

Changes in the distribution of long-run earnings and retirement incomes: Have recent cohorts fallen behind?

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CHANGES IN THE DISTRIBUTION OF LONG-RUN EARNINGS AND RETIREMENT INCOMES—HAVE RECENT COHORTS FALLEN BEHIND?

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Abstract

This study is motivated by the well-documented increase in wage inequality during the 1980s and the continued high levels of inequality during the 1990s. Specifically, we examine changes in the distribution of long-run earnings and changes in economic mobility for recent cohorts. These cohorts, who either entered retirement in the 1990s or are nearing retirement, experienced very different labor market conditions during their working lives than did earlier cohorts. Economic growth led to higher mean earnings for recent cohorts but the distribution of yearly earnings became less equal. As a result of these changes, the average worker nearing retirement had higher long-run earnings than members of previous cohorts. This, however, need not have translated into higher long-run earnings across the board. Those at the bottom of the distribution of long-run earnings might actually have had lower accumulated earnings than previous cohorts if the gains from growth were more than offset by the increase in inequality of earnings during the 1980s. If the accumulated earnings of those at the bottom of the distribution fell, then this could have had an impact both on decisions about whether to continue to work after the period of normal retirement and on Social Security benefits.

The second, and related, policy question is whether mobility has increased. If mobility has increased, then this may partially offset the impact of the increase in earnings inequality. Outcomes may be less equal, but there is less chance of being stuck with a bad outcome. Our ability to measure earnings mobility for five cohorts spanning a twenty-five-year period allows us to address this important question.

Introduction

This study is motivated by the well-documented increase in wage inequality during the 1980s and the continued high levels of inequality during the 1990s. Specifically, we examine changes in the distribution of long-run earnings and changes in economic mobility for recent cohorts. These cohorts who either entered retirement in the 1990s or are nearing retirement experienced very different labor market conditions during their working lives than did earlier cohorts. Economic growth led to higher mean earnings for recent cohorts but the distribution of yearly earnings became less equal. As a result of these changes, the average worker nearing retirement had higher long-run earnings than members of previous cohorts. This, however, need not have translated into higher long run earnings across the board. Those at the bottom of the distribution of long run earnings might actually have had lower accumulated earnings than previous cohorts if the gains from growth were more than offset by the increase in inequality of earnings during the 1980s. If the accumulated earnings of those at the bottom of the distribution fell, then this could have had an impact both on decisions about whether to continue to work after the period of normal retirement and on Social Security benefits.

We are specifically interested in those at the bottom of the earnings distribution who are likely to have suffered disproportionately as a result of the rise in inequality of yearly earnings. We, however, recognize that yearly earnings may be a poor measure of permanent earnings, especially if there is substantial mobility. By using administrative earnings records that span a half century, we are able to classify workers on the basis of their long-run earnings. This allows us to examine changes in the distribution of long-run earnings and to see how persons at the bottom of this distribution have fared during their working lives and as they entered their 60s.

This paper is purely descriptive. It attempts to document the stylized facts that a behavioral model would have to explain. While making no pretense at identifying causal mechanisms, it does address some important questions that often surface in policy debates about the extent and importance of the increase in economic inequality. Critics rightly argue that there is substantial earnings mobility so yearly earnings inequality overstates the extent of inequality of permanent earnings. If individuals either have savings or can borrow, then low earnings in one year can be counterbalanced by higher earnings in another year. This argues for a longer period over which

to aggregate earnings. Our ability to aggregate over a twenty-four-year period certainly meets this goal.

The second, and related, policy question is whether mobility has increased. If mobility has increased, then this may partially offset the impact of the increase in earnings inequality. Outcomes may be less equal but there is less chance of being stuck with a bad outcome. Our ability to measure earnings mobility for five cohorts spanning a twenty-five-year period allows us to address this important question.

Our paper can be viewed as a complement to Bosworth, Burtless and Sahm (2000), BBS. The two papers ask similar questions but use different methodologies and data to address these questions. Each approach has its relative strengths and weaknesses. The fundamental empirical problem both papers face is that no data set includes earnings histories covering the full working lives of cohorts who precede the rise in inequality and cohorts who were affected by these changes in labor markets. BBS deal with this problem by using the MINT microsimulation model to extrapolate the earnings of persons who had not yet reached retirement age by 1998, the last year of administrative data available to them. The approach they use is to splice the earnings history of an older worker, whose history was observed, to that of a younger worker with similar characteristics.¹ This allows them to construct earnings histories over full careers from age 22 to 61.² As they acknowledge, the advantage of having earnings over the full career path comes at the cost of having to assume that (a) the premium paid to higher education, experience and other characteristics that they control for will be the same in the future as it was in the mid-1990s and that (b) inequality among workers with the same characteristics will also not change.³

We take a different approach which does not have to make assumptions about future changes in the distribution of earnings. This advantage, however, comes at the cost of having shorter work histories. As we will explain in the following section, this imposes a tradeoff between the cohorts covered and the period over which we can observe their earnings using administrative records. Given our desire to include cohorts whose working lives predate the rise

¹ They match workers on the basis of age, sex, race, educational attainment, disability status, and average career earnings prior to the matching period. They only use the most recent histories of older workers by splicing successive five-year earnings segments.

² The earliest age is limited by the fact that the SER covers earnings starting in 1951.

³ Bosworth et al (2000, p17). The latest five years of data used to hot deck comes from SER records covering earnings in 1994-98. Therefore, the explicit assumption is that returns to characteristics and within group inequality will be the same in the future as it was between 1994 and 1998. This does not imply that inequality will not change in the future but any changes would have to come from changes in the distribution of the characteristics they measure.

in earnings inequality, our measure of long-run earnings is based on earnings between the ages of 36 and 60 rather than 22 and 61 as in BBS.

The data we use to measure long-run earnings also differ in one important way with the data available to BBS. Both studies use administrative records. However, BBS only had access to earnings records with earnings up to the FICA taxable maximum. As they acknowledge, this limitation of the data can have important consequences for measures of inequality if the changes in the distribution occurred above this ceiling. We have access to more recent data that provide uncensored earnings starting in 1991. While our classification of persons on the basis of long-run income must still deal with the issue of top-coding prior to 1991, the availability of this data does allow us to examine the earnings of persons during their late 60s with uncensored data.

While both studies examine the impact of the rise in earnings inequality on the distribution of permanent earnings, the focus of the two studies are somewhat different. BBS present evidence on the overall distribution of permanent earnings and the distribution of Social Security benefits. We focus more narrowly on the outcomes of persons in the bottom of the distribution of long-run earnings. This focus on the bottom of the distribution reflects not only our substantive interests but also limitations of the data as described in the following section.

Data

The major problem with using any nationally-representative longitudinal data set to measure long run earnings is that workers are observed only over a relatively short period. Even the PSID, the longest available national longitudinal data set, has only 23 years of complete data on earnings and retirement outcomes.⁴ While such data sets provide rich demographic information, there are at least two interrelated problems with these limited longitudinal data sets. First, since these data sets cover at best a small part of the working lives of respondents, the resulting histories may misclassify persons as low earners even if they had high earnings prior to the period covered in the PSID. Second, comparing individuals in different cohorts over the same period of their working lives greatly reduces sample size or limits the length of the period over which their experiences can be compared.⁵

The alternative to using the nationally representative data sets, such as the PSID, is to use matched administrative data. These data offer less demographic detail but cover a much longer

⁴ The income data for 1968 and 1969 are in bracketed form. 1993 is the latest year of final release data.

