PRASC

Project for the Regional Advancement of Statistics in the Caribbean

Projet régional pour l'avancement de la statistique dans les Caraïbes

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CARIBBEAN NATIONAL ACCOUNT TRAINING PROGRAM

Project for the Advancement of Statistics in the Caribbean Region (PRASC)
National Accounts Training
Session 12 – GDP Income (GDP-I or Generation of Income Account)

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Statistics Canada Statistique Canada

Canada

National Accounts

Gross Domestic Product – Income Approach

National Accounts - Overview

➢Course Objective

- ✓Provide national account compilers with an overview of the three ways to measure gross domestic product (GDP) with a focus on the income approach to measuring GDP.

GDP by income account

- All income, as measured in the SNA, comes from production
- The GDP by income account shows who receives the immediate benefit from value added
  - **Compensation of employees** shows the return to labour
  - **Operating surplus** shows the return to capital
  - **Taxes less subsidies on production** shows how much is appropriated by government

GDP by income account

GDP by production approach	
Output	100,000
Intermediate consumption	50,000
Gross value added	50,000
Less: Compensation of Employee	20,000
Equals: Gross Operating Surplus	30,000
Or GDP by income approach	
Compensation of Employess (return to labour)	20,000
Plus: Gross Operating Surplus (return to capital)	30,000
Equals: Gross Domestic Product	50,000

- Assume that an individual starts up a landscaping business and invests $50,000 in equipment. Over the course of the month they sell $100,000 worth of landscaping services, using $50,000 worth of supplies (gravel, interlocking brick, sod, plants, gas, etc.). In addition, they pay their employees $20,000.
- Given the following information what is the value of gross valued added and what is the return to each of the factors of production?
- The GDP by income approach shows the return to labour and capital resulting from the production process.

GDP by income account

Compensation of employees

(Return to labour)

GDP by income account
Compensation of employees

- Compensation of employees is defined as the total remuneration, in cash **or in kind**, payable by an enterprise to an employee in return for work done by the latter during the accounting period.
- Compensation of employees represents the income generated in the production of goods and services accruing to the labour factor of production.
- Compensation of employees is comprised of two components:
  - wages and salaries; and
  - employers' social contributions.

GDP by income account
Compensation of employees – wages and salaries

- Wages and salaries includes:
  - Wages or salaries payable at regular weekly, monthly or other intervals, including payments by results and piecework payments; enhanced payments or special allowances for working overtime, at nights, at weekends or other unsocial hours; allowances for working away from home or in disagreeable or hazardous circumstances; expatriation allowances for working abroad; etc.;
  - Supplementary allowances payable regularly, such as housing allowances or allowances to cover the costs of travel to and from work, but excluding social benefits;

GDP by income account
Compensation of employees – wages and salaries

- Wages and salaries include:
  - Wages or salaries payable to employees away from work for short periods, for example, on holiday or as a result of a temporary halt to production, except during absences due to sickness, injury, etc;
  - Ad hoc bonuses or other exceptional payments linked to the overall performance of the enterprise made under incentive schemes;
  - Commissions, gratuities and tips received by employees;

GDP by income account
Compensation of employees – wages and salaries

- The following is a list of items that are not considered remuneration:
  - Per diem paid to an employee when travelling
  - Use of a company cell phone
  - Airfare paid by a company when undertaking business travel
  - Uniforms
  - First aid facilities, medical examinations or other health checks required because of the nature of the work.
  - Tools or equipment used exclusively, or mainly, at work.
- These all represent intermediate consumption of the enterprise.

GDP by income account

Compensation of employees – employers' social contributions

- Employers' social contributions comprises employers contributions or payments to a variety of employee benefit plans for the health and financial well-being of employees and their families.
- These payments can be required by law, negotiated by unions, or organized by formal or informal agreements between employers and employees; or employers may wholly sponsor employee benefit plans.
- **Contributions made by business on behalf of employees are included in compensation of employees** – payments made by businesses for employee social programs in their role as an employer are considered other taxes on production.

What is the compensation of employees?

- Assume that the Landscape Supplies Company pays their employee a monthly salary of $6,000. The firm also contributes $200 to a defined contribution pension plan and pays $100 towards a dental insurance plan. The firm reimbursed the employee $2000 for a business trip where they required the individual to present their latest products at a trade show. The firm remitted $1500 worth of personal income tax to the federal government on behalf of the employee along with a $200 contribution to the Employment Insurance program and a $150 contribution to the Canadian Pension Plan. The firm also provided a $500 gift certificate to their employee to purchase landscape supplies at any of their retail outlets. The firm paid $50 in worker's compensation insurance and $250 in payroll taxes.

