

Money, prices and the exchange rate I

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- 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.
- If you want to participate, please fill out the following survey: Primer corte 30% > Learning Activities > Tu opinión sobre la economía colombiana
- This presentation is based on (Cardenas 2020, chap. 7)

Analyze the money market and introduce the concepts of inflation, nominal exchange rate and interest rate

- Money is an **asset**¹ that fulfills in general 3 functions
 - Medium of exchange
 - Unit of account
 - Store of value
- “A central bank² is the institution that issues and administrates legal currency and exercises the function of banker of banks” (República 2021)

¹This part is important because for example a credit card can fulfills the 3 functions but it is not an asset as defined by (IFRS 2018, chap. 4)

²For a list of central banks around the world see <https://www.bis.org/cbanks.htm>

- In the case of Colombia, some of the functions of the central bank are (**Banrep 2025a**):
 - Maintain a low and stable inflation rate in order to preserve the purchasing power of money (**Monetary Policy - Política monetaria**)
 - Intervene in the foreign exchange market in such a way that the interventions are consistent with the inflation targeting strategy (**Foreign exchange intervention policy - Política de intervención cambiaria**).
 - Regulate the activity of credit institutions, control the liquidity of the financial system and ensure the proper functioning of payments in the economy (**Credit policy - Política crediticia**).

- In the case of Colombia, some of the functions of the central bank are (**Banrep 2025a**):
 - Manage the international reserves³ (**Reservar internacionales**)
 - Lender of last resort for credit institutions (**Prestamista de última instancia de los establecimientos de crédito**)
 - Support the government in certain economic operations for the management of its liquidity, its payments, and its financial portfolio (**Government fiscal agent - Agente fiscal del gobierno**)

³For more information about the international reserves you can check out (**Banrep 2025b**)

Table 1: Establishment date of central banking institutions (Herger 2019, 15)

Bank	Established
Sveriges Riksbank	1668
Bank of England	1694
Banque de France	1800
Bank of Finland	1800
Nederlandsche Bank	1814
Austrian National Bank	1816
Norges Bank	1816
Danmarks Nationalbank	1818
Banco de Portugal	1846
Belgian National Bank	1850
Banco de España	1874
German Reichsbank	1876
Bank of Japan	1882
Banca d'Italia	1893
Banco de la Republica (Colombia)	1923

- **Inflation** is a persistent increase in the price level:
 - Inflation refers to a general increase in the price level
 - This increase must be persistent
 - A measure that represents the behavior of the price level is required where it is necessary to specify a basket of products
- Review the videos found in:
 - **Tercer corte 40% > Learning Resources > Links of interest**

- The **price level** is an **index number** (Ralph, O'Neill, and Winton 2015)
 - An **index number** is a quantity that by varying shows the changes of a magnitude over time or space
- The variation in the **price level** from one period to another is used to measure inflation
- The value that the index number takes to measure the **price level** will depend on the products that are taken into account in the basket that is used

- Usually the **price level** used to measure inflation in Colombia is called **Indice de Precios al Consumidor (IPC)** or **Consumer Price Index (CPI)**
 - In Colombia, this index measures the average variation of the prices of a basket of products representative of household consumption (**DANE 2019**)
 - You can check out the historical basket of products included in the **(IPC)** or **(CPI)** in: (**DANE 2019**) > Información adicional > Estructura histórica de ponderaciones y canasta de seguimiento del IPC

- The **CPI** is build using information from **Encuesta Nacional de Presupuesto de los Hogares –ENPH- (2016-2017)** where it is conducted every 10 years (**DANE 2019, sec. 2.1.5**).
- Additionally, usually monthly, but in some cases bimonthly, quadrimestral and biannual, price information is collected for approximately 443⁴ items in 38 cities where divisions included in the **CPI** are based on **Classification of Individual Consumption According to Purpose (COICOP)** (**Nations 2023**) and adapted for Colombia.

