A Note on the Effect of Union Army Pensions on the Labor Force Participation of Older Males in Early-Twentieth-Century America

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The labor force participation of older males in the United States started to decline in the late nineteenth century, long before the development of major public welfare programs for the elderly. Some scholars have attributed this phenomenon to the expansion of the Union army pension programs. This note suggests that the veterans' pension is of secondary importance in explaining the trend toward declining labor market activity of older males. This result implies that the labor force participation of older males would have declined over the last century even without the rise of public welfare and social insurance programs. (*JEL* Classification: J14, N31)

I. Introduction

The labor force participation rate (LFPR) of older males in the United States fell dramatically over the last 120 years. In the late nineteenth century, nearly four out of five men 65 and older participated in the labor market. Today, only 15 percent of males in the same age group are working. Such a sharp decline in the

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[**Seoul Journal of Economics** 2000, Vol. 13, No. 1]

labor market activity of older men has been regarded as one of the most marked changes in the U.S. labor market that the past century witnessed. Naturally, it has been a perennial economic issue what produced the fall in the labor market involvement of aged men. Many economists have attributed this phenomenon to the creation and expansion of various public welfare and social insurance programs for old age security (Boskin 1977; Parsons 1980, 1991; Hurd and Boskin 1984; and Gruber and Wise 1999).[1] Numerous studies have examined how such programs, especially social security, affected the retirement behavior of aged males based on various empirical grounds. Unfortunately, the results of these studies are sharply divided over the size of the impact of social insurance programs on retirement.

Considering this literature on retirement, it is interesting to note that the decline in the labor market activity of older men started as early as the end of late nineteenth century, long before the creation of major public insurance programs for the aged. Indeed, about half of the fall in the LFPR of older men over the last 120 years took place prior to 1940 when the first Old Age Survivors Insurance (OASI) benefits were paid out.[2] The trend in the LFPR of older males before 1940 casts doubts about the view that the implementation and expansion of public social welfare programs caused the exit of older workers from the labor force.[3]

Some studies reconcile the discrepancy between the timing of the rise of the welfare state and of the decline in the LFPR of older males in terms of early public transfer programs for the elderly, especially the provision of Union army pensions. Moen (1987a)

[1]See Krueger and Pischke (1992) and Lee (1998a) for some evidence against this view.

[2]See Ransom and Sutch (1986, 1989), Moen (1987a, b), Margo (1993), Carter and Sutch (1996), and Lee (1998b) for the debate over the trend in the LFPR of older males between 1870 and 1940.

[3]The labor force participation rates of older males in Britain, France, and Germany exhibit time trends generally similar to that of the United States (Costa 1998), despite the fact that these European countries established public old-age pension programs much earlier than did the United States. According to a recent study of London labor market circa 1930, the state pension in Britain did not exert a strong retirement effect (Baines and Johnson 1999). These findings, though not decisive, tend to suggest that the decline in the LFPR of older males in the above European nations is probably not attributable to social security, either.

argues that the decline in the LFPR of older males in the late nineteenth and early twentieth centuries may have been caused in part by increased generosity of the Union army pension program. The fact that the LFPR of older men ceased to decline between 1910 and 1930, he maintains, is consistent with this explanation because the number of pension recipients decreased sharply after 1910 as many veterans died. It was also found that Union army pensions had a strong positive effect on the probability of retirement of individual pensioners (Costa 1995). Costa's result confirms that pensions did have a significant retirement effect at the individual level. There is little evidence, however, on the magnitude of the retirement effect of Union army pensions at the aggregate level, because only a portion of older men received pensions. The purpose of this note is to estimate how much of the decline in the LFPR of older men prior to the social security era resulted from the expansion of the Union army pension program.

II. Analysis

The basic system of pension laws was initially established in 1862 to provide pensions to Union army veterans who were disabled as a direct result of military service.[4] The dollar amount received depended on the degree of disability, where disability was determined by the applicant's capacity to perform manual labor. As a result of vociferous lobby of veterans and the desire of politicians to earn their support, the scope and generosity of the pension program grew enormously over time (Skocpol 1995). By the turn of the century, benefits consumed almost 30 percent of the federal budget and about 90 percent of those who served in the Union army were on pension rolls. The annual value of the average veteran pension was $135, or 36 percent of the annual income of nonfarm laborers.

