative voluntary separation ratios of table 2 understate the impact that vesting has on voluntary quits.

TABLE 6.—FACULTY SALARIES AND SALARY RATIOS BY RANK, EXTENT OF VESTING, AND TYPE OF INSTITUTION, 1959-60

	Average salaries					
	All IHE		Colleges		Universities	
	Vested	Nonvested	Vested	Nonvested	Vested	Nonvested
Professor.....	\$10,100	\$9,100	\$8,400	\$8,600	\$11,200	\$9,500
Associate professor.....	7,400	7,300	6,600	7,100	7,900	7,400
Assistant professor.....	6,200	6,300	5,800	6,300	6,500	6,200
Instructor.....	5,200	5,200	5,200	5,400	5,300	5,000
	Salary ratios					
	All IHE		Colleges		Universities	
	Vested	Nonvested	Vested	Nonvested	Vested	Nonvested
Professor/associate professor.....	1.37	1.25	1.27	1.21	1.42	1.28
Professor/assistant professor.....	1.64	1.45	1.45	1.37	1.72	1.53
Professor/instructor.....	1.94	1.75	1.62	1.59	2.11	1.90

Source: U.S. Office of Education, "Higher Education and Management Planning Data," 1959-60.

Much of the movement from one academic job to another probably takes place between "colleges" or between "universities." Therefore, a breakdown of average salaries and salary ratios, by rank and type of institution, is also presented. In table 6, the average salary in nonvested colleges is slightly higher (\$200 to \$500) for all ranks than that in vested colleges. But, for the universities, the average salary in vested universities is slightly higher (\$300 to \$500) than that in nonvested universities, except for the rank of full professor where the salary paid in vested universities is substantially higher (\$1,700) than that paid in nonvested universities. The salary ratios are, in fact, quite close for "colleges" and I, therefore, anticipate that salary differentials between vested and nonvested colleges will not affect the conclusions drawn on the basis of the voluntary separation data in table 3. For "universities," however, it is clear from the ratios in table 6 that salary differentials in favor of vested universities understate the extent of the voluntary movement between universities due to vested pension plans.

It does seem strange that the salary differentials among vested and nonvested universities range from \$300 to \$500 at the three lower ranks, and then jump to \$1,700 at the full professor rank. If this is a persistent differential at the full professor rank, why is it not diminished by the movement of full professors from nonvested to vested universities?

It may very well be that salary differentials between vested and nonvested universities are the result rather than the cause of differences in voluntary separation rates. One could argue that, since the full professor in a nonvested institution is "locked in" by his pension plan, he pays a price for his immobility in lower salary as compared with his counterparts in vested institutions and with his more mobile junior colleagues in the same institution. If one assumes that an administrator seeks, with the income available for professorial services, to maintain and improve its instruction and research, does it not follow that it will, unintentionally to be sure, transfer income from those who are not mobile to those who are? If administrators do act in this

way, then the salary structure of nonvested IHE will be compressed and this narrowing will show up, as it does in table 6, with an increasing differential in salaries between vested and nonvested IHE as academic rank advances.

The data on average faculty salaries, by rank, presented in table 6, tells very little about the dispersion of the salaries of faculty around the mean salary of each rank. Large salary dispersion may mean that the college or university is giving substantial cash awards to its most competent faculty in order to reduce their mobility. If salary dispersion is greater in vested than in nonvested IHE, then the voluntary separation rate because of vesting will be understated in the present study.

Why would a college or a university want to have a vested pension system? Vesting has several undesirable features: first, it is more expensive, for the IHE has to pay the retirement benefits of those who leave as well as those who stay; and second, vesting makes it easier for senior faculty to move. Since most IHE use an elaborate weeding-out process to select their tenured faculty, it would seem unwise for them, in effect, to subsidize their departure. If IHE do adopt vesting, it must mean that they are either unaware of these consequences or, what is more likely, they have other methods of discouraging the mobility of the senior staff. The most important immobilizing device is money. Thus, the so-called merit increase is really a tax on mobility; it is the antithesis of severance pay.

The data on salary dispersion in higher education were not available according to the extent of vesting of pension systems. I have, therefore, used "control" as a surrogate for vesting; for, as will be recalled, most privately controlled IHE have vested pension systems and most publicly controlled IHE have nonvested systems. The dispersion data are presented by type of IHE, for again "colleges" and "universities" show distinctly different results. Quartile deviations, by control and type, are presented in table 7. It should be noted that privately controlled (vested) universities have wider salary dispersion than publicly controlled (nonvested) universities; thus, for universities, voluntary separations because of vesting are understated in table 3. But, for colleges, the pattern is reversed—publicly controlled (nonvested) colleges have wider salary dispersion than privately controlled (vested) colleges, and, thus, the voluntary separations because of vesting in table 3 are overstated. The conclusions drawn earlier from the separation data have been reinforced. Nonvested pension systems retard the mobility of university faculty members but do not affect the mobility of college faculty members.