What is the compensation of employees?

- Assume that a the Landscape Supplies Company pays their employee an monthly salary of $6,000. The firm also contributes $200 to a defined contribution pension plan and pays $100 towards a dental insurance plan. The firm reimbursed the employee $2000 for a business trip they required the individual to present their latest products at a trade show. The firm remitted $1500 worth of personal income tax to the federal government on behalf of the employee. The firm had to make a $200 matching contribution to the Employment Insurance program and a $150 matching contribution to the Canadian Pension Plan. The firm also provided a $500 gift certificate to their employee to purchase landscape supplies at any of their retail outlets. The firm paid $50 in worker's compensation insurance and $250 in payroll taxes.

- Compensation of employees = $6000+$200+$100+$200+$150+$500=$7200

GDP by income account

Gross operating surplus

(Return to capital)

GDP by income approach
Gross operating surplus

- Gross operating surplus can be interpreted as the compensation owed to capital from the production of goods and services.
- In it's simplest terms it is the value of goods and services produced (output) less intermediate consumption (inputs) less compensation of employees less taxes on production.
- It can be thought of as the income left over for the owners of the capital once they have paid for their inputs, their workers and the government.
- It tends to be more volatile than the other types of income.

GDP by income approach
Gross operating surplus

- There are two components to gross operating surplus:
  - Consumption of fixed capital, which represents the income that needs to be generated in order to replace the capital that is used up in the production process. Consumption of fixed capital (CFC) represents the decline in the value of the produced capital stock due to normal damage and obsolescence, and wear and tear from the use of the assets in production
  - Net operating surplus, which represents the income that is payable to the owners of capital once they have accounted for the capital that was used up in the production process.

GDP by income account

GDP by production approach	
Output	100,000
Intermediate consumption	50,000
Gross value added	50,000
Less: return to labour	20,000
Equals: return to capital	30,000
Or GDP by income approach	
Compensation of Employees	20,000
Plus: Gross Operating Surplus	30,000
Equals: Gross Domestic Product	50,000

- Assume that an individual starts up a landscaping business and invests $50,000 in equipment. Over the course of the month they sell $100,000 worth of landscaping services, using $50,000 worth of supplies (gravel, interlocking brick, sod, plants, gas, etc.). In addition, they pay their employees $20,000.
- Assume that the one-fifth of the equipment that was purchased by the landscaper was used up in the course of the accounting period. The consumption of capital would then be valued at $10,000. While the gross operating surplus is 30,000 the net is 20,000 (30,000 less the value of capital used up to product the goods).

GDP by income account

Mixed income

GDP by income approach
Mixed income

- Mixed income refers to the income of unincorporated businesses that are generated from their productive activity
- “Mixed” because it includes remuneration of both capital and labour services and it is impossible to separate the two, given that the accounting records of the unincorporated business and households are not separated.

GDP by income approach
Mixed income

- In the calculation of mixed income we start with the production account and subtract the intermediate inputs to arrive at the value of mixed income.

Production account	
Output	Y
Intermediate inputs	II
Gross value added	***X***
Generation of income account	
Compensation of employees	?
Gross operating surplus	?
Gross mixed income	***X***

GDP by income approach
Mixed income – An example

- Suppose that a father runs a home daycare business. He looks after 5 kids every day and receives $50 per day, per child. He minds the children for 200 days per year. He also has two children of his own.

- He minds the children at his house and uses his minivan to bring the kids to various activities each day. He cooks lunch for the children each day and provides snacks and other necessities. Although he has never really broken it down, he expects that the cost of food, space and utilities to run his daycare operation is around $30 per day per child. How would we account for this individual's GDP?

GDP by income approach
Mixed income – An example

- Since the activity of the business (day care) is intertwined with the activities of the household it is very difficult to disentangle the return to labour (the individuals providing the day care services) and the return to capital (which in this case is the home, home furnishings and mini-van). The best we can do, as far as a sequence of accounts, is the following:

Production account	
Output	50,000
Intermediate inputs	30,000
Gross value added	***20,000***
Generation of income account	
Compensation of employees	?
Gross operating surplus	?
Gross mixed income	***20,000***

GDP by income approach
Mixed income – An example

- Suppose that there is a dairy farmer with100 cows producing $300,000 worth of milk each year. Suppose that the farmer spends $100,000 on feed, $20,000 to maintain the milking equipment and another $30,000 on insurance, heating and other utilities. The farmer is an unincorporated business. How would we calculate the mixed income?