As far as the age group of 65 and over is concerned, the effect of Union army pensions on the LFPR of all males should have been particularly strong during the first decade of the twentieth century. Though the number of pensioners increased rapidly after 1890, the

[4]See Glasson (1918) and Costa (1998) for a more detailed description of the Civil War pension system.

majority of veterans were younger than 65 by the turn of the century. By 1910, however, the vast majority of pensioners were 65 and older. For this reason, the number of pensioners aged 65 and older more than doubled between 1900 and 1910 while the total number of pensioners decreased during the same period. After 1910, on the other hand, the number of pensioners in that age group decreased rapidly as many of them died. Accordingly, the analysis below focuses on the period 1900-10 to have an upper bound estimate of the effect of pensions on the decline of the LFPR of older men.

I decompose the decline in the LFPR of men 65 and older between 1900 and 1910 into several factors to examine how Union army pensions affected the trend in the LFPR of older males. The LFPR of males in an age group j may be presented as the weighted average of the LFPRs of Union army pensioners (P_j^U) and non-pensioners (P_j^N), where corresponding weights are the fractions of pensioners (ϕ_j) and non-pensioners ($1-\phi_j$) in that age group. Here, I divide males 65 and older into four age groups, 65-69, 70-74, 75-79, and 80 and older. The LFPR of all males 65 and older (P^A) can be given as the weighted average of the LFPRs of the four age groups as shown below, where ω_j denotes the proportion of men 65 and older in age group j:

$$P^A = \sum \omega_j \{ \phi_j P_j^U + (1-\phi_j) P_j^N \}. \quad (1)$$

By differencing the above equation, we have:

$$\Delta P^A = \sum \omega_j \phi_j \Delta P_j^U + \sum \omega_j (1-\phi_j) \Delta P_j^N + \sum \omega_j (P_j^U - P_j^N) \Delta \phi_j + \sum P_j^A \Delta \omega_j + \varepsilon . \quad (2)$$

The first and second terms on the RHS of equation (2) show the change in the LFPR of all males 65 and older produced by changes in the LFPR within the categories of pensioners and non-pensioners. The third term represents the size of the effect of a change in the fraction of pensioners, which depends on the difference in the LFPR between pensioners and non-pensioners. The remaining two terms indicate, respectively, the effect of a change in age structure and the residual.

For decomposing the decline in the LFPR of males aged 65 and over between 1900 and 1910 based on equation (2), the following information is required for 1900 and 1910: (1) The weight to be assigned to each age category (ω_j); (2) the fraction of Union army

TABLE 1

AGE DISTRIBUTION AND THE LABOR FORCE PARTICIPATION RATE OF THE ENTIRE MALE POPULATE 65 AND OLDER

Age	1900		1910	
	Proportion	LFPR	Proportion	LFPR
65-69	0.408	0.841	0.413	0.797
70-74	0.299	0.697	0.277	0.636
75-79	0.170	0.526	0.180	0.494
80 and over	0.123	0.405	0.130	0.322

Source: IPUMS of 1900 and 1910 censuses

pensioners in each age category (ϕ_j); and (3) the labor force participation rate of pensioners (P_j^U) and non-pensioners (P_j^N). The weight for the age group 65-69, for example, can be easily calculated by dividing the number of males aged 65 to 69 by the number of all males 65 and over. The Integrated Public Use Micro Samples (IPUMS) of the 1900 and 1910 censuses are used for the computation.[5] Table 1 reports the result of the calculations.

The fraction of pensioners in each age group, on the other hand, is not readily available from existing data. Only the total numbers of Union army pensioners in 1900 and 1910 are known from a published source (Table 2, col. 2). In order to obtain the number of pensioners in particular age groups, I estimate the percentage of pensioners in each age group using a sample of about 15,000 Union army veterans. This sample has been collected as part of the project titled *Early Indicators of Later Work Level, Disease, and Death*.[6] Information on nearly 40,000 white enlisted men in a random sample of 303 Union army infantry companies was gathered from the regimental records, and has been linked to other data sources. These sources include military records, carded medical records, pension records, manuscript schedules of the federal censuses of 1850, 1860, 1900, and 1910, and surgeons' records on medical examinations of veterans. The sample used in this study is composed of about 15,000 recruits (about 40 percent

[5]See Ruggles and Sobek (1995) for details of these sources.

[6]This project has been jointly sponsored by the National Institutes of Health, the Center for Population Economics at the University of Chicago, and the Economics Department at Brigham Young University. See Fogel (1993) and ICPSR (1996) for details of the data and related research projects.

TABLE 2

ESTIMATED NUMBER OF UNION ARMY PENSIONERS 65 AND OVER

Year	(1) Male population 65 and older	(2) All Union army pensioners	(3) Fraction of pensioners 65 and older	(4) Union army pensioners 65 and older
1900	1,560,000	740,000	0.251	185,740
1910	1,990,000	560,000	0.734	411,040

Source: (1) U.S. Bureau of the Census (1901, 1913).
(2) U.S. House of Representatives. Recited from Moen (1987a).
(3) Union army veteran sample.
(4) Calculated from cols. (2) and (3).

