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THE CIVILIAN EARNINGS EXPERIENCE OF VIETNAM-ERA VETERANS*

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ABSTRACT

In this paper we examine the civilian earnings experience of Vietnam-era veterans and nonveterans between 1968 and 1977. Contrary to the results of other studies indicating sizable premiums for veterans of earlier wars but significant penalties for Vietnam veterans, we find only small *overall* differences between the earnings of Vietnam-era veterans and similar nonveterans. However, the absorption of veterans into the civilian labor market was slow, particularly during the early seventies. More detailed analysis shows that Vietnam-era veterans exhibited longitudinal earnings profiles which were initially lower but steeper than those of nonveterans, that veterans' relative earnings improved toward the end of this period, and that younger birth cohorts may have fared more poorly than older cohorts. Only those with less than a high school education consistently realized veteran premiums. We find no evidence that military service has benefited recent cohorts of nonwhite veterans.

While Vietnam-era veterans have received considerable attention from the mass media, there exists little scholarly research on their earnings experience in the civilian labor market. On the one hand, the media have focused on the stunted careers, shattered personal lives, and psychological scars borne by a significant number of Vietnam veterans. On the other hand, the empirical literature on the civilian earnings experience of veterans indicates that veterans of past wars have received wage premiums

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relative to similar nonveterans. However, no study as yet has analyzed in depth the earnings experiences of a large sample of Vietnam-era veterans and nonveterans over the seventies.

In this paper we examine the earnings experience of Vietnam-era veterans and nonveterans, born between the years 1942 and 1952. We utilize individual data from the 1969 through 1978 March Current Population Surveys (CPS) and are able to trace the earnings experience of the 1942–1952 birth cohorts over this period. Contrary to the situation portrayed by the media or by the evidence on veterans of previous wars, we find few sizable overall differences between the earnings performance of Vietnam-era veterans and otherwise similar nonveterans. Our results suggest that some of the discontent among Vietnam veterans results not from veteran status *per se*, but rather from a deterioration in earnings opportunities for veterans and nonveterans alike.

Separate analysis by schooling group indicates that for the relatively small number of veterans with less than a high school degree a small earnings premium exists, while for those with a high school education or some college, veterans fare somewhat worse than comparable nonveterans. While precise disaggregation of the veteran-nonveteran differential into cohort, age, and time period effects is not possible, the results from our sample suggest that, relative to nonveterans, more recent cohorts of veterans may have fared more poorly than older cohorts. In addition, longitudinal age-earnings profiles of veterans are initially lower and steeper than those of nonveterans and, consistent with this evidence, the relative earnings of Vietnam-era veterans is found to have improved over the seventies. In contrast to previous studies, we find that military service during this period did not provide relatively larger benefits to nonwhites than to whites. While only small overall differences between veterans and nonveterans from the Vietnam era are found, veterans from previous periods are shown to have received substantial earnings premiums.

I. PREVIOUS EVIDENCE

Previous research on earnings and military service has focused on several policy-related topics.¹ A number of studies have compared the civilian earnings of nonveterans and veterans of previous wars, with evidence

1 Cooper [5] and Danzon [7] examine military retirees' pension income, earnings, and employment. Ross and Warner [24] compare military and veteran compensation, while Norrblom [20] and O'Neill, Ross, and Warner [22] examine the return on various types of military training. A large literature exists on the all-volunteer army. Cooper [4] provides an analysis of manpower requirements, while Janowitz and Moskos [15] present a broad assessment of the all-volunteer force.

for older veterans generally indicating an earnings premium associated with veteran status.² For instance, De Tray [9], using data from the 1960 and 1970 Census Public Use Samples, finds an earnings premium for veterans relative to otherwise similar nonveterans. The size of the veteran premium by age group appears to vary directly with the proportion veteran in that group, to vary inversely with schooling, and to be larger for blacks. Knapp [16] uses a 1964 cross section and observes a veteran premium among enlistees for all except college graduates. Likewise, a study by Little and Fredland [18], utilizing the National Longitudinal Survey (NLS) older men's sample, finds a significant veteran premium for World War II veterans. Using a single cross section from the 1970 Census, Villemez and Kasarda [29], as well as Martindale and Poston [19], find positive premiums for veterans of World War II and the Korean conflict.

Most evidence on the earnings of Vietnam-era veterans derives from reported 1969 earnings from the 1970 Census. Villemez and Kasarda, focusing on income, find a veteran disadvantage for both whites and blacks. Likewise, Martindale and Poston conclude that among whites, veterans have an earnings disadvantage.³ Similarly, De Tray [9] obtains negative veteran coefficients in earnings function regressions among young whites, ages 22 to 29, in 1970. Unfortunately, the 1970 Census provides no information on a large proportion of Vietnam-era veterans (those who had not left the service by 1969) and for the rest provides earnings data at only a single point in time shortly after military service. As with any single cross section, little information can be gleaned regarding subsequent earnings performance, differences in shapes of earnings profiles between veterans and nonveterans, and the effects of cohort versus age on earnings.

Recently, Rosen and Taubman [23] have used a matched sample of Social Security and CPS records to examine the earnings pattern of white males between 1951 and 1976. Included in their earnings regressions is a Vietnam-era veteran dummy variable. They find that Vietnam-era veterans earn about 19 percent less than nonveterans, in marked contrast to the significant premiums earned by World War II and Korean veterans. While the Rosen and Taubman paper makes a major contribution to our understanding of life-cycle earnings, we do not believe their evidence on Vietnam-era veterans, tangential to the primary focus of their paper, is particularly convincing. Their sample includes only 220 Vietnam-era vet-

2 An exception is Cutright [6]. For a survey of these studies, see Chamarette and Thomas [3].

3 In addition to relying on 1969 data, the Villamez-Kasarda and Martindale-Poston studies possess numerous methodological and statistical problems which, in our opinion, make their results unreliable.

erans, observed over several years (approximately 2300 observations).⁴ By simply including veteran status as a dummy control variable, they do not allow fully for differences in earnings structure between veterans and nonveterans. Specifically, the veteran-nonveteran differential is not permitted to vary across age, time, or cohort. Moreover, their omitted reference group, intended to include only nonveterans, apparently includes peacetime veterans as well.⁵

Because of the weaknesses of past studies, longitudinal-type analysis of a large sample of Vietnam-era veterans and nonveterans over the seventies is highly desirable. In particular, an examination of veteran-nonveteran differences by cohort, age, and year should improve significantly our understanding of the civilian earnings experience of Vietnam-era veterans.

