

LECTURE 2

MACROECONOMIC VARIABLES

Required reading:

Blanchard chapter 2



MACROECONOMIC VARIABLES

The major macroeconomic variables are:

- 1) Output
- 2) Inflation
- 3) Unemployment



1) MEASUREMENT OF OUTPUT

- Great depression there were no measure of aggregate economic activity.
- At the end of World War II National Income and Product Accounts put together.
- GROSS DOMESTIC PRODUCT (GDP): measure of aggregate economic activity



DEFINITIONS AND DERIVATION OF GDP

(PRODUCTION SIDE)

- GDP1: value of all *final goods and services* produced in an economy during a given period (monthly, quarterly or monthly)
- GDP2: sum of *value added* in an economy during a period.

Value added by a firm: Sales- Payments for the intermediate goods
(Value of production for firm- value of intermediate goods)



- GDP3: sum of incomes in an economy during a period

DEFINITIONS AND DERIVATION OF GDP (INCOME SIDE)



EXAMPLE:



2 Firms producing milk & pudding

Firm A: Milk Production in 2020

Revenue from Sales 120,000 TL

Expenses 75,000TL

 Wages 75,000 TL

Profit 45,000TL



EXAMPLE

- Firm B: Smoothie Production in 2007

Revenue from Sales	200,000TL
Expenses	155,000 TL
Wages	35,000 TL
Milk Purchases	120,000 TL
Profits	45,000TL



LET'S DO THE FOLLOWING:

1) Use GDP1 to derive GDP.

Final good & intermediate goods?

2) Use GDP2 to derive GDP.

Value added by Firm A and Firm B?

3) Use GDP3 to derive GDP.

Workers income / Producer Income/Gov Income?



CONCERNS ABOUT GDP

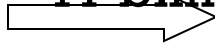
- 1) Do include imputed values but not for everything. Only for housing.
- 2) Household production not included.
- 3) Informal market activities are not included.



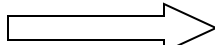
REAL VS. NOMINAL GDP

- Turkey GDP:

1970 17 billion \$



2010 751 billion \$



- Nearly 44 times increase in GDP. Does this reflect the increase in only?

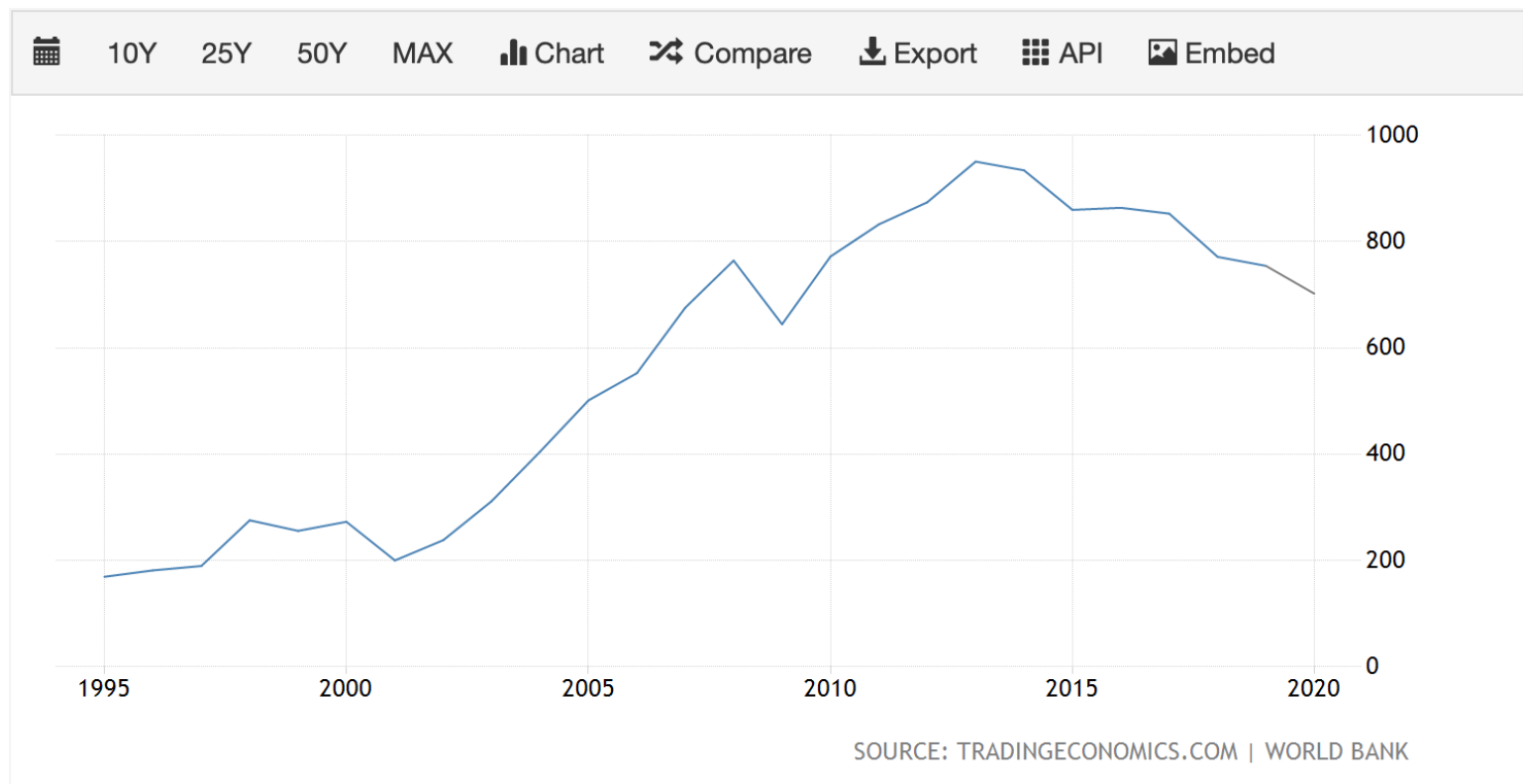


GDP IN TURKEY

- The Gross Domestic Product (GDP) in Turkey was worth 754.41 billion US dollars in 2019, according to official data from the World Bank and projections from Trading Economics. The GDP value of Turkey represents 0.63 percent of the world economy.



