

## 2.3. OASDI COVERED EMPLOYMENT AND EARNINGS (COV)

### 2.3.a. Overview

Total at-any-time employment (TE) is defined as the sum of total OASDI covered employment (TCE) and total noncovered employment (NCE). TCE can be decomposed to workers who only report OASDI covered self-employed earnings (SEO) and to wage and salary workers who report some OASDI covered wages (WSW). Combination workers (CMB\_TOT) are those who have both OASDI covered wages and self-employed income. Workers with some self-employment income (CSW) are the sum of SEO and CMB\_TOT.

COV projects annual values for TE and the principal measures of OASDI covered employment. Equations 2.3.1 through 2.3.9 outline the overall structure and solution sequence used to project these concepts. The combination employment ratio (RCMB) is defined as the ratio of CMB\_TOT to WSW.

$$(Equation 2.3.1 \text{ not used in this version.}) \quad (2.3.1)$$

$$TE = TE(\cdot) \quad (2.3.2)$$

$$NCE = NCE(\cdot) \quad (2.3.3)$$

$$TCE = TE - NCE \quad (2.3.4)$$

$$SEO = SEO(\cdot) \quad (2.3.5)$$

$$WSW = TCE - SEO \quad (2.3.6)$$

$$RCMB = RCMB(\cdot) \quad (2.3.7)$$

$$CMB\_TOT = RCMB * WSW \quad (2.3.8)$$

$$CSW = SEO + CMB\_TOT \quad (2.3.9)$$

Total OASDI covered earnings is defined as the sum of OASDI covered wages (WSC) and total covered self-employed income (CSE\_TOT). Both components can be expressed as ratios to their U.S. earnings counterparts. The covered wage ratio (RWSC) is defined as the ratio of WSC to WSD, while the covered self-employed ratio (RCSE) is the ratio of CSE\_TOT to Y.

COV projects annual values for the principal measures of OASDI covered earnings using Equations 2.3.10 through 2.3.13.

$$RWSC = RWSC(\cdot) \quad (2.3.10)$$

$$WSC = RWSC * WSD \quad (2.3.11)$$

$$RCSE = RCSE(\cdot) \quad (2.3.12)$$

$$CSE\_TOT = RCSE * Y \quad (2.3.13)$$

COV projects various annual measures of average OASDI covered earnings, including the average covered wage (ACW), average covered self-employed income (ACSE), and average covered earnings (ACE).

$$ACW = WSC / WSW \quad (2.3.14)$$

$$ACSE = CSE\_TOT / CSW \quad (2.3.15)$$

$$ACE = (WSC + CSE\_TOT) / TCE \quad (2.3.16)$$

The average wage index (AWI) is based on the average wage of all workers with wages reported on Forms W-2 and posted to the Master Earnings File (MEF). By law, it is used to set the OASDI contribution and benefit base (TAXMAX).

COV projects annual values for the AWI and TAXMAX.

$$AWI = AWI(\cdot) \quad (2.3.17)$$

$$TAXMAX = TAXMAX(\cdot) \quad (2.3.18)$$

### **2.3.b. Input Data**

#### *Long-Range OASDI Projection Data*

1. Demography - (See Section 2.1.b.)
2. Economics- Employment and earnings-related data from Sections 2.1 and 2.2.
3. Trustees Assumptions - (See Section 2.1.b.)

#### *Addfactors*

4. Addfactors were included on some employment variables to smooth the transition from the latest historical data to program estimates. The need for addfactors is reviewed each year and they are implemented if necessary.

#### *Other input data*

5. Ratios of OASDI covered to NIPA wages by sector. NIPA wages by sector are available quarterly from 1947 to the third quarter of the year prior to the Trustees Report and annually from 1947 to the second year prior to the Trustees Report. They are published by the BEA and updated several times

during the year. OASDI covered wages (1971 through the third year prior to the Trustees Report) are updated annually by the Economic process. Covered data for the latest historical year are estimated from tabulations of Form 941 and W-2 data.

