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Chapter Author: Charles C. Brown

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12 Dead-end Jobs and Youth Unemployment

Charles Brown

The hypothesis that one's job is related to one's chances of being unemployed is neither new nor very controversial. In every year since 1958, unemployment rates of craft workers have exceeded those of white-collar workers, while those of nonfarm laborers have been double those of craft workers. Moreover, a substantial fraction of these differences among broad occupational groups persists after controlling for differences in "personal" characteristics (age, sex, race, education, location) of the workers in them (Martson 1976, p. 196).

Recent analyses have emphasized "dead-end" jobs as an important factor in youth unemployment, even in relatively prosperous times. While the precise definition of a dead-end job is generally unstated, a recurring idea is that dead-end jobs do not offer opportunities for advancement and hence provide little incentive for stable, continuous employment. Feldstein argues that

> high turnover rates and voluntary unemployment are also a response to the unsatisfactory type of job that is available to many young workers. These are often dead-end jobs with neither opportunity for advancement within the firm nor training and experience that would be useful elsewhere. [1973, p. 14]

Similarly, a *Washington Post* report on unemployment among black teenagers in Washington, D.C. asserted that they

> sometimes refuse to take low level jobs as busboys, dishwashers, and janitors because they feel that these jobs cannot offer them money, status, or *an opportunity for advancement*. . . . [T]eenagers often stay at

Charles Brown is associated with the University of Maryland and with the National Bureau of Economic Research. The author is grateful to Nancy Lemrow for research assistance and to members of the NBER Project on Youth Unemployment for helpful comments on earlier drafts of this paper.

> those jobs only long enough to buy a certain thing or qualify for unemployment [benefits]. [Italics added.]

The importance of the conceptual distinction between "low-wage" jobs and those that offer no chances for advancement is implicit in Hall's (1970, p. 395) assertion that "trainees in banks and workers in service stations receive about the same hourly wages, but the trainees have an incentive to work hard and steadily that is absent for the service station men."

To be sure, the long-run consequences of working in a dead-end job depend on the individual worker and his/her stage in the life cycle. Working in such a job during the summer before returning to college is unlikely to lead to later problems, but an out-of-school worker who bounces from one such a job to another may suffer permanent economic disadvantages. One would anticipate, however, that such jobs would generally be associated with more frequent quitting- and layoff-related unemployment in the short run, because neither the individual nor the employer stands to lose very much from such separations.

While the relationship between wages and unemployment has received considerable attention, the independent impact of opportunities for advancement has received less attention. Two factors appear to be responsible for this omission. First, while the notion that disadvantaged workers may end up in jobs with low wages and little prospect of advancement is present in the writings of human capital theorists (e.g., Rosen 1972, p. 338), it has received much greater emphasis in dual labor market theories (Piore 1971; Gordon 1972, chapter 4). Because both attributes are seen as common to the "secondary" labor market, the dichotomy between low-wage, no-advancement jobs and high-wage jobs with opportunities for advancement has been stressed, to the exclusion of separate analysis of each component. Second, existing occupational indices—e.g., the Duncan index, the Dictionary of Occupational Titles' General Educational Development and Specific Vocational Preparation scales—measure current position rather than opportunities for advancement. "Apprentice" classifications receive low ratings because they measure what a job requires, not what it promises.[1]

These observations suggest alternative strategies for further research on occupational differences in unemployment: (1) improving the controls for differences in personal characteristics by using more such variables or more sophisticated statistical techniques; and (2) attempting to characterize occupations in a parsimonious way which gives some clues as to why such differences exist. This chapter follows the second strategy. It focuses on young males; young people because their unemployment rates are so high, males to reduce complications which those not in the labor force introduce. The data—occupational characteristics based on the 1970 Census and labor-force status and personal characteristics of indi-

viduals from the Current Population Survey—are described in section 12.1. Characteristics related to opportunities for advancement are emphasized. In section 12.2, the hypothesized relationship between these characteristics and youth unemployment is explored. Some support for the dead-end job hypothesis is found, but several puzzles also emerge. Conclusions are offered in section 12.3.

12.1 Data

The 1970 Census ascertained each worker's occupation and industry in 1965 as well as in 1970, making it a unique source of data on the (realized) prospects for advancement in each occupation. The aspect of dead-end jobs emphasized in the introduction was the lack of orderly career advancement. This suggests that, whatever the average wage which such occupations pay, those who are in them can't expect future wages to be much higher.

Let $W_i(t, t_0, j)$ be the period t wage of those who are/were in occupation i, with j periods of experience, in period t_0. Thus i and j are occupation and experience level in period t_0. Ideally, a measure of realized opportunities for advancement in occupation i would involve a comparison of W_i (1965, 1965, j) and W_i (1970, 1965, j).[2] Given W_i (1965, 1965, j), an occupation which provided greater advancement opportunities would have a larger value of W_i (1970, 1965, j) than those which did not provide such opportunities. While W_i (1970, 1965, j) was determined directly by the Census, W_i(1965, 1965, j) was not (the Census did not ask individuals how much they earned five years ago). However, if wages grew uniformly at rate g *within* each occupation-experience cell from 1965 to 1970,

$$W_i\,(1965, 1965, j) = (1 + g)^{-1}\, W_i\,(1970, 1970, j)$$

Thus the 1970 wage of those in occupation i with j periods of experience in 1970 is used to reflect the 1965 wage of those in that same occupation with j periods of experience in 1965. To simplify later notation, let $W_i = W_i$ (1970, 1970, j) and $W_i' = W_i$ (1970, 1965, j). Opportunities for advancement are then inferred from large values of W_i' given W_i.

W_i and W_i' were tabulated by three-digit occupation from the 1/100 Public Use File for out-of-school men with less than ten years of labor market experience.[3] Average weekly wages were calculated as the ratio of total earnings to total weeks worked in the year preceeding the Census.[4] Average hourly wages were calculated as total earnings divided by total hours worked, the latter being approximated by weeks worked last year times hours worked in the week preceding the Census. These averages were based on roughly 200 out-of-school men with less than ten years experience per occupational cell—a sample size unattainable with any other data source.

Having calculated W_i and W_i' one can ask which occupations provide the best prospects for W_i' *given the level of* W_i. A simple answer is provided by regressing $\ln(W_i')$ on $\ln(W_i)$ and calculating the residuals.[5] Dead-end occupations are expected to have substantial negative residuals, while those in occupations which promise advancement should have positive residuals. Table 12.1 lists the sixty largest occupations by this criterion using hourly wage data. The list is restricted to "large" occupations in order to minimize the importance of sampling variation.

It is not clear which occupations should be rated high or low on such an index on a priori grounds. My own a priori candidates for high-advancement jobs (apprentice categories) do not appear in table 12.1 because no apprentice category achieved sufficient cell size. Other ways of generating table 12.1 (using weekly wages or a nonlogarithmic estimating function) produced similar, though certainly not identical, rankings.

