

# Production and Income II

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# Please Read Me

- Check the message **Welcome greeting** published in the News Bulletin Board.
- Dear student please edit your profile uploading a photo where your face is clearly visible.
- The purpose of the virtual meetings is to answer questions and not to make a summary of the study material.
- This presentation is based on ([Cardenas 2020, chap. 2](#))

# Purpose

Understand how production is measured using the concept of Gross Domestic Product (GDP)

# Inflation adjustments in GPD

- Initially the Gross Domestic Product is expressed in current Local Currency Units (LCU) which is the sum of monetary values
- A particular monetary value is the product of a quantity and a unit price
- A change in the level of Gross Domestic Product, measure in current LCU, is a combination of changes in quantities and prices
  - Inflation adjustments, applied to GDP, **try** to eliminate the changes of prices
  - There are 2 approaches to make inflation adjustments ([ABS 2003](#)):
    - **Constant price estimates**
    - **Chain volume measures**

# Inflation adjustments in GPD

- **Chain volume measures** is the alternative used by the Departamento Administrativo Nacional de Estadística (DANE) to make inflation adjustments
  - A gentle introduction to this approach is explained in ([ABS 2003](#))
  - The monetary values adjusted using **chain volume measures** are not additive. This means that the sum of the components of an aggregate is not necessarily equal to the aggregate
    - In addition to the values adjusted using **chain volume measures**, DANE reports a value known as statistical discrepancy because of non additivity

# Inflation adjustments in GPD

- Expenditure/Final demand approach using chain volume measures and expressed in thousands of millions (Colombia)

Concepto	2015	2020 <sup>a</sup>	2021 <sup>a</sup>
Gasto de consumo final individual de los hogares y las ISFLH <sup>b</sup>	551013	583810	668608
Gasto de consumo final individual de los hogares	547843	580706	665405
Gasto de consumo final de las ISFLSH <sup>b</sup>	3170	3103	3223
Gasto de consumo final del gobierno general	119188	141071	154922
Formación bruta de capital	191305	152442	171577
Exportaciones	125936	103430	119862
Importaciones	182750	162001	205261
Producto interno bruto	804692	817315	907352
Discrepancia estadística	0	-1279	-2158

Source: DANE - Cuentas Nacionales Anuales - Producto Interno Bruto (PIB) - Series encadenadas de volumen con año de referencia 2015

Last update: 2023-02-15

<sup>a</sup> Preliminary data

<sup>b</sup> Instituciones sin fines de lucro al servicio de los hogares

# Inflation adjustments in GPD

- Expenditure/Final demand approach using current prices and expressed in thousands of millions (Colombia)

Concepto	2015	2020 <sup>a</sup>	2021 <sup>a</sup>
Gasto de consumo final individual de los hogares y las ISFLSH <sup>b</sup>	551013	706622	865491
Gasto de consumo final individual de los hogares	547843	702619	860924
Gasto de consumo final de las ISFLSH <sup>b</sup>	3170	4003	4567
Gasto de consumo final del gobierno general	119188	171326	191374
Formación bruta de capital	191305	190306	226226
Exportaciones	125936	135016	194729
Importaciones	182750	205528	285234
Producto interno bruto	804692	997742	1192586

Source: DANE - Cuentas Nacionales Anuales - Producto Interno Bruto (PIB) - Precios corrientes  
Last update: 2023-02-15

<sup>a</sup> Preliminary data

<sup>b</sup> Instituciones sin fines de lucro que sirven a los hogares



# Economics sectors and GDP

- ISIC adapted for Colombia ([DANE 2022, 134–677](#))

Section	Division	Description
A	01-03	Agricultura, ganadería, caza, silvicultura y pesca
B	05-09	Explotación de minas y canteras
C	10-33	Industrias manufactureras
D	35	Suministro de electricidad, gas, vapor, y aire acondicionado
E	36-39	Distribución de agua; evacuación y tratamiento de aguas residuales, gestión de desechos y actividades de saneamiento ambiental
F	41-43	Construcción
G	45-47	Comercio al por mayor y al por menor; reparación de vehículos automotores y motocicletas
H	49-53	Transporte y almacenamiento
I	55-56	Alojamiento y servicios de comida
J	58-63	Información y comunicaciones
K	64-66	Actividades financieras y de seguros

# Economics sectors and GDP

- ISIC adapted for Colombia ([DANE 2022, 134–677](#))

