**SAM0506 Construction**

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The CA FY2006 SAM borrows heavily from previous CA SAM versions in its construction methodology. A series of Excel workbooks are constructed to organize the various data sources that will ultimately be compiled and makeup the bulk of SAM0506. The construction of these Excel workbooks is detailed here in the general order of construction required as some workbooks feed into others as pasted inputs.

(PB Nov 09) The order in which to work on these files is this. First the ES 202. Then the CAIO. Then the G0506,HH, and N0506. Finally these are combined into the SAM0506.

**CA IO table**

The 2006 CA IO table is assembled in stages. First is generating a US IO table using BEA data. Next is calculating US/CA wage ratios for 2002 to 2006. These wage ratios are used to transform the 2002 US IO table into the 2006 CA IO table. Finally, energy outputs are calculated using data from the EIA and CA energy almanac to adjust output for CA energy sectors.

* 2002 IO Data
  + Raw data obtained from BEA at <http://www.bea.gov/industry/io_benchmark.htm#2002data>
    - 2002 Supplementary Make, Use and Direct Requirements Tables at the detailed level
    - The raw Make and Use data files (IOMakeDetail.txt and IOUseDetail.txt) are read into Excel and are saved as 2002IOmake.xlsx and 2002IOuse.xlsx.
    - The sheet ‘1997 to 2002 correspondence’ compares the BEA industry/commodity codes for the two years. Some 1997 industries/commodities were not carried forward to the 2002 data and some 2002 industries/commodities are new. SAM sectors assigned to 1997 industry/commodity codes were used where the same industry/commodity codes were present in the 2002 data. New 2002 industry/commodity codes were assigned to SAM sectors based on numerical grouping of the industry/commodity codes as well as relevance of industry/commodity description.
    - The sheet ‘SAM Sectors’ represents the final 2002 mapping of industry/commodity codes to SAM sectors. Due to BEA industry/commodity code changes between the 1997 and 2002 IO data, three sectors are not represented in the 2002 make and use matrices: CONOTHER, CONSTREETS, and CONUTILITY. The SAM sector AUTOMFG is also not in the 2002 IO tables due to lack of 2006 CA ES202 wage data. The 2002 AUTOMFG IO make and use data were assigned to the VEHICLEMFG SAM sector.
    - The sheets ‘Make Raw’ and ‘Use Raw’ from the 2002IOmake.xlsx and 2002IOuse.xlsx excel files contain the raw data read from the BEA text files. SAM sectors are assigned utilizing the mapping from the ‘SAM Sectors’ sheet and Excel’s VLOOKUP function.
    - The sheets ‘Make Matrix’ and ‘Use Matrix’ are the aggregation of ‘Make Raw’ and ‘Use Raw’ data into matrix form. This is accomplished by Excel’s SUMIFS formula. Each cell within the matrices reads the industry and commodity columns in the ‘Make Raw’ and ‘Use Raw’ sheets and sums the appropriate producer’s prices for the matrix row and column industry and commodity.
    - (PB Nov 09) The category NA represents the government. It is accounted for in the cge apart from the IO table and so is omitted.
* ES202 Dram Summary
  + This workbook generates sector by sector ratios of US 2002 wages to CA fiscal year 2006 wages (e.g., the ratio of wages paid by the AGRIC sector to CA employees in FY 2006 to wages paid by AGRIC nationally in 2002).  These ratios are ultimately used in the 2002 US IO workbook to transform the 2002 US IO matrix to the CA FY 2006 IO matrix. CA wage data obtained form the BLS Quarterly Census of Earnings and Wages at <http://www.bls.gov/cew/home.htm>. 2002 US wages pasted from the 2002 US Use matrix.
    - The sheet ‘Final mapping’ is the mapping of NAICS to the SAM sectors. The column “Aggregated NAICS code” identifies the highest level NAICS code that can be assigned to that particular SAM sector.
    - The sheet ‘Aggregated Final Mapping’ is the NAICS to SAM sector mapping used for wage aggregation.
    - The sheets ‘2005 CA ES202’and ‘2006 CA ES202’ are raw data from ES202s showing CA wages by NAICS code.
    - The sheet ‘NAICS detail’ organizes the raw data from the above sheets onto one sheet.  Note that the column 4Q total sums the wage data from ‘2005 CA ES202’and ‘2006 CA ES202’. Also note at the bottom that the sheet wage total does not match the “book” total from the ES202 raw data. This is due to data suppression that takes place at various code levels, as well as an ‘unclassified’ NAICS sector that is not mapped to a specific SAM sector.
    - The sheet ‘NAICS to model sectors’ aggregates the wages by SAM sector by reading the 4Q total column from the NAICS detail sheet for each NAICS code, and cross-listing the values with the SAM sectors. The difference from the sheet total and book total from the ‘NAICS detail’ sheet is also distributed to all sectors in this aggregation step.
    - The construction SAM sectors CONUTILITY, CONSTREETS, and CONOTHER from the previous version of the SAM do not show up in this 0506 version due to BEA code changes in the 2002 IO data, yet there are wages for the NAICS codes associated with the sectors. Since it is not clear from the code titles whether the wages should be assigned to CONNONRES or CONRES, the sum of these wages is split and assigned to CONNONRES and CONRES based on the ratio of CONNONRES and CONRES to total construction in the 2002 IO wage (LABOR) data. NAICS codes 33611 & 336112 changed from AUTOMFG to VEHICLEMFG due to wage suppression issues with the AUTOMFG sector.