II. VETERAN STATUS AND CIVILIAN EARNINGS

In this paper we analyze the effect of military service on subsequent civilian earnings, while excluding analysis of employment effects. Military service may, of course, decrease the likelihood of being in the labor force, or the likelihood of employment given labor force participation. However, each of these effects appears small. Approximately .7 percent of all Vietnam-era veterans died of a medical condition connected with the conflict in Vietnam, while approximately 1.8 percent suffered injuries requiring hospital care.⁶ As calculated from the March 1978 CPS tape, among males ages 25 to 39, 1.2 percent of Vietnam-era veterans were not working due to disability, compared to 2.0 percent among nonveterans. However, among those out of the labor force, disability was the reason given for not working for 34.5 percent of the veterans and 24.9 percent of the nonveterans. Among individuals in the labor force, a health limitation accounted for some weeks not worked in 1977 for 2.5 percent of the Vietnam-era veterans and 2.2 percent of the nonveterans. Likewise, unemployment rates have not differed markedly between Vietnam-era veterans and nonveterans throughout the seventies. In 1978, unemployment rates were 4.0 for both Vietnam-era veterans and nonveterans, ages

4 These figures are estimates based on data from Rosen and Taubman [23, Table 2].

5 For an analysis separating peacetime veterans from war veterans and nonveterans, see Section VI below. Both Kohen [17] and De Tray [8] have attempted to examine the earnings of Vietnam-era veterans based on the Young Men's sample of the NLS. De Tray obtains a 10 percent estimated wage premium for veterans based on a 1971 cross section, but was unable to obtain any clear results when incorporating the longitudinal nature of the data set. Similarly, Kohen concludes that sample sizes are too small to provide any clear pattern.

6 Calculated from data in U.S. Veterans Administration [28, pp. 14, 23].

25–39.⁷ Because the civilian employment effects of military service have been small, we focus attention in this paper exclusively on the relative earnings experience of Vietnam-era veterans over the 1968–1977 period.

Weekly earnings differentials between veterans and nonveterans with similar measured characteristics can result from (1) any direct effects of military training or service (relative to a similar length of civilian work experience) on subsequent civilian productivity, (2) unmeasured quality differences between otherwise similar veterans and nonveterans (“selectivity” differences), (3) the effects of veteran status as a screen for either the training or quality differences mentioned above, and (4) any differential treatment of veterans in the labor market not related to productivity differences.

Apart from limited preferential hiring programs for veterans in the federal government, we do not believe preferential or discriminatory treatment of veterans is important (an industry dummy variable for government employment is included in the empirical work).⁸ Thus, in contrast to studies which treat unexplained differences as measures of discrimination, we assume that actual earnings differences reflect productivity differences related to the first three sources listed above. While the data used in this study are well suited for measuring the size and behavior of the veteran-nonveterans differential over time, they provide no direct information on the extent to which it results from direct military training and service effects as opposed to resulting from inherent quality differences between those who serve in the military (and subsequently leave) and those who do not serve.

Although the media have focused on the psychological and personal problems of Vietnam veterans, widespread negative effects from military service on subsequent earnings most likely result from forgone human capital investment, coupled with incomplete transferability of skills acquired in military training. However, for those who voluntarily enter and subsequently leave military service, the presumption is that they expect that career path to be optimal. Even during the height of the Vietnam war, a relatively small proportion of military personnel were drafted, though a large number who volunteered would not have done so in the

7 U.S. Bureau of the Census [26, p. 382]. Veteran unemployment also appears to have been more sensitive to economic downturns, particularly among the youngest veterans. This results in part because veterans are likely to have less job seniority than nonveterans of the same age. Unemployment rates were higher for recently returning Vietnam-era veterans due to time spent in transition and job search, and because of the easy availability of unemployment insurance for veterans.

8 To the extent that legally mandated or voluntary preferential hiring is important, veterans should realize an earnings premium over nonveterans with similar characteristics. Within a given job, however, a veteran may be less productive and earn less than a nonveteran if the job was acquired as a result of preferential treatment.

absence of the draft.⁹ Among veterans who chose to enter and subsequently leave the armed forces, the shape of the earnings profile may have changed even if the present value of lifetime earnings did not. For instance, veterans are likely to have faced a lower initial wage upon entry into the civilian labor market (relative to the wage they would have earned if time in the military had been spent in the civilian labor market), but to have experienced faster wage growth subsequently. However, any negative effects due to forgone civilian training are expected to have been largest among the cohorts in which conscription or nonvoluntary military service was most likely.¹⁰

Previous studies have found the largest returns from military service for those with the least schooling, a result that may be partially attributable to unmeasured veteran-nonveteran quality differences by schooling group (see below). An alternative interpretation (see, for example, Rosen and Taubman [23]) is that military service is more apt to be a substitute rather than a complement for secondary schooling. Military training may substitute directly for skills otherwise acquired in school, or service in the military may signal some of those same desirable characteristics associated with schooling.

Approximately half of all one-term enlisted Vietnam-era veterans took advantage of the GI Bill which provided “vouchers” for virtually all types of educational training.¹¹ While we are unable with our data to know which veterans used the GI Bill, and thus had discontinuous years of schooling, its widespread use is certain to affect measured earnings differentials. Because newly discharged veterans faced a low private opportunity cost for schooling, not only because of the large GI Bill subsidy but also because reabsorption into the civilian labor market did not occur instantly, observed earnings gains from additional years of postsecondary schooling are likely to be lower for veterans than for nonveterans. In comparing similarly aged veterans and nonveterans with, say, a college degree, the veteran not only will have less total civilian work experience, but is also likely to have less *continuous* schooling and experience. Thus, relative veteran-nonveteran performance probably will be poorest among higher schooling groups where use of the GI Bill is most likely.