⁵ The starting age for the common period of observation must be set high enough so that the oldest cohort is observable at that age while the maximum age must be set low enough so that the most recent cohort is observed at that age.

period. They are also likely to provide less measurement error in earnings and benefits. The data used in this paper are based on Summary Earnings Records (SER), Detail Earnings Records (DER), and Master Beneficiary Records (MBR) which are collected by the Social Security Administration. The data we use come from the matched respondents in the 1984, 1990, 1993 and 1996 panels of Survey of Income and Program Participation (SIPP). Since the SIPP is a nationally-representative survey of the non-institutionalized US population, our sample can be used to make inferences on this population.

The records contained in the SER and DER are employer-filed tax records for earnings paid from 1951-2000, and 1978-2000, respectively. The SER includes all earnings subject to the FICA tax. The DER further includes separately identified taxable self-employment income and wage and salary earnings not covered by Social Security, as well as state or local employment, wage and tips. The use of employer-filed tax records over a 49-year period improves our measure of earnings compared to the self-reports that are the basis of most other studies of earnings and retirement.⁶ In addition, the SER data version used in this paper contains Medicare taxable earnings that are not affected by the FICA taxable maximum imposed in the usual SER records. These uncapped earnings are available starting in 1991.

Finally, we use MBR records to measure Old Age Survivor and Disability Insurance (OASDI) cash benefits. The MBR database contains information for administering the OASDI program and for determining a beneficiary's payment level and payment status in Social Security programs as well as Medicare.

Our data set includes earnings between 1951 and 2001 and OASDI benefits through 2002. All dollar amounts are in 1998 dollars. Our sample includes only males since, for females, changes in long-run earnings across cohorts would largely reflect the changing labor force participation rates over the last half of the twentieth century. Low accumulated earnings for a female entering the labor market in the mid 1930s has a very different meaning than for a female entering the labor market in the early 1960s.

Methodology

Cohorts

We group all sample members into five-year cohorts starting with those born between 1915 and 1919 and ending with persons born between 1935 and 1939. Table 1 shows the ages of each

⁶ Previous research has shown that these detailed tax records improve reporting of earnings (Bridges et. al., 2002).

cohort in the first year for which we have earnings data (1951) and the last year for which we have earnings and OASDI data (2000 and 2002 respectively). We also show their ages in 1980, the year when earnings inequality started to rise most dramatically, and in 1991, the first year for which we have uncapped earnings.

Table 1-- Age of Cohorts in Selected Years

Cohort		Year of birth	Age in				
			1951	1980	1991	2000	2002
1	Start	1915	36	65	76	85	87
	End	1919	32	61	72	81	83
2	Start	1920	31	60	71	80	82
	End	1924	27	56	67	76	78
3	Start	1925	26	55	66	75	77
	End	1929	22	51	62	71	73
4	Start	1930	21	50	61	70	72
	End	1934	7	46	57	66	68
5	Start	1935	16	45	56	65	67
	End	1939	12	41	52	61	63

Pre-retirement earnings of members of the earliest cohort, born between 1915 and 1919, were largely unaffected by the rise in inequality during the 1980s since members of this cohort were 61 to 65 in 1980. At the other extreme, the cohort born between 1935 and 1939 were 41 to 45 in 1980. They were, therefore, in their prime earnings years during the 1980s. Our five cohorts can, therefore, be characterized in the following way.

- Cohort 1—Members of this cohort were in their 60s when earnings inequality started rising. They serve as a benchmark against which to contrast later cohorts.
- Cohort 2-4—Members of these cohorts are observed working during the period of rising inequality and are observed in years of normal retirement.
- Cohort 5—Members of this cohort may have been hit hardest by rising inequality since they were in their prime earnings years in the 1980s. However, their retirement histories are incomplete since they turn 61 to 65 in 2000.

Accumulated Earnings

Our measure of accumulated earnings is the sum of real earnings received between the ages of 36 and 60. This age range allows us to observe earnings for all sample members since the

oldest member of cohort 1 was 36 in 1951, the first year for which we have administrative data, and the youngest member of cohort 5 was 61 in 2000, the latest year for which we have data.⁷

We focus on persons in the bottom quintile of the accumulated earnings distribution for two reasons. The first is guided by our substantive interest in the experiences of those at the bottom of the distribution who are likely to have suffered the most from the increase in earnings inequality. The second is guided by the data limitation discussed earlier. Since the SER is limited to the FICA maximum prior to 1991, our measure of earnings will understate true earnings for anyone who reaches the FICA maximum prior to this year. Therefore, summary measures such as mean earnings will be affected by the proportion of each cohort who reached the FICA maximum at some point between the ages of 36 and 60. While we cannot rule out the possibility that members of the lowest quintile of accumulated earnings did attain the FICA maximum at some point in this age range, this is likely to have been rare.

When examining mobility, we also avoid global measures, such as the correlation in earnings, which would again be affected by top coding at the FICA maximum. Instead we focus on transitions in and out of the lowest quintiles of accumulated earnings.

Results

Yearly Inequality

We start by verifying that the SER and the Current Population Survey (CPS) show similar patterns in inequality of annual earnings. While most studies using the CPS focus on changes in the distribution of wage rates, comparison with the SER requires measures of inequality of annual earnings. Since the latter is the product of wages and hours, its distribution will reflect the distribution of hours conditional on wages as well as the distribution of wages. These two distributions could, therefore, show different patterns. For example, if low wage workers increased their hours relative to higher wage workers, then the growth in earnings inequality would be smaller than the growth in wage inequality.

Gottschalk and Danziger (2004) examine both distributions and find changes in the distribution of earnings largely mirrors changes in the distribution of wages until the 1990s. Both wage inequality and earnings inequality grew substantially between 1979 and 1989.⁸ This increase in dispersion was largely a result of a sharp decline at the bottom of the wage

⁷ The age limits were set when we only had data through 2000.

⁸ Card and Dinardo (2002) also find that the rise in wage inequality is largely confined to the 1980s.

distribution, though real wages at the top of the distribution also grew during this period. Changes in the distribution of wage rates and annual earnings are somewhat different during the 1990s. Wage inequality continued to grow but at much more moderate rates than in the 1980s. This was largely a result of the fact that wages at the bottom started increasing for the first time in more than a decade. While these real increases were not large enough to offset other changes in the distribution, they did limit the rise in wage inequality. In contrast, annual earnings inequality fell for the first time in decades. This was a result of hours as well as wages increasing for those at the bottom of the distribution of annual earnings as the expansion filtered down to the least skilled.

Figure 1 shows selected percentiles of the distribution of annual earnings as measured in the SER. The patterns are very similar to those found in the CPS, in spite of the top-coding that may have affected the upper percentiles prior to 1991. Earnings inequality started increasing during the late 1970s with the largest changes occurring during the 1980s. By the early 1990s the growth in inequality was largely over. The patterns at the bottom of the distribution of yearly SER earnings also match the patterns in the CPS. Earnings declined sharply at the twenty-fifth and tenth percentiles (P25 and P10) during the early-1980s followed by a leveling off and then a slight increase in the lowest deciles late in the late 1990s.

We conclude that the SER and CPS give similar results when they are both used as a set of independent cross sections. This need not have been the case since the CPS and SER data are collected from very different sources.

Distribution of Accumulated Earnings

It is well known that there is substantial mobility across the distribution of annual earnings. Someone in the lowest quintile in one year need not be in the same quintile in the following years. Annual earnings, therefore, serve as a poor measure for long-run earnings. We, therefore, follow the procedures described earlier to construct the distribution of accumulated earnings, which measures the total earnings an individual received between the ages of 36 and 60.

