

## Chapter 5: National Income Accounting

### John Petroff

#### INTRODUCTION

The purpose of this topic is to study how the gross national product is measuring the economic activity of a nation. The concept is defined and explained. The components are analyzed in the expenditure and the income approach, and the two are reconciled. Adjustments for inflation are presented. The concept is compared to other measures of economic welfare.

#### NATIONAL INCOME ACCOUNTING

National income accounting is used to determine the level of economic activity of a country. Two methods are used and the results reconciled: the expenditure approach sums what has been purchased during the year and the income approach sums what has been earned during the year.

Just as firms need to know how well they are doing, so does a country. National income accounting provides the statistics to determine if the economy is encountering difficulties.

#### GROSS NATIONAL PRODUCT

The gross national product is the sum total of all final goods and services produced by the people of one country in one year. The GNP is a flow concept. It can be calculated with either the expenditure approach or the income approach. The GNP excludes intermediate goods, second hand sales as well as financial transactions. The GNP is a money amount and must be adjusted for changes in the value of money.

The goal of gross national product is to measure the physical activity of a nation by adding all the different types of productions: production of cars, production of computers, etc...  
But adding cars and computers does not make much sense.  
Therefore, the prices of these goods are summed.

#### GROSS DOMESTIC PRODUCT

The gross domestic product is the sum of all the final goods and services produced by the residents of a country in one year. Summing the production of residents (rather than nationals as in GNP) gives often a more accurate picture of the level of activity in a country.

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The difference between GDP and GNP is net unilateral transfers and factor income of foreigners.

Countries which have many foreign firms operating within their territory, have a gross domestic product larger than the gross national product. On the contrary, countries, such as the United States or Japan, which have firms operating in foreign countries, have a gross domestic product smaller than the gross national product (the net factor income from foreigners is negative).

### INTERMEDIATE GOODS

Intermediate goods are goods which are made part of some final good. For instance, tires are intermediate goods when they are part of a car. Tires are final goods when they are sold separately as replacement parts. Incorporating intermediate goods to form a final good adds value to that good.

Almost all metals and crude oil are part of intermediate goods: they are not counted separately, but as part of the final good in which they are incorporated. Tires purchased by customers to replace used tires are final consumption; but, not the tires installed on new cars: these are intermediate goods.

### VALUE ADDED

GNP can be calculated by adding up all the value added from the intermediate goods (the result is exactly the same). Countries with tax systems based on value added taxes prefer this method.

The work performed to assemble a car from its many components (such as windshield, tires, motor, and so on), is the value added in a car assembly plant. Such a value added can also be calculated by taking the difference between the selling price and the costs of all material and goods used in the product sold.

### EXPENDITURE APPROACH

GDP can be calculated as the sum of all expenditures: personal consumption expenditure (C), gross private domestic investment (I<sub>g</sub>), government purchases (G), and net exports (X<sub>n</sub>).

$$GDP = C + I_g + G + X_n.$$

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The expenditure approach sums all that is purchased: in a sense, it is equivalent to the income approach because purchases are only possible if income is present.

### PERSONAL CONSUMPTION EXPENDITURE

Personal consumption expenditure is what households buy (except houses). It is made of durables (cars, appliances), nondurables (clothing, food) and services (haircuts, doctor visits, airline tickets). A convention is made on nondurables to be all items which last less than a year, including clothing. Nondurables expenditure is the most stable component of personal consumption expenditure.

People buy all kinds of goods and services. Services are, for example, transportation, communication, banking and insurance. Durable goods include furniture, appliances, equipment, cars, etc.. Nondurable goods are all items which would normally be consumed within a year: food, fuel, stationary, and by convention also clothing.

### GROSS PRIVATE DOMESTIC INVESTMENT

Gross private domestic investment is made of 1) new construction, 2) new capital (machines, trucks and equipment), and 3) changes in inventory. It excludes investment made by government and investment made outside the country. New construction includes all forms of new building, be it for rental purpose or for private residential purpose. Changes in inventory captures the goods produced in one year and sold in future years.

When a company builds a plant and installs machinery and equipment: that is an investment, i.e. an increase in capital. By convention, a private house is considered an investment. The reason is that a private house may later be rented and it is not possible to know for which purpose, rental or private use, a house is built in the first place.

### CAPITAL CONSUMPTION ALLOWANCE

Capital consumption allowance is the part of new capital produced during one year, which is needed to replace the capital used up during that year. It is also known as depreciation. Capital consumption allowance (CCA) is equal to the difference between gross investment (I<sub>g</sub>) and net investment (I<sub>n</sub>):

$$CCA = I_g - I_n$$

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All machines and equipment used to produce other goods, are subject to some wear and tear. Part of capital goods production must be devoted to replace this wear and tear. Otherwise, the productive capacity of a nation would be depleted. This replacement of the capital used is capital consumption allowance.