    - The sheet ‘2002 National wages’ is the transpose of the LABOR row from the 2002 US Use Matrix.
    - The sheet ‘Wage ratios’ is the final product of this workbook.  The CA 2006 column shows CA 2006 wages.  The US 2002 column simply copies over the data from the ‘2002 National wages’ sheet.  This data does not account for the one-to-many retail sectors, but is corrected in the Adjusted US 2002 column, which allocates all US RETAIL wages to the 3 retail sectors on the basis of CA wages.  These sectors are highlighted in red on the sheet.  Finally, the Ratio column gives the ratio of CA 2006 wages to US 2002 wages for each sector.
* 2002 US IO Table
  + The wage ratios from the ES202 Dram Summary workbook are used to create 2002MakeExpansion.xls and 2002UseExpansion.xls. These two excel workbooks expand the retail sector into the three SAM retail sectors (RETAILVEH, RETAILGAS, and RETAILOTHER) for the use and make IO tables. The expanded use and make tables are then aggregated using the MATLAB routine CalcIOAggregate.m to create the 2002 US IO table AggregateIOtable.xls.
    - Workbooks 2002IOmake.xlsx and 2002IOuse.xlsx are expanded into the workbooks 2002MakeExpansion.xlsx and 2002UseExpansion.xlsx through the following steps:
      * Within the 2002\_\_\_\_Expansion.xlsx workbooks the wage ratio’s transpose worksheet is a pasted copy from the ES202\_DramSummary0506.xlsx worksheet of the same name. The 2002 IO use and 2002 IO make worksheets are pasted copies from 2002IOuse.xlsx and 2002IOmake.xlsx respectively.
      * The worksheet Horizontal Expansion expands the retail sector into the RETAILVEH, RETAILGAS, and RETAILOTHER sectors. This is accomplished by multiplying the IO retail value by the RETAILVEH, RETAILGAS, or RETAILOTHER sector percent of retail wages from the wage transpose worksheet. The Vertical Expansion uses the same process.
    - The expansion workbooks are then aggregated to the 2002 US IO table using the MATLAB code CalcIOAggregate.m, resulting in the file AggregateIOtable.xls.
* 2006 CA IO Table
  + This workbook turns the 2002 US IO table into the 2006 CA IO table utilizing US to CA wage ratios. It also corrects the energy sectors DISTELEC, DISTGAS, OILGAS, and OILREF by utilizing US and CA production and price data to obtain actual output, as opposed to a wage ratio implied output.
  + Utilizes the following data sources
    - * EIA - Refiner Petroleum Product Prices by Sales Type <http://tonto.eia.doe.gov/dnav/pet/pet_pri_refoth_dcu_nus_m.htm>
      * CA Energy Almanac – Weekly Fuels Watch Report <http://www.energyalmanac.ca.gov/petroleum/fuels_watch/index.html>
      * EIA – Oil production data <ftp://ftp.consrv.ca.gov/pub/oil/annual_reports/2006/2006AnnualReport.pdf>
      * EIA – Oil price data <http://tonto.eia.doe.gov/dnav/pet/pet_pri_spt_s1_a.htm>
      * EIA – Electricity Generation data <http://www.eia.doe.gov/cneaf/electricity/epa/fig1p1.pdf>
      * EIA – Electricity Price data <http://www.eia.doe.gov/cneaf/electricity/epa/fig7p4.pdf>
      * EIA – Natural Gas Consumption and Price data <http://www.eia.doe.gov/pub/oil_gas/natural_gas/data_publications/natural_gas_annual/current/pdf/table_030.pdf>
    - Sheet ‘2002 US IO’ is a paste from AggregateIOtable.xls
    - Sheet ‘Wage Ratios’ is a paste from ES202\_DramSummary0506.xls worksheet of the same name.
    - Sheet ‘2005-2006 Weekly Fuel Watch Report’ contains CA oil refinery production data from the CA energy almanac over the CA FY2006 time period. Additionally, it contains prices for oil refinery products, obtained from the Energy Information Administration, to calculate CA FY2006 OILREF output. California prices were available for motor gasoline, jet fuel, and No.2 distillate (diesel). For No.1 distillate and residual fuel, the average ratio of US/CA prices was used to estimate CA prices from the US prices. If price data were available on a monthly basis then the average was taken for 7/2005-6/2006 price data, otherwise the annual prices for 2005 and 2006 were averaged to obtain an estimated CA FY2006 price.
    - Sheet ‘Energy Outputs’ makes the calculations for OILREF, OILGAS, DISTELECT, and DISTGAS output using production/generation/consumption data from the EIA. CA FY2006 prices were estimated using the methods described above.
    - Sheet ‘2006 AMS’ contains manufacturing output, measured by value of total shipments, reported in the 2006 Annual Manufacturing Survey conducted by the U.S. Census Bureau.
    - Sheet ‘2006 CA IO’ uses the wage ratios, CA energy output, and manufacturing output data to transform the 2002 US IO table into the 2006 CA IO table.
    - The four energy sector columns; DISTGAS, DISTELECT, OILGAS, and OILREF were adjusted so that the column sum reflected the calculated CA output. This was accomplished by multiplying the 2002 US IO value by the ratio of the CA output to the 2002 US IO output for the respective sector.
    - 32 of the manufacturing sector columns, listed on the left side of the ‘2006 AMS’ sheet, were adjusted so that the column sum reflected the CA output reported in the AMS. This was accomplished by multiplying the 2002 US IO value by the ratio of the CA output to the 2002 US IO output for that manufacturing sector.
    - All remaining sectors were adjusted by multiplying the 2002 US IO value by the corresponding sector wage ratios.
    - The one-to-many retail, wholesale, and acc sectors were consolidated into a more realistic representation.
    - The NA sector was merely deleted. Detailed government and household transactions are calculated in other workbooks.

