

C Government Consumption

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C.1 Background

Under standard national accounting conventions, government consumption includes the outputs of non-market processes of production and excludes their inputs, these being accounted as intermediate usage by various industries, mainly public administration and defense (SNA 2008). Most I-O tables contributed to GTAP follow this convention, but some do not. The non-compliant tables differ from the compliant in presenting much lower totals for government consumption expenditure, and, within those totals, much lower expenditure shares for public administration and defense (more precisely, for the GTAP commodity *osg* in which public administration and defense are included). This has been a major source of variation in I-O structure across regions in previous releases. This chapter explains the procedure used to improve government consumption representation in the non-compliant tables.

C.2 Methodology

The objectives of this procedure are to identify the non-compliant tables, and to revise them so as to approximate a more compliant treatment. The procedure is applied after initial cleaning (chapter 8), but before any sectoral disaggregation (chapter B). Therefore, the I-O tables are not yet uniform in sectoral classification: some use the GTAP sectoral classification, others use various different aggregations thereof.

To identify non-compliant tables, the ratio of government consumption to GDP is calculated for each table, and compared to external macroeconomic data. Since the contributed tables have various reference years, time series data are used for the comparison. A table is deemed non-compliant if its ratio of government consumption to GDP is less than half the corresponding ratio in the external data.

The time series data source used is same to the chapter 7, which combines the WDI data (primary) and UN data. This distinguishes 215 countries corresponding to GTAP standard countries. We extract estimates for GDP and government consumption in current US dollars, for the years 1984 to 2017. For some countries, some observations are missing; we treat zero observations as mis-coded missing values.

After discarding all observations for which we lack matching GDP and government consumption, our data set contains 187 countries. For these countries overall, about two thirds of the possible observations are present and one thirds are absent. We fill in the missing observations, using linear interpolation method for each country. The method identifies and exploits country-specific time trends. It has however this weakness, that it does not capture year-specific characteristics of the data set.

That first step fills in the missing observations for those countries for which some WDI observations are available. The next step supplies the UN data for which no observations are available, again for the years 1984-2017. For this we use the GDP and government consumption estimates from the GTAP macroeconomic data set (chapter 7). Finally, we estimate the missing values for each country independently, using linear regression of the log term. This gives us our final multi-year macroeconomic data set.

We identify the reference year for each contributed I-O table. Some contributed tables are a hybrid of original I-O data for an earlier year and macroeconomic data for a later year; for such tables, we take the reference year for the macroeconomic data. For some tables, the reference year is not a calendar year but a financial year; for those, we use the simple average of the data for the calendar years that overlap the financial year.

All contributed tables have original macroeconomic data for the required reference year. We now compare the ratio of government consumption to GDP in each contributed table with the corresponding ratio for that table's reference year in the time-series macroeconomic data set. We reject the government consumption data for those tables in which the ratios differ by a factor of more than 2. We find five such tables; Table 9.6 shows them, and also selected tables for which ratios compare relatively poorly, but for which we did not reject the government consumption data.

Table 9.6: Government Consumption Data, Selected Countries Government Consumption to GDP Ratio

Country	I-O Data	Macro Data	Accept / Reject	Government services share in Government Consumption
Estonia	0.21	0.18	accept	0.35
Malta	0.27	0.19	accept	0.36
Norway	0.27	0.22	accept	0.34
Hungary	0.10	0.22	reject	0.39
Luxembourg	0.42	0.17	reject	0.36
Syria	0.15	0.05	reject	0.98
Algeria	0.04	0.19	reject	0.01
Chad	0.10	0.04	reject	0.69

The tables for which we reject the I-O data are Hungary, Luxembourg, Syria, Algeria, and Chad. We note that the I-O tables present not only sizable apparent underestimates of government consumption, but also some sizable apparent overestimates.

In the last column of 9.6, we report the share from the contributed table. As noted above, one feature of tables using non-standard treatments of government consumption is a low share of government services (GTAP commodity osg) in government consumption expenditure. This is the case for just one of the the countries being rejected. For other countries, the share of osg in government consumption expenditure appears reasonable.

References

SNA (2008). *System of National Accounts*. Brussels/Luxembourg, Washington, D.C., Paris, New York, United Nations. URL: <http://unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf>.