TABLE 3

AGE DISTRIBUTION AND THE LABOR FORCE PARTICIPATION RATE OF UNION ARMY PENSIONERS 65 AND OLDER

Age	1900		1910	
	Proportion	LFPR	Proportion	LFPR
65-69	0.510	0.803	0.500	0.663
70-74	0.314	0.587	0.297	0.491
75-79	0.142	0.484	0.135	0.416
80 and over	0.034	0.348	0.068	0.195

Source: Union army veteran sample

of the entire sample) who enlisted in companies organized in Ohio, Pennsylvania, and New York. An advantage of using this sample is that we can identify whether a person received pensions based on the information contained in pension records.

We first estimate the fraction of pensioners aged 65 and over (Table 2, col. 3) and then the age distribution of pensioners 65 and older (Table 3). Since the age distribution of pensioners used here is calculated using a 40 percent sample rather than the entire random sample of Union army recruits, it could be biased. In order to examine the magnitude of the potential bias, I conducted the following check. Though not all recruits have been linked to other data sources such as pension records and censuses, we do know the age and date of enlistment for the entire sample. We can calculate the age distribution as of 1860 for the entire random sample using this information. Next, I estimate the age distribution of this full sample as of 1900 and 1910 applying cohort mortality rates calculated from life tables of 1860 through 1910. An underlying

TABLE 4

ESTIMATED FRACTION OF UNION ARMY PENSIONERS IN EACH AGE CATEGORY, 1900 AND 1910

Age	1900			1910		
	(1) All Males	(2) Pensioners	(3) ϕ^U	(1) All Males	(2) Pensioners	(3) ϕ^U
65-69	636,480	94,727	0.149	821,870	205,520	0.250
70-74	556,440	58,322	0.131	551,230	122,071	0.221
75-79	265,200	26,375	0.099	358,200	55,490	0.155
80 and over	191,880	6,315	0.033	258,700	27,951	0.108

Definition and Source:

(1) Number of all males. Calculated from the age distributions reported in Table 1 and col. 1 of Table 2.
(2) Number of Union army pensioners. Calculated from the age distributions reported in Table 3 and col. 4 of Table 2.
(3) Fraction of Union army pensioners in each age group. Calculated by dividing col. 2 by col 1.

assumption is that the mortality among veterans did not differ from that among the entire male population. The estimated age distribution for all veterans looks similar to that for veterans included in the three-state sample, indicating that the selection bias problem in age distribution should not be serious. Using these estimates and the total number of pensioners, the number of pensioners in each age group can be estimated (Table 4, col. 2). The fraction of pensioners in each age group is calculated by dividing the estimate of pensioners by the entire male population (Table 4, col. 3).

The LFPR of pensioners is estimated using the information on gainful occupation of veterans who received pensions. The results for 1900 and 1910 are reported in Table 3. Since the estimation is based on the sample of veterans who enlisted in the three states and who were linked to the census data, we may have a selection bias problem. However, the similar age structure and other socio-economic characteristics of the three-state sample and the random sample of veterans suggest that such a bias problem should not be too serious.[7] Moreover, the major implications of the result, particularly

[7]The LFPR of the entire veterans for 1910 can be estimated using the IPUMS of the 1910 census which reports the information on veteran status. However, this source will provide a lower-bound estimate of the LFPR of pensioners because the LFPR of non-pensioners mixed in the sample would

TABLE 5

A DECOMPOSITION OF THE DECLINE IN THE LFPR OF MEN 65 AND OLDER, 1900-1910

Variable	Estimate	
$\sum \omega_j \phi_j \Delta P_j^U$	0.019	(30.2%)
$\sum \omega_j (1-\phi_j) \Delta P_j^N$	0.028	(44.4%)
$\sum \omega_j (P_j^U - P_j^N) \Delta \phi_j$	0.010	(15.9%)
$\sum P_j^A \Delta \omega_j$	0.003	(4.8%)
ε	0.003	(4.7%)
ΔP^A	0.063	(100.0%)

Note: In parenthesis is the percentage of the decline in the LFPR of all men 65 and over between 1900 and 1910 explained by each variable.