One striking feature of table 12.1 is the high rating given to a few occupations which seem doubtful as sources of training or other avenues of advancement (farm laborers, gas station attendants). A plausible explanation for these "outliers" is that initial wages are so low in these occupations that the individual is likely to advance subsequently simply by leaving them.[6] Thus, if some occupations have substantial negative transitory effects (low W_i) they might show substantial positive "advancement" ($\ln W_i' - \ln W_i$), but one would not expect such "advancement" to be reflected in low unemployment rates. This possibility should be kept in mind when considering the results in section 12.2.

A second, somewhat more tentative index can also be constructed. To the extent that what is "learned" on the job is industry-specific, those who are on career paths should remain in the same industry, even if they change occupational title or accept a position with a different employer. Those in jobs where such learning is absent have no particular incentive to find a new job in the same industry. Thus a plausible index of advancement opportunities expected by workers in an occupation is the probability that a worker in that occupation will be in the same *industry* at some point (five years) in the future. This probability was computed directly from the 1970 Census 1/100 File, using three-digit industries.

Table 12.2 presents the sixty largest occupations according to this index. The rankings seem to me more plausible than those in table 12.1, but that may be due largely to the fact that this index is not constructed to be uncorrelated with $\ln(W_i)$, so that low-wage occupations are more prominantly represented among the "worst" occupations according to this index. However, $\ln(W_i)$ is held constant in the regressions in section 12.2.

Three other occupational characteristics were taken from published 1970 Census data: median years of schooling, percent female, and percent black (U.S. Census Bureau, 1973, tables 1 and 38). They may be

Table 12.1 Occupations by Wage-Growth Residual

3-digit Code	Occupation	Residual	*N*	3-digit Code	Occupation	Residual	*N*
65	Physicians: med., osteo.	.1678	554.	410	Brickmasons, stonemasons	−.0057	283.
305	Bookkeepers	.1422	274.	694	Misc. operat.	−.0074	857.
552	Phone inst., repairmen	.1023	438.	680	Welders, flamecutters	−.0092	804.
822	Farm labor., wage work.	.0968	1052.	643	Packers, wrappers: x meat, produce	−.0103	267.
623	Garage work., gas station attend.	.0942	606.	11	Civil eng.	−.0105	322.
31	Lawyers	.0865	586.	231	Sales mgr., dept. heads: retail	−.0106	291.
233	Sales mgr., x retail	.0775	315.	522	Plumbers, pipefitters	−.0118	555.
265	Ins. agents, brokers, underwriters	.0744	870.	23	Eng., nec	−.0129	357.
1	Accountants	.0601	978.	610	Checkers, examiners, inspec.: manu.	−.0131	529.
374	Shipping, receiving clerks	.0524	620.	715	Truck drivers	−.0160	2474.
430	Electricians	.0495	727.	395	Not spec. clerical work.	−.0221	599.
153	Elec., electronic eng. technic.	.0460	349.	602	Assemblers	−.0223	1120.
152	Draftsmen	.0433	652.	751	Const. labor.: x carpenters' helpers	−.0230	1091.
801	Farmers: owners, tenants	.0324	1254.	481	Heavy equip. mech., incl. diesel	−.0265	612.
202	Bank officers, finan. mgr.	.0313	525.	12	Elec., electronic eng.	−.0293	589.
640	Mine operat., nec	.0197	323.	144	Sec. sch. teach.	−.0331	788.
140	Teach., coll., univ.	.0169	275.	142	Elem. sch. teach.	−.0358	797.
510	Painters: const., maint.	.0167	406.	690	Mach. operat.: misc., spec.	−.0382	1243.
903	Janitors, sextons	.0154	682.	415	Carpenters	−.0390	1103.
935	Barbers	.0106	269.	441	Foremen, nec	−.0399	1459.
705	Deliverymen, routemen	.0095	821.	692	Mach. operat.: not spec.	−.0437	908.
912	Cooks: x pri. hhold.	.0091	413.	964	Policemen, detectives	−.0459	632.
245	Mgr., admin., nec	.0079	3735.	695	Not spec. operat.	−.0498	727.
473	Auto mech.	.0033	1492.	14	Mechanical eng.	−.0508	318.
631	Meat cutters, butchers: x manu.	.0020	325.	706	Fork lift, tow motor operat.	−.0563	329.
381	Stock clerks, storekeepers	.0011	463.	461	Machinists	−.0567	752.
162	Eng., science technic., nec	.0006	306.	436	Excavating, grading, road mach. oper.	−.0635	358.
785	Not spec. labor.	.0005	882.	753	Freight, material handlers	−.0667	605.
762	Stock handlers	−.0030	475.	755	Gardeners, groundskeepers: x farm	−.0673	294.
422	Compositors, typesetters	−.0048	298.	86	Clergymen	−.0972	388.

Table 12.2 Occupations by Industry-Retention Rates

3-digit Code	Occupation	Retention	*N*	3-digit Code	Occupation	Retention	*N*
140	Teach., coll., univ.	.8444	315.	1	Accountants	.6020	1098.
86	Clergymen	.8404	445.	231	Sales mgr., dept. heads: retail	.5927	329.
144	Sec. sch. teach.	.8373	922.	706	Fork lift, tow motor operat.	.5914	394.
552	Phone inst., repairmen	.8350	509.	610	Checkers, examiners, inspec.: manu.	.5892	628.
31	Lawyers	.8258	666.	415	Carpenters	.5836	1388.
142	Elem. sch. teach.	.8149	929.	280	Salesmen, sales clerks, nec	.5777	4326.
65	Physicians: med., osteo.	.8148	637.	690	Mach. operat.: misc., spec.	.5630	1460.
14	Mechanical eng.	.7808	365.	473	Auto. mech.	.5628	1759.
964	Policemen, detectives	.7790	751.	381	Stock clerks, storekeepers	.5562	543.
12	Elec., electronic eng.	.7712	660.	461	Machinists	.5455	836.
11	Civil eng.	.7655	371.	640	Mine operat., nec	.5448	402.
522	Plumbers, pipefitters	.7432	662.	680	Welders, flamecutters	.5433	935.
233	Sales mgr., x retail	.7413	375.	395	Not spec. clerical work.	.5378	662.
631	Meat cutters, butchers: x manu.	.7247	385.	692	Mach. operat.: not spec.	.5330	1062.
935	Barbers	.7178	326.	715	Truck drivers	.5330	3013.
801	Farmers: owners, tenants	.7156	1575.	694	Misc. operat.	.5224	1005.
202	Bank officers, finan. mgr.	.7074	605.	753	Freight, material handlers	.5217	715.
481	Heavy equip. mech., incl. diesel	.6972	710.	602	Assemblers	.5201	1296.
23	Eng., nec	.6969	386.	912	Cooks: x pri. hhold.	.5172	522.
430	Electricians	.6845	862.	374	Shipping, receiving clerks	.5158	698.
441	Foremen, nec	.6795	1747.	903	Janitors, sextons	.5074	816.
245	Mgr., admin., nec	.6694	4374.	822	Farm labor., wage work.	.5071	1331.
422	Compositors, typesetters	.6638	348.	762	Stock handlers	.4927	548.
153	Elec., electronic eng. technic.	.6634	407.	755	Gardeners, groundskeepers: x farm	.4751	362.
510	Painters: const., maint.	.6623	539.	785	Not spec. labor	.4638	1022.
265	Ins. agents, brokers, underwriters	.6437	1002.	705	Deliverymen, routemen	.4626	936.
152	Draftsmen	.6412	694.	643	Packers, wrappers: x meat, produce	.4618	314.
410	Brickmasons, stonemasons	.6236	364.	695	Not spec. operat.	.4203	847.
162	Eng., science technic., nec	.6221	344.	751	Const. labor: x carpenters' helpers	.3942	1380.
436	Excavating, grading, road mach. oper.	.6220	455.	623	Garage work., gas station attend.	.2400	725.