### NET INVESTMENT

Net private domestic investment is equal to gross private domestic investment less capital consumption allowance. It is the most sensitive component of GDP. When it is negative it implies that the capital stock is being depleted and production has to be decreasing. Economic growth is implied in a positive net private domestic investment.

The productive capacity of a nation will increase only if net investment is positive. This can easily be verified at the level of a single plant: the number of new machines installed in any given year must be greater than the machines that have been used up during that year.

### GOVERNMENT PURCHASES

Government purchases combine all goods and services bought by all forms of government: from paper clips to bridges and hospitals. This does not include government payment for work or any transfer payment.

As a single entity, the government is the largest purchaser in a nation. It buys all kinds of products: from hospitals and bridges, to paper and pens (so we can fill out all these forms). It also spends large sums on services such as those provided by firemen and policemen.

### NET EXPORTS

Net exports is the difference between total exports and total imports. It is equal to the trade or merchandise balance of payments. When imports exceed exports (and the balance of payments is in deficit), the amount shown as net exports is negative.

American exports, such as computers, airplanes and various

crops, are all items produced which are sold to foreigners. Imports, on the contrary, are items produced by foreigners on which Americans spend some of their income.

### INCOME APPROACH

The income approach sums all income derived from productive activities.

If we compare a nation to a business, the income approach would be an allocation of the funds generated from the sales of one year (net of costs of intermediate goods), to the various expenses and retained profit.

### NET NATIONAL PRODUCT

Net national product (NNP) is equal to gross national product minus capital consumption allowance:

$$\text{NNP} = \text{GNP} - \text{CCA}.$$

Net domestic product is likewise

$$\text{NDP} = \text{GDP} - \text{CCA}.$$

(As above, the difference between NNP and NDP is net factor income and unilateral transfers to foreigners.)

The production which has been devoted to maintaining our stock of means of production, that is the capital consumption allowance, must be deducted to see what new consumption and income occurred during the year.

### NATIONAL INCOME

National income (NI) is equal to net national product minus indirect business taxes:

$$\text{NI} = \text{NNP} - (\text{ind business taxes})$$

National income is also equal to the sum of salaries, rent, interest, profit and proprietors' income.

National income is the sum of all forms of gross income, similar to the gross salary appearing in a paycheck of an employee, that

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is before various taxes and other deductions are taken out.

### INDIRECT BUSINESS TAXES

Indirect business taxes are all the various sales and excise taxes.

Sales taxes are the largest part of indirect business taxes. These sales taxes are paid as an addition to the price when a purchase is made. They are passed on to the government by the business that collects them. Thus, these moneys are not part of what is distributed by the firm in the form of income.

### PERSONAL INCOME

Personal income (PI) equals national income net of transfer payments. Transfer payments added to national income are: social security and pension payments, welfare and unemployment payments. Transfer payments deducted from national income are: social security contributions, undistributed corporate profits and corporate income taxes.

### TRANSFER PAYMENTS

Transfer payments are additions and subtractions to national income to obtain personal income. Additions include social security retirement payments, unemployment benefits and welfare payments. Subtractions include social security contributions, corporate income taxes and undistributed corporate profits.

Transfer payments are payments which are not connected to any productive activity. The typical example of a transfer payment is social security: contributions to social security are collected from all those who work and are passed on to those who are retired.

### DISPOSABLE INCOME

Disposable income (DI) equals personal income less personal income taxes. Disposable income is distributed between personal consumption expenditure and saving.

Disposable income can readily be seen in the paycheck an employee receives from the employer. From the gross salary

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various amounts have been taken out: taxes and various transfer payments. On the national level, it is just about the same.

### REAL GDP

Real GDP is GDP adjusted for inflation (or change in value of money). The unadjusted GDP is known as nominal or current GDP. The adjustment consists in dividing current GDP by a price index (also known as a deflator).

GDP adjusted for inflation is said to be real in the same way as what a paycheck can buy in various goods and services, is the real purchasing power of that salary.

### PRICE INDEX

A price index is constructed by taking the weighted average of the prices of a basket of goods in a given year divided by the weighted average of the prices of the same basket in a base year. A well known price index is the consumer price index or CPI.

The consumer price index is simply an average of prices reported by various consumers from different markets during a telephone survey conducted periodically. Such an average of prices is adequately portraying the presence of any inflation.