**g0506**

This workbook uses data regarding federal, state, and local government sectors to compute the government expenditure and revenue flows which appear in the SAM.   The workbook consists of a top-level sheet (g0506) which displays the government sector portions of the SAM, and supporting sheets for federal (US0506), state (CA0506) and local governments (Local0506). g0506 uses the MotorFuelTax.xlsx workbook for establishing industry contributions to gasoline (CTGAS) and diesel (CTDIE) taxes.

* Raw data inputs:
  + US0506 sheet
    - Consolidated Federal Funds Report / FY 2006 <http://www.census.gov/govs/www/cffr.html>
    - DoD PRIME CONTRACT AWARDS By STATE and MAJOR PROCUREMENT PROGRAM ($)  -  FY2006  <http://siadapp.dmdc.osd.mil/procurement/historical_reports/geographic/P06-P09/FY2006/P06-P09-State-Maj-Procurement-2006.pdf>
    - Internal Revenue Service 2006 Data Book <http://www.irs.gov/pub/irs-soi/06databk.pdf>
    - Social Security payments <http://www.bea.gov/regional/sqpi/default.cfm?sqtable=SQ4>
    - Federal Excise taxes <http://www.irs.gov/taxstats/article/0,,id=175900,00.html>
  + CA0506 sheet
    - Governor’s Budget Summary [http://www.dof.ca.gov/budget/historical/2007-08/documents/FullBudgetSummary.pdf](http://www.dof.ca.gov/budget/historical/2007-08/documents/FullBudgetSummary.pdf%20)
      * Entered data represent actual 2005-2006 numbers as recorded in the 2007-2008 Governor’s Budget
        + Schedule 4:  Personnel Years and Salary Cost Estimates
        + Schedule 8:  Comparative Statement of Revenues
        + Schedule 9: Comparative Statement of Expenditures
    - BEA Regional Economic Information System <http://www.bea.gov/regional/docs/reis2006dvd.cfm>
  + Local0506 sheet
    - California Department of Education
      * Report on The Budget Act 2005 <http://www.cde.ca.gov/fg/fr/eb/documents/budgetreport05.pdf>
        + Figure 2: Funding for K-12 Education
    - Ed-Data: General Fund – Expenditures, Statewide total and averages, 2005-06 <http://www.ed-data.k12.ca.us/Navigation/fsTwoPanel.asp?bottom=%2Fprofile%2Easp%3Flevel%3D04%26reportNumber%3D16>
    - Most recently available versions of various local government revenue and expenditure reports taken from the California State Comptroller’s Office web site <http://www.sco.ca.gov/pubs/index.shtml#localgovrep>
      * Community Redevelopment Agencies Annual Report (2005-06)
        + Figure 9: Combined Statement of Revenues, Expenditures, and Changes in Fund Balance by Fund Type
      * Counties Annual Report (2005-06)
        + Figure 3: County Revenues by Source and Other Financing Source
        + Figure 15: County Expenditures by function and other Financing Uses
        + Figure 18: Public Assistance
        + Figure 20: Public Protection
      * Transit Operators and Non-Transit Claimants Annual Report (2005-06)
        + Figure 5: Transit Operating Revenues and Capital Additions to Equity
        + Figure 7: Passenger Fares and Local Support
        + Figure 10: Transit Operating Expenses
      * Special Districts Annual Report (2005-06)
        + Figure 16: General Purpose Transactions
      * Transportation Planning Agencies Annual Report (2005-06)
        + Figure 2: Transportation and Planning Agencies and Special Taxing Authorities Revenues and Expenditures.
      * Street and Roads Annual Report (2005-06)
        + Figure 1: Monies Made Available, Expenditures, and Restricted Balances
        + Figure 11: Monies Made Available for City Street Purposes
        + Figure 14: Expenditures for City Street Purposes
        + Figure 17: Monies Made Available for County Road Purposes
        + Figure 20: Expenditures for County Road Purposes
      * Cities Annual Report
        + Table 3: Statement of Revenues
        + Table 4: Statement of Expenditures
* Workbook Construction Methodology
  + Expenditures (Spending units; Columns)
    - US0506
* FSNON
  + Spending to industrial sectors is obtained by allocating the Consolidated Federal Funds Non-Defense CA contract total in proportion to the BUSSERVICES column of the CA IO table.
  + Spending to LABOR is equal to the Consolidated Federal Funds Non-Defense CA wage total.
* FSDEF