9 Of those with military service during the Vietnam era, 20.0 percent were draftees (calculated from [26, p. 375]). The draft also led some nonveterans to alter their behavior, particularly with respect to schooling.

10 While this reasoning leads to the prediction that the relative earnings of veterans are affected more adversely among groups with the highest proportion of veterans, De Tray [9] provides arguments and evidence suggesting just the opposite. Berger and Hirsch [2] critically examine De Tray's hypothesis and provide evidence for Vietnam-era veterans.

11 This figure is based on calculations from O'Neill [21, Table 1].

Another important reason why there might be a difference in the earnings of veterans and nonveterans with similar measured characteristics is that a “selectivity” bias exists whereby otherwise similar veterans and nonveterans are in fact different. This is simply an omitted variable problem in that we do not fully observe all of a worker’s characteristics (see [14]). The inability to adjust for unmeasured differences between veterans and nonveterans alters substantially the interpretation of empirical results. For instance, the finding that veterans fare relatively better than nonveterans among those with less than a high school degree need not result from any direct contribution of military service or training. Rather, among those with little schooling, veterans may be among the most able and motivated. Likewise, any veteran earnings disadvantage among those with more schooling might result from veterans being among the least able in this group.

In interpreting earnings differences between veterans and nonveterans with similar measured characteristics, it is also useful to treat veteran status as a screening device for the productivity differences discussed above. For instance, De Tray [9] suggests that veteran status isolates the more from the less productive workers and certifies that some minimum standards have been met. Veteran status thus should have the greatest signaling value for those with the least schooling. In this sense, schooling and military service can be regarded as substitutes. De Tray also argues that the value of veteran status as a screen will increase with the proportion veteran since the probability of any nonveteran being a rejectee is larger. It is doubtful, however, that being a nonveteran provides such negative information (see [2]) except among those with the least schooling (where rejection rates are higher) or during a period such as World War II when conscription was sufficiently widespread.

The above discussion suggests that there is no presumption for believing that systematic positive or negative differences exist in the present value of lifetime earnings between similar Vietnam-era veterans and nonveterans, nor that existent differences are identical for all schooling groups. However, because the timing of earnings is likely to differ between veterans and nonveterans, it is essential that longitudinal-type data be employed to investigate differences in earnings patterns. Moreover, it is important that the effect of veteran status be distinguished from other changes in earnings profiles that have occurred during this time period. Previous research has established that “baby-boom” cohorts have suffered depressed earnings relative to older cohorts, though there is disagreement regarding the steepness of earnings profiles among these young cohorts.¹² Thus, Vietnam-era veterans are likely to have faced depressed

12 For other analyses examining earnings during this period, see Welch [31], Freeman [11, 12], Dooley and Gottschalk [10], Berger [1], and Rosen and Taubman [23].

earnings prospects in the civilian labor market, in part because they belong to large birth cohorts and independent of any effects from military service or veteran status.

III. DATA AND ESTIMATION

Principal shortcomings of past research on veteran-nonveteran earnings differentials have been the lack of large sample sizes, the absence of longitudinal-type data, and the use of data (the 1970 Census, for example) which do not measure well the earnings experience of Vietnam-era veterans. However, the March Current Population Survey contains a wide variety of labor market and demographic information, provides samples of adequate size for both veterans and nonveterans, and allows a longitudinal-type analysis over the seventies.

The focus of this paper is on the civilian earnings experience of Vietnam-era veterans. Our sample includes 72,632 records of males born between 1942 and 1952, the age cohorts coinciding with peak military service during the Vietnam era. Among these cohorts, the 1947–1948 cohorts have the largest proportion with previous military service (as measured from the March 1978 CPS tape), with 44.5 percent veteran as compared to a low in our sample of 25.4 percent veteran among the 1950–1952 cohorts. We exclude from the sample anyone who did no work or had no wage and salary earnings during the previous year, anyone enrolled in school (defined as their major activity during the survey week), and those for whom being in school was the reason for working only part of the previous year.

While Vietnam-era veterans are defined officially as those who were in the military between August 5, 1964 and May 7, 1975, we compare the earnings of all veterans with those of nonveterans from the prime Vietnam-era cohorts.¹³ We are unable to distinguish between those Vietnam-era veterans who did and did not serve in Vietnam. However, 32.1 percent of all Vietnam-era veterans served in Vietnam, ranging from 41 to 54 percent among those discharged between 1968 and 1971, to 12 to 16 percent among those discharged between 1975 and 1977 [27, p. 382]. The average age at entry during this period (we have no individual data) was about 20.3 years [28, pp. 19, 21], while the median length of service was about 34 months, with a low of 30 months for those discharged in 1972 [28, p. 21]. During the Vietnam era, reenlistments accounted for

13 Thus, included as Vietnam-era veterans are some individuals from the oldest cohorts who left the service prior to August 1964, a few from the youngest cohorts who were discharged between May 1975 and December 1977, and several from the other cohorts who are coded incorrectly as veterans of previous wars. We obtained similar results when our analysis was restricted to only those coded as Vietnam-era veterans.

between 20 and 35 percent of annual enlisted personnel procurement [27, p. 379]. Virtually all of our sample consists of enlisted men since there were relatively few officers among the 1942–1952 cohorts discharged during this period (see [28, p. 16]).

While the CPS is an attractive data set for such an analysis, it is not without shortcomings. Ideally, one would like information on individual characteristics, activities, and earnings before and during as well as after military service. However, data sources containing this information, such as the NLS, are plagued by serious sample size problems. While the CPS has sufficient sample sizes, information on an individual's characteristics, activities, and earnings is available only for the previous year. Absence of true longitudinal or retrospective history data, in particular information at the time of entry into the military and on those who chose to remain in the military, prevent us from appropriately treating the potential sample selection problems mentioned previously. Veterans are likely to differ from nonveterans with similar measured characteristics and from otherwise similar military personnel who chose to remain in the military and for whom we have no data.