Section	Division	Description
L	68	Actividades inmobiliarias
M	69-75	Actividades profesionales, científicas y técnicas
N	77-82	Actividades de servicios administrativos y de apoyo
O	84	Administración pública y defensa; planes de seguridad social de afiliación obligatoria
P	85	Educación
Q	86-88	Actividades de atención de la salud humana y de asistencia social
R	90-93	Actividades artísticas, de entretenimiento y recreación
S	94-96	Otras actividades de servicios
T	97-98	Actividades de los hogares en calidad de empleadores; actividades no diferenciadas de los hogares individuales como productores de bienes y servicios para uso propio
U	99	Actividades de organizaciones y entidades extraterritoriales <sup>a</sup>

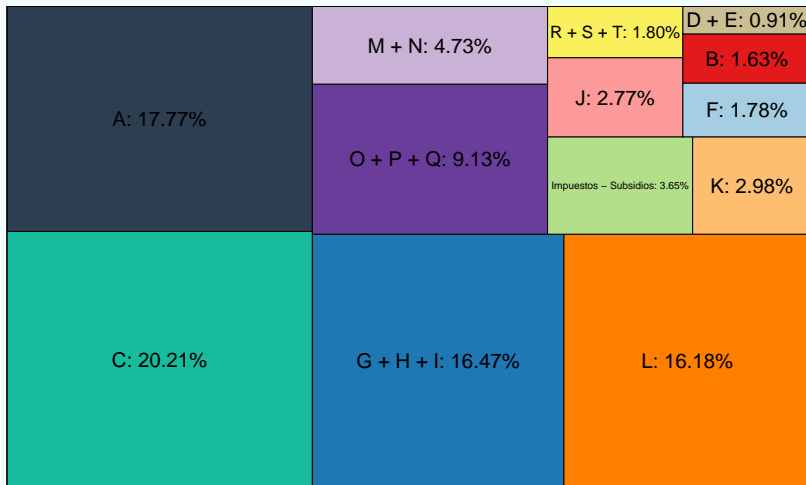
<sup>a</sup> Because of extraterritoriality, in the context of international law, the production

# Economics sectors and GDP

## Sectors and share in GDP for Colombia

Period: 1975

Observation: Monetary values at current prices are used because of chain volume measures non-additivity



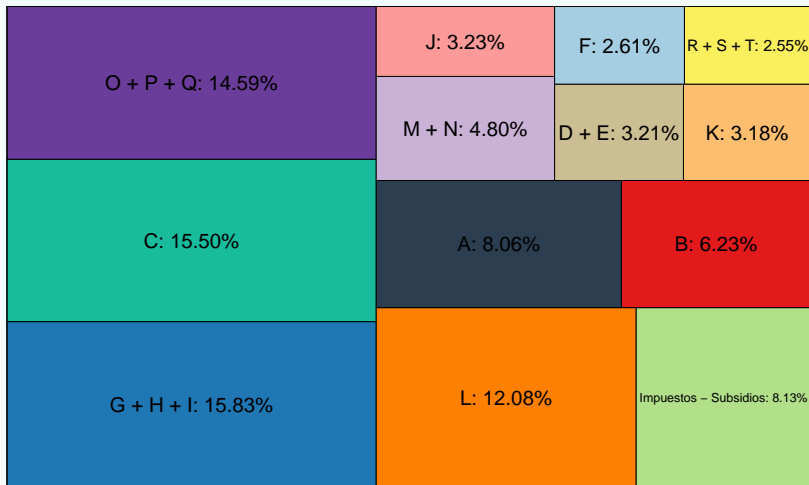
Source: DANE – Cuentas Nacionales Anuales – Retropolación Base 2015 – PIB enfoque de la producción y del gasto a precios corrientes  
Update: 2023-02-15

# Economics sectors and GDP

## Sectors and share in GDP for Colombia

Period: 2000

Observation: Monetary values at current prices are used because of chain volume measures non-additivity