  + Spending to industrial sectors is obtained by first determining the distribution of defense contracts. The Department of Defense report on prime contract awards by state and major procurement program is used to assign contract amounts to industrial sectors. The sector assignment was carried forward from g0304.xls. This distribution of defense contracts is then used to proportionally allocate the Consolidated Federal Funds Defense CA contract total to the appropriate sectors.
  + Spending to LABOR is equal to the Consolidated Federal Funds Defense CA wage total.
    - CA0506
      * Amounts for CA spending units are generally obtained through the following steps. First, spending sectors are mapped[[1]](#footnote-1) to the line items of the comparative statement of revenues for the state budget. Second, Expenditures are aggregated by spending sector and expenditure fund source. Next, using the Personnel Salary Costs from the state budget, wages are assigned to spending sectors and aggregated. Finally, the wage total for each spending sector is subtracted from the State Operations and Unclassified expenditure totals for each spending sector. This total is then allocated to industrial sectors in proportion to the BUSSERVICES column of the CA IO table for CSTRA, CSCOR, CSWEL, CSHTH, and CSOTH; CSK14 and CSUNI totals are allocated in proportion to the EDUCATION column. Deviations and exceptions to this procedure are as follows:
        + Spending to CONNONRES is equal to the spending sectors total for aggregated Capital Outlay expenditures.
        + Spending to LABOR is equal to the spending sectors total for aggregated Personnel Salary Costs.
    - Local0506
      * Since there is no single budget for all of the local governments of CA, revenue and expenditure tables are compiled using various reports from the CA State Controller’s office. These tables serve as proxy for a CA local budget. As with the state worksheet, local spending sectors are mapped to the line items and then aggregated by spending sector and source report. Payments to LABOR is calculated first by allocating in proportion to the BUSSERVICES column from the CA IO table for LSTRA, LSCOR, and LSOTH and the EDUCATION column for LSK14. Next, payments to LABOR, CTLAB, and FTSOC are subtracted from each spending sector’s aggregated expenditure total and allocated to industrial sectors in the same fashion as the local payments to LABOR above. Deviations and exceptions to this procedure are as follows:
        + LSWEL spending to household sectors is calculated in HH0506.xlsx workbook
  + Revenues (Taxing units; Rows)
    - US0506
* FTSOC
  + Tax receipts from industrial and government spending (federal, state, and local) sectors were obtained by allocating the employer government insurance contribution total from BEA in proportion to the amount each industrial and government spending sector spent on LABOR.
    - Industrial spending on LABOR is obtained from CA IO table. Government spending on LABOR is obtained as government spending totals are allocated/calculated in the different worksheets.
* FTPIT
  + Tax receipts are calculated in the PIT0506.xls workbook.
* FTPRO
  + Tax receipts from industrial Sectors are obtained by allocating the Corporation Income Tax total from the IRS 2006 Data Book in proportion to the CAPITAL row from the 2006 CA IO table.
* FTDUT
  + Tax receipts are calculated in SAM0506.xlsx
* FTMSC
  + Tax receipts from industry are calculated using Federal excise tax aggregate data and allocated based on the assignment of SAM sectors to the excise tax data line items.
    - CA0506
      * The Comparative Statement of Revenues of the state budget is mapped and aggregated in the same fashion as the expenditures. The aggregated revenue totals are then allocated to industrial sectors as follows.
* CTHHS, CTEST, CTPIT, CTSVC
  + Tax receipts are calculated in the PIT0506.xlsx workbook
* CTBOZ & CTCIG
  + Tax are paid by the BEVTOBAC sector
* CTHOR
  + Tax are paid by the RETAILVEH sector
* CTTR, CTLIC, & CTREG
  + Tax are paid by the VEHICLEMFG sector
* CTDIE, CTGAS
  + Tax receipt assignments are divided between firms and households. Industry pays 90% of CTDIE taxes and 20% of CTGAS taxes, households calculate the remaining portions. Allocation of taxes paid by specific industries is calculated in MotorFuelTax.xlsx. Household payments are calculated in HH0506.xlsx
* CTMSC, CTBAC, & CTPAM
  + Tax receipts are assigned to the industrial sectors in proportion to the CAPITAL row of the CA IO table
  + CTRGU Tax receipt assignments are divided between firms and households. 70% are assigned to industrial sectors in proportion to the CAPITAL row of the CA IO table. 30% are assigned to households and are calculated in PIT0506.xlsx