Despite the now common use of selectivity adjustment techniques designed to deal with such problems (Heckman [14]), data available here do not lend themselves to such procedures. Because individuals are not observed when they enter or leave the military, we have little ability to predict individual veteran status within a birth cohort other than by race and *current* region, schooling, etc. Moreover, such selectivity adjustment procedures have rarely proven to be robust in wage equations even where variables to identify the selection process (for example, the choice of union status or labor force participation) are readily available. While we cannot treat selectivity problems explicitly, we do make inferences regarding their importance in interpreting our results.

The most serious shortcoming of our data is probably the absence of direct information on individual age at entry and length of military service, and on the timing of schooling and use of the GI Bill. Thus, individuals from the same birth cohort with equal years of schooling may have substantially different time patterns of schooling, military service, and civilian work experience. In our empirical analysis we treat as “similar” those veterans and nonveterans from the same birth cohort, with equal years of schooling and other control variables. Therefore, similar workers have the same potential period of work experience; however, veterans have substituted military service for civilian work experience and are more likely to have discontinuous years of schooling.¹⁴

14 Additional problems with the CPS are that large year-to-year variability exists and that some procedures employed by the Census changed over this time period. Particularly

Because of our limited knowledge of individuals' schooling, military service, and civilian work experience patterns, and the finding in previous studies of significant differences in earnings structure across schooling groups, we provide separate analyses by schooling group. Our largest and probably most reliable group consists of 33,508 individuals with 12 years of schooling, 47 percent of whom are veterans. For most veterans in this group, military service occurred directly following school, and work experience directly followed military service. Indeed, among all Vietnam-era veterans, 59.1 percent were high school graduates with no college at the time of separation from the military, 19.8 percent had less than 12 years, while 21.1 percent had schooling greater than 12 years [28, p. 14]. We also provide a separate analysis for 13,376 individuals with 8–11 years of schooling, 26 percent of whom are veterans. We omit those with less than eight years since many nonveterans in this group would not meet minimum military entrance requirements. Finally, we analyze the earnings of 25,748 individuals with 13–16 years of schooling completed, 37 percent of whom are veterans. Because many veterans attended college on the GI Bill following military service, such individuals are least likely to have continuous work experience immediately preceding their observed earnings. For this reason, we exclude from our sample those with more than 16 years of schooling and place less emphasis on the results for the group with 13–16 years than we otherwise would.

In order to examine the civilian earnings experience of Vietnam-era veterans and nonveterans, we propose a model in which the effects of veteran status are permitted to vary by birth cohort, age, and sample year. We estimate semilog wage functions of the following form by schooling group for veterans and nonveterans:

$$\begin{aligned}
 (1) \quad \ln W_{ivs} = & \alpha_{ovs} + \delta_{ovs}AGE_i + \gamma_{ovs}AGE_i^2 + \sum_{c=1}^{10} \alpha_{cvs}C_{ic} \\
 & + \sum_{c=1}^{10} \delta_{cvs}C_{ic}AGE_i + \sum_{c=1}^{10} \gamma_{cvs}C_{ic}AGE_i^2 \\
 & + \sum_{k=1}^m \beta_{kvs}X_{ik} + \mu_{ivs}
 \end{aligned}$$

important is the change in the imputation procedure beginning with the 1976 March survey which primarily affected those with a college degree or more. However, we obtain no variability in our results which we can easily attribute to changes in imputation procedures. For a further discussion of the CPS and an attempt at estimating labor force experience, see Welch [31].

$$\begin{aligned}
 (2) \quad \ln W_{iNs} &= \alpha_{ONs} + \delta_{ONs}AGE_i + \gamma_{ONs}AGE_i^2 + \sum_{c=1}^{10} \alpha_{cNs}C_{ic} \\
 &+ \sum_{c=1}^{10} \delta_{cNs}C_{ic}AGE_i + \sum_{c=1}^{10} \gamma_{cNs}C_{ic}AGE_i^2 \\
 &+ \sum_{k=1}^m \beta_{kNs}X_{ik} + \mu_{iNs}
 \end{aligned}$$

W_i represents real weekly earnings of individual i in constant 1977 dollars, V and N index veteran and nonveteran status, s indexes schooling groups 8–11, 12, and 13–16, c indexes the birth year cohorts from 1942 to 1952, and C is a vector of dummy variables representing individual birth cohorts. Because (1) and (2) are estimated within relatively narrow schooling groups, age measures roughly potential military and civilian work experience, though we are unable to distinguish among individuals with different schooling, military, and civilian experience time patterns. The equations specified above provide estimates of separate longitudinal earnings profiles for each of the 11 birth cohorts, while the coefficient vectors α_c , δ_c , and γ_c show changes across cohorts in these profiles.

The vector X_k represents those control variables expected to influence earnings, while the μ_i from (1) and (2) are error terms with zero means and constant variances. The control variables include three regional dummy variables for the four Census regions, presence in a metropolitan area, marital status, race, the unemployment rate in the survey year, and dummies for six broad Census industry groupings. As mentioned previously, we segment our sample into three educational groups: those who have completed 8–11, 12, and 13–16 years of schooling. Three schooling dummy variables are included in the schooling 8–11 and 13–16 equations.

IV. VETERAN STATUS EFFECTS BY COHORT, AGE, AND YEAR

An Overview

To examine veteran-nonveteran earnings differences over the 1968–1977 period, we estimate the weekly earnings equations (1) and (2) for veterans and nonveterans by schooling group. While presentation and discussion of the complete results are not warranted, a brief overview is useful.¹⁵ Differences in earnings structure between Vietnam-era veterans and nonveterans are moderate, but statistically significant. We obtain F statistics of $F_{13278}^{49} = 1.77$, $F_{33416}^{46} = 3.16$, and $F_{23650}^{49} = 2.70$ for schooling groups 8–

15 Complete regression results are available on request.

11, 12, and 13–16, respectively, thus rejecting the hypothesis of equality of coefficients at the .01 level.¹⁶

The weekly earnings functions have R^2 s of between .17 and .18 for veterans and from .26 and .27 for nonveterans. These are reasonably high values considering the use of individual data, the division of earnings by weeks worked (rather than having the log of weeks worked as an explanatory variable), and estimation with narrow schooling groups. Veterans display a substantially lower variance in log earnings and characteristics than do nonveterans within each schooling group.