TABLE 7.—QUARTILE DEVIATIONS IN FACULTY SALARIES IN COLLEGES AND UNIVERSITIES, BY RANK AND CONTROL OF INSTITUTION, 1961-62

	Colleges		Universities	
	Privately controlled (vested)	Publicly controlled (nonvested)	Privately controlled (vested)	Publicly controlled (nonvested)
Professor.....	1,290	2,660	2,035	1,225
Associate professor.....	585	770	810	550
Assistant professor.....	575	525	555	360
Instructor.....	740	745	185	395

Source: U.S. Office of Education, "Higher Education Planning and Management Data," 1962.

SUMMARY AND CONCLUSIONS

We have reopened the question, raised by Ross and others, of whether nonvested pension plans deter voluntary employee movement. The higher education industry was studied because it was unique among manufacturing and nonmanufacturing industries in that there was an almost equal division of firms having vested and nonvested pension plans; thus, it was possible to make a cross-section analysis of the effect of vesting on mobility.

The cross-section analysis of the voluntary separation rates of IHE showed that, for the higher education industry as a whole, mobility was as large in nonvested IHE as it was in vested IHE. This finding supported Ross' conclusions that labor resources have not become immobilized because of the increased use of pensions and other non-wage benefits.¹⁹

When, however, the higher education industry was subdivided into its "college" and "university" components, we found that the voluntary movement of university faculty was affected by the extent to which their pension plans were vested, while the movement of college faculty was not affected by vesting. The insensitivity of college faculty, and the sensitivity of university faculty to equity losses from movement under nonvested pension systems found further support in the analysis of average faculty salaries, particularly the relatively low salary of the "locked in" full professor at a nonvested university, and in the analysis of salary dispersion. We suggested that the differential behavior of faculty could be explained, at least in part, by differences in research potential. We also speculated that those faculty who had a large investment in research training would also have a high propensity to be mobile, and would choose a "university" career; a low propensity for mobility is likely to be associated with a smaller investment in research training and faculty in this grouping would choose a "college" career.

Further subdivision of the data showed that (a) faculty in privately controlled IHE were more sensitive to vesting than faculty in publicly controlled IHE, and (b) faculty in nonsouthern IHE were more sensitive to vesting than faculty in southern IHE. Again, we speculated that faculty who anticipated gains from being mobile would choose employment in privately controlled nonsouthern IHE.

In summary, it seems that faculty, in the aggregate, are not very different from industrial workers, in the aggregate, with respect to the decision to resign from their job; neither group seems to allow their mobility decisions to be influenced by losses in pension plan equities. This study also shows, however, that the aggregate data may conceal the differential effects that nonvested pension systems may have on the mobility of particular groups of employees. For example, university faculty are affected by the vesting of pension plans. It may be suggested that, if the aggregate data on industrial workers were subdivided by occupation, similar differential effects would be observed.

¹⁹ For a similar conclusion based on an attitude survey of male production workers in two Columbus, Ohio, firms, one with and one without a pension plan, see H. S. Parnes, "Workers' Attitudes to Job Changing: The Effect of Private Pension Plans," in Gladys L. Palmer et al., "The Reluctant Job Changer," Philadelphia, 1962.

APPENDIX

1. THE DATA

In their comprehensive study of retirement plans in American colleges, Greenough and King (see footnote 7) sent questionnaires to all IHE (1,377) offering at least the bachelor's degree. They received 1,096 usable replies. To obtain a more homogeneous group of IHE, the present study is limited to the 637 IHE replying to Greenough and King that (1) had liberal arts programs, and (2) had been accredited by one of the six regional accrediting associations in the United States. Questionnaires requesting information on faculty separations were sent to these 637 IHE, and 504 (79 percent) replied. The 504 responding IHE represented 55 percent of all faculty and 89 percent of all faculty in accredited IHE in the United States.

Each IHE was asked to supply the number of voluntary separations (termination of employment initiated by the employee); the number of involuntary separations (termination of employment initiated by the employer); and a catchall category of terminations for military duty, disability, and the like. These data were collected, by academic rank, for specified departments. (See below.) The total number of faculty in each of these departments, by rank, was also collected. From these data, percentage separation rates were computed, by rank and department (really subject field taught), for the faculty in each IHE responding.

As indicated above, the subject field to which a faculty member devotes a major part of his teaching time (as indicated by his department affiliation) is held constant in this study. The voluntary separation rates of faculty are dependent on the job alternatives available and these alternatives are, in turn, dependent upon the faculty member's training. For example, the academic physicist commands a wider range of job alternatives than the academic historian. The study was limited to faculty in 10 subject fields (all in liberal arts) with the largest enrollment, subject to the provision that there was at least one field in the biological sciences, the humanities, the physical sciences, and the social sciences. The subject fields were chemistry, economics, English, foreign languages, mathematics, music, physics, political science, psychology, and zoology.