interpreted as measures of the labor market disadvantage of the members of each occupation. They may also reflect the relative opportunities for advancement in occupations, to the extent that blacks, women, and those with less education choose low-training occupations (Rosen, 1972, p. 338) or are crowded into them (Bergmann 1971).

These occupational characteristics were matched to the 1973–75 May Current Population Survey according to the individual's three-digit occupation code. Apart from the restrictions noted above (male, not in school, less than 10 years of experience), the matching process imposes the additional requirement that the individual report an occupation. This excludes (1) all those who have never worked, whether they are unemployed or out of the labor force at the time of survey; and (2) most of those not in the labor force.[8] The first exclusion is inherent in the study of "occupation effects"; the second leads to the exclusion of all those not in the labor force from the regressions presented below.[9]

In addition to whether the individual was unemployed at time of survey, the CPS determined the reason for unemployment. Those who report they "have a job or business from which [they were] . . . on layoff last week" are counted as having "lost" their last job. Those who reported they started looking for work because they "lost or quit a job at that time" are counted as "lost" or "quit," respectively. Consequently, those who dropped out of the labor force between quitting or losing their previous job and beginning their current spell of unemployment probably aren't captured in either the "lost" or "quit" categories, though they are counted as unemployed.

Finally, the CPS files provided several potentially important individual characteristics: race, education, age (and hence experience), location, and marital and veteran statuses. Moreover, hourly earnings and union membership were determined for those who were working, who had a job but were absent or on layoff, or who had worked in the last three months.

12.2 Results

Equations in which personal and job characteristics are used to explain unemployment are presented in table 12.3. The dependent variable in each equation is a dummy variable indicating a state of being unemployed at time of survey multiplied by 100. Thus each regression coefficient can be interpreted as that variable's "effect" on the unemployment rate, measured as a percentage. The number in parentheses below each coefficient is the standard error. The number in brackets is the product of the regression coefficient and the variable's standard deviation. It reflects the impact of a one-standard deviation change in the independent variable on the unemployment rate and can, in that sense, be compared across variables.

Table 12.3 **Unemployment Equations (Males Less than Ten Years after School-leaving)**

Variable	Mean (S.D.)	(1)	(2)	(3)	(4)	(5)
Constant		28.706*	34.814*	28.581*	30.632*	26.774*
		(1.213)	(1.365)	(1.895)	(1.918)	(2.738)
Region = north central	.284	−.308	−.288	−.324	−.243	−.291
	(.451)	(.449)	(.448)	(.449)	(.448)	(.449)
		[−.139]	[−.130]	[−.146]	[−.109]	[−.131]
Region = south	.308	−3.070*	−3.061*	−2.974*	−2.977*	−2.919*
	(.462)	(.459)	(.458)	(.457)	(.458)	(.458)
		[−1.418]	[−1.414]	[−1.374]	[−1.375]	[−1.349]
Region = west	.184	−.155	−.310	−.307	−.337	−.295
	(.388)	(.499)	(.498)	(.498)	(.498)	(.498)
		[−.060]	[−.120]	[−.119]	[−.131]	[−.114]
Lives in SMSA	.697	.845*	.716	.640	.753	.666
	(.459)	(.379)	(.380)	(.382)	(.380)	(.382)
		[.388]	[.329]	[.294]	[.346]	[.306]
Percent poor in area	11.300	.075*	.079*	.082*	.077*	.080*
	(10.800)	(.018)	(.018)	(.018)	(.018)	(.018)
		[.805]	[.848]	[.889]	[.828]	[.868]
Race = white	.895	−4.600*	−4.301*	−3.995*	−3.914*	−3.793*
	(.306)	(.548)	(.548)	(.551)	(.552)	(.553)
		[−1.408]	[−1.316]	[−1.223]	[−1.198]	[−1.161]
Married, spouse present	.640	−4.831*	−4.679*	−4.643*	−4.589*	−4.620*
	(.480)	(.363)	(.364)	(.365)	(.364)	(.365)
		[−2.319]	[−2.246]	[−2.228]	[−2.203]	[−2.218]
Veteran	.351	.863*	.839*	.677	.742*	.662
	(.477)	(.352)	(.351)	(.352)	(.351)	(.352)
		[.412]	[.400]	[.323]	[.354]	[.316]

Schooling	13.000	−1.098*	−.895*	−.699*	−.747*	−.648*
	(2.590)	(.066)	(.082)	(.088)	(.089)	(.090)
		[−2.843]	[−2.317]	[−1.811]	[−1.934]	[−1.677]
Experience	4.150	−.289	−.212	−.166	−.245	−.209
	(2.870)	(.279)	(.279)	(.278)	(.278)	(.279)
		[−.829]	[−.608]	[−.478]	[−.704]	[−.601]
Max (0, Experience − 2)	2.510	−.057	−.087	−.104	−.030	−.051
	(2.440)	(.324)	(.323)	(.323)	(.323)	(.323)
		[−.138]	[−.213]	[−.254]	[−.073]	[−.124]
$\ln(W_i)$	1.160		14.012*	9.684*	11.930*	7.742*
	(.299)		(2.190)	(2.575)	(2.257)	(2.628)
			[4.190]	[2.895]	[3.567]	[2.315]
$\ln(W_i')$	1.380		−10.166*	−3.345	−3.882	−.069
	(.293)		(2.244)	(2.530)	(2.426)	(2.634)
			[−2.979]	[−.980]	[−1.137]	[−.020]
Occ's retention rate	.612		−18.896*	−15.134*	−14.167*	−13.467*
	(.125)		(1.778)	(2.116)	(1.901)	(2.231)
			[−2.362]	[−1.892]	[−1.771]	[−1.683]
Occ's median yrs school	12.300				−.709*	−.407
	(2.110)				(.166)	(.219)
					[−1.496]	[−.859]
Occ's percent female	17.800				.012	.002
	(20.600)				(.009)	(.010)
					[.238]	[.046]
Occ's percent black	8.640				.148*	.140*
	(7.030)				(.032)	(.043)
					[1.043]	[.982]
10 Occupation dummy variables		No	No	Yes	No	Yes
R^2		.039	.044	.048	.046	.048
Number of observations	23714					