Figure 2 shows the median of accumulated earnings for each of our five cohorts measured in 1998 dollars.⁹ As expected, there was a sharp increase in the median accumulated earnings for the first four cohorts, since they gained from the wage increases of the 1950s, 1960s and early 1970s. Wages then stopped growing, which is reflected in the leveling off of median earnings.

⁹ Medians rather than means are shown in order to reduce the impact of top-coding.

As a result of these changes, the three cohorts born after 1929 all had median earnings roughly 25 percent higher than the cohort born between 1915 and 1919.

Figure 3 shows selected percentiles of the distribution of accumulated earnings for our five cohorts.¹⁰ Each percentile is measured relative to the corresponding percentile for the cohort born between 1915 and 1919. If there had been growth but no increase in inequality of accumulated earnings across cohorts, then all the percentiles would have grown at the rate and the lines would have the same slope.

The rise and then stabilization of the median shown in Figure 1 is reflected in the leveling off of the P50 at 1.25. While the P10 grew somewhat faster than the P50 between the first two cohorts, it then dropped for successive cohorts. As a result, the accumulated earnings for a person at the tenth percentile was only marginally higher for a person born between 1935 and 1939 than for a person born twenty years earlier.

Since median earnings had grown by 25 percent, this means that the bottom of the accumulated earnings distribution had fallen relative to the median. Earnings of those at the P10 reached a peak with the 1920-25 cohort. Successive cohorts all had earnings that were not only low relative to their own median but also lower in real terms than the accumulated earnings at the P10 of the 1920-25 cohort. Since accumulated earnings is measured over a twenty-four-year period, this measure of inequality is dominated by permanent differences across individuals rather than transitory fluctuations. Furthermore, since accumulated earnings is calculated over the same age span for each cohort, this measure does not reflect age-related differences in inequality. We, therefore, conclude that the earnings inequality among the three most recent cohorts reflects an increase in inequality of permanent earnings.

Mobility

It is sometimes argued that focusing on inequality ignores the fact that there is substantial mobility within the income or earnings distribution.¹¹ Persons who are in the bottom of the distribution in one period may not be the same as those who were at the bottom in the previous period. Therefore, it is inappropriate to think of a drop in the income at the P10 as a drop in the income of the same individual.

We have already partially addressed this issue by classifying persons on the basis of their long-run incomes. By using a sufficiently long accounting period, we have allowed transitory

¹⁰ We show the P75 and P90 for completeness but we do not discuss these percentiles since they may have been affected by changes in the FICA max prior to 1991.

decreases in earnings to be averaged out. Thus, we have taken account of the effects of mobility in reducing inequality of long-term earnings.

However, there is another reason to be concerned about mobility. Mobility may be valued as an end in itself. The easiest way to think of this is to consider two societies.¹² In society A, there is no mobility so a person's position late in life is preordained by his position early in life. In society B, earnings are less evenly distributed both early in life and late in life. However, there is sufficient mobility to offset this additional inequality. As a result, the distribution of accumulated earnings is the same in the two societies. While the two societies would be classified as similar in terms of the distribution of accumulated earnings, society B would be considered more open than society A.

The same concepts apply to the changes in the distribution of accumulated earnings across cohorts that we documented in Figure 3. The increase in inequality of accumulated earnings for cohorts 3, 4 and 5 can reflect the fact that these cohorts have greater inequality of earnings early in life than earlier cohorts, that they have greater inequality of earnings late in life than earlier cohorts, or that they have less mobility so that those who had low earnings early in life are more likely to be the same people who have low earnings late in life.

Figures 4 and 5 explore the changes in mobility across the five cohorts. We calculate the accumulated earnings over two twelve-year age ranges for each cohort-- between the ages of 36 and 48 and between 49 and 60. We then classify individuals by quintile of accumulated earnings in each age range. This is done separately for each cohort.

Figure 4 shows the conditional probability of being in the same quintile in the older age range as in the younger age range.¹³ The conditional probability of being in the lowest quintile based on earnings between 49 and 60, given the person was in the lowest quintile based on earnings between 36 and 48, is roughly 70 percent. This very high probability of remaining in the lowest quintile is similar across cohorts. The probability of remaining in the second quintile is roughly 40 percent.¹⁴ There is no systematic pattern across cohorts, which indicates that mobility did not increase or decrease by this measure.

¹¹ Note that this argument is sometimes inappropriately used to argue that mobility has offset the *rise* in inequality. Mobility can offset the *increase* in inequality only if mobility is *higher* in the period of higher inequality.

¹² See Gottschalk and Spolaore (2002) for a discussion of this point.

¹³ These are the diagonal elements in a standard transition matrix. We again focus on the lowest two quintiles in order to reduce the impact of changes in top-coding.

¹⁴ The fact that the conditional probability is higher for the lowest quintile than for the second quintile reflects the fact that the only way of leaving the lowest quintile is to have an increase in earnings while exit from the second quintile can result either from an increase or a decrease in earnings.

Figures 5 and 6 focus on the magnitude of changes across quintiles. Figure 5 shows the proportion of individuals moving up or down more than one quintile. These data show that roughly ten percent of persons who were in the lowest quintile on the basis of their earnings between the ages of 36 and 48 had moved out of the lowest two quintiles based on their earnings between the ages of 49 and 60. For those who started in the second quintile, mobility was still low, but slightly higher. Among those born between 1915 and 1919, the probability of moving more than one quintile (given they started in the second quintile) was 29 percent. For the most recent cohort, it was 13 percent.

Figure 5 does not distinguish between movements to higher or lower quintiles. For those starting in the lowest quintile this is not an issue since they can only move up. However, those starting in the second quintile can move up or down. Figure 6, therefore, shows the proportion of those moving up who moved more than one quintile. For completeness, we show this both for those starting in the lowest and the second quintile.¹⁵ Among those persons in cohort 1 who started in the second quintile and moved up, roughly 60 percent moved beyond the third quintile. For the most recent cohort, the proportion is .34. While the two most recent cohorts have had the lowest probabilities, there is not a clear systematic pattern across cohorts.

We conclude that when earnings are averaged over a twelve-year period, there is relatively little mobility out of the two lowest quintiles. Furthermore, the mobility that does exist has not increased for more recent cohorts. These cohorts seem to have experienced an increase in inequality and no increase in mobility.

Employment and OASDI Income after 65

The preceding sections have shown that the increase in inequality of yearly earnings during the 1980s translated into a decline in the P10 of accumulated earnings for more recent cohorts. We now turn to the outcomes of these cohorts as they entered retirement or semi- retirement. We examine both the labor market outcomes and Social Security income between the ages of 65 and 70.

Labor Market Outcomes

The labor market outcomes after 65 for recent cohorts at the bottom of the accumulated earnings distribution reflect two offsetting forces. With lower lifetime earnings, these individuals may have had greater need to continue to work during their late 60s. Countering this outward shift in labor supply is the shift in demand for older persons with low skills. Whether earnings

increased or decreased depends both on elasticities of supply and demand and on the relative size of these two shifts.

In this section, we examine both the employment and earnings of persons classified by cohort and age. In order to avoid the problems caused by top-coding of earnings, we rely on the SER data starting in 1991. These data allow us to measure labor market outcomes at each age between 65 and 70. However, since these data are only available for an eleven-year period (1991 to 2001), we cannot follow each cohort over the full age range. Members of the cohort born between 1915 and 1919 were 72 to 76 in 1991. They were, therefore, too old to be included in this part of the analysis. The next most recent cohort was born between 1920 and 1924, so we observe their non-top coded earnings starting at age 67. The next two cohorts are observed over the full age range but the most recent cohort, born between 1935 and 1939, can only be observed at age 65.