To provide summary measures of earnings differentials between Vietnam-era veterans and nonveterans by schooling group, birth cohort, age, and year, we first generate predicted values of weekly earnings. Based on estimated parameter values from equations (1) and (2), predicted values of $\ln W_{Vs}$ and $\ln W_{Ns}$ are generated using all-worker means by schooling group for all explanatory variables in control vector X , and for each specific birth cohort and age group cell using values from the estimated parameter vectors α , δ , and γ .

Veteran-nonveteran differentials are measured by the log difference, $\ln \hat{W}_V - \ln \hat{W}_N$, the percentage differential being $[\exp(\ln \hat{W}_V - \ln \hat{W}_N) - 1] \cdot 100$. We thus obtain 110 values of $\ln \hat{W}_V - \ln \hat{W}_N$ from (1) and (2), corresponding to the 11 Vietnam-era cohorts born 1942–1952, for the 10 years 1968–1977. Because we follow the same cohorts over time, the age span varies by cohort, ranging from ages 27 to 36 for the 1942 cohort to ages 17 to 26 for the 1952 cohort. Weighted summary measures by cohort, age, and year are presented below by schooling group. We also trace the relative veteran-nonveteran differentials realized by the 1947–1948 birth cohorts over the 1968–1977 period. As is well known, it is not possible to disentangle precisely earnings differentials resulting from cohort (vintage), age, and time effects.¹⁷

Summary veteran-nonveteran log differences over the entire 1968–1977 period are first calculated for each schooling group. These summary measures are weighted averages of the differentials across 110 cohort-year cells.¹⁸ We reach the broad conclusion that among the Vietnam-era birth cohorts, the earnings of veterans with at least a high school education have been lower than those of nonveterans with similar measured characteristics, though the magnitude of these differences has been small.

16 When we use a weaker mean square error test suggested by Wallace [30], we reject the hypothesis of equality for the schooling 12 and 13–16 groups, but cannot reject for the schooling 8–11 group.

17 For instance, see Hanoch and Honig [13].

18 These summary measures can be obtained equivalently by evaluating the veteran and nonveteran equations at the sample means of all of the variables within each schooling group.

Veterans with a high school degree and with 13–16 years of schooling have had weekly earnings approximately 1.9 and 1.8 percent lower, respectively, than similar nonveterans. On the other hand, veterans with 8–11 years of schooling have shown a 3.1 percent earnings premium.

These *adjusted* differences contrast with weighted *actual* earnings differences of 9.0, 0.6, and -1.5 percent for the 8–11, 12, and 13–16 schooling groups, respectively. Thus in each case, controlling for differences in characteristics between the two groups causes the veteran-nonveteran differential to become less positive (or more negative). Differences in characteristics explain a large proportion of the raw veteran premium in the lowest schooling group, whereas in the highest schooling group there is little difference between the actual and adjusted measures.

While the veteran-nonveteran differences are not large, the evidence does support the contention that military training and veteran status provide the greatest benefit (or the smallest penalty) to those with less than a high school education. This evidence is consistent with the belief that military service and training provide a substitute for schooling, that veterans among the schooling 8–11 group are relatively more able than nonveterans (due in part to the military's strict AFQT standards for enlistees without a high school degree), and that veteran status provides a valuable screen for those with the least schooling.

Finally, weighting the actual and predicted differences for each schooling group by the relative size of the group produces a composite picture of the veteran-nonveteran earnings differential for our entire sample.¹⁹ Weighted actual earnings of veterans exceed those of nonveterans by 1.3 percent, while the adjusted earnings differential, which accounts for differences in characteristics, is -1.0 percent.

Differences by Cohort

In Table 1, summary log differences over the entire 1968–1977 period are weighted by the number in each cohort by CPS sample year. Comparing across birth cohorts among those with 12 years of schooling, we observe a tendency for a larger veteran earnings penalty for later cohorts. The younger Vietnam-era veterans earn less than similar nonveterans, while veteran-nonveteran differences among older cohorts are positive or close to zero. Of interest is the fact that the youngest and oldest birth cohorts are the least likely to have been drafted and, among veterans, least likely to have served in Vietnam. The more negative differential for younger than for earlier cohorts suggests that actual service in the Viet-

¹⁹ However, this calculation does not hold constant differences in mean characteristics across schooling groups.

TABLE 1
WEIGHTED VETERAN-NONVETERAN LOG WEEKLY EARNINGS
DIFFERENCES BY SCHOOLING GROUP AND BIRTH YEAR COHORT,
1968–1977

Birth Year Cohort	Schooling Group		
	8–11	12	13–16
1942	.061	.044	.015
1943	.045	.013	–.011
1944	.042	.028	–.058
1945	.016	–.007	–.015
1946	–.013	–.012	–.050
1947	.106	–.003	–.044
1948	.052	–.049	–.019
1949	–.069	–.039	–.025
1950	–.061	–.031	.013
1951	–.027	–.029	.032
1952	.166	–.137	–.029
1942–1952	.031	–.019	–.018
n	13,376	13,508	25,748

TABLE 2
WEIGHTED VETERAN-NONVETERAN LOG WEEKLY EARNINGS
DIFFERENCES BY SCHOOLING GROUP AND AGE, 1968–1977

Age	Schooling Group		
	8–11	12	13–16
20	–.142	–.094	–
21	–.115	–.104	–
22	–.048	–.109	–
23	–.016	–.085	–.001
24	.018	–.057	–.017
25	.028	–.028	–.044
26	.057	–.001	–.054
27	.056	.020	–.046
28	.042	.023	–.030
29	.032	.032	–.003
30	.052	.009	.009
31	.063	.001	.007
32	.048	.010	.018
33	.060	.006	.017
17–36	.031	–.019	–.018
n	13,376	33,508	25,748

nam theater has not appreciably affected earnings, independent of veteran status. Rather, later cohorts of veterans have fared relatively worse, possibly because the value of veteran status as a screen has deteriorated, because shorter job tenure (relative to nonveterans) has had a larger proportionate effect on younger cohorts, or because of a decline in the relative quality of later cohorts of veterans which is unmeasured with our data. While the results for high school graduates suggest a relatively clear pattern across cohorts, estimates for the schooling 8–11 and 13–16 groups are much more erratic.

