An Introduction to the National Income and Product Accounts

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This note summarizes the main elements in Appendix 1 of Blanchard (2017). In section 1, we decompose GDP from the income side, detailing who receives what. In section 2, we decompose GDP from the production side (called the product side in the national accounts): what is produced, and who buys it. Section 3 discusses some arbitrary choices which are made in assembling national accounts.

1 The Income Side

1.1 From GDP to national income

Figure 1 presents the income side of GDP in 2014, using billions of dollars as a unit of account. The top part of the table (lines 1-8) goes from GDP to national income – the sum of the incomes received by the different factors of production:

1. The starting point, in line 1, is gross domestic product (GDP). GDP is defined as the market value of the goods and services **produced by labor and property located in the United States**.

2. The next three lines take us from GDP to gross national product (GNP) (line 4). **GNP is an alternative measure of aggregate output**. It is defined as the market value of the goods and services produced by labor and property supplied by **U.S. residents**. The emphasis in the U.S. national accounts shifted from GNP to GDP in 1991. The difference between the two comes from the distinction between "located in the United States" (used for GDP) and "supplied by U.S. residents" (used for GNP). For example, profit from a U.S.-owned plant in Japan is not included in U.S. GDP, but is included in U.S. GNP. So, to go from GDP to GNP, we must first add **receipts of factor income from the rest of the world**, which is **income from U.S. capital or U.S. residents abroad (line 2)**; then **subtract payments of factor income to the rest of the world, which is income received by foreign capital and foreign residents in the United States (line 3)**.

3. The next step takes us from GNP to **net national product (NNP)** (line 6). The difference between GNP and NNP is the **depreciation** of capital, called **consumption of fixed capital** in the national accounts.

4. Finally, lines 7 and 8 take us from **NNP to national income (line 8)**. National income is defined as the income that originates in the production of goods and services supplied by residents of the United States. In theory, national income and NNP should be equal. In practice, they typically differ, because they are constructed in different ways. The difference between the two is called the statistical discrepancy.

1.2 The components of national income

The bottom part of the table (lines 9–15) decomposes national income into different types of income:

1. **Indirect taxes** (line 9). Some of the national income goes directly to the state in the form of sales taxes. (Indirect taxes are just another name for sales taxes.)

2. **Compensation of employees** (line 10), or labor income, is what goes to employees. It is by far the largest component of national income, accounting for **61% of national income**.

3. **Corporate profits and business transfers** (line 13). Profits are revenues minus costs (including interest payments) and minus depreciation.

4. **Net interest** (line 14) is the interest paid by firms minus the interest received by firms, plus interest received from the rest of the world minus interest paid to the rest of the world.

5. **Proprietors' income** (line 15) is the income received by persons who are self-employed. It is defined as the income of sole proprietorships, partnerships, and tax-exempt cooperatives.

6. **Rental income of persons** (line 16) is the income from the rental of real property, minus depreciation on this real property. Houses produce housing services; rental income measures the income received for these services. If the national accounts counted only actual rents, rental income would depend on the proportion of apartments and houses that were rented versus those that were owner occupied. To avoid this problem, national accounts treat houses and apartments as if they were all rented out. So, rental income is constructed as actual rents plus imputed rents on those houses and apartments that are owner occupied.

1.3 From national income to personal disposable income

Before we move to the product side, Figure 2 shows how we can go from **national income** to **personal disposable income**, which is the income available to persons after they have received transfers and paid taxes:

1. Not all national income (line 1) is distributed to persons. Some of the income goes to the state in the form of **indirect taxes**, so the first step is to subtract indirect taxes.

2. Some of the corporate profits are retained by firms. Some of the interest payments by firms go to banks, or go abroad. So the second step is to subtract all corporate profits and business transfers (line 3) and all net interest payments (line 4), and add back all income from assets (dividends and interest payments) received by persons (line 5).

3. People receive income not only from production, but also from public transfers (line 6). From these transfers must be subtracted personal contributions for social insurance (line 7). The net result of these adjustments is **personal income**, the income actually received by persons (line 8).

4. **Personal disposable income** (line 10) is equal to personal income minus personal tax and nontax payments (line 9). In 2014, personal disposable income was about 74% of GDP.

So much for the income side of Gross Domestic Product.

2 The Product Side

Figure 3 shows the product side of the national accounts – what is produced, and who buys it.

2.1 Closed economy components

Start with the three components of domestic demand: consumption, investment, and government spending.

1. **Consumption**, called **Personal Consumption Expenditures** (PCE, line 2), is by far the largest component of demand. It is defined as the sum of goods and services purchased by persons resident in the United States. In the same way that national accounts include imputed rental income on the income side, they **include imputed housing services as part of consumption**. Consumption is itself disaggregated into three components:

   (a) Durable goods (line 3). Durable goods are commodities that can be stored and **have an average life of at least three years**; automobile purchases are the largest item here.

   (b) Nondurable goods (line 4). Nondurable goods are commodities that can be stored but have a life of less than three years.

   (c) Services (line 5). Services are commodities that cannot be stored and must be consumed at the place and time of purchase.

2. **Investment**, called **gross private domestic fixed investment** (line 6), is the sum of two very different components:

   (a) Nonresidential investment (line 7) is the purchase of new capital goods by firms. These may be either structures (line 8) – mostly new plants – or equipment and software (line 9) – such as machines, computers, or office equipment.
   (b) Residential investment (line 10) is the purchase of new houses or apartments by persons.