* CTINS
  + Taxes are paid by the FININSURE sector
* CTSAU
  + Tax receipts by industry are calculated based on each SAM sectors exposure to sales and use taxes.
* CTLAB
  + Tax receipt total was obtained by adding the Unemployment Insurance Net Collection from the IRS Data Book to Workers Compensation and State Unemployment Insurance totals from the BEA Regional Economic Information System. This total was then assigned to industrial as well as federal, state, and local government spending sectors in proportion to the LABOR row of the CA IO table and the government sector spending on LABOR.
    - Local506
      * Revenue totals mapped and aggregated in the same fashion as the expenditure tables mentioned above.
* LTPRP
  + Tax receipts are divided between firms and households. 25% are assigned to industrial sectors in proportion to the CAPITAL row of the CA IO table. 75% are assigned to households and are calculated in HH0506.xlsx
* LTSAU
  + Tax receipts by industry are calculated based on each SAM sectors exposure to sales and use taxes.
* LTFMS
  + Tax receipts are by industry are allocated in proportion to the CAPITAL row of the CA IO table
* LTHHS
  + Tax receipts are calculated in PIT0506.xlsx
* LTMSC
  + Tax receipt assignments are divided between firms and households. 25% are assigned to firms in proportion to the CAPITAL row of the CA IO table. 75% are assigned to households and calculated in PIT0506.xlsx
    - Intergovernmental Transfers
      * Some government sectors, such as CGENF, exist for the sole purpose of transferring revenues from tax units to spending units for expenditures. Other tax or spending sectors transfer their revenues to another spending sector before the ultimate expenditures are made. The following are the intergovernmental transfers included in the g0506.
* CGENF
  + Aggregated revenues from CA tax sectors “spend” into the CA general fund, and then the general fund “spends” on CA and local spending sectors. The amount “spent” on CA spending sectors is equal to the sum of general funds and bond funds, less expenditures for local assistance, from the Expenditures – Fund Aggregation table. The sum of general fund and bond fund expenditures dedicated to local assistance are what is “spent” on the local spending sectors.
* CA Special funds
  + Tax sectors transfer general fund revenues to the general fund, but transfer special fund revenues directly to the spending sectors, both state and local.
* FTSOC, FTPRO, FTPIT, FTMSC and FTDUT tax receipt totals transfer to FSNON
* FSNON transfers to CA and Local spending sectors via the federal funds aggregated revenues from the state budget. CA spending sectors receive Capital Outlay, State Operations, and Unclassified federal funds. Local spending sectors receive Local Assistance federal funds. Local Assistance federal fund amounts aggregated to CSK14 and CSUNI both transfer to LSK14
* CA special fund revenues?
  + CA special fund transfers to spending sectors were calculated using the previous versions methodology as well as examining the CA and LA county budget for intended use of special funds and source sectors.
    - MotorFuelTax.xlsx
      * ‘2002 US IO Raw’ is a paste from 2002IOUse.xlsx
      * ‘Petroleum Refineries 324110’ isolates purchases of refinery products by industry.
      * ‘Wage Ratios’ is a paste from ES202\_DramSummary0506.xlsx.
      * ‘324110 Agg’ sums the refinery purchases by industry and calculates their purchases of refinery products as a percentage of total refinery products purchased by all industry. For the purposes of allocating payments to CTGAS and CTDIE by industry in g0506.xlsx, a ratio of gas and diesel purchases is assumed for each industry. For most industries a 50/50 split is assumed, but for industries that would have a more lopsided purchase of gasoline or diesel based on the nature of their business a different ratio is assumed. For example, AGRIC is more likely to consume more diesel than gasoline, thus a 10/90 split is assumed. Using these ratios the payments to CTGAS and CTDIE are determined for each industry based on their assumed purchases of gasoline and diesel as a percentage of total industry purchases.
      * ‘Motor Fuel Tax Collection’ merely consolidates the data from ‘324110 Agg’ to be copied into g0506.xlsx.