In all studies where the kind of data collected depends upon voluntary response, it is important to test for systematic bias in the data resulting from the nonresponse. A chi-square analysis was made of the differences between the IHE that responded and those that did not. The analysis indicated that no significant differences existed (at the 5-percent level). I, therefore, concluded that the data do not bear a serious nonresponse bias.

In the higher education industry, a small fraction of the IHE have plans with deferred vesting. Deferred vesting plans that require a long period of coverage before vesting is achieved impose the same restraints on mobility as nonvested pension plans. I, therefore, defined a deferred vesting system as nonvested if the plan did not vest fully within 5 years. There were also 21 IHE with deferred vesting systems that vested within 5 years. Since this group was so small, they were excluded from the study. Sixty-seven IHE that shifted from nonvested to vested

pension systems after 1951 were also excluded, for the reason that the faculty in these IHE would not have had enough covered time to have their mobility decisions affected by the vesting of their pension systems.

There remained in the study 339 colleges and 98 universities, or 87 percent of the respondents. Of those remaining, 47 percent had vested pension systems and 53 percent had nonvested systems.

2. METHODOLOGY

This study consists basically of a cross section comparison of average separation rates between IHE having vested and those having nonvested pension system. In all cross-section studies, it is necessary to standardize the sample or hold "other factors constant." It is clear that there are factors, other than the extent of pension vesting, that do affect the voluntary separations of faculty. The question here, however, is whether they affect relative separation rates—do these factors cause separation rates to be different between IHE with vested and those with nonvested pension plans? Alternatively, are there factors that correlate with the extent of vesting in such a way that the failure to control the impact of these factors will lead to biased results?

I suspected that there were nine such factors and have divided them into three groups. The first group consists of factors associated with the institution: Type of IHE (college or university), administration of IHE (privately or publicly controlled), regional location of IHE (South or non-South), and the size of city in which the IHE is located (particularly the small town and the very large city). The second group consisted of factors associated with the faculty (age, race, sex, and subject field taught). The third group concerned the income of faculty, subdivided into cash and noncash income.

Several of these factors are not quantitatively important in this industry; that is, even if there were a maldistribution among vested and nonvested IHE, the comparison error resulting would be very small. An example is the race of faculty. There are few nonwhite faculty members in the United States (less than 5 percent of total faculty according to the 1960 census. Therefore, a concentration of nonwhite faculty in either vested or nonvested IHE would not lead to substantial bias in relative separation rates.

The factors in all three groups have in common one characteristic that makes it possible to reduce, if not substantially to eliminate, their impact on relative separation rates. This characteristic is that their impact on the separation rates of faculty in a given IHE is roughly the same for all faculty members. Assume that voluntary separation rates are higher in IHE located in very large cities than in IHE located in small towns. If, also, big city IHE have vested pension plans and small town IHE have nonvested ones, then an uncorrected comparison between these IHE would show higher rates among vested IHE—due in part to the effect of city size. But, if separation rates are higher in larger cities, they are higher for all faculty; and, if lower in towns, they are lower for all faculty. Thus the effect of city size on relative separation rates can be substantially eliminated by dividing the rates of individual or groups of faculty members by other individual or groups of faculty members in the same IHE. It was found convenient to group faculty by academic rank. The deflation procedure

described above was, therefore, accomplished by deflating the voluntary separation rates of one academic rank of faculty by another in each IHE in the sample. The resulting figure is meaningless in itself but it does give a corrected measure of relative separation rates.

The third group of factors—that relating to the income of faculty—warrants further discussion. Income differentials between IHE whether they take the form of differences in income levels or income increments, may be a major cause of voluntary separations. Faculty income can be defined as consisting of cash and noncash income; the latter is comprised of a varied package of benefits ranging from employer contributions to insurance plans to subsidized housing. The noncash income received by faculty may be a large fraction of total income. It is convenient in this study to distinguish between cash and noncash income because the value of fringe benefits (with the exception of pensions and tuition for faculty children) does not generally vary with faculty rank. Thus, the value of fringe benefits in a given institution is reduced to unity by the deflation process. There can, therefore, be no effect on relative (vested versus nonvested) mobility because of absolute fringe benefit differentials between IHE. Salary income, however, clearly varies with rank, but systematically with higher average salaries in the higher ranks. If, in fact, a systematic salary relationship exists between ranks, that is, if high (or low) salaried IHE pay high (or low) salaries to all ranks, then the deflation procedure will yield constant ratios of salaries or salary changes between vested and nonvested IHE, and the impact of salary differentials as a factor affecting voluntary separation rates between vested and nonvested IHE will again be minimized. The effectiveness of the deflation procedure on salaries is discussed in the text (pp. 231-232).