3. **Government purchases** (line 11) equal the **purchases of goods by the government** plus the **compensation of government employees**. (The government is thought of as buying the services of the government employees.) Note that **government purchases do not include transfers from the government or interest payments on government debt.** These do not correspond to purchases of either goods or services, and so are not included here. This means that the number for government purchases you see in Figure 3 is substantially smaller than the number we typically hear for government spending – which includes transfers and interest payments.

The sum of consumption, investment, and government purchases gives the demand for goods by U.S. firms, U.S. persons, and the U.S. government. If the United States were a closed economy, this would be the same as the demand for U.S. goods.

2.2 Open economy components

Because the U.S. economy is open, the two numbers are different. To get to the demand for U.S. goods, we must make two adjustments

1. First, we must add the foreign purchases of U.S. goods, exports (line 17).

2. Second, we must subtract U.S. purchases of foreign goods, imports (line 18). Adding consumption, investment, government purchases, and net exports gives the total purchases of U.S. goods.

2.3 Inventories

Production may be less than purchases if firms satisfy the difference by decreasing inventories. Or production may be greater than purchases, in which case firms are accumulating inventories. The last line gives changes in business inventories (line 19), also sometimes called (rather

misleadingly, since this investment is typically not a choice) "inventory investment." It is defined as the change in the volume of inventories held by business. The change in business inventories can be positive or negative.

3 Warning: arbitrariness in national accounting

The national accounts give an internally consistent description of aggregate activity. But underlying these accounts are many choices of what to include and what not to include, where to put some types of income or spending, and so on, some of which are quite arbitrary. Blanchard (2017) gives five examples:

1. **Work within the home is not counted in GDP**. If, for example, two men decide to babysit each other's child rather than take care of their own child and pay each other for the babysitting services, measured GDP will go up, whereas true GDP clearly does not change. The solution would be to count work within the home in GDP, the same way that we impute rents for owner-occupied housing. But, so far, this has not been done. (and you can imagine how hard that would be: how about vacuuming, cooking meals, etc?)

2. The **purchase of a house is treated as an investment**, and housing services are then treated as part of consumption. In contrast, and despite the fact that they provide services for a long time, purchases of automobiles are not treated as investment. **They are treated as consumption and appear in the national accounts only in the year in which they are bought.**

3. The purchase of education is treated as consumption of education services. But **education is clearly in part an investment**; people **acquire education in part to increase their future income**.

4. Many **government purchases have to be valued in the national accounts in the absence of a market transaction**. How do we value the work of teachers in teaching children to read when that transaction is mandated by the state as part of compulsory education? The rule used is to value it at cost, so **using the salaries of teachers**. So if teachers' salaries are increased, then GDP mechanically goes up.

5. The correct calculation of the government's deficit (and debt) is a challenging task. Here is one aspect of the problem: Suppose the teachers

in the example are paid partly with cash and partly with the promise of a future retirement pension. There is an important sense that the pension is just like government debt (i.e., a future liability of taxpayers), and yet it is not counted in the official deficit. Another problem lies in the treatment of private sector debt guarantees by federal or state government. Should such contingent liabilities be counted as part of public debt?

References

Blanchard, Olivier J., *Macroeconomics*, Pearson Education, 2017.

Figure 1: GDP: The Income Side

Table A1-1 GDP: The Income Side, 2014 (billions of dollars)		
From gross domestic product to national income:		
1 **Gross domestic product** (GDP)	17,348	
2 Plus: receipts of factor income from the rest of the world		854
3 Minus: payments of factor income to the rest of the world		−591
4 Equals: **Gross national product**	17,611	
5 Minus: consumption of fixed capital		2747
6 Equals: **Net national product**	14,865	
7 Minus: Statistical Discrepancy		−212
8 Equals: **National income**	15,077	
The Decomposition of National Income:		
9 Indirect taxes	1,265	
10 Compensation of employees	9,249	
11 Wages and salaries		7,478
12 Supplements to wages and salaries		1,771
13 Corporate profits and business transfers	2,073	
14 Net interest	532	
15 Proprietors' income	1,347	
16 Rental income of persons	610	

Source: Survey of Current Business, July 2015, Tables 1-7-5 and 1-12

Figure 2: From National Income to Personal Disposable Income

Table A1-2 From National Income to Personal Disposable Income, 2014 (billions of dollars)		
1 National income	15,077	
2 Minus: indirect taxes		−1,265
3 Minus: corporate profits and business transfers		−2,073
4 Minus: net interest		−532
5 Plus: income from assets		2,118
6 Plus: personal transfers		2,529
7 Minus: contributions for social insurance		−1,159
8 Equals: **Personal income**	14,694	
9 Minus: personal tax payments		−1780
10 Equals: **Personal disposable income**	12,914	

Source: Survey of Current Business, July 2015,Tables 1-7-5, 1-12, and 2-1

Figure 3: GDP: The Product Side

Table A1-3 GDP: The Product Side, 2014 (billions of dollars)			
1 **Gross domestic product**	17,348		
2 Personal consumption expenditures	11,866		
3 Durable goods		1,280	
4 Nondurable goods		2,668	
5 Services		7,918	
6 Gross private domestic fixed investment	2,860		
7 Nonresidential		2,234	
8 Structures			507
9 Equipment and Software			1,727
10 Residential		549	
11 Government purchases	3,152		
12 Federal		1,220	
13 National Defense			748.2
14 Nondefense			471.6
15 State and local		1,932	
16 Net exports	−530		
17 Exports		2,342	
18 Imports		−2,872	
19 Change in business inventories	77		

Source: Survey of Current Business, July 2015, Table 1-1-5