Finally, it is worth noting again that the summary measures presented in Table 1 necessarily entangle to some degree the effects of birth cohort and age. Since we followed the same Vietnam-era cohorts during the 10-year period, each cohort is examined over a different age span. Thus, the most recent cohorts are measured at younger ages than are older cohorts. Evidence presented above, suggesting that more recent birth cohorts of veterans have fared more poorly relative to nonveterans, is also consistent with the existence of larger veteran penalties among young workers.

Differences by Age

To examine how the veteran-nonveteran differential varies over the life cycle, we calculated weighted veteran-nonveteran log earnings differences across cohorts by age, where weights represent the proportion of all workers in each age group. In Table 2 these earnings differentials are presented for ages 20 through 33 by schooling group. Because we followed a moving sample of birth cohorts over time, different age groups are sampled in different years and for different cohorts. For instance, age groups 26 and 27 were included in our sample during all 10 sample years, age group 20 in four years (1968–1971), and age group 33 in four years (1974–1977). These differentials provide information on the relative shapes of veteran and nonveteran longitudinal age-earnings profiles, averaged across cohorts.

Focusing first on the high school group, we find that the evidence summarized in Table 2 indicates that veteran-nonveteran differentials are most negative for youngest workers. The longitudinal age-earnings profiles for veterans, while initially lower than for nonveterans, are also initially steeper. The veteran and nonveteran earnings profiles appear to converge around age 26, with little difference in earnings thereafter. Thus, Vietnam-era veterans in this schooling group appear to have been penalized due to incomplete transferability of training and lower seniority during the beginning of their civilian work lives (where the present value of the differential is largest). While they appear to eventually reach parity

TABLE 3
WEIGHTED VETERAN-NONVETERAN LOG WEEKLY EARNINGS
DIFFERENCES BY SCHOOLING GROUP AND YEAR

Year	Schooling Group		
	8-11	12	13-16
1968	.054	.029	-.009
1969	.053	.006	-.005
1970	.036	-.020	-.012
1971	.019	-.042	-.023
1972	.012	-.053	-.028
1973	.009	-.054	-.033
1974	.020	-.045	-.031
1975	.033	-.023	-.022
1976	.053	.008	-.003
1977	.081	.052	.024
1968-1977	.031	-.019	-.018
n	13,376	33,508	25,748

with nonveterans in earnings, we find little evidence of a compensating veteran premium at older ages.

Results for the college group indicate a pattern similar to those from the schooling 12 group except that convergence of the veteran and nonveteran earnings streams occurs several years later. We do not present results for ages less than 23 since relatively few college-trained veterans are likely to be in this group. Veterans from the schooling 8-11 group also show faster earnings growth and appear to receive a compensating premium shortly after “catching up” at about age 24. This premium, approximately 5 percent, does not appear to vary much with age. Our evidence again suggests that military service is a substitute for formal schooling because of transferable general skills obtained in the military or because veteran status serves as a screen. Alternatively, less-schooled veterans may have an unmeasured quality advantage over nonveterans. The results by age group are consistent with the hypothesis that military service and veteran status are more beneficial (less harmful) to those with less schooling and that veterans’ age-earnings profiles are initially lower and steeper than those for similar nonveterans.

Differences by Year

We also calculate weighted veteran-nonveteran earnings differentials by year for the period 1968-1977. These estimates will reflect not only the effects of time per se, but also any changes due to differences in the age

TABLE 4
 VETERAN-NONVETERAN LOG WEEKLY EARNINGS DIFFERENCES
 BY SCHOOLING GROUP AND YEAR, 1947–1948 BIRTH COHORT

Year	Schooling Group		
	8–11	12	13–16
1968	-.011	-.134	—
1969	.022	-.079	—
1970	.059	-.039	-.058
1971	.087	-.008	-.064
1972	.108	.013	-.063
1973	.118	.022	-.056
1974	.123	.018	-.044
1975	.116	.003	-.025
1976	.111	-.020	-.001
1977	.081	-.056	.032

structure of the Vietnam-era cohorts over the 1968–1977 period. Table 3 presents earnings differentials by calendar year, again using all-worker means and weighted by the proportion of individuals in each year cell. For all three schooling groups, we observe a similar U-shaped pattern in the veteran-nonveteran earnings differential over time. During the first several sample years, the largest wave of Vietnam-era veterans had not yet entered or reentered the civilian labor market, while the “older” cohorts of veterans had entered just prior to the deterioration in the labor market which was to affect later cohorts. The 1971–1974 period, where Vietnam-era veterans fared most poorly, corresponds to the period in which exiting waves of veterans were largest and followed the general deterioration in the relative earnings of youth. However, by the end of this period we find no evidence of a remaining earnings disadvantage for veterans and, if the results for 1977 are reliable, a nontrivial veteran advantage.

Differences Among the 1947–1948 Cohorts and Summary

The preceding analysis, examining veteran-nonveteran differentials between 1968 and 1977, has entangled to some degree the effects of cohort, age, and year. Thus, it is probably worth providing results for a specific cohort and following it through this period. In Table 4 we present differentials for the combined 1947–1948 birth cohort, the prime Vietnam-era cohort among whom 44.5 percent were veterans. We observe a pattern of differentials that begin negative and then move toward zero and, in the case of the schooling 8–11 group, become significantly positive. Again,

these results simply reflect the initially lower but steeper longitudinal earnings profiles among veterans.