The equation in column 1 of table 12.3 includes only "personal" characteristics as independent variables. There are few surprises. The coefficients of the three regional variables show that unemployment is considerably lower in the South than elsewhere, but there is very little difference among the three other regions (Northeast, North Central, and West). Living in an SMSA or a poverty area is associated with a higher unemployment rate, and a standard deviation difference in the area poverty rate has a considerable impact. Even with other personal characteristics controlled, whites have an unemployment rate nearly five percentage points lower than nonwhites. Married men with spouses present enjoy considerably lower unemployment, while veterans' unemployment rate is almost one percentage point higher than others'. Schooling has a considerable impact, with the unemployment rate declining one point per year of schooling. Perhaps the strongest surprise is the failure of the two experience variables to achieve "significance." Experience was defined as years since estimated departure from school, following Mincer (1974, p. 48). The two experience variables allow the experience-unemployment relationship to have a different slope in the first two years than later on, in light of Ornstein's (1971, p. 417) finding that young workers appear to spend roughly two years finding their place in the labor market. The standard errors of these variables' coefficients may be increased by the sample selection, which limits the range of experience, and the estimated effect in the first two years is probably reduced by eliminating those without work experience.

Columns 2–5 reflect the addition of various occupational characteristics to the equation. The coefficients of the personal characteristics, taken as a group, are not greatly affected by the additional variables. Even granting the crudeness of the occupation variables, the small change in the coefficients of the poverty area and race coefficients is striking. Schooling does lose up to 40% of its estimated effect (column 5 vs. column 1), suggesting that a nonnegligible fraction of the advantage of those with more schooling comes from access to "better" occupations.

In column 2, the two wage variables ln (W_i) and (W_i') and the three-digit retention rate are added to the equation. Each is highly significant. A higher occupation wage (W_i) is associated with a higher unemployment rate (when personal characteristics are held constant).[10] However, if only this wage is added to the personal characteristics, its coefficient is .166 (.864). The wage variable intended to capture advancement, W_i', has an almost equally large negative coefficient. While the size of this coefficient relative to those of the personal characteristics is, of course, sensitive to scaling, the impact of a one-standard deviation difference (three percentage points) *is* quite large. Finally, the effect of occupation's "retention rate" is negative and significant: individuals in occupations in which industry-switching is less common (higher retention rate) have lower unemployment rates.

A sterner test of the three occupational characteristics is presented in column 3, where ten dummy variables for Census broad occupation groups (e.g., "clerical workers") are added to the equation. The occupation wage (W_i) and retention rate are not significantly affected, but the coefficient of W_i falls to one-third its previous value and is no longer "significant" at conventional levels. The ten dummy variables are jointly significant at the 1% level.

Three additional occupational characteristics are added, with and without the broad-occupation dummies, in columns 4 and 5. Once again, the effects of the occupation wage and retention rate are not dramatically affected, but the coefficient of W_i' is considerably reduced (column 4 vs. column 2) or eliminated (column 5). The standard error of W_i' rises with the addition of the other occupation variables, but the increase is not very large. Two of the three new variables (the occupation's median years of schooling and the fraction of its workers who are black) have substantial effects on the unemployment rate, while the fraction that is female does not.

Modest experimentation with the specification produced similar results. Deletion of the retention rate reduced the impact of W_i (though it remained positive and generally "significant") but had little impact on the other occupation characteristics' coefficients. The effect of W_i was significantly positive when weekly wages replaced hourly wages, or when W_i' was deleted. An industry retention rate based on about twenty broad industries produced similar, slightly weaker results. Median years of schooling, percent female, and percent black were little affected by these experiments.

The relationship between occupational characteristics and unemployment that emerges from these regressions is a good deal more complicated than the discussions cited in the introduction imply. The three major findings are as follows. (1) A consistent relationship between three occupational characteristics (retention rate, median schooling, and racial composition) and unemployment is evident. Whether this reflects the current position or future opportunities provided by the occupation is unclear, since quite plausible a priori arguments can be made for either. (2) The coefficient of W_i', the wage variable intended to measure opportunities for advancement, was quite sensitive to the other occupational characteristics included, ranging from being a quite important factor to a thoroughly negligible one. The measurement difficulties noted in section 12.1 may help to explain its demise as other, correlated variables are added, but this remains a matter of conjecture until these difficulties can be overcome. (3) The broad-occupation dummies were consistently significant when added to any of the equations. This suggests that significant occupation differences in unemployment exist, independent of the variables discussed above. With service workers as the omitted category, white-collar and farm workers have unformly lower unemployment.

Among blue-collar workers, craft workers and transport operatives had consistently lower unemployment rates, while unemployment among other operatives and nonfarm laborers was similar to that of service workers.

Table 12.4 decomposes unemployment by reason for leaving last job. Columns 1, 4, and 7 reproduce columns 1, 2, and 5 from table 12.3, and relate to total unemployment. The remaining columns relate to unemployment due to losing or quitting one's previous job. Thus, in column 2, the dependent variables was one (times the scaling factor 100) if the individual was unemployed through losing his previous job, and zero otherwise (including other types of unemployment). The difficulties in defining such categories of unemployment in these CPS data should be recalled (see p. 433) when interpreting the results.

Given that less than half of the unemployed fall into either the lost or quit category, one expects estimated coefficients to be smaller than in column 1. Indeed, the effect of each variable on "other" unemployment can be obtained by subtracting columns 2 and 3 from column 1. In general, the variables which had substantial effects on overall unemployment have substantial effects of this residual category.

Among the personal variables (columns 2 and 3), Southern and Western locations are associated with lower "lost" unemployment, but have negligible effects on the "quit" component. Living a poverty area has little effect on either component. The large overall advantage of whites does not appear to be attributable to differences in either the "lost" or "quit" components. Being married substantially reduces the "quit" component, but has much less effect on the "lost" component. Schooling remains a significant, negative determinant of both components.

The coefficients of the occupational characteristics vary with the type of unemployment (columns 5, 6, 8, and 9). The positive effect of the occupation wage (W_i) is concentrated on the "lost" category of unemployment, consistent with an equalizing difference interpretation. The lack of impact of occupation wage on quitting unemployment is surprising.[11] A higher value of W_i' is associated with lower "lost" unemployment, "significantly" in column 5 and nearly so in column 8. This is consistent with the notion that jobs which offer advancement for the worker are also those which involve investing in the worker by the firm. However, it has no impact on quitting unemployment, and a mildly positive impact on nonlayoff unemployment (columns 7–8). Thus there is no evidence that W_i' has a significant impact on the more "voluntary" components of unemployment. At the very least this contradicts the emphasis of the "opportunities for advancement" hypothesis on quitting. The occupation's industry retention rate was significant and negative for both components of unemployment. Median schooling has a modest coefficient in the "lost" unemployment equation, and the racial composi-

tion of the occupation is related to both components. Deletion of the retention rate once again had little effect on the other coefficients.