Probability of Working

Figure 7 plots the proportion of each cohort working at different ages.¹⁶ As expected, there is a steep decline in the proportion working between the ages of 65 and 70 for each cohort. The most recent cohort born between 1935 and 1939 is only observed at age 65, so we cannot trace its full history. It, however, started with a higher proportion working (.589) than the previous cohort (.558). This indicates that, as a whole, this cohort continued to work in greater numbers than previous cohorts in spite of the fact that they had similar median accumulated earnings (see Figure 2).

Figure 8 plots the age-specific employment rates of those in the bottom quintile of the accumulated earnings distribution. Those at the bottom of the most recent cohort have a high proportion working at 65 (.615) compared to other members of their cohort and compared to those at the bottom of the previous cohort.

In summary, individuals in the recent cohorts who fared poorly during their working lives were substantially more likely to continue to work in their mid-60s than were members of previous cohorts. This does not seem to be a cohort effect, since the employment rates of the lowest quintiles rose relative to the mean for the cohort.

¹⁵ For the first quintile, the probability in Figure 6 is the probability in Figure 5 divided by one minus the probability in Figure 4.

¹⁶ Work is defined as having positive earnings.

Earnings

We now turn to the earnings of those who did work. Figure 9 plots the mean earnings of workers, classified by age and cohort. Since we use SER data starting in 1991, these means are not affected by top-coding. As expected, average earnings decline with age, starting a little over \$20,000 for 65-year-old workers and falling below \$15,000 for 70-year-olds. This decline in the mean can reflect both selection (i.e. workers with above average earnings drop out of the labor force) and real declines in earnings of those who continue to work (i.e. either a decline in hours or wages).

Again the most recent cohort stands out. While the two previous cohorts had average earnings under \$21,000 at age 65, the most recent cohort had average earnings of nearly \$23,000. Thus, the most recent cohort was more likely to work at age 65 and those who did work earned more than previous cohorts.

Figure 10 shows the mean earnings between the ages of 65 and 70 of those who had the lowest quintile of the accumulated earnings distribution during their working lives. Figure 10 shows that the most recent cohort again stands out. Like previous cohorts, the earnings of those at the bottom of the accumulated earnings distribution were roughly half the overall average, indicating that low earnings persisted through their 60s. The most recent cohort, however, had substantially higher mean earnings (roughly \$13,000) than previous cohorts (roughly \$11,000). Thus, persons in the bottom of the distribution of accumulated earnings in the most recent cohort were more likely to work than members of previous cohorts, and the average earnings of those who worked was higher.

OASDI Benefits

We now turn to Social Security benefits received between 65 and 70. We use OASDI benefits which are likely to be dominated by the distribution of retirement benefits, since retired workers and their children and spouses comprise 70 percent of OASDI beneficiaries. Since the benefit formula under this program is progressive, it is possible that the decline in accumulated earnings at the bottom of the distribution would be cushioned by OASDI benefits.

We again start by looking at persons in all quintiles. Figure 11 shows mean OASDI benefits drawn from the Master Beneficiary Record, which is available through 2001. Mean benefits are somewhat higher at older ages, which partially reflects the effects of non-random attrition if persons with lower benefits are more likely to die. The most pronounced pattern in the data is the sharp increase in benefits for the most recent cohorts. This cohort with high average accumulated earnings also benefited from higher OASDI benefits.

Figure 12 again focuses on the experiences of those in the lowest quintile of accumulated earnings. This chart shows that the average OASDI benefits of members with the lowest accumulated earnings have been roughly half as large as the overall average OASDI benefits. This pattern holds for all cohorts and all ages. The most recent cohort again stands out. This, however, seems to be a cohort effect since the larger benefits for those in the lowest quintile largely reflect the higher OASDI benefits for the cohort as a whole.¹⁷ This would be consistent with the effects of the progressive benefit structure largely offsetting the decline in earnings that determine OASDI benefits.

Conclusion

The availability of administrative earnings data that span half a century has allowed us to examine the outcomes of persons in the bottom of the distribution of long-run earnings. We have addressed three interrelated questions: (1) Did recent cohorts, who were in their early 40s when earnings inequality started rising, experience an increase in inequality of permanent earnings? (2) Did these cohorts experience an increase in the amount of economic mobility, which would have partially offset the increase in inequality during the 1980s? (3) How did those in the bottom of the distribution of long-run earnings fare after reaching 65? Did they end up working more? Did OASDI benefits cushion their drop in lifetime earnings?

The answer to the first question is clear. While the median permanent earnings of recent cohorts is at an all-time high, those at the bottom of the distribution lost ground. Cohorts who were in their prime earning years during the 1980s when earnings inequality started rising dramatically, experienced a real decline in the permanent earnings at the bottom of the distribution relative to cohorts born 20 years earlier.

The second claim, that mobility has been rising, is clearly not supported by the data. The probability of leaving the lowest quintile of the distribution of long-run earnings (measured over a twelve-year span) was roughly 30 percent for each cohort we follow. Not only are these escape rates low but most of the transitions that do occur are only to the second quintile. As a result, less than ten percent of those who started in the lowest quintile moved more than one quintile.

Finally, we find that members of the most recent cohort at the bottom of the distribution of long-run earnings did differ in some ways from the corresponding members of previous cohorts.

¹⁷ Bosworth, Burtless and Sahm (2000) likewise find that inequality of the simulated Primary Insurance Amount (PIA) is considerably higher for the cohort born between 1961 and 1965 (who would turn 62 between 2023 and 2027) than for the cohort between 1931 and 1935.

They were substantially more likely to work at age 65, which could indicate that they continued to work to compensate for their lower long-run earnings. Furthermore, those who did work had higher earnings. OASDI benefits were higher than for similar persons in earlier cohorts, but this seems to be a cohort effect.

We conclude that the persons reaching their mid 60s in 2000 had done very well in terms of earnings over their working lives. Furthermore, they seemed to be doing as well as they retired or reached retirement. Both their average earnings and their average OASDI benefits were higher than previous cohorts. But, as is often the case, the average experience should not be generalized to all members of this cohort. For persons at the bottom of the distribution of long-run earnings, the picture was considerably bleaker. Their long-run earnings had not grown with the median and were, in fact, not much higher than for persons born 20 years earlier. This indicates that effects of the rise in inequality of yearly income do not dissipate over the lifecycle.

It is still too early to know what will happen to this cohort in retirement. However, their labor market outcomes at 65 indicate that they are continuing to work in record numbers, even when compared to other members of their own cohorts. This may indicate a need to compensate for their lower earnings during their earlier working lives.

References

- Bosworth, B., G. Burtless, and C. Sahm, 2000. Distributional impact of social security reforms: summary. Presented, “International Forum of the Collaboration Projects” meetings. Osaka, Japan. September 2000. Brookings Institution, Washington.
- Bridges, B., L. Del Bene, and M. Leonesio, 2002. Evaluating the accuracy of 1993 SIPP earnings through the use of matched social security administrative data. Paper presented to the 2002 Annual Meetings of the American Statistical Association.
- Card, D. and J.E. DiNardo, 2002. Skill-biased technological change and rising wage inequality: some problems and puzzles. *Journal of Labor Economics* 20 (4), 733-51.
- Committee on Ways and Means U.S. House of Representatives, The 2000 Green Book Background Material and Data on Programs within the Jurisdiction of the Committee on Ways and Means, Table 1-11 <http://aspe.hhs.gov/2000gb/sec1.txt>
- Gottschalk, P. and E. Spolaore, 2002. On the evaluation of economic mobility. *Review of Economic Studies* 69, 191-208.
- Gottschalk, P. and S. Danziger, 2004. Diverging fortunes: trends in poverty and inequality, In: *The American People: Census 2000*. Russell Sage Foundation. New York.