6. U.S. armed forces (EDMIL) by age and sex were estimated by the Department of Defense and published by the Census Bureau on a monthly basis (1948-2000) by single year of age (17 to 64) and sex. These data are no longer produced by Census.
7. EDMIL by age and sex are estimated by the Economic process as the difference in the monthly resident plus Armed Forces overseas population and the monthly civilian population. These two populations are available from the Census Bureau on a monthly basis (April 2000 to December of the year prior to the Trustees Report) by single year of age (16 to 69) and sex. These data are updated once a year.
8. Railroad employment is covered by the Railroad Retirement Act. The annual historical data are for the period 1971 to the third year prior to the Trustees Report.
9. Data obtained from Office of Research, Evaluation, and Statistics (ORES) are tabulations of quarterly Form 941 data. Data currently used are the OASDI, HI, and income taxable wages by sector for the most recent five years. The data represent changes in reported wages since the prior quarterly report. The most recent data are appended to previously reported data. Annual totals are computed and used to derive estimates of OASDI covered wages by sector for the latest historical years.
10. Data obtained from the most recently available 1% CWHS active file, maintained on Social Security's mainframe and made available by ORES. The years of data are 1951 to the third year prior to the current Trustees Report year. The data are used for comparison of OASDI covered earnings from other sources.
11. Data obtained from extracting information from the 1% Employee-Employer Files, maintained on Social Security's mainframe and made available by ORES. Each year two files are created: a Version 1 file for the third year prior to the current Trustees Report and a Version 3 file for the fifth year prior to the current Trustees Report. Data currently being used are government and farm sector OASDI, HI, and total wages and employment. Data from the latest files are used to estimate OASDI covered wages for the years available on each file.
12. Data obtained from quarterly IRS Form 941 files, provided by Office of the Chief Information Officer (OCIO). Data currently used are the OASDI and HI

taxable wages for 1978 to the most recent year available. The data represent changes in reported wages since the prior quarterly report. The most recent data are appended to previously reported data. Annual totals are computed and used to derive estimates of HI taxable wages, which are then used to develop OASDI covered wages for the most recent historical years.

13. Data obtained from BLS Quarterly Census of Employment and Wages (QCEW). Data currently used are the total wages for U.S., Virgin Islands, and Puerto Rico for 2006Q4 to the most recent quarter available (for quarterly data) and 2014 to the most recent year available (for annual data). The data represent total wages reported by employers covering more than 95 percent of U.S. jobs. Data for the most recent several quarters are used to estimate the HI taxable wages for the most recent year, for which reporting from other sources of wage data are not yet complete.
14. Data from the Quarterly EPOXY Report, received in hard copy and, more recently, electronic formats obtained from OCIO. The data currently used are the number of workers with OASDI taxable earnings, number of workers with HI taxable earnings, distribution of number of HI workers by wage intervals, distribution of number of OASDI workers by wage intervals, number of persons with OASDI taxable wages, number of persons with HI taxable wages, number of persons with OASDI taxable self-employment income, and number of persons with HI taxable self-employment income. Data are also available on an age-sex specific basis for number of persons with OASDI taxable wages, number of persons with HI taxable wages, number of persons with OASDI taxable self-employment income, and number of persons with HI taxable self-employment income.
15. Data obtained from the Quarterly Trust Fund Letter, received from Office of Financial Policy and Operations (OFPO). Data currently used are OASDI and HI taxable wages accumulated from all Forms 941 and W-2 to date, changes in self-employment income, and in self-reported wages and tips since the prior Letter. These data are for years 1978 to the most recent year available.
16. Data obtained from OCIO on amounts of OASDI taxable wages on the Earnings Suspense File for 1937 through the second year prior to the current Trustees Report year. The data are used in estimating total OASDI covered employment.
17. Ratio of OASDI covered to NIPA wages, and ratio of OASDI taxable to covered wages. NIPA wages by sector are available quarterly from 1947 to the third quarter of the year prior to the Trustees Report and annually from 1947 to the second year prior to the Trustees Report. They are published by the BEA and updated several times during the year. OASDI covered and taxable wages (1971 to the second year prior to the Trustees Report) are updated annually by the Economic process. Covered and taxable data for more

recent historical years are estimated from preliminary tabulations of Form 941 and W-2 data. Projected values for covered ratios are set to the latest historical year for the military, state and local, farm, and private household sectors. The projected value for the federal civilian sector covered ratio is projected to grow to 1.0 by 2030. The projected values for the private nonfarm business and the private sector vary with the relative size of the temporary or unlawfully present population.