The individuals in tables 12.3 and 12.4 are "young" in the sense of having limited labor market experience, but they are not necessarily young in the more usual sense. A high school graduate with nine years of experience or a college graduate with four years of experience would each be twenty-seven years old—beyond that age the bounds the "youth unemployment problem." Consequently, equations identical to those in table 12.4 were estimated for a sample restricted to those who are most likely to be part of "the problem": those with no more than twelve years of schooling and less than five years of post-school experience.

Comparison of these equations (not shown) with those reported in table 12.4 revealed frequently larger coefficients and much larger standard errors (because of a smaller sample and less variation in independent variables). The most striking differences were the reduced impact of living in a poverty area, the almost complete concentration of the racial effect in the residual unemployment category, and the lack of any effect of W_i' in the last three equations. In general, however, the earlier findings—both expected and anomolous—remain.

A final experiment concerned the relationship between unionization and unemployment. Union sector jobs are often regarded as among the better blue-collar jobs, so that the relationship between unionization and unemployment is of some interest. For about 80% of those in tables 12.3 and 12.4, union membership and individual's hourly wage rate were available in the CPS file.[12] Adding these variables to the equations shown in table 12.4 produced a fairly consistent pattern: union membership was associated with greater "lost" unemployment, less "quit" unemployment, and had no statistically significant relationship to overall unemployment. (The individual's hourly wage showed a similar pattern.) Thus, while unionization may be associated with several "good job" characteristics, it does not seem to be a source of lower unemployment rates for young workers.

12.3 Conclusions

Occupational characteristics did prove significantly related to the unemployment of young workers with given personal characteristics. This result is not very surprising, given previous research and the limited range of personal characteristics in the CPS. The more interesting question is the more narrow one: Is there evidence of a relationship between lack of opportunities for advancement and youth unemployment? Unfortunately, the results presented above are too weak to justify either a confident yes or a confident no.

Table 12.4 **Unemployment Equations, by Type of Unemployment (Males Less than Ten Years after School-leaving)**

Variable	Mean (S.D.)	(1) All	(2) Lost	(3) Quit
Constant		28.706*	8.336*	3.781*
		(1.213)	(.694)	(.490)
Region = north central	.284	−.308	.350	.008
	(.451)	(.449)	(.257)	(.181)
		[−.139]	[.158]	[.004]
Region = south	.308	−3.070*	−1.113*	−.262
	(.462)	(.459)	(.262)	(.185)
		[−1.418]	[−.514]	[−.121]
Region = west	.184	−.155	−.594*	−.237
	(.388)	(.499)	(.285)	(.201)
		[−.060]	[−.231]	[−.092]
Lives in SMSA	.697	.845*	−.348	.299
	(.459)	(.379)	(.217)	(.153)
		[.388]	[−.160]	[.137]
Percent poor in area	11.300	.075*	−.014	.012
	(10.800)	(.018)	(.010)	(.007)
		[.805]	[−.147]	[.133]
Race = white	.895	−4.600*	−.677*	−.012
	(.306)	(.548)	(.314)	(.221)
		[−1.408]	[−.207]	[−.004]
Married, spouse present	.640	−4.831*	−.329	−1.129*
	(.480)	(.363)	(.208)	(.147)
		[−2.319]	[−.158]	[−.542]
Veteran	.351	.863*	−.007	.107
	(.477)	(.352)	(.201)	(.142)
		[.412]	[−.003]	[.051]
Schooling	13.000	−1.098*	−.340*	−.192*
	(2.590)	(.066)	(.038)	(.027)
		[−2.843]	[−.880]	[−.498]
Experience	4.150	−.289	−.163	.194
	(2.870)	(.279)	(.160)	(.113)
		[−.829]	[−.467]	[.558]
Max (0, experience − 2)	2.510	−.057	.120	−.256
	(2.440)	(.324)	(.185)	(.131)
		[−.138]	[.293]	[−.626]
$\ln(W_i)$	1.160			
	(.299)			
$\ln(W_i')$	1.380			
	(.293)			
Occ's retention rate	.612			
	(.125)			
Occ's median yrs school	12.300			
	(2.110)			
Occ's percent female	17.800			
	(20.600)			
Occ's percent black	8.640			
	(7.030)			
10 occupation dummy variables		No	No	No
R^2		.039	.007	.008
Number of observations	23714			

(4) All	(5) Lost	(6) Quit	(7) All	(8) Lost	(9) Quit
34.814*	10.987*	4.156*	26.774*	5.155*	2.655*
(1.365)	(.782)	(.553)	(2.738)	(1.569)	(1.110)
−.288	.343	.018	−.291	.237	.029
(.448)	(.257)	(.181)	(.449)	(.257)	(.182)
[−.130]	[.155]	[.008]	[−.131]	[.107]	[.013]
−3.061*	−1.109*	−.266	−2.919*	−1.040*	−.230
(.458)	(.262)	(.185)	(.458)	(.262)	(.186)
[−1.414]	[−.512]	[−.123]	[−1.349]	[−.480]	[−.106]
−.310	−.649*	−.247	−.295	−.668*	−.211
(.498)	(.285)	(.202)	(.498)	(.285)	(.202)
[−.120]	[−.252]	[−.096]	[−.114]	[−.259]	[−.082]
.716	−.364	.270	.666	−.310	.217
(.380)	(.218)	(.154)	(.382)	(.219)	(.155)
[.329]	[−.167]	[.124]	[.306]	[−.142]	[.100]
.079*	−.013	.013	.080*	−.015	.013
(.018)	(.010)	(.007)	(.018)	(.010)	(.007)
[.848]	[−.138]	[.142]	[.868]	[−.164]	[.143]
−4.301*	−.593	.018	−3.793*	−.450	.110
(.548)	(.314)	(.222)	(.553)	(.317)	(.224)
[−1.316]	[−.181]	[.006]	[−1.161]	[−.138]	[.034]
−4.679*	−.325	−1.102*	−4.620*	−.382	−1.108*
(.364)	(.208)	(.147)	(.365)	(.209)	(.148)
[−2.246]	[−.156]	[−.529]	[−2.218]	[−.183]	[−.532]
.839*	−.001	.101	.662	−.122	.098
(.351)	(.201)	(.142)	(.352)	(.202)	(.143)
[.400]	[−.000]	[.048]	[.316]	[−.058]	[.047]
−.895*	−.280*	−.178*	−.648*	−.148*	−.185*
(.082)	(.047)	(.033)	(.090)	(.052)	(.037)
[−2.317]	[−.725]	[−.461]	[−1.677]	[−.384]	[−.478]
−.212	−.155	.205	−.209	−.146	.191
(.279)	(.160)	(.113)	(.279)	(.160)	(.113)
[−.608]	[−.445]	[.589]	[−.601]	[−.418]	[.548]
−.087	.124	−.262*	−.051	.132	−.248
(.323)	(.185)	(.131)	(.323)	(.185)	(.131)
[−.213]	[.303]	[−.640]	[−.124]	[.322]	[−.605]
14.012*	8.398*	.228	7.742*	5.653*	−.058
(2.190)	(1.255)	(.887)	(2.628)	(1.506)	(1.066)
[4.190]	[2.511]	[.068]	[2.315]	[1.690]	[−.017]
−10.166*	−7.498*	.437	−.069	−2.565	.802
(2.244)	(1.286)	(.909)	(2.634)	(1.509)	(1.068)
[−2.979]	[−2.197]	[.128]	[−.020]	[−.752]	[.235]
−18.896*	−4.859*	−2.429*	−13.467*	−2.715*	−2.533*
(1.778)	(1.019)	(.720)	(2.231)	(1.279)	(.905)
[−2.362]	[−.607]	[−.304]	[−1.683]	[−.339]	[−.317]
			−.407	−.147	.081
			(.219)	(.125)	(.089)
			[−.859]	[−.311]	[.171]
			.002	−.003	.004
			(.010)	(.006)	(.004)
			[.046]	[−.060]	[.089]
			.140*	.050*	.052*
			(.043)	(.025)	(.017)
			[.982]	[.351]	[.369]
No	No	No	Yes	Yes	Yes
.044	.009	.008	.048	.013	.009