Fig 1
Percentiles of Yearly Earnings by Birth Cohort (1950=1.00)

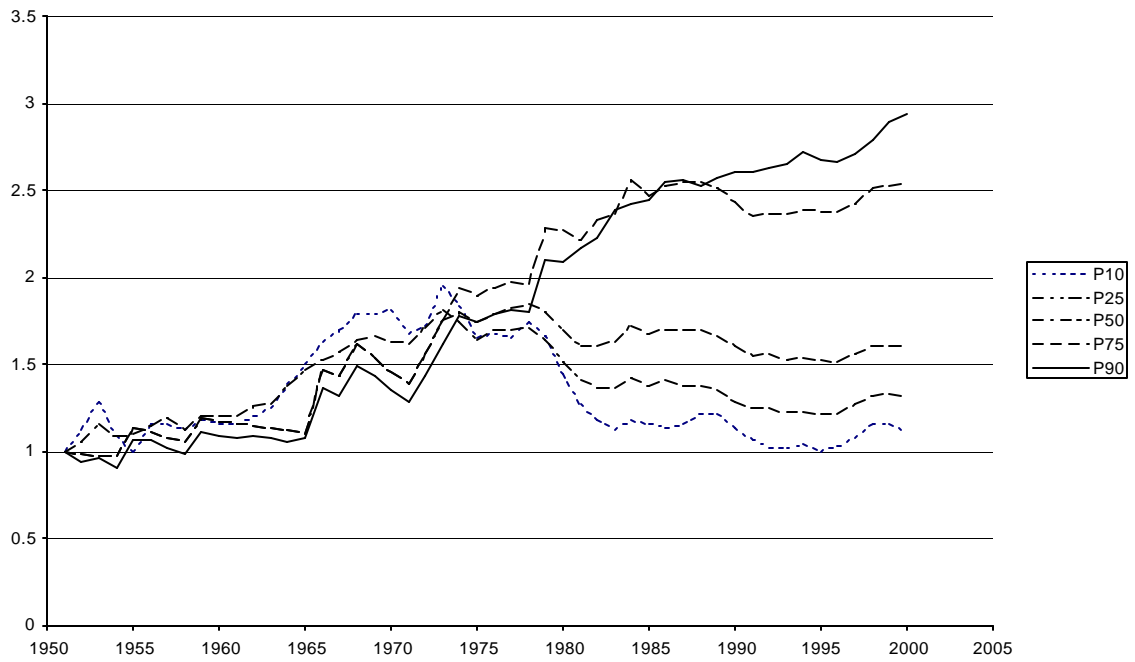


Figure 2
Median Accumulated Earnings by Birth Cohort

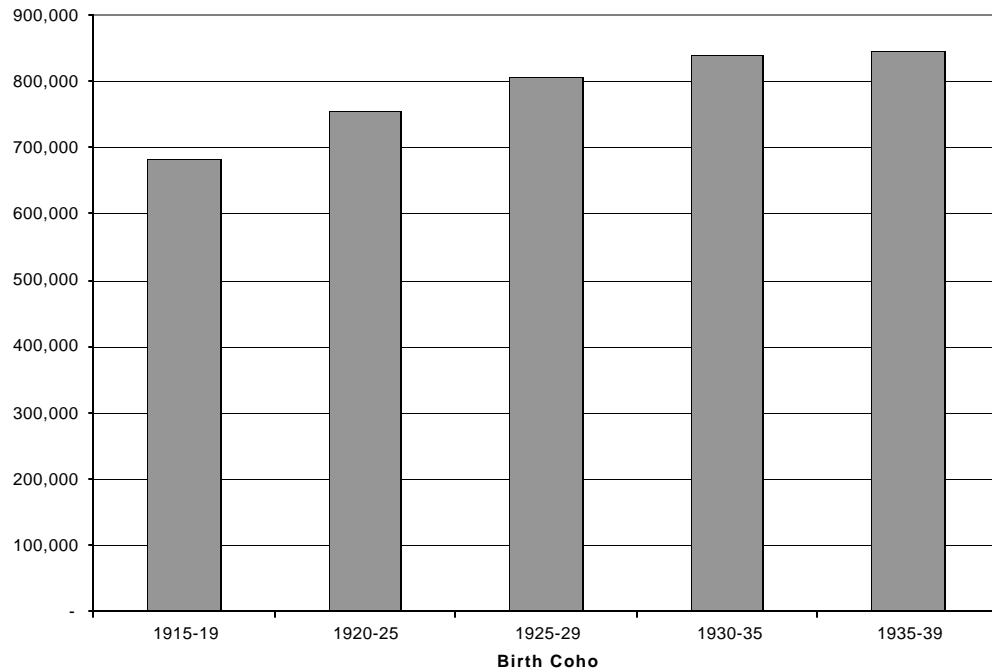


Figure 3
Percentiles of Accumulated Earnings by Birth Cohort (1950=1.00)

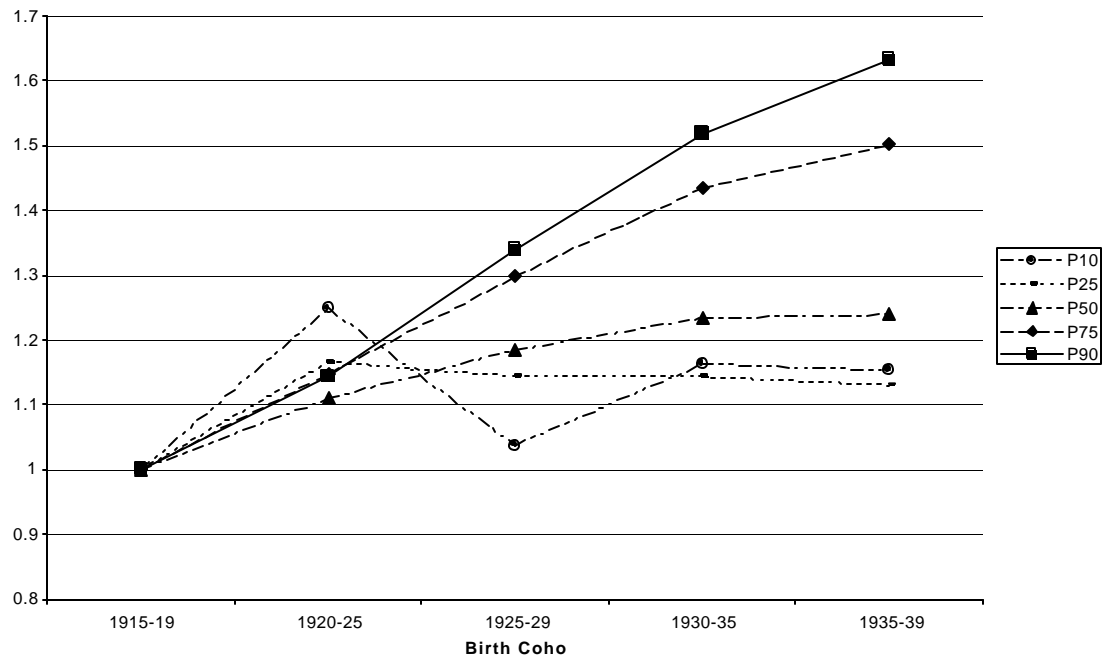


Figure 4--Proportion Staying in Same Quintile of Twelve Year Average Earnings-- by Cohort