In summary, the evidence summarized in this section presents a reasonably clear picture of the civilian earnings performance of Vietnam-era veterans relative to similar nonveterans. From 1968 to 1977 there tended to be a small earnings penalty associated with veteran status for all but those with less than a high school education. While precise separation of earnings differentials by cohort, age, and year is not possible, a fairly consistent pattern is found. In general, younger birth cohorts have fared relatively more poorly than older cohorts of Vietnam-era veterans (though evidence on this point is weak), age-earnings profiles for veterans are estimated to be initially lower and steeper than those for nonveterans, and by the end of the 1968–1977 period there existed little evidence of any remaining earnings penalty for Vietnam-era veterans.

V. VETERAN-NONVETERAN DIFFERENCES AND RACE

Previous literature on military service and earnings frequently has focused on the positive effect of veteran status on the relative earnings of nonwhites. Explanations for these effects have included the relatively greater value to nonwhites from general training received in the military, the relatively higher value of veteran status as a screen, and sociological explanations such as the belief that military service provides a “bridge” between the early black experience and civilian work.

We are unable to provide a detailed examination of racial differences by veteran status within the framework of this paper. In order to do so, we believe it would be necessary to estimate separate earnings functions such as (1) and (2) by race as well as veteran status and schooling. However, many CPS cell sizes would be quite small: in particular, cells of black veterans with less than a high school education from any specific birth cohort and CPS survey year.

An alternative way to examine racial earnings differences is to estimate a restricted version of the model previously estimated in which we impose a linear trend on cohort effects and include nonwhite-cohort interaction variables. We estimate:

$$(3) \quad \ln W_{iVs} = \alpha'_{OVs} + \delta'_{OVs}AGE_i + \gamma'_{OVs}AGE_i^2 + \alpha'_{iVs}C_i + \delta'_{iVs}C_iAGE_i \\ + \gamma'_{iVs}C_iAGE_i^2 + \phi_{Vs}NW_i + \psi_{Vs}C_iNW_i + \sum_{k=1}^m \beta_{kVs}X_{ik} + \mu'_{iVs}$$

$$(4) \quad \ln W_{iNs} = \alpha'_{ONs} + \delta'_{ONs}AGE_i + \gamma'_{ONs}AGE_i^2 + \alpha'_{iNs}C_i + \delta'_{iNs}C_iAGE_i \\ + \gamma'_{iNs}C_iAGE_i^2 + \phi_{Ns}NW_i + \psi_{Ns}C_iNW_i + \sum_{k=1}^m \beta_{kNs}X_{ik} + \mu'_{iNs}$$

The variable C' now represents a linear cohort variable which runs from 0 to 10 for the 1942 to 1952 birth cohorts, and NW is a dummy variable equal to 1 if the individual is nonwhite and 0 otherwise. Coefficient estimates for equations (3) and (4) are presented in Table 5.

This restricted model, in addition to providing evidence on the effects of veteran status and race, also provides summary estimates of longitudinal earnings profiles and changes in these profiles by cohort in a more concise manner than the less restrictive equations (1) and (2). For example, coefficients on the age and age squared interactions with cohort indicate that more recent birth cohorts have longitudinal earnings profiles which are initially lower, but steeper and more concave.²⁰

Coefficient estimates on NW and $C'NW$ from equations (3) and (4) provide estimates of racial differences in the veteran-nonveteran earnings differential or, equivalently, differences by veteran status in racial earnings differences. That is, $(\phi_{Vs} + \psi_{Vs}C') - (\phi_{Ns} + \psi_{Ns}C')$ measures by cohort either $(\ln W_V - \ln W_N)_{Nonwhite} - (\ln W_V - \ln W_N)_{White}$ or, rearranging terms, $(\ln W_{Nonwhite} - \ln W_{White})_V - (\ln W_{Nonwhite} - \ln W_{White})_N$.

Table 6 provides these calculations of racial differences in the veteran-nonveteran differential for six sample cohorts based on parameter estimates presented in Table 5. In contrast to previous studies, we find that military service during the Vietnam era, at least among those in the schooling 8–11 and 13–16 groups, generally provided smaller (but insignificant) relative benefits to nonwhites. When we compare the coefficients ψ_{Vs} and ψ_{Ns} on the nonwhite cohort interaction variable, we do observe a difference between these two schooling groups. While the racial wage differential showed no significant trend with respect to cohort among the schooling 8–11 group, there was a significant narrowing of the race differential among *both* veterans and nonveterans with some college. A particularly interesting pattern is observed among the schooling 12 group. For the oldest birth cohort (born 1942), nonwhites realized a veteran-nonveteran earnings differential which was 18 percent higher than that of whites during the 1968–1977 period. Whereas new cohorts of nonwhite nonveterans showed significant improvements in the labor market over this period, the nonwhite veterans showed no such vintage effects. For the youngest cohort (born 1952), the veteran-nonveteran differential was no better for nonwhites than for whites over this period. Thus, while military service has provided an attractive bridge to civilian work for some older nonwhite Vietnam-era cohorts, we find no evidence that military service continued to provide significant relative gains for more recent nonwhite cohorts.²¹

20 This result is obtained except among veterans in the schooling 8–11 and 13–16 groups. See Berger [1], Freeman [12], Welch [31], and Rosen and Taubman [23] for related evidence on this question.

21 Nonwhites who *remained* in the military may have fared well relative to similar civilian

TABLE 5
REGRESSION ESTIMATES EXPLAINING LOG WEEKLY EARNINGS
BY VETERAN STATUS, SCHOOLING GROUP, AND RACE
(standard errors in parentheses)

Explanatory Variables ^a	Schooling 8-11		Schooling 12		Schooling 13-16	
	Veterans	Nonveterans	Veterans	Nonveterans	Veterans	Nonveterans
Nonwhite	-.2569 (.089)	-.2791 (.033)	-.1304 (.030)	-.2953 (.026)	-.2218 (.040)	-.2212 (.037)
Cohort	-.1004 (.185)	-.5005 (.085)	-.3828 (.083)	-.4493 (.060)	-.0911 (.136)	-.4502 (.081)
Nonwhite*Cohort	.0023 (.015)	.0080 (.005)	-.0043 (.006)	.0136 (.004)	.0120 (.008)	.0162 (.006)
Age	.2955 (.091)	.1035 (.054)	.2113 (.037)	.1282 (.035)	.3480 (.056)	.2536 (.043)
Age ² ÷ 100	-.4368 (.1526)	-.1093 (.089)	-.2984 (.062)	-.1571 (.060)	-.5102 (.092)	-.3686 (.072)
Age*Cohort	.0098 (.014)	.0398 (.006)	.0296 (.006)	.0352 (.004)	.0089 (.010)	.0333 (.006)
Age*Cohort ÷ 100	-.0220 (.025)	-.0777 (.011)	-.0565 (.011)	-.0674 (.008)	-.0211 (.017)	-.0628 (.011)
R ²	.159	.253	.179	.255	.169	.284
Sample Size	3,480	9,896	15,899	17,609	9,558	16,190

a Other explanatory variables included in each regression are the aggregate unemployment rate and dummy variables controlling for Census region (3), industry (6), SMSA status, marital status, race, and single-year schooling completion group.