One fairly straightforward way to measure opportunities for advancement is from the wage gains that different occupations provide. The main reservation about this approach is that if transitory variation in earnings is occupation-related—as seems almost certain—individuals in some occupations will have "low" initial earnings because of these transitory influences, while others will have "low" initial earnings because they are "buying" opportunities for advancement. This measurement problem clearly tends to obscure the effect of opportunities for advancement on unemployment, if they exist. When we turn to the data, we find that the wage variable designed to capture these opportunities exhibits a nontrivial relationship to unemployment, but it is not very sturdy in the presence of other occupational characteristics and is confined to unemployment of job losers. (The bias noted above might be expected to be stronger for quitters than for job losers, since those with low earnings due to transitory factors would have an incentive to quit.)

An alternative strategy is to assume (plausibly, I believe) that opportunities for advancement should lead, in most cases, to an individual remaining in his current industry. Industry-retention rates of occupations did prove consistently (negatively) related to unemployment, controlling both for personal characteristics and average wages of young workers in the occupation. The problem here is that an occupation's industry-retention rate is influenced by other factors besides opportunities for advancement. Indeed, any desirable job characteristic (apart from the wage, which is included separately) would be likely (other things equal) to reduce quitting, quitting-related unemployment, and industry-switching; whatever it is that reduces layoffs would also be likely to reduce layoff-related unemployment and layoff-induced industry switching.[13] One should not overstate the "automatic-ness" of these relationships, however: turnover and unemployment are not synonymous, and lack of opportunities for advancement would increase the likelihood that one would leave one job without having another lined up.

To end on a more positive note, two conclusions do seem warranted: (1) The industry retention rate is clearly measuring *something* that wages in the occupation and broad-occupation dummy variables do not. (2) While jobs in unionized firms may be desirable jobs for young workers for other reasons, improving access to these jobs is an unpromising approach to solving youth unemployment. Their greater layoff rates compensate for their lower quitting rates.

Notes

1. In the NLS Young Men's file, SVP scores range from 0 to 9 years; apprentice occupations are coded 2 months. For the Duncan index (100-point scale), the median score for apprentice occupations was 33.

2. Knowing the *previous* occupation of each individual is critical when occupation-changing is common. Without such information, one is forced to infer opportunities for advancement from a purely cross-sectional wage-experience profile (e.g., Landes 1977, p. 529). But this compares, for example, apprentice carpenters five years out of school with apprentice carpenters ten years out of school, missing the fact that much of the return to being an apprentice carpenter depends on *not* being an apprentice carpenter (i.e., being a "regular" carpenter) five years later. In the sixty most common occupations (i.e., those in table 12.1), occupation-changing was quite important for those with less than ten years of experience. The fraction of those in an occupation in 1965 who were in the same occupation in 1970 ranged from 17 to 96%, the median being only 54%.

3. Labor market experience since leaving school is measured by age minus estimated age upon leaving school. Ages upon leaving school for each level of schooling are from Mincer (1974, p. 38).

4. The actual calculation was sightly more complicated. W was calculated separately by occupation for those with 0–4 and 5–9 years of experience. The "final" W was computed as a weeks-weighted average of the two experience groups, corrected for differences in experience composition.

5. Occupations were included in the regression if W_i' and W_i were each based on at least ten observations; occupations were weighted according to number of individuals used in calculating W_i'.

6. An analysis of the occupational transitions made by those initially in these occupations was consistent with this interpretation. Less than half of the workers in these two occupations were in the same occupation five years later, and there was little evidence of systematic movement to related occupations. (In general, the occupational transitions revealed only two patterns: remaining in one's prior occupation was the most frequent single outcome, and some workers in most occupations moved to supervisory [foreman, managers, n.e.c.] positions. Movements to skill-related occupations seemed surprisingly infrequent.)

7. Regressing W_i on the characteristics of those in each occupation is *not* a helpful first step in solving this problem, since negative residuals would be expected for both high-training and negative-transistory occupations.

8. Those in "rotation groups" 4 and 8 who had worked in the last five years are asked their occupation by the CPS.

9. Those in "small" occupations—those in which published characteristics were unavailable or with less than ten individuals in the 1/100 file—were also deleted.

10. Marston (1976, p. 192) found the probability of becoming unemployed positvely related to the individual's wage; Bartel and Borjas (1977, table 10) found a negative relationship between wage and probability of separation (quit or layoff) for those with "long" tenure, and a non-significant positive relationship for those with short tenure in the NLS Mature Men sample.

11. Related previous research has used the individual wage as the independent variable: Marston (1976, table 7: positive, nonsignificant relationship to probability of becoming unemployed because of layoff and negative, nonsignificant relationship to becoming unemployed by quitting); Bartel and Borjas (1977, tables 7 and 4: positive, nonsignificant relationship to probability of layoff and significant negative relationship to quitting); Leighton (1978, table 16: positive, significant relationship to probability of layoff); Feldstein (1978, table 2: positive, sometimes significant relationship to probability of being on temporary layoff unemployment).

12. As noted earlier (p. 433), the availability of these variables was not random—those unemployed who hadn't "lost" their last job were overrepresented among those for whom these variables weren't available. Consequently, the conclusions in the text need to be read with some caution because of possible sample-selection biases.

13. One piece of information which supports this interpretation is the fact that a very high percentage of industry stayers are also firm stayers. Among out-of-school NLS young men, the percentage of industry stayers who were also firm stayers were 81.9% (1971 vs. 1966) and 86.3% (1973 vs. 1968).

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Comment

Paul Osterman

The purpose of Brown's chapter is to determine if a particular characteristic of jobs—whether or not they offer opportunities for advancement—has an effect upon unemployment. The chapter develops two indices of the future possibility of jobs and enters these in linear probability models of unemployment. The results are mixed. One measure, a wage growth variable, performs quite poorly, losing significance when other occupational controls are introduced. The other variable, the industry retention rate, does better but with some apparently anomalous results, especially its insignificance in quit equations.