⁴This can change sometimes every year

Table 2: COICOP divisions (International version)

Division	Name
01	Food and non-alcoholic beverages
02	Alcoholic beverages, tobacco and narcotics
03	Clothing and footwear
04	Housing, water, electricity, gas and other fuels
05	Furnishings, household equipment and routine household maintenance
06	Health
07	Transport
08	Information and communication
09	Recreation, sport and culture
10	Education services
11	Restaurants and accommodation services
12	Insurance and financial services

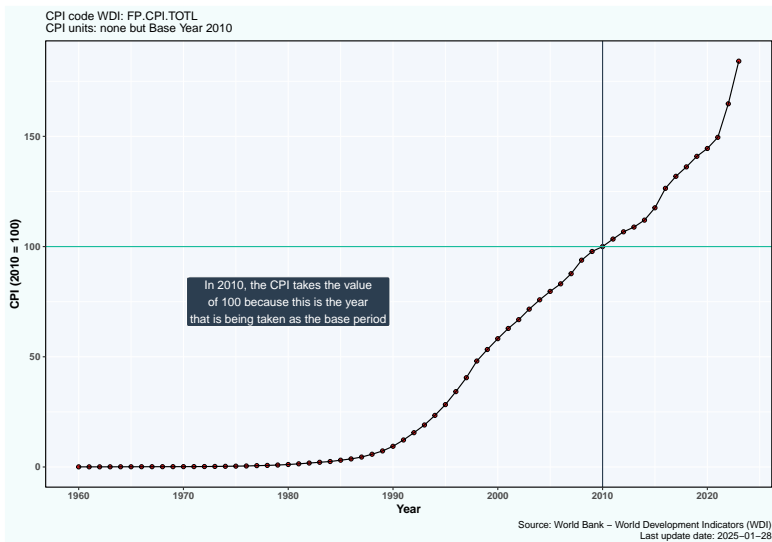


Figure 1: Colombia Consumer price index (CPI)

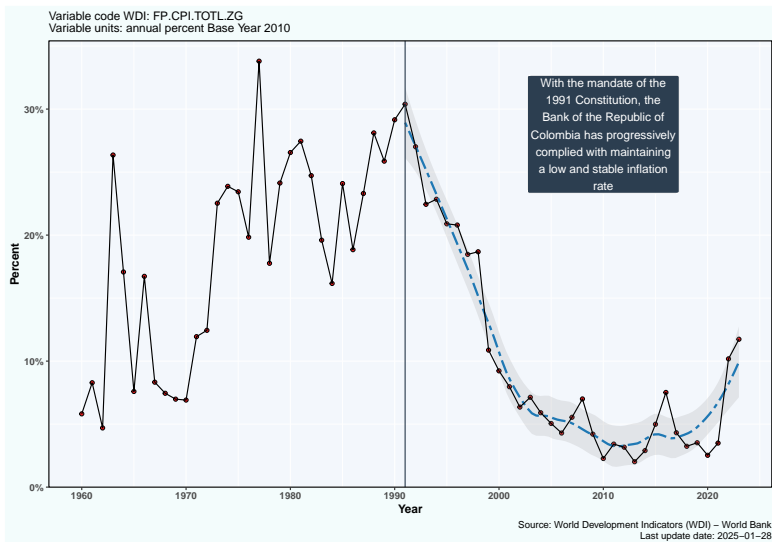


Figure 2: Inflation using Consumer price index (CPI) for Colombia

- Calculating inflation using the **Consumer Price Index (CPI)**
 - CPI annual periodicity

$$Inflation_t = \frac{CPI_t - CPI_{t-1}}{CPI_{t-1}} \times 100$$

- CPI monthly periodicity

$$Inflation_t = \frac{CPI_t - CPI_{t-12}}{CPI_{t-12}} \times 100$$

- An exchange rate is the amount of **units of national currency** that must be given in exchange for a **unit of foreign currency**
- If the exchange rate between COP⁵ and USD⁶ is 4073 COP/USD, it means that 4073 COP must be given to obtain 1 USD
- To have a reference of the exchange rate between COP and USD, the **“Superintendencia Financiera de Colombia (SFC)”** currently calculates and certifies an *average* exchange rate called **“Tasa Representativa del Mercado (TRM)”** on a daily basis
- Also it is important to take into account the following terminology:
 - **Devaluation:** TRM - COP/USD (↑)
 - **Revaluation:** TRM - COP/USD (↓)

⁵Colombian peso according to ISO 4217 code

⁶United States dollar according to ISO 4217 code



Figure 3: Daily Tasa Representativa del Mercado - TRM (COP/USD)

- To my family that supports me
- To the taxpayers of Colombia and the **UMNG students** who pay my salary
- To the **Business Science** and **R4DS Online Learning** communities where I learn **R** and **π -thon**
- To the **R Core Team**, the creators of **RStudio IDE**, **Quarto** and the authors and maintainers of the packages **tidyverse**, **knitr**, **kableExtra**, **wbstats**, **tidyquant**, and **tinytex** for allowing me to access these tools without paying for a license
- To the **Linux kernel community** for allowing me the possibility to use some **Linux distributions** as my main **OS** without paying for a license

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