TABLE 6
 RACIAL DIFFERENCES IN THE VETERAN-NONVETERAN LOG WEEKLY
 EARNINGS DIFFERENTIAL BY SELECTED BIRTH COHORTS
 AND SCHOOLING GROUP, 1968–1977^a

Birth Cohort	Schooling Group		
	8–11	12	13–16
1942	.022	.165	–.001
1944	.011	.129	–.009
1946	–.001	.093	–.017
1948	–.012	.058	–.026
1950	–.023	.022	–.034
1952	–.035	–.014	–.043

a Measures $(\ln W_V - \ln W_N)_{Nonwhite} - (\ln W_V - \ln W_N)_{White}$. Calculated by $(\phi_{V_S} + \psi_{V_S}C') - (\phi_{N_S} + \psi_{N_S}C')$ from equations (3) and (4).

VI. VIETNAM-ERA VETERANS VERSUS VETERANS OF EARLIER WARS

Our evidence to this point has shown that during the 1968–1977 period, Vietnam-era veterans, other than those with less than a high school education, have tended to earn slightly less than similar nonveterans. This evidence contrasts with that from earlier studies, using less recent data and pre-Vietnam-era veterans, which found significant veteran premiums, and with Rosen and Taubman [23], who found a large penalty for Vietnam-era veterans. To compare our results with those from previous studies using a single cross section, we estimate a standard semilog earnings function using 1977 data from the 1978 CPS on males aged 25–64. We include dummy variables for Vietnam-era, Korean, World War II, and other veterans; the excluded reference group is nonveterans.²² Control variables include years of schooling, experience, experience squared, race, SMSA status, region, race, marital status, and industry.

Below are the coefficient estimates on the veteran dummies (standard errors in parentheses):

veterans and nonveterans. Smith and Welch [25] provide a more complete examination of changing black-white differentials over time.

- 22 The results from this analysis are not directly comparable to the preceding analysis. Our sample here, from a single cross section, includes a 40-year age band and also those with schooling less than 8 and greater than 16 years. Moreover, here the Vietnam-era and other veteran dummies correspond to the CPS coding, whereas earlier we compared all veterans within our 11 cohorts with similar nonveterans.

$$\ln W = \Sigma\beta X - .018VIET + .038KOREA + .063OTHER + .033WWII$$

(.010)
(.013)
(.013)
(.012)

$$R^2 = .226 \quad n = 27,866$$

The cross-section results indicate a small earnings disadvantage for Vietnam-era veterans. By comparison, 3.9 and 3.4 percent premiums are found for Korean and World War II veterans, respectively, and a 6.5 percent premium is found for peacetime veterans. Whereas the 1970 Census provided data too early to draw reliable inferences, sufficient time had elapsed by 1977 for most Vietnam-era veterans to make initial labor market adjustments. In contrast to these results for Vietnam-era veterans, De Tray [9], using 1960 Census data, finds that similarly aged Korean War veterans were already earning significant premiums by 1959, only six years after the end of the war. Based on the results presented in this paper, we have little reason for believing that Vietnam-era veterans will realize premiums of this size in the future.

VII. CONCLUSIONS

In contrast to the veterans of earlier periods who have realized earnings premiums relative to nonveterans, Vietnam-era veterans fared relatively poorly in the labor market throughout much of the seventies. Returning veterans not only were penalized for forgone training and lost seniority, but also reentered the civilian labor market during a period when earnings opportunities had deteriorated for baby-boom cohorts, veteran and non-veteran alike. While the veteran earnings disadvantage was not permanent, full absorption and adjustment into the civilian labor market was slow. Disappointment among Vietnam-era veterans also may have resulted even when there was no differential if veterans, based on recruitment information and the experience of previous veterans, anticipated significant wage premiums.

As is the case in most of the literature on intergroup differentials, our findings are subject to the important caveat that we may not be comparing truly similar groups. Despite extensive use of control variables, it is unlikely that all differences between the earnings performance of veterans and nonveterans with identical characteristics is a direct result of military service and veteran status. The existence of any long-run veteran-nonveteran differential, as is the case for those with 8–11 years of schooling, may just as likely arise from inherent productivity differences as from any direct effect of military service and training or differential treatment by employers.

Despite these inherent limitations, a reasonably clear picture of the earnings performance of Vietnam-era veterans has emerged. Overall, the

1942–1952 cohorts of veterans have suffered a small earnings penalty during the 1968–1977 period. We did not find veteran status to be advantageous for the most recent cohorts of nonwhites. The veteran-nonveteran differential did vary with schooling, cohort, age, and year. In contrast to most veterans who had at least a high school degree, less-schooled veterans received a premium relative to nonveterans. We did find that veterans exhibited longitudinal age-earnings profiles that were initially lower and steeper than those of nonveterans, and that younger cohorts possibly fared more poorly than older cohorts. By the end of this period, the relative earnings performance of Vietnam-era veterans had improved sufficiently such that no long-run earnings penalty was apparent. However, we find little evidence supporting the belief that Vietnam-era veterans will receive substantial future earnings premiums, as have previous veterans. Indeed, one important conclusion to be drawn from this study is that lifetime earnings differences between Vietnam-era veterans and nonveterans are likely to be small.

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