the small contribution of the increase in the fraction of pensioners to the fall in the LFPR, are not highly sensitive to changes in the estimate of the LFPR for pensioners. The LFPR of non-pensioners (P_j^N) for each age group is calculated indirectly from the following identity using the estimated LFPR of the entire males (P_j^A) and pensioners (P_j^U) and the fraction of pensioners (ϕ_j) in that age group:

$$P_j^A = \phi_j P_j^U + (1-\phi_j) P_j^N. \tag{3}$$

Applying the parameters estimated above we can now calculate each of the components of equation (2). The result, reported in Table 5, suggests that the effect of a change in the coverage of the Union army pension program accounts for only 16 percent of the total decline in the LFPR of men 65 and older between 1900 and 1910. The fall in the LFPR among non-pensioners explains nearly half of the LFPR decline among the entire older males. Another 30 percent is accounted for by the decline in the labor market activity among pensioners. Even if we assume that this 30 percent of the decline is entirely attributable to a rise in pension benefits, which is unlikely, less than half of the decline in the LFPR is explained by Union army pension during the decade in which its effect should have been at the peak.

be lower than that of pensioners.

III. Concluding Remarks

The expansion of the Union army pension program doesn't seem to be a major factor of the decline in the LFPR of older men prior to 1900. The LFPR of men 65 and older fell sharply from 78 percent in 1880 to 65 percent in 1900. The Union army pensions became increasingly generous over the late nineteenth century in terms of coverage and average benefit as noted above. However, most pensioners were relatively young before 1900. In 1900, for example, only one out of four pensioners were 65 and older. According to the age-specific LFPR calculated from the IPUMS of the 1880 and 1900 censuses, male workers began to leave the labor force only after age 60. Therefore, the retirement effect of veterans' pensions should have been, if any, small in magnitude before 1900.

There was another major government transfer program for the elderly prior to 1940, namely, Old Age Assistance (OAA). It was a federal-state joint program that provided assistance to the elderly poor. A number of studies have reported that the OAA should be responsible for the dramatic fall in the LFPR of older men during the 1930s (Moen 1987a; Parsons 1991; and Friedberg 1996). However, at least a part of the exodus of aged workers from the labor force during that decade appears to have been a result of discouraged worker effect produced by the poor labor market prospect in the era of the Great Depression (Lee 1998a). It is likely, therefore, that the two major public income transfer programs for the elderly introduced prior to 1940 are of secondary importance in explaining the trend toward declining labor market activity of older males. This result implies that the establishment of public welfare programs for the elderly may not have been a necessary condition for the spread of early retirement. Even if the OAA was fully responsible for the drop of the LFPR during the 1930s, we still have a similar implication from the result. Nearly one third of the entire decline in the LFPR of older men over the last 120 years occurred between 1880 and 1910. And the only major public transfer program of that era, namely, Union army pensions, hardly explains the decline in the labor market involvement of older males during those periods. This evidence tends to support the view that the labor force participation of older males would have declined over the last century even without the rise of public welfare and

social insurance programs.

What then produced the secular decline in the labor market activity of the elderly prior to 1950? It is widely accepted that increased retirement incomes could be one of the most important causes of the long-term decline in the labor market activity of older males. Costa (1995), for example, reported that 90 percent of the decline in labor force participation rates of men older than 64 between 1900 and 1930 could be attributed to secularly rising incomes. A further question arises from this view: What were the main sources of retirement incomes? The result of this study suggests that individuals may have financed retirement relying largely upon private resources, such as savings in various forms and family supports, rather than income transfers from younger generations forced by the government.

Another possible explanation for the rise of retirement in the early twentieth century is that aged workers were forced out of the labor force, victimized by the consequences of industrialization. Contemporaries often condemned the increased intensity of production, the greater need for formal education, new managerial practices, and the rise of age discrimination for making older men less useful compared to younger workers (Squier 1912; Epstein 1928; and Graebner 1980). A number of recent studies provide evidence supporting this view. For example, older workers were much more likely to be unemployed for a prolonged period as compared to the young in the early twentieth century because they had greater difficulty in locating a new job when laid off (Keyssar 1986; and Margo 1993). Long-term unemployment of an aged worker often lead to permanent departure from the labor force (Lee 1998b). Industrialization appears to have brought a growth of the sectors in which the pressure toward retirement was relatively severe, as indicated by the pattern of the shift in the occupational structure between 1880 and 1940 (Lee 2000).

It is difficult to determine which of the above two factors of retirement, namely, increased incomes and deteriorated labor market prospect was the more important force behind the fall in labor market activity of older males. In fact, they may have been supplementing, rather than competing factors with each other. It is beyond the scope of the present note to suggest a complete answer to the question of why individuals started to retire earlier than previous generations since the late nineteenth century. But at least

it seems clear from the result of this study that long-term factors, such as rising incomes or changing industrial environments, are more important than the introduction of welfare programs in explaining the long-term decline in the labor market involvement of older males.

(Received January, 2000; Revised March, 2000)

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