18. Data obtained from OCACT on historical covered workers by sex, age and marital status (annual data, 1937 to 1950). Values are static (not updated) for each Trustees Report.

### **2.3.c. Development of Output**

#### *Equation 2.3.2 - Total Employment (TE)*

Based on a 100 percent count of earnings reports (i.e., Form W-2 and Schedule SE) tabulated by SSA, OCACT estimates the total number of persons employed at any time during a calendar year (TE). While E is an estimate of the average weekly number of workers in the civilian noninstitutional US population age 16 and over, TE is an estimate of employment at any time during a calendar year in the broader Social Security area population, which includes U.S. territories, the military, and institutions. TE also includes employment of workers who age 15 and younger.

For ages 16 and over, disaggregated by sex and age groups in the set 16-17, 18-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, and 70 and over, TE is adjusted for the differences in the underlying population to arrive at the civilian employment at any time during a calendar year. Since this quantity is conceptually similar to the work experience published by BLS, it is denoted WE. For each sex and age group, average weeks worked (AWW) during a calendar year is defined as  $AWW = E * 52 / WE$ . Such AWW, disaggregated by sex and age, is projected as a function of a time trend and unemployment rate. WE is projected as  $(E * 52) / AWW$ . TE is projected as the product of its lagged value and the growth rate for WE, adjusted for the military population. TE is adjusted by two multiplicative factors due to differences between E and TE over the recent historical period. The first factor accounts for the difference in growth between N and P between the last historical value for TE and the last historical value for E. The second factor adjusts the model estimate to the value of our most recent historical year, and our latest estimate based on partial quarterly data for that year.

#### *Equation 2.3.3 - Noncovered Employment (NCE)*

NCE is disaggregated by age and sex. Age groups include 14-15, 16-17, 18-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, and 70 and over. Employment may not be OASDI covered for a variety of reasons mostly related to the type of work. Consequently, NCE is further disaggregated to the type-of-work components listed below.

Federal Civilian Government - All Federal civilian employees are HI (i.e., Medicare) covered. All Federal Civilian employees hired in January 1984 and later are covered under the Federal Employees Retirement System (FERS) and are OASDI covered. Employees hired before January 1984 are covered under the Civil Service Retirement System (CSRS) and are not OASDI covered. This “closed group” of relatively older CSRS employees is projected to fall to near zero by 2030.

State and Local Government – OASDHI coverage of State and Local government employees is determined through agreements made between each state and SSA. In 1983, about 70 percent of State and Local Government (S&L) employment and wages were covered under OASDI and HI. Beginning April 1986, all newly hired S&L employees were covered under HI. Beginning January 1990, all S&L employees not under an S&L retirement system were covered under OASDHI.

Our most recent estimate is that about 27 percent of S&L employment and 28 percent of wages are not covered under OASDI. The closed group of relatively older S&L employees not covered under HI is projected to fall to near zero by 2030. S&L employment not covered under OASDI is projected to grow at about the same rate as the labor force.

Students at Public Schools – Prior to 2000, students working at S&L public schools were covered under OASDI and HI if the other school employees were covered. In 2000, legislation offered an “open season” allowing schools to remove their students from coverage. Virtually all major schools opted for removal. Hence, almost no students working at their public schools are covered under OASDI or HI. Students at public schools are projected to grow at about the same rate as the population aged 18 to 24.

Election Workers – Most S&L election workers are not covered under their state’s coverage agreement with SSA. However, in most states, only non-covered election workers who are paid less than a specific threshold are exempt from paying Social Security and Medicare tax on all payments received. The threshold was raised from \$100 to \$1,000 beginning January 1995 and indexed thereafter. Election workers are projected to grow at about the same rate as LC.