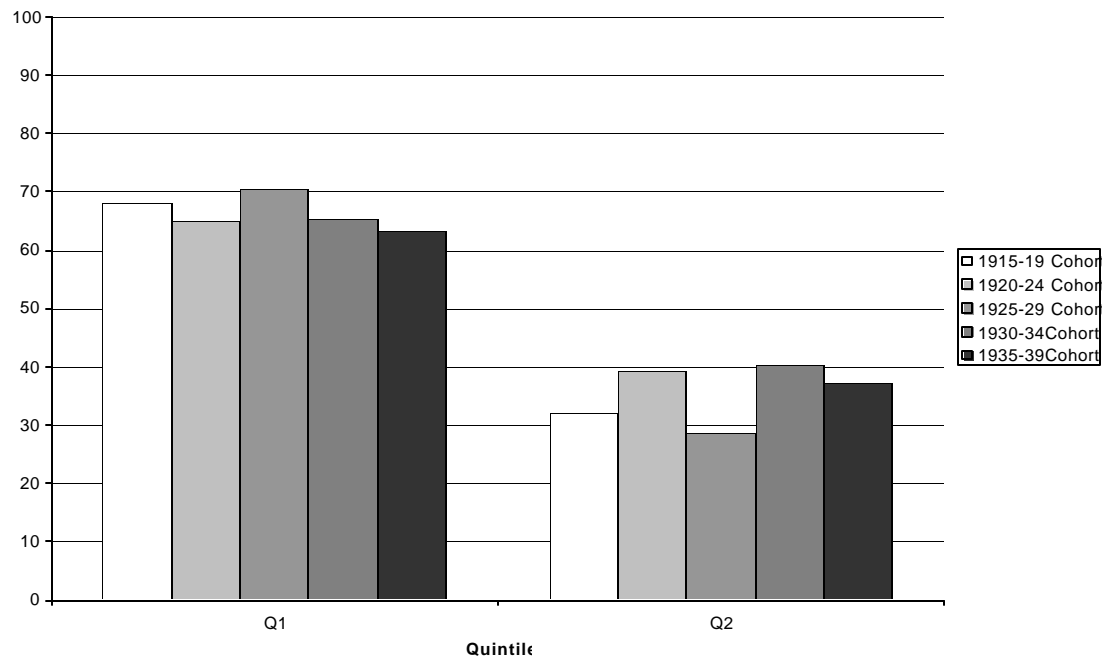


Figure 5--Proportion Moving More than One Quintile of Twelve Year Average Earnings-- by Cohort

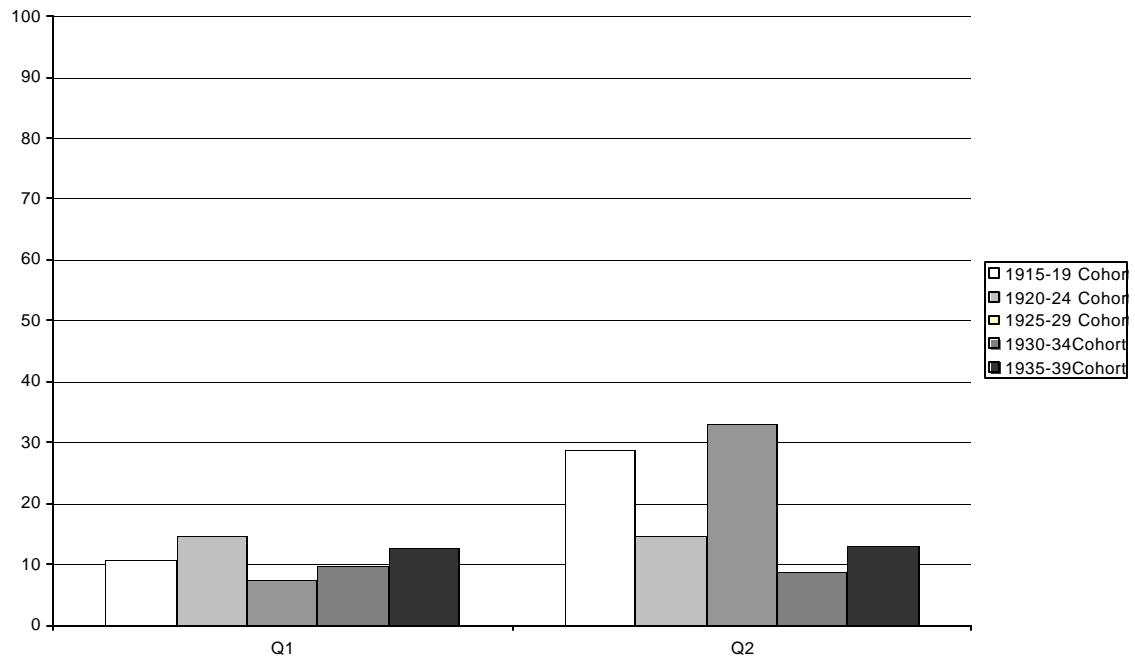


Figure 6--Proportion of those Moving Up More than One Quintile of Twelve Year Average Earnings-- Conditional on Moving Up