**N0506**

This workbook creates the capital coefficients matrix (CCM), which shows the percentage distribution of each industry sector’s investment in other industries.  The entry in row i column j shows the percentage of sector j's investment which is made in sector i.

* Raw Data Inputs
  + 1997 Capital Flow Table from the BEA
* Workbook Construction/methodology
  + the '180x123Combined’ worksheet (part of the Capital Flow Table workbook from the BEA) is the national CCM matrix from the BEA; columns represent distributions of capital use by each sector, while rows represent distributions of capital to using industries from each sector. Our model is based on the NAICS system of industrial classification, which differs from the BEA’s system.  The column 'Closest dofarb sector' has been inserted to show how our model sectors correspond to the BEA classification.
  + The sheet called ‘Transpose BEA CCM’ features a transposed version of the data in the '180x123Combined’ worksheet, with rows inserted for BEA categories which split across dofarb sectors.
  + The ‘Industry Reallocation’ sheet has the same layout as ‘Transpose BEA CCM.’   The ‘wage share’ column (col. F) is added to show the CA wage share of our model sectors for the BEA sector corresponding to each row.  For cases where there is a one-to-one or many-to-one mapping of BEA sector to dofarb sector, the wage share is 1.  For cases where there is a one-to-many mapping of BEA sector to dofarb sectors, the wage shares represents the percentage share of CA wages to dofarb sectors which correspond to the BEA sector in question.  Multiplying wage shares by investment to BEA sectors reallocates investment to our model sectors.
  + The sheet called ‘Investment by Model Sector’ aggregates the rows of ‘Industry Reallocation’ by dofarb sectors.
  + The ‘Undo Transpose’ sheet next deals with translation of the BEA codes for industries supplying investment into corresponding dofarb sectors.  The first step is to transpose the ‘Investment by Model Sector’ sheet, so the rows of the new matrix again represent investment supply.  Column D shows BEA codes for supplying industry, and column C is added to show corresponding dofarb sectors.
  + ‘Aggregate CCM’ adds up rows of ‘Investment by Model Sector’ by each dofarb sector, resulting in a CCM matrix which shows the total amount invested by each dofarb sector from each supplying industry.
  + The ‘Percentage CCM’ sheet converts the columns in ‘Aggregate CCM’ into percentage distributions. This sheet is copied and values pasted into a new workbook “CCM0506.xls” which will be read into EDRAM0506 as parameter ccm(i, i1).
  + The sheet ‘2006 CA IO’ is a paste of the CA IO table.
  + The sheet ‘N0506’ assumes a 11% rate of return and 5% depreciation rate, in conjunction with the IO table distributions, to calculate inter-industry investments to arrive at a final investment column (the sum of the rows) for the SAM0506 INVEST sector.