Private Household - The threshold for coverage of domestic employees’ earnings was raised from \$50 per calendar quarter to \$1,000 per calendar year (CY) per employee for 1994 and 1995, and indexed thereafter. Domestic workers are no longer covered if under age 18. Private household employment is projected to grow at about the same rate as E and vary with RTP.

Students at Private Schools - All students working in private schools are not covered under OASDHI. Students at private schools are projected to grow at about the same rate as the population aged 18 to 24.

Railroad - Employers do not submit payments for payroll taxes to the IRS for railroad employees. Railroad employees are projected by the Railroad Retirement Board.

Underground Economy Workers - Set to the at-any-time employed in the temporary or unlawfully present population who have no reported earnings and therefore are part of the underground economy (i.e., TEO\_UND).

#### Foreign Students and Exchange Visitors

##### *Equation 2.3.5 - Self-Employed Only (SEO)*

SEO is projected to grow at the same rate as ES.

##### *Equation 2.3.7 - Ratio of Combination Workers (RCMB)*

Total CMB\_TOT can be separated into two groups depending on whether they have OASDI covered wages under or over the TAXMAX. CMB\_TOT with covered wages under the TAXMAX have taxable wages and self-employed income. CMB\_TOT with covered wages over the TAXMAX have taxable wages only. CMB\_TOT with covered wages over the TAXMAX would have paid taxes on their self-employed income if the TAXMAX had been eliminated.

Total CMB\_TOT is projected as a ratio to WSW. This ratio is dependent on the RTP. If RTP rises, then the CMB\_TOT increases.

##### *Equation 2.3.10 - Ratio of Covered Wages (RWSC)*

RWSC is disaggregated by the following sectors: Federal Civilian government, Federal Military, S&L government, and Private.

Federal Civilian government - Total Federal civilian employment and wages are split by retirement system. Those under FERS are OASDI covered, while those under CSRS are not. Hence, the RWSC for the Federal civilian employment is defined as the ratio of wages for employment under FERS to total Federal civilian wages. Employment and wages are projected for workers under each retirement system. Employment under CSRS is a closed group that is expected to fall to zero by about 2030. Employment under FERS is defined as total Federal employment less employment under CSRS. Total Federal civilian employment is projected to be constant over the short-range period (i.e., the first 10 years of the projection), and about equal to the growth in the LC thereafter. The growth rates in the average wage for those under CSRS and FERS are projected based on, for the first five years, pay raises assumed under the most recent OMB FY Budget and on the growth rate in the CPI.

Federal Military - The RWSC for the Federal military sector is projected to remain constant at its latest actual historical level.

S&L government - The RWSC for the S&L government sector is projected to remain constant at its latest actual historical level.

Private - The private sector is separated into sub-sectors including private households, farm, railroad, tips, and a residual private “base”. The RWSCs for the private household and farm sub-sectors are projected to remain constant at their latest actual historical levels. By definition, the RWSCs for the railroad and tips sub-sectors are projected to remain constant at 0.0 and 1.0, respectively. The projected RWSC for the private base sub-sector is dependent on the ratio of EO wage workers in the private base sub-sector who are covered under the OASDI program to all EO wage workers in the private base sub-sector. We assume that all of EO will be wage workers employed in the private residual base sub-sector of the economy and that the proportion of EO that is covered under the OASDI program will decrease. Therefore, we assume that the RWSC for the private residual base sector will also decrease.

*Equation 2.3.12 - Ratio of Covered Self-Employed Earnings (RCSE)*

The RCSE is projected to remain constant at its latest actual historical level.

*Equation 2.3.17 - Average Wage Index (AWI)*

The growth in the AWI is projected to be equal to the growth in the average wage for employees with any wages (covered and noncovered) posted to the MEF (AWS\_MEF). Total wages posted to the MEF (WS\_MEF) is equal to WSC less wages posted to the ESF plus any non-OASDI covered wages posted to the MEF. Similarly, the total number of employees with any wages posted to the MEF (WSW\_MEF) is equal to WSW less employees posted only to the ESF plus any employees with no OASDI covered wages posted to the MEF.

*Equation 2.3.18 - OASDI Taxable Maximum (TAXMAX)*

By law, the growth in the AWI is used to increase the TAXMAX.