General Notes on the Philadelphia Fed's
Real-Time Data Set for Macroeconomists (RTDSM)

Gross Domestic Income and Components

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I. Overview of the Philadelphia Fed's Real-Time Data Set for Gross Domestic Income

This document contains general notes on variables in the Philadelphia Fed's real-time data set for gross domestic income (GDI) and its components. A *real-time data set* shows the observations for a variable as those observations were revised over time. The Philadelphia Fed's real-time data set records snapshots, or vintages, of the data as they existed at various points in time in the past before the data were fully revised. The *vintage date* is an important concept in a real-time data set: It refers to the date on which the data were available to the public. Our data sets, organized as Excel workbooks, provide all vintages for a particular variable in one Excel workbook.

A real-time data set is organized with observation dates in the rows and vintage dates in the columns. This characterizes the construction of the Philadelphia Fed's data. When the data are organized this way, each column shows the entire time-series history of the variable that would have been available to someone at the vintage date shown in the column header. Thus, an analyst can easily track the revisions to an observation by moving horizontally across the columns. Indeed, as you move from one column to the next, two features of the data change. First, the new column lists any additional observations released by the government statistical agency. Second, the new column records any revisions to the previous observations. Data for each variable in the GDI data set generally begin with the observation for 1947:Q1. Exceptions are noted below.

GDI vs. GDP. The rules for national income accounting say that nominal GDI should equal nominal GDP. Nominal GDI represents the income side of the national accounts, while nominal GDP measures the expenditure side. All expenditures should be allocated to one or more components on the income side so that the two sides are in balance. However, it is well known that the equality does not hold in the U.S. data. According to the Bureau of Economic Analysis (BEA), the U.S. government statistical agency responsible for computing the U.S.

national income and product accounts, the two measures are based on "… largely independent source data ...," implying the absence of a mechanism to ensure the equality. One interpretation is that the alternative measures contain *measurement error*. Neither measure is perfect, but both can be thought of as carrying important information on the production of goods and services in U.S. economy. The table below shows the variables included in the Philadelphia Fed's real-time data set for gross domestic income, its components and additional items of relevance for GDI. We show the variable's mnemonic in parentheses.

GDI Variables in the Philadelphia Fed's Real-Time Data Set

Nominal Gross Domestic Income (YNGDI)
Nominal Compensation of Employees, Paid (YNCOMPEP)
    Nominal Wages and Salaries (YNWS)
    Nominal Supplements to Wages and Salaries (YNSWS)
Nominal Taxes on Production and Imports (YNTAXR)
Nominal Government Subsidies (YNGSUB)
Nominal Net Operating Surplus (YNOS)
    Nominal Net Operating Surplus, Private Enterprises (YNOSP)
      Net Interest and Misc Payments, Private Enterprises (YNIPAID)
      Business Current Transfer Payments, Private Enterprises, Net (YNTRPAY)
      Proprietors Income with IVA and CCA, Private Enterprises (YNPINCW)
      Rental Income with CCA, Private Enterprises (YNRINC)
      Corporate Profits with IVA and CCA, Private Enterprises (YNCPRFW)
        Taxes on Corporate Income, Private Enterprises (YNCTAX)
        Corporate Profits After Tax with IVA and CCA, Private Enterprises (YNCPRFATW)
          Net Dividends Paid, Private Enterprises (YNDPAID)
          Undistributed Corporate Profits with IVA and CCA. Private Enterprises (YNUCPRFW)
    Nominal Net Operating Surplus, Government Enterprises (YNOSG)

Nominal Consumption of Fixed Capital (YNCFC)
    Nominal Consumption of Fixed Capital, Private Enterprises (YNCFCP)
    Nominal Consumption of Fixed Capital, Government (YNCFCG)

Additional Items of Relevance

Nominal Statistical Discrepancy (YNSD) = GDP minus GDI
Implicit Price Deflator for GDP (YPDGDP)
Real GDI (YRGDI) = Nominal GDI divided by the ratio ngdp/rgdp

Some Identities of Interest. The variables for GDI and components are related in the ways shown below. The variables described as nominal and real GDP (NGDP, RGDP) are not included in the real-time data set for GDI, but they are available elsewhere in the Philadelphia Fed's real-time data set for macroeconomists, as NOUTPUT and ROUTPUT.