Production account	
Output	300,000
Feed	100,000
Maintainence	20,000
Insurance, heating and utilities	30,000
Gross value added	***150,000***
Generation of income account	
Compensation of employees	?
Gross operating surplus	?
Gross mixed income	***150,000***

GDP by income approach
Mixed income – the special case of imputed rent

- The rental portion of net income of non-farm unincorporated business includes all net rental income of individuals in their capacity as owners, including the implicit income that they generate by inhabiting a dwelling that they own.
- The latter component is included because, in national accounting, persons who own the dwellings in which they live are treated as owning unincorporated enterprises that produce housing services that are consumed by the households to which the owner belongs.
- This imputation is made to ensure that the measure of production will not vary when shifts occur between owner-occupancy and the renting of residential dwellings.

Rent – owner occupied dwellings

- In the GDP by expenditure approach we impute a rental charge for individuals who own their own home.
- In the GDP by income approach we need to impute an income flow to these home-owners in their capacity as landlords receiving rent (from themselves).
- This is calculated by first computing a gross rent figure which represents the
  - average paid rental rate*quality adjustment factor*housing stock.

Calculating net rent

Gross rent imputed to owner-occupants
Less: expenses of owner-occupants
Repair costs
Property and school taxes
Insurance
Mortgage interest
Depreciation
Miscellaneous expenditures
= Net residential rental income imputed to owner-occupants

GDP by income account

Taxes less subsidies

(Appropriation by government)

Taxes

- Taxes are compulsory, unrequited payments, in cash or in kind, made by institutional units to government units.
  - Taxes on products is a tax payable per unit of some good or service consumed.
    - Examples include the GST, HST, gasoline and motive fuel taxes, custom import duties....
  - Taxes on production consist of all taxes except taxes on products that enterprises incur as a result of engaging in production.
    - Examples include natural resources licences and taxes, payroll taxes, real property taxes, licences, permits and fees.

Subsidies

- Subsidies are current unrequited payments that government units, including non-resident government units, make to enterprises on the basis of the levels of their production activities or the quantities or values of the goods or services that they produce, sell or import.
  - ‘Subsidies on products’ is a subsidy payable per unit of a good or service consumed.
  - ‘Subsidies on production’ consist of subsidies except subsidies on products that resident enterprises may receive as a consequence of engaging in production.
- Subsidies are subtracted in the calculation of gross domestic product

GDP by income account
Why less subsidies?

	Without Subsidy	With Subsidy
Production Account		
Output	80	80
Less: Intermediate Consumption	50	50
Gross Value Added	30	30
Generation of Income Account		
Less: Compensation of employees	40	40
Less: Less subsidies	0	-30
Gross Operating Surplus	-10	20
Gross Domestic Product	30	30

- Assume that a firm is able to produce widgets for $100 (the selling price includes a return to capital). Also assume that individuals are only willing to pay $80 to purchase the product. As a means to encourage the production of the widget (this is an industry that is considered strategically important) the government provides a subsidy to the manufacturer totalling $30 per widget. How is this subsidy accounted for in the GDP by income approach?

Statistical discrepancy

Statistical discrepancy

- Three measures of economic activity
  - Gross domestic product
  - Gross value added
  - Gross domestic income
- In theory, the measures should yield the same numbers.
- In practice this does not occur because of imperfections in the statistical system.

Statistical discrepancy

- Some countries bury the statistical discrepancy in operating surplus (income side) or inventories (expenditure side).
- Some countries accept a discrepancy and publish it as one of the components of GDP. It is felt that the discrepancy is an indicator of the quality and coherence of the data.

Calculating the statistical discrepancy

- Determine GDP by taking the average of the two measures
- SD income side = average GDP – GDP (expenditure side)
- SD expenditure side = average GDP – GDP (expenditure side)

Calculating the statistical discrepancy

- GDP by income approach: 1,950
- GDP by expenditure approach: 2,100
- Average GDP = (1,950 + 2,100)/2
- Average GDP = 2,025
- Statistical discrepancy, income side

  2025 – 1950 = 75
- Statistical discrepancy, expenditure side

  2025 – 2100 = -75

National Accounts – GDP-I

➢Key takeaways

✓GDP-I represents the payment to the factors of production.

✓GDP-I is generally only recorded in nominal terms but more an more countries are calculating estimates of real GDI and real GNI.

✓In most countries compensation of employees and mixed income are the major components of GDP-I.

National Accounts - Overview

➢Activity

✓What are the data sources you could use to construct an estimate of GDP-I for your country.