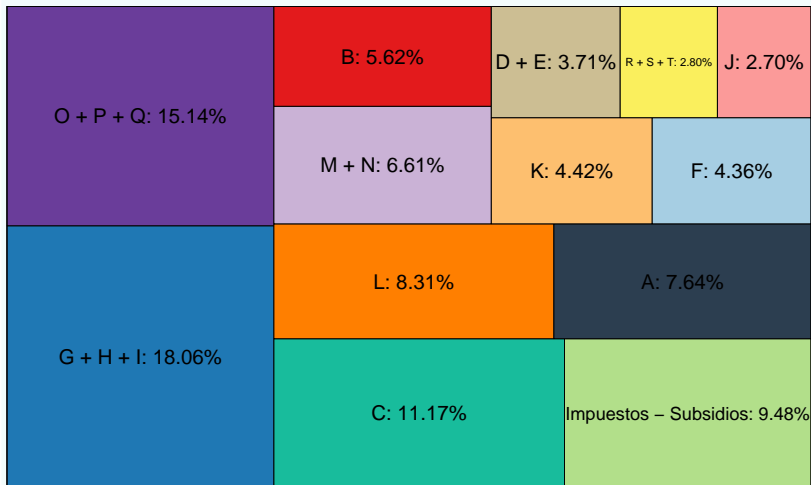
Source: DANE – Cuentas Nacionales Anuales – Retropolación Base 2015 – PIB enfoque de la producción y del gasto a precios corrientes  
Update: 2023-02-15

# Economics sectors and GDP

## Sectors and share in GDP for Colombia

Period: 2021

Observation: Monetary values at current prices are used because of chain volume measures non-additivity



Source: DANE – Cuentas Nacionales Anuales – Retropolación Base 2015 – PIB enfoque de la producción y del gasto a precios corrientes  
Update: 2023-02-15

# Macroeconomic identity

- Uses that firms, non-profit institutions, government bodies, households and the external sector give to production

$$\begin{aligned}\text{Demand}_t &= \text{Gasto de consumo final individual de los hogares y las ISFLH}_t + \\ &\quad \text{Gasto de consumo final del gobierno general}_t + \\ &\quad \text{Formación bruta de capital}_t + \\ &\quad \text{Exportaciones}_t \\ &= C_t + G_t + I_t + X_t\end{aligned}$$

# Macroeconomic identity

- Aggregate value generated by the production units in a territory, plus taxes minus subsidies on products, plus products produced outside the territory offered to the territory

$$\begin{aligned}\text{Supply}_t &= \text{Valor agregado bruto}_t + \\ &\quad \text{Impuestos menos subvenciones sobre los productos}_t + \\ &\quad \text{Importaciones}_t \\ &= \text{Producto interno bruto}_t + \\ &\quad \text{Importaciones}_t \\ &= GDP_t + M_t\end{aligned}$$

# Macroeconomic identity

$$\mathbf{Supply}_t = \mathbf{Demand}_t$$

$$GDP_t + M_t = C_t + G_t + I_t + X_t$$

$$GDP_t = (C_t + G_t + I_t) + (X_t - M_t)$$



# Macroeconomic identity

## Share of GDP components in Colombia

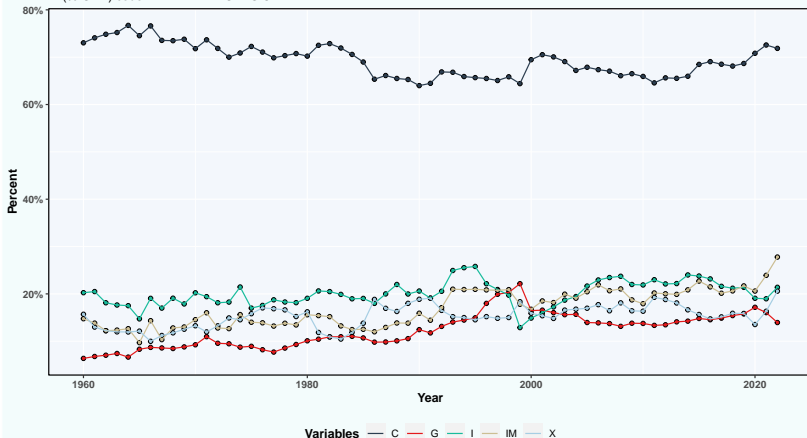
C (% GDP) code WDI: NE.CON.PRVT.CN

G (% GDP) code WDI: NE.CON.GOVT.CN

I (% GDP) code WDI: NE.GDI.TOTL.CN

X (% GDP) code WDI: NE.EXP.GNFS.CN

M (% GDP) code WDI: NE.IMP.GNFS.CN



Source: World Development Indicators (WDI) – World Bank  
Last update date: 2023-12-18

## Resource of interest

If you want a summary about the topic of Gross Domestic Product check out<sup>1</sup>:

- <https://youtu.be/YXTjJSGWnsE>

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<sup>1</sup>Banco de la República de Colombia - Cátedras de Macroeconomía y Banca Central

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# References

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