Nominal Gross Domestic Income (YNGDI) =
Compensation of Employees (YNCOMPEP) **plus** Taxes on Production and Imports (YNTAXR)
minus Subsidies (YNGSUB) **plus** Net Operating Surplus (YNOS)
plus Consumption of Fixed Capital (YNCFC)

Nominal Compensation of Employees (YNCOMPEP) =
Wages and Salaries (YNWS) **plus** Supplements to Wages and Salaries (YNSWS)

Nominal Net Operating Surplus (YNOS) =
Net Operating Surplus Private Enterprises (YNOSP)
plus Net Operating Surplus Government (YNOSG)

Nominal Net Operating Surplus Private Enterprises (YNOSP) =
Net Interest Payments (YNIPAID) **plus** Net Business Transfer Payments (YNTRPAY)
plus Proprietors' Income with IVA and CCA (YNPINCW) **plus** Rental Income with CCA (YNRINC)
plus Corporate Profits with IVA and CCA (YNCPRFW)

Corporate Profits After Tax with IVA and CCA (YNCPRFATW) =
Corporate Profits with IVA and CCA (YNCPRFW) **minus** Taxes on Corporate Income (YNCTAX)

Nominal Consumption of Fixed Capital (YNCFC) =
Consumption of Fixed Capital Private Enterprises (YNCFCP)
plus Consumption of Fixed Capital Government (YNCFCG)

Nominal Statistical Discrepancy (YNSD) = GDP **minus** GDI (YNGDI)
Note:
The nominal statistical discrepancy measures the extent to which nominal GDP and nominal GDI do *not* balance.

Real Gross Domestic Income (YRGDI)=
Nominal Gross Domestic Income (YNGDI) **divided by** ratio (NGDP/RGDP)
Note:
Computation by Philadelphia Fed.
An alternative, equivalent, calculation is Nominal GDI (YNGDI)

divided by GDP deflator (YPDGDP).

Revisions to GDI vs. GDP. Variables from the BEA's national income and product accounts undergo a systematic process of revision. Near the end of the first month of each quarter, the Bureau of Economic Analysis (BEA) releases its first estimate for **GDP** and components for the previous quarter. In recent times, the BEA calls this the *advance* estimate. Near the end of the following two months, the BEA releases revisions to its advance estimate. The BEA calls these revisions the *preliminary* and *final* estimates, respectively.[1] However, the term "final" is somewhat misleading because additional revisions follow the final estimate. Each year, in its *annual revision* of July, the BEA releases revisions to the previous three years. (Recently, the BEA switched to *flexible* annual revisions, which cover more than the past three years.) Moreover, every few years, the BEA releases a *benchmark or comprehensive revision*. Benchmark revisions can affect all observations, even those as far back as 1947.[2]

All revisions — preliminary, final, annual, and benchmark — incorporate the new economic information that the BEA has received since the time of its last estimate. However, historically, benchmark revisions often involved something more: These revisions often incorporated new statistical procedures and new definitions. For example, in the benchmark revision of December 1991, the BEA switched from reporting GNP as its headline measure of output to reporting GDP as the headline measure. In the benchmark revision of January 1996, the BEA switched from reporting fixed-weight aggregation methods to chain-weight methods in its headline measures.

Revisions to **GDI** and components follow a somewhat different timing than those for GDP. The difference in timing occurs because the BEA delays the publications for GDI compared with those for GDP. The publication delay, in months, depends on the quarter of the observation to be released, as shown in the table below. The monthly delay for a fourth-quarter observation (two months) is longer than the delay for the remaining quarters (one month). The table below highlights the BEA's timing differences between its publication of GDP and GDI. Note that some components of GDI have different (shorter) monthly publication delays than that for GDI itself.

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[1] Beginning with the benchmark revision of July 2009, the BEA changed its vintage terminology: Instead of the terminology "Advance," "Preliminary," and "Final," the BEA now uses "Advance," "Second," and "Third." The timing of these releases remained the same.

[2] Beginning in 2010, the BEA introduced "flexible" annual revisions. Unlike prior annual revisions, these revisions now can include changes in definitions or statistical changes. They can also affect the entire historical time series, not just the most recent three years.

Difference in Timing Between First Releases for GDP and GDI

Quarter of Observation	Publication Month of First Release (End of Month)	
	GDP	GDI
Q1	April	May (one-month delay)
Q2	July	August (one-month delay)
Q3	October	November (one-month delay)
Q4	January	March (two-month delay)

Noteworthy Exceptions to the BEA's Timing for NIPA Revisions: GDP and GDI. The NIPA variables in the Philadelphia Fed's real-time data set are subject to the revision process discussed above. Some noteworthy exceptions to the BEA's timing exist. The BEA will sometimes skip an annual revision in anticipation of an upcoming benchmark revision. As another example, in its annual revision of 2002, the BEA announced the start of an additional quarterly revision to its estimate for wages and salaries in its report on personal income. Because wages and salaries are a component of personal income, this change also produced an additional quarterly revision to personal income, disposable personal income, and personal savings in the Philadelphia Fed's real-time data set. An important exception applies to some components on the income side of NIPA: The BEA releases its first estimate of corporate profits with a one- to two-month delay. Finally, note that many early vintages for disaggregated variables, such as personal consumption expenditures and its components, do not include the last observation. This problem, which affects vintages prior to that of 1970 Q1, is caused by a delay in the BEA's reporting procedures.