**PIT0506**

This workbook generates all personal tax payments made by each household sector.

* Raw Data Inputs
  + Franchise Tax Board 2006 Annual Report: Table B-4A.1 & B-4A.2 <http://www.ftb.ca.gov/aboutftb/annrpt/2006/2006AR.pdf>
  + 2006 California Tax Rate Schedule Y <http://www.ftb.ca.gov/forms/06_forms/06_540tt.pdf>
  + 2006 Federal Tax Rate Schedule Y-1 <http://www.irs.gov/formspubs/article/0,,id=150856,00.html>
* Workbook Construction/Methodology
  + The sheet ‘2006 Tax Rate Schedule’ shows the CA and Federal income tax brackets.
  + The sheet ‘2005 PIT’ shows the CA personal income tax table for 2005.
  + The sheet ‘Fed tax calculations’ uses the federal data available in the CA returns to impute federal tax figures.
  + The sheet ‘From g0506’ contains copied and pasted data from the tax take sections of the ‘g0506.xls’ workbook.
  + The sheet ‘PIT Aggregation’ aggregates the CA and Federal data into the 8 household sectors. The aggregated data are then used to distribute the tax revenue data from g0506.xls. Due to lack of data within the Consumer Expenditure Survey on HOUS0 it is merged with HOUS1.

**HH0506**

This workbook calculates household income and expenditures using data from the Bureau of Labor Statistics’ Consumer Expenditure survey (CES) as well as other previously completed SAM component workbooks.

* Workbook Construction/Methodology
  + ‘Expenditure & Income data’ contains pasted tables from PIT0506.xlsx, g0506.xlsx, and 2006CAIOtable.xlsx. The worksheet notes which table comes from which workbook. Other tables on this worksheet are derived through Stata do files which interact with the CES datasets as well as an Incomplete Demand System (IDS) estimation of consumer demand.
    - The table “Consumer Expenditure Survey distribution of household transfer payments” is produced by the Stata do file OtherIncome.do[[2]](#footnote-2) which tabulates the amount of Federal, State, and Local transfer payments to the SAM household sectors.
    - The Table “Household Consumption Shares of Consumption Categories” is produced by the Stata do file PredictedShares.do which uses the estimated coefficients from the IDS estimation[[3]](#footnote-3) to obtain the predicted household consumption shares used to distribute household consumption of the 8 composite commodities.
  + ‘Consumption Sector Spending’ contains pasted tables from g0506.xls as well as tables derived through Stata do files which interact with the CES datasets as well as the IDS estimation of consumer demand.
    - The table “Consumption sector industry demand less retail markup and motor fuel taxes” is produced by the Stata do file outsheets.do[[4]](#footnote-4). It calculates the distribution of Consumption sector spending of Industry Sectors less retail markup and motor fuel taxes.
    - The table “Retail markups on consumption sector industry demand” is also produced by the Stata do file outsheets.do. It calculates the retail markup on commodities sold through retail outlets based on percentages obtained from the 2002 Economic Census table “Estimated Annual Gross Margin as a percentage of Sales of Retail Firms by Kind of Business: 1993 Through 2006 –Con.” which are in turn obtained from Annual Retail Trade Survey.
    - The table “Consumption sector payments to motor fuel taxes” shows the distribution of payments to CTGAS and CTDIE tax sectors. It is also obtained by the Stata do file outsheets.do.
  + ‘HH0506’ organizes the data from the previous two worksheets to calculate income and expenditures of the household and composite commodity sectors.
    - Total household income is obtained from the Bureau of Economic Analysis’ calculation of CA state personal income. It is an average of the four quarters making up the CA 2006 fiscal year. It is broken down into the following sources
      * Wages. The labor row from the CA IO table is the total household wages. It is distributed to the different household sectors based on the distribution of household wages according to CA tax data from PIT0506.xls.
      * Transfer Payments. Total amounts for federal, state, and local transfer payments are obtained g0506.xls and distributed to the household sectors according to allocation of transfer payments recorded in the CES.
      * Capital. The total amount of capital payments to households is obtained by subtracting wages and transfer payments from the BEA total for state personal income and distributed to the houshehold sectors according to the distribution of earned capital recorded in CA tax data from PIT0506.xls.
    - Total household expenditures are exactly equal to state personal income obtained from BEA. The expenditures are broken down in the following manner:
      * Taxes. The total amount and distribution of taxes paid to federal, state, and local tax sectors is obtained from CA tax data from PIT0506.xls.
      * Savings. The total savings by households is calculated by assuming a 3% savings rate of CA state personal income. Savings by household sectors is allocated based on the distribution of earned capital recorded in CA tax data from PIT0506.xls.
      * Consumption. The total amount for household consumption is obtained by subtracting taxes and savings from state personal income and distributed by household and composite commodities sectors according to the consumption shares obtained from the IDS estimation.
    - Total composite commodity income is exactly equal to the amount of household consumption calculated above.
    - Total composite commodity expenditures to Industry, retail, and tax sectors is exactly equal to composite commodity income and distributed according to the allocation recorded in sheet ‘Consumption sector spending’.
    - Note: The total amount of payments to FTSOC by households is organized in sheet ‘HH0506’ as being paid by the LABOR sector as opposed to being paid by households to facilitate programming code in EDRAM0506.gms.