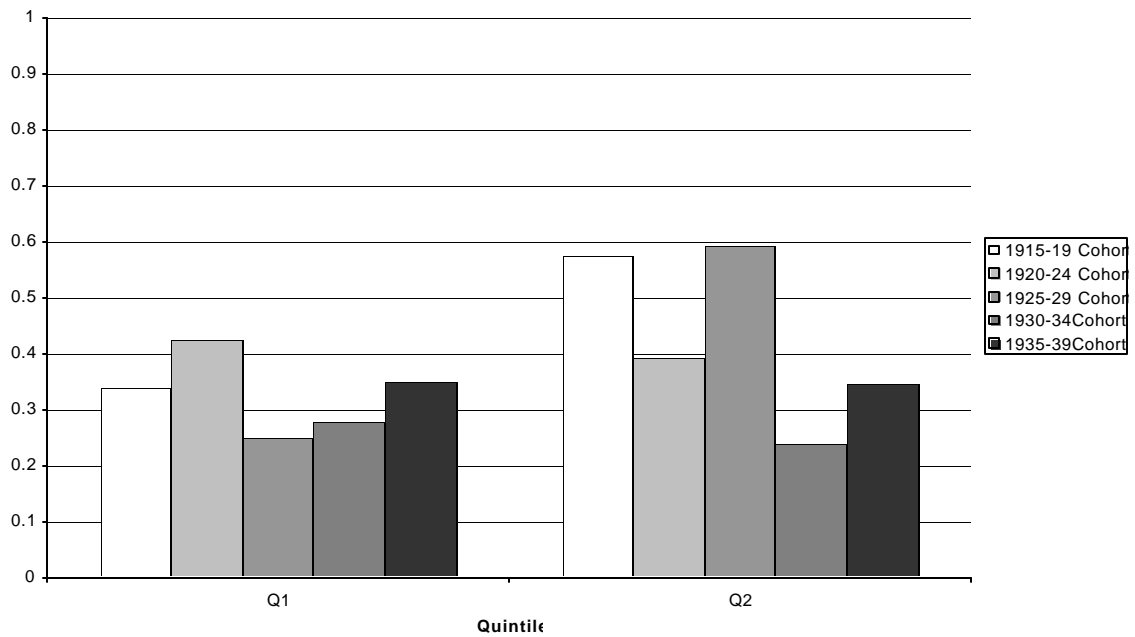


Figure 7--Proportion Working--by Age and Cohort
All

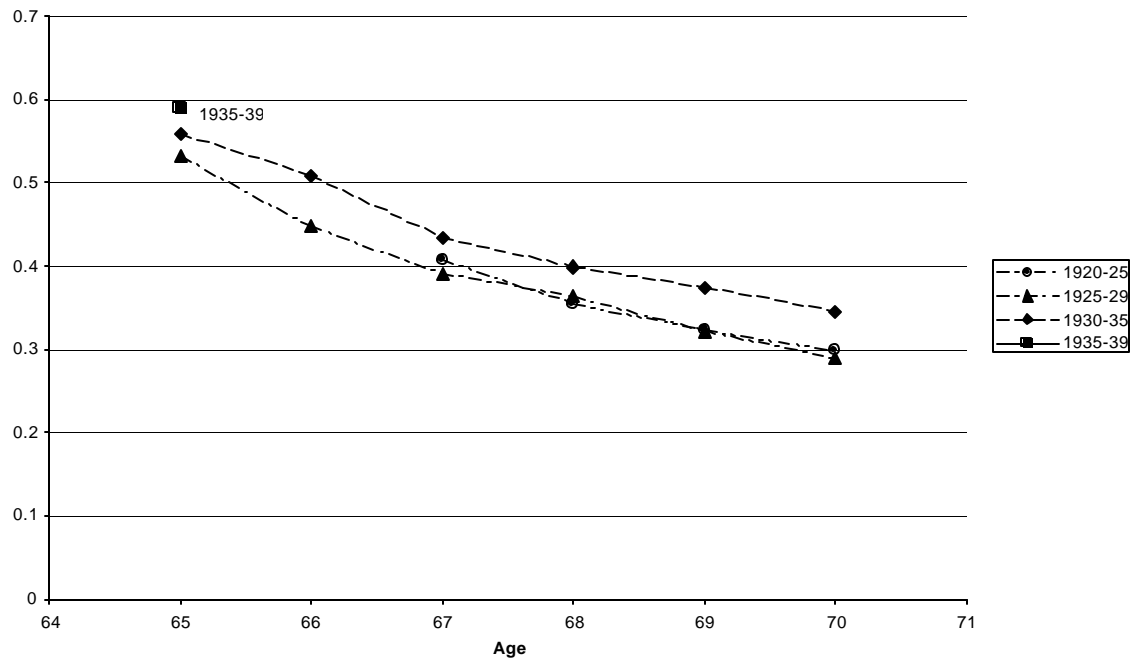


Figure 8--Proportion Working--by Age and Cohort
Lowest Quintile

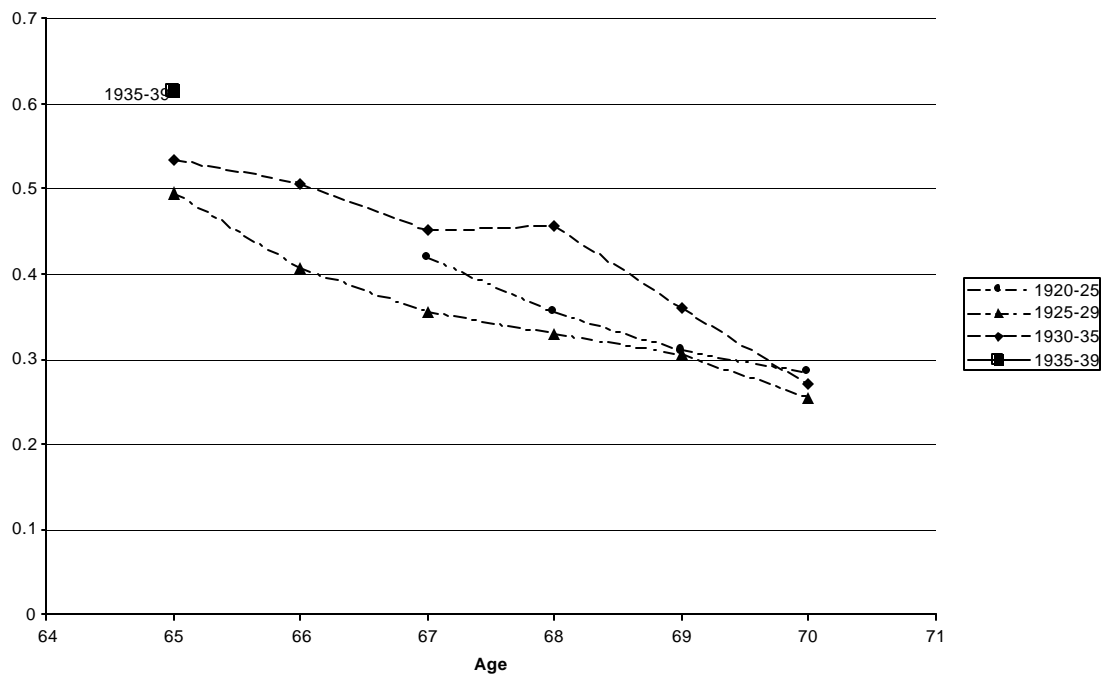


Figure 9--Mean Earnings (excluding zeros) --by Age and Cohort
All

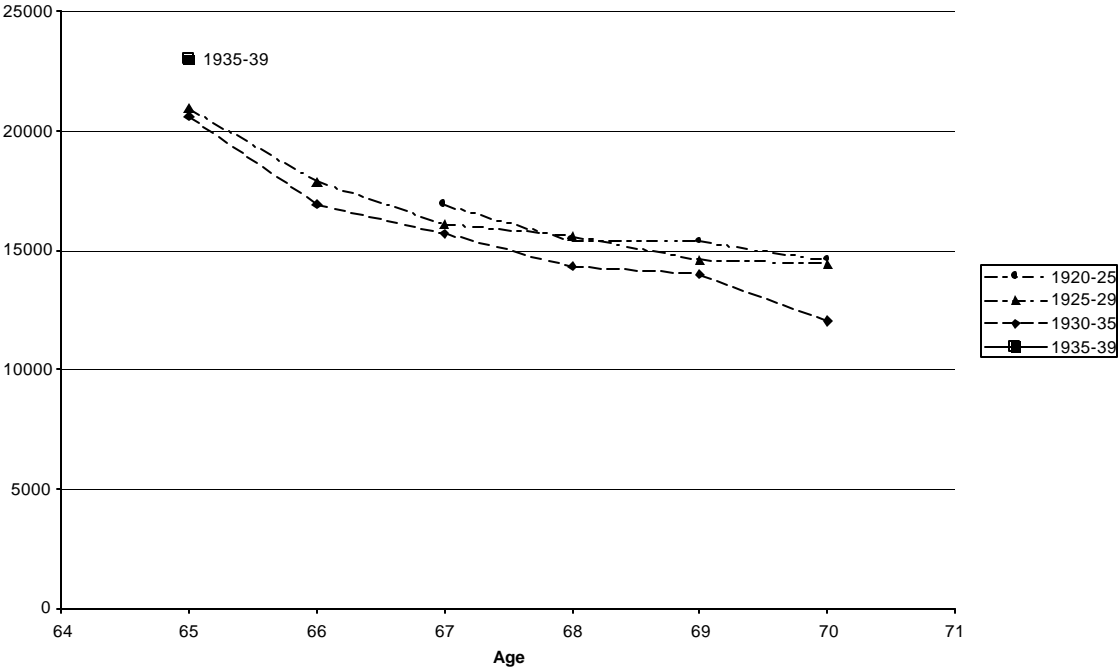