II. File Structure and Variable Names: GDI and Components

Our real-time data files for GDI are stored as Excel worksheets. There is one file for each variable. Each row represents a time series observation. For example, the row labeled 1947:Q1 is the observation for the first quarter of 1947. Each column shows all time-series observations available at a particular vintage date (which is listed in the column header).

The file name, which also indicates the root name for the column headers, describes the variable. For example, the file for monthly vintages (Mv) of quarterly data (Qd) for nominal GDI (Yngdi) is called YngdiMvQd.xlsx.

Each column header in the file (except the first, which gives the date of the time-series observation) follows the nomenclature given by YngdiyyMm, where yy is a two-digit number indicating the vintage year, M denotes the word "month," and m is a one- or two-digit number indicating the vintage month. For example, the column header given by Yngdi05M2 indicates the GDI data for this column are those available in the middle of February 2005, which incorporates the data the BEA released at the end of January 2005.

III. Our Methodology of Data Collection: GDI and Components

Our real-time data set is organized around the following key principle: *Each vintage should include the exact values of the observations that would have been known at the vintage date.* Our vintages for GDI and its components were collected digitally in real time at the end of each month. The first vintage for each variable, which differs from variable to variable, is shown in the table below.

Description	Variable Name	First Vintage
1. Nominal GDI	YNGDI	2005M2
2. Compensation of Employees	YNCOMPEP	2015M5
3. Wages and Salaries	YNWS	2015M5
4. Supplements to Wages and Salaries	YNSWS	2015M5
5. Taxes on Production and Imports	YNTAXR	2015M5
6. Govt Subsidies	YNGSUB	2015M5
7. Net Operating Surplus	YNOS	2015M5
8. Net Operating Surplus, Private	YNOSP	2015M5
9. Net Interest and Misc Payments	YNIPAID	2015M5
10. Business Current Transfer Payments (net)	YNTRPAY	2015M5
11. Proprietors' Income with IVA & CCA	YNPINCW	2015M5
12. Rental Income with CCA	YNRINC	2015M5
13. Corporate Profits with IVA & CCA	YNCPRFW	2015M5
14. Taxes on Corporate Income	YNCTAX	2015M5
15. Corporate Profits After Tax with IVA & CCA	YNCPRFATW	2015M5
16. Net Dividends Paid	YNDPAID	2015M5
17. Undistributed Corporate Profits with IVA & CCA	YNUCPRFW	2015M5
18. Net Operating Surplus, Government	YNOSG	2015M5
19. Consumption of Fixed Capital	YNCFC	2015M5
20. Consumption of Fixed Capital, Private	YNCFCP	2015M5
21. Consumption of Fixed Capital, Government	YNCFCG	2015M5
22. Statistical Discrepancy	YNSD	2005M2
23. Implicit Price Deflator, GDP	YPDGDP	2015M5
24. Real GDI	YRGDI	2005M2

IV. Special Notes on Selected Variables

Real GDI (YRGDI). No dedicated price index exists for converting nominal GDI into real GDI. The BEA uses its implicit GDP deflator for this purpose. (Notably, the implicit GDP deflator differs from the BEA's headline chain-weight GDP price index.) The real-time data set for GDI constructs real GDI with the following formula, using nominal GDP and real GDP to construct the implicit GDP deflator:

$$\text{Real GDI (YRGDI)} = \frac{\text{Nominal GDI (YNGDI)}}{\text{Nominal GDP/Real GDP}}$$

This formula produces values for real GDI that differ from the BEA's official values by extremely small amounts related to rounding. An alternative computation yields nearly identical results, up to the aforementioned differences in rounding:

$$\text{Real GDI (YRGDI)} = \frac{\text{Nominal GDI (YNGDI)}}{\text{GDP Implicit Deflator (YPDGDP)}}$$

Net Operating Surplus (YNOS), Net Operating Surplus, Government (YNOSG), and Government Subsidies (YNGSUB). Observations for Net Operating Surplus (YNOS) and Net Operating Surplus, Government (YNOSG) begin in 1959:Q1, not 1947:Q1.

Prior to 1959:Q1, according to the BEA, Government Subsidies (YNGSUB) and the Current Surplus of Government were not "…shown separately…". The BEA's methodological adjustment induced changes in the time-series availability of the data for the relevant variables.

Questions about the data should be addressed to:

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