These results seem weak, although it should be noted that some of the control variables—especially the racial and sexual composition of occupations—are probably collinear with "dead-endedness." In any case, Brown is to be commended for this effort because it represents one of the few serious attempts to examine the importance of the institutional characteristics of jobs upon youth unemployment. Most of the problems in the chapter stem from the quality of the data rather than from errors by the author and the results are sufficiently encouraging to suggest that further work along these lines would be useful.

My comments are directed toward three categories: (1) the theory underlying the analysis; (2) the definition of the variables measuring opportunities for advancement; and (3) the sample selection. I will argue that a correctly specified theory would in fact imply weak effects for the variables at issue and that problems of variable definition and sample selection raise difficulties for the interpretation of the results.

Brown introduces his chapter with several quotations which speak to the effect of dead-end jobs. However, it is not clear that these quotations in fact imply a consistent story. Feldstein suggests that if a youth had an opportunity to hold a job with a future he or she would take it and presumably not quit. I think that this comes closest to what Brown means, but an important assumption, which I will return to, is that youths want these jobs. The argument implied by the *Washington Post* quotation is quite different. The implication here is that there are certain categories of jobs which black youths find racially insulting, largely because those jobs have been traditionally associated with labor market discrimination. This implies a racial difference in the behavior of black and white youths, a hypothesis which is not tested by Brown. A further implication, relevant to both racial differences and to the point I will make below about youth attitudes, is that behavior with respect to dead-end jobs will vary depending on whether the youth views the job as a temporary expedient

Paul Osterman is assistant professor of economics at Boston University.

or rather as emblematic of future treatment and prospects. Brown's data are not longitudinal and thus this issue cannot be addressed.

Why should a youth holding a dead-end job have a higher probability of experiencing subsequent unemployment than a youth holding a job with a future? One possibility is layoffs: firms which invest in screening, hiring, and training will be inclined to hoard labor, and these firms are also more likely to offer jobs with a future. Dead-end jobs should thus entail higher layoff rates and hence we should expect to see, and we do observe, an index perform well in a layoff equation. However, much of the burden of the argument seems to rest on quitting (as in the Feldstein passage) and here the argument is less clear. I would argue that much teenage labor market behavior is supply-driven in that most youths *want* to work only for spending money. They are target earners.[1] Thus there will be a tendency to leave jobs regardless of the jobs' characteristics and therefore I would not expect the index to perform well in the quit equation; in fact it does not.

Another issue is the definition of the indices. Brown is clearly unhappy with both and his approach was dictated by the data. However, it is important to emphasize two points. First, the wage growth index is not conceptually correct. It measures wage growth for both those who leave the occupation (or firm) and those who stay. But the unemployment question is whether low wage growth prospects lead people to leave firms. Many youths prefer working in low-paying casual jobs during the period in which they are target earners and they subsequently settle down into a different kind of work. The proper measure for the purposes of this chapter is the firm specific age-earnings profile of those who remain in the firm. This would capture the structure of opportunities for those who stay. The industry index comes closer, but it presents another problem. If an occupation—for any reason—has a low unemployment rate associated with it, then that occupation will score high on the index since a large source of industry leaving is reduced or eliminated. Thus the observed negative correlation between the index and unemployment is in some part the result of the construction of the variable.

Finally, the sample selection raises problems. The dependent variable takes on the value of one if the individual is currently experiencing unemployment, yet in samples of this sort the sampling procedure is such that currently unemployed indivuduals are likely to have longer than average durations of unemployment.[2] However, long durations are not characteristic of the youth labor market—the more common pattern is frequent spells and short durations. Thus it is not clear to what extent the paper addresses "typical" youth unemployment. A similar problem is raised by the exclusion of youths currently out of the labor force since movement in and out of the labor force is common in this age range.

As I said earlier, these problems are almost all the result of inadequate data. This paper is sufficiently promising to emphasize the need for good labor market data on individuals which will capture many more institutional characteristics of the firms in which they work than do the data commonly available. Most data sets now contain nothing beyond industry and occupation codes and perhaps a union variable. As a result, interesting questions such as the one raised by this chapter cannot adequately be addressed.

Notes

1. For a discussion of this argument see Paul Osterman, *Getting Started; Youth Labor Market*, Cambridge: MIT Press, 1980.
2. For a demonstration of this point see Stephen Marston, "The Impact of Unemployment Insurance on Job Search," *Brookings Papers on Economic Activity* 1/1975:13–60.

Comment Ronald G. Ehrenberg

Charles Brown has very ambitiously attempted to analyze whether the existence of "dead-end jobs" contributes to the youth unemployment problem. He assumes that the average rate of wage growth of individuals initially employed in an occupation and the proportion of these individuals who remain employed in the same industry for five years are both inversely related to the probability that individuals initially employed in the occupation find themselves in dead end-jobs. His basic methodological approach involves using data from the 1/100 sample of the 1970 Census of Population to calculate both of these variables for each three-digit occupation, merging these occupation-specific data into individual records from the 1973–75 Current Population Surveys, and then estimating equations in which the probability that an individual is unemployed at the CPS survey date is a function of the individual's personal characteristics and these occupation-specific variables. Conclusions are then drawn about the extent to which these occupation-specific variables influence young men's probabilities of being unemployed, of having voluntarily left their last job, and of having been laid off. The paper clearly represents a large commitment of time and effort and Brown should be commended for having undertaken it.

My major concern about Brown's approach is that it may not be possible to infer information about the characteristics of an occupation from either data on average wage growth of individuals initially in the

Ronald G. Ehrenberg is professor of economics and labor economics at Cornell University.

occupation or data on the proportion of these individuals who remain employed in the same industry over a five-year period. Rather, what we may be observing is information about the characteristics of individuals who choose the occupation.

To illustrate this point, suppose there are two types of individuals: "peaches" who always choose or are selected into occupation 1, and "lemons" who always choose or are selected into occupation 2. Whether an individual is a peach or a lemon can be ascertained readily by employers, but the information used to make this judgment is *not* contained in the CPS survey. True to their names, lemons are "lemons," and as a result will exhibit lower rates of wage growth and higher probabilities of unemployment, which may also result in lower probabilities of their remaining in the same industry. In this situation, if one were to calculate measures of wage growth and industry retention rates for individuals initially in an occupation, and then find after controlling for *measured* personal characteristics, that these variables were correlated in the CPS data with the probability of an individual's being unemployed, one could not conclude that it was the occupational characteristic per se that caused this relationship. Rather, it may simply be that individuals in occupations classified as being "dead-end" ones, on average are lemons (even though we cannot observe this fact in the CPS data). Put another way, we cannot ascertain from Brown's analyses whether it is the characteristics of jobs or the characteristics of workers in those jobs that he has identified. This is a classic example of the problem of trying to distinguish between heterogeneity of individuals and state dependence (see Heckman 1978 for an example).