**SAM0506**

SAM0506.xlsx compiles date from all previous workbooks and calculates the Social Accounting Matrix for use in EDRAM0506.xlsx and is assembled in the following manner:

* ‘2006 CA IO’ is a paste from 2006CAIOtable.xlsx.
* ‘g0506’ is a paste from g0506.xlsx.
* ‘HH0506’ is a paste from HH0506.xlsx.
* ‘N0506’ is a paste from N0506.xlsx.
* ‘Preliminary’ organizes the previous 4 worksheets into a preliminary SAM.
* ROW calculates imports and exports based on the row/column deficits/surpluses from ‘preliminary’ as well as trade ratios obtained from the 2002 CFS.
* ‘Secondary’ incorporates the import and export data from ‘ROW’ into a secondary SAM.
* ‘Secondary Transposed’ is merely ‘Secondary’ transposed.
* ‘Positive Transformed’ eliminates negative values. This is achieved by transposing a negative expenditure, for example, into a positive income value.
* ‘FTDUT’ calculates import duties by taking the total amount of import duties paid, obtained from g0506.xlsx, and distributes this total based on the two way trade calculated in ‘ROW’.
* ‘With Import Duties’ incorporates import duties into the positive transformed SAM.
* ‘Negative Check’ runs a final check for negative values as well as balance in the row/column sums.
* ‘SAM0506’ is the CA FY2006 Social Accounting Matrix.

1. State and local revenue and expenditure mapping from 0304 model was carried forward. Remapping took place after examination of intergovernmental transfer balances as well as State budget documentation. For local government mapping adjustments the Los Angeles County final budget was used as a proxy for all local government budgets due the county’s high percentage of the State’s population (28%). [↑](#footnote-ref-1)
2. This do file requires the auxiliary Stata files OtherIncomeAgg.dta, itab2005-2006dict.dct, mtab1980-2006dict.dct, fmly2004-2005dict.dct, and fmly2006dict.dct. The Excel worksheet TransferPayments.xls is the product of these Stata files. [↑](#footnote-ref-2)
3. The IDS estimation is executed using the Stata do files IDS\_MasterDo.do, IDS88-06Q1, IDS88-06Q2, IDS88-06Q3 as well as the Dataset 1980-2006CES. [↑](#footnote-ref-3)
4. This do file requires the auxiliary Stata files SAMSectorNumbers.dta, uccagg1980-2006\_8-6-09.dta, HHDemand0506.do, mtab1980-2006dict.dct, fmly2004-2005dict.dct, and fmly2006dict.dct. The worksheets CMFUEL.xls, HHIndDemand.xls, and HHRetDemand.xls are the products of these Stata files. [↑](#footnote-ref-4)