Figure 10--Mean Earnings (excluding zeros) --by Age and Cohort
Lowest Quartile

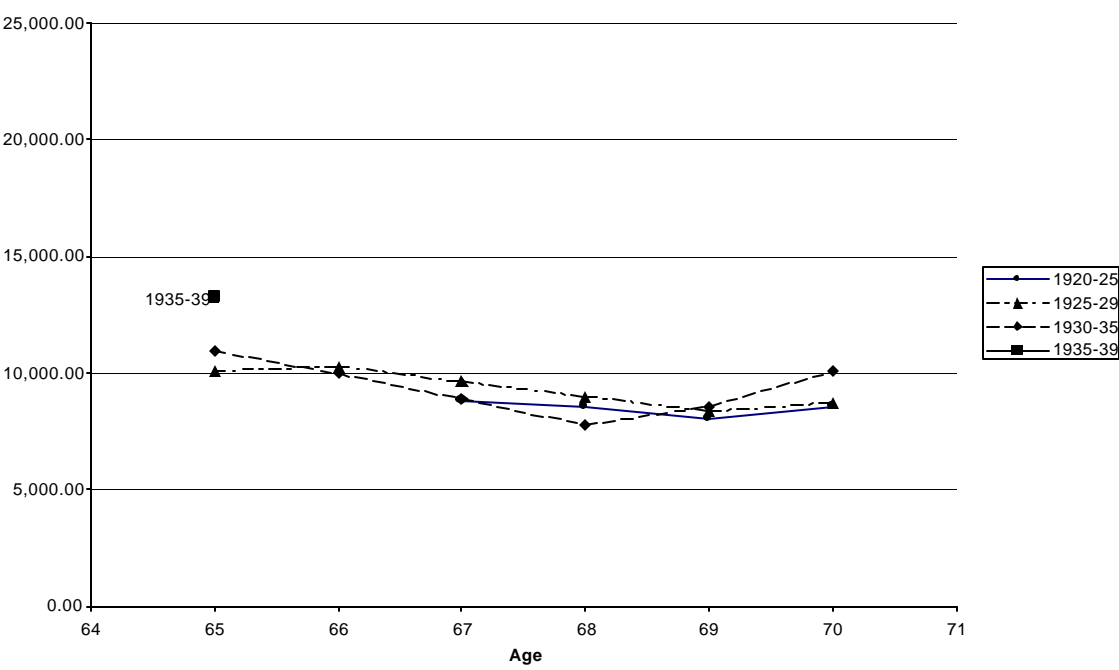


Figure 11--OASDI Benefits by Age and Cohort
All

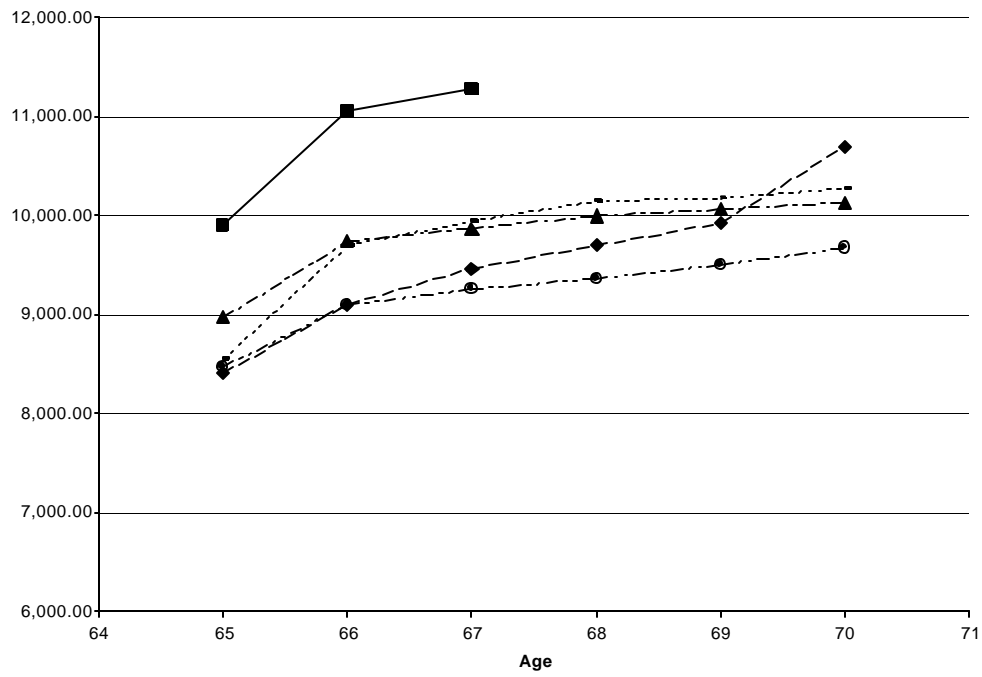
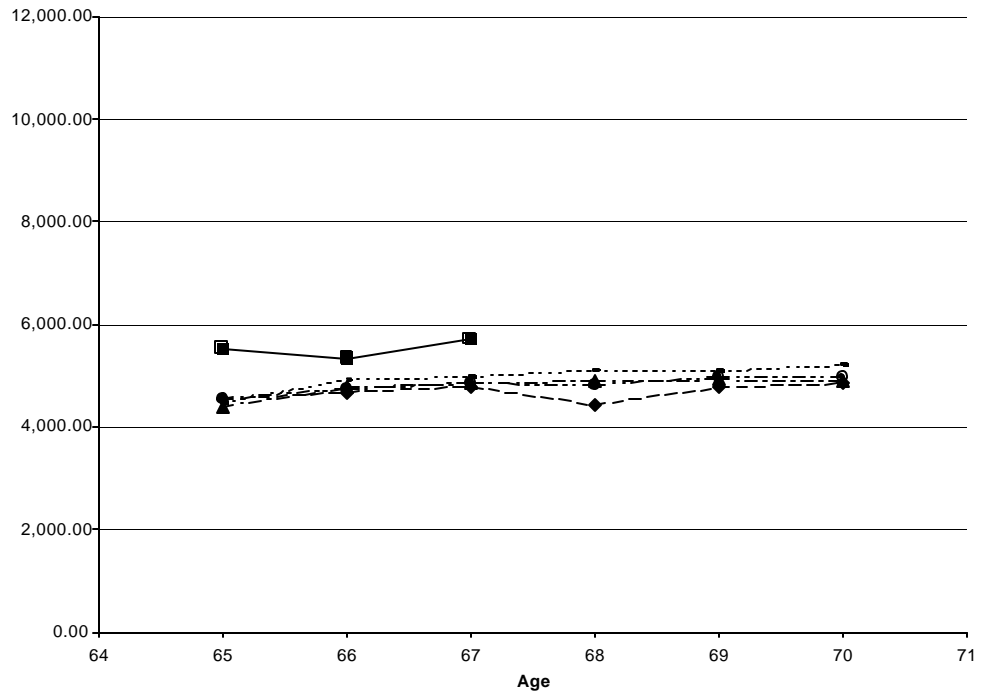


Figure 12--OASDI Benefits by Age and Cohort
Lowest Quartile



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