One might think that this problem could be solved if one could use occupational data that reflected specific technical job characteristics. For example, in some work that I am doing for the National Commission for Employment Policy, I am attempting to ascertain if the probability that an employed teenager becomes unemployed is related to the occupational characteristic data that are found in the *Dictionary of Occupational Titles*. These data have been used with some success by Quinn (1979) and Lucas (1977) in previous work on other subjects. The data include information for each three-digit occupation on a variety of job characteristics such as whether individuals in the occupation have a variety of responsibilities, find themselves in situations which involve repetitive operations carried out according to set procedures, have jobs that allow little or no room for independent action or judgment, are required to control directly or plan an entire activity or the activities of others, are required to perform adequately under stress, are required to have physical strength, and are required to work under poor working conditions (e.g., under extremes of cold, heat, or temperature change, wetness or humidity, noise and vibration, hazards, fumes, odors, toxic conditions,

dust, or poor ventilation). It seems plausible that may of these job characteristics are associated with dead-end jobs.

If in my own work I ultimately observe a correlation between these characteristics and the probability that an employed worker voluntarily leaves or loses his job, one might be tempted to conclude that occupational job characteristics do affect turnover. However, the problem of unobservable individual characteristics still is present. That is, if lemons are sorted (by themselves or employers) into jobs with poor characteristics, it is difficult to determine whether it is the characteristics of the job or the characteristics of the employees which are "causing" the high probabilities of unemployment. To resolve this problem, one must use a methodology which allows one to distinguish between heterogeneity and state dependence. This requires a longitudinal data base that contains a number of observations for each individual; the cross-section data used by Brown is inadequate for this purpose.

Setting this major conceptual issue aside, let me now turn to a discussion of some of the specifics of Brown's work. Brown focuses on young males; young people because their unemployment rates are so high, males to reduce complications which those not in the labor force introduce. In fact, because of the nature of the CPS data, his empirical work excludes individuals not currently in the labor force from the sample. This exclusion has the potential to bias his results substantially since individuals who have dropped out of the labor force may be those who are the most likely to have been in dead-end jobs. Moreover, the fraction of younger males who move from employment to out of labor force status each month is not insubstantial. For example, in Ehrenberg (1980) I show that the gross-flow data from the CPS indicate that during the 1967–77 period approximately 11% of the white males and 14% of black males aged 16–19 who were employed one month were *not* in the labor force the next month. These percentages drop to about 3.5% for males aged 20–24; however, these numbers should be contrasted with the less than .3% rate for white males aged 25–59. The magnitude of these labor force exit rates suggests that exclusion of individuals currently not in the labor force is unwarranted. This is another serious weakness of the CPS data and it again suggests the need to use a longitudinal data source such as the National Longitudinal Surveys or the Michigan Income Dynamics data when one attempts to analyze this question.

Brown's initial discussion suggests that the five-year average growth rate of earnings of individuals initially employed in an occupation is a reasonable measure of whether the occupation consists of dead-end jobs. Somewhat surprisingly, in his empirical research the average beginning wage rate in the occupation and the average wage rate that the individuals obtain five years later are entered as separate independent variables, rather than the growth rate of earnings per se being entered. If his initial

discussion was correct, some measure of the percentage or absolute change in wages in an occupation would be the relevant variable to include. This suggests that the coefficients of the current and future wage variables in his equations should bear certain relationships. In particular, if the percentage change is the correct variable in his equations, the coefficients of the logarithms of the current and future wages should be equal and opposite in sign. While this appears to occur in many cases, Brown does not formally test this implication himself.

Of course, one might question whether the relative wage growth of individuals initially employed in an occupation really does measure the extent to which the occupation is a dead-end job. Brown tabulates wage growth by occupation in table 12.1. Among the fifteen occupations with the lowest rates of wage growth we find clergymen, elementary school teachers, and secondary school teachers (but, fortunately, not college professors or economists). I doubt that one would really want to argue that being a clergyman is a dead-end job (especially if one considers the very long run). It seems clear that the wage growth measure must be capturing other factors, including nonpecuniary characteristics of jobs.

Brown's second proxy variable for the existence of dead-end jobs is the proportion of individuals in an occupation who remain in their initial industry of employment five years later. Estimates of this variable are found in table 12.2 for sixty large occupational groups. While this variable is capturing something in the empirical work, it is again not clear that it is capturing whether jobs are dead end. To draw such a conclusion first requires us to assume that skills learned in an occupation are industry- rather than occupation-specific. Furthermore, all of the eleven highest occupations in this ranking, save for police and telephone installers and repairmen (which is a highly industry-specific occupation since the vast majority of its members are employed by the Bell System), require individuals to have college degrees and are high-skill jobs. In contrast, the ten lowest-rated occupations are primarily low-skill jobs, with little formal educational or training requirements. Brown's industry retention rate variable, therefore, is very highly correlated with the skill level or educational requirements of occupations; it is not surprising then that he finds that unemployment probabilities are correlated with this variable. In my view, a much more interesting variable would be industry retention rates by occupation that standardize for the skill composition of occupations. The relevant question is not whether occupations in which college graduates wind up have lower turnover than those in which elementary and high school graduates are sorted, but rather if among the range of occupations open to elementary and high school graduates there are some dead-end and some non-dead-end jobs.

Brown's sample restrictions are also not always the ones I would have made. Restricting his sample to individuals who are not in school elimi-

nates most teenagers from the sample. Furthermore, it prevents us from learning how initial part-time employment of enrolled youths influences their subsequent labor market success. I have already commented on the effects of his exclusion of individuals currently not in the labor force. Finally, his classification of unemployed individuals into those who were laid off or lost their last job, those who quit, and those who could not be identified (e.g., those who dropped out of the labor force and then reentered) ignores the distinction between permanent and temporary layoffs. While one might expect that high skill level jobs would have a low probability of permanent layoff, to my knowledge nothing in the theory or empirical evidence on temporary layoffs suggests that the probability of temporary layoff is small for this group. Unfortunately, he cannot make this distinction with the CPS data. Again, a true longitudinal data base is required.

Rather than rehashing his results, let me summarize the main message of my comments. First, longitudinal data are required and an attempt must be made to distinguish between unobservable heterogeneity of workers and state dependence. Occupational characteristic variables used in the analysis which are truly characteristics of the job (such as the *Dictionary of Occupational Titles* data) rather than the characteristics of the individuals who inhabit the positions will help but not solve the problem. Third, it is important to include those people temporarily out of the labor force in the sample, to consider the part-time employment experience of individuals enrolled in school, and to distinguish between temporary and permanent layoffs. While Brown must be commended for undertaking his ambitious, creative, and time-consuming study, it is clear, as he notes in his conclusion, that the results in the paper are too weak to justify either a confident yes or no answer to the question, "Is there evidence of a relationship between lack of opportunity for advancement and youth unemployment?" It is my hope, and I am certain his, that future research on this subject will provide more precise answers to this question.

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