GDP IN TURKEY



NOMINAL GDP

- Value of all final goods and services produced in US in current prices.

Assume a two goods economy:

Apples & Oranges

$NGDP(2010) = (\text{Price of Apples in 2010} * \text{Quantity of Apples}$

$\text{Produced in 2010}) + (\text{Price of Oranges in 2010}) * (\text{Quantity of Oranges Produced in 2010})$



NOMINAL GDP

- Nominal GDP changes for two reasons:
 - 1) Prices of most goods increase over time
 - 2) Production of most goods increases over time
- How to measure the production changes only?



REAL GDP

- Value of all goods and services at constant prices.
- Assume a two goods economy: Apples & Oranges
- Assume that base year is 2000.

$$\text{RGDP}(2009) = (\text{Price of Apples in 2000} * \text{Quantity of Apples Produced in 2009}) + (\text{Price of Oranges in 2000}) * (\text{Quantity of Oranges Produced in 2009})$$



EXERCISE:

BLANCHARD, CHAPTER 2, QUESTIONS AND PROBLEMS #4

- An economy produces three goods: cars, computers and oranges. Quantities and prices per unit for years 2003 and 2004 are as follows:

	2003		2004	
	Quantity	Price	Quantity	Price
Cars	10	\$2,000	12	\$3,000
Computers	4	\$1,000	6	\$500
Oranges	1000	\$1	1000	\$1



EXERCISE

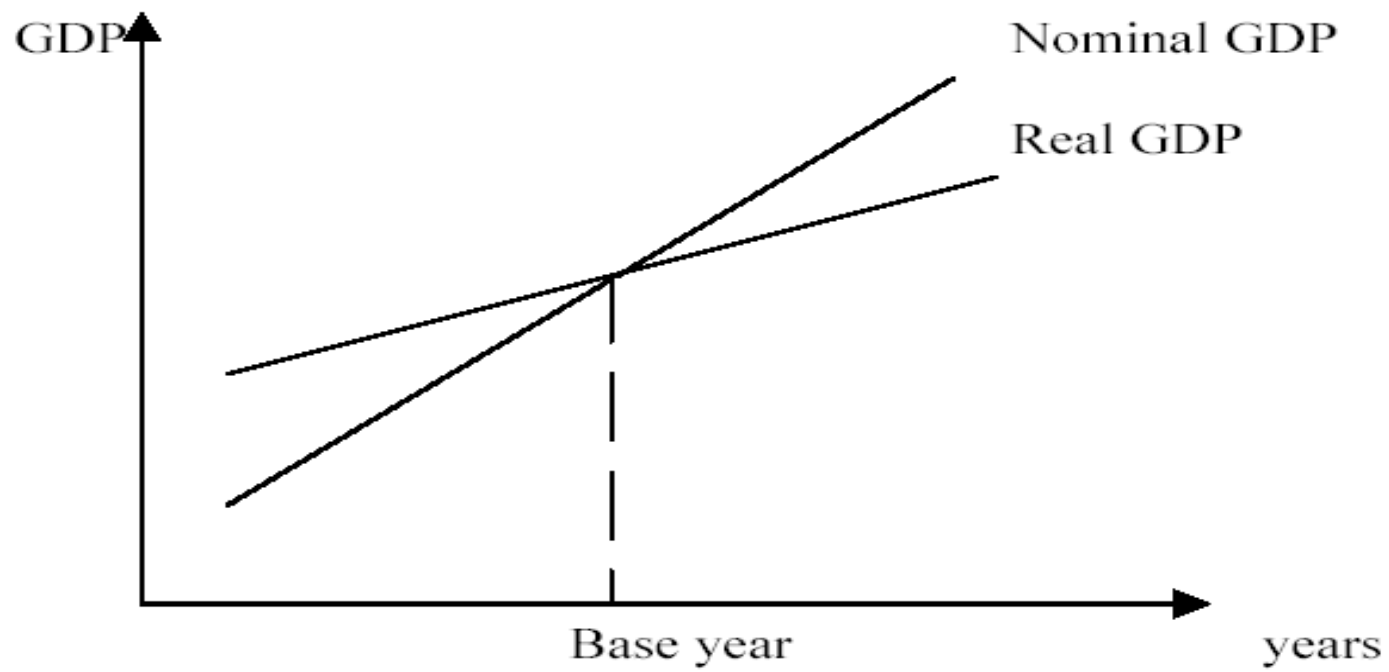
1) Nominal GDP (2003), Nominal GDP (2004), percentage change in nominal

GDP from 2003 to 2004 (g_{nom}) ?

2) Base year is 2003, Real GDP (2003) and Real GDP (2004)? Percentage change in real GDP from 2003 to 2004

(g_{real})?





ECONOMIC GROWTH

- Indicators of Economic Performance?

GDP level / GDP growth rate

Periods of + growth expansions

Periods of – growth $\xrightarrow{\hspace{1cm}}$
 recessions
 $\xrightarrow{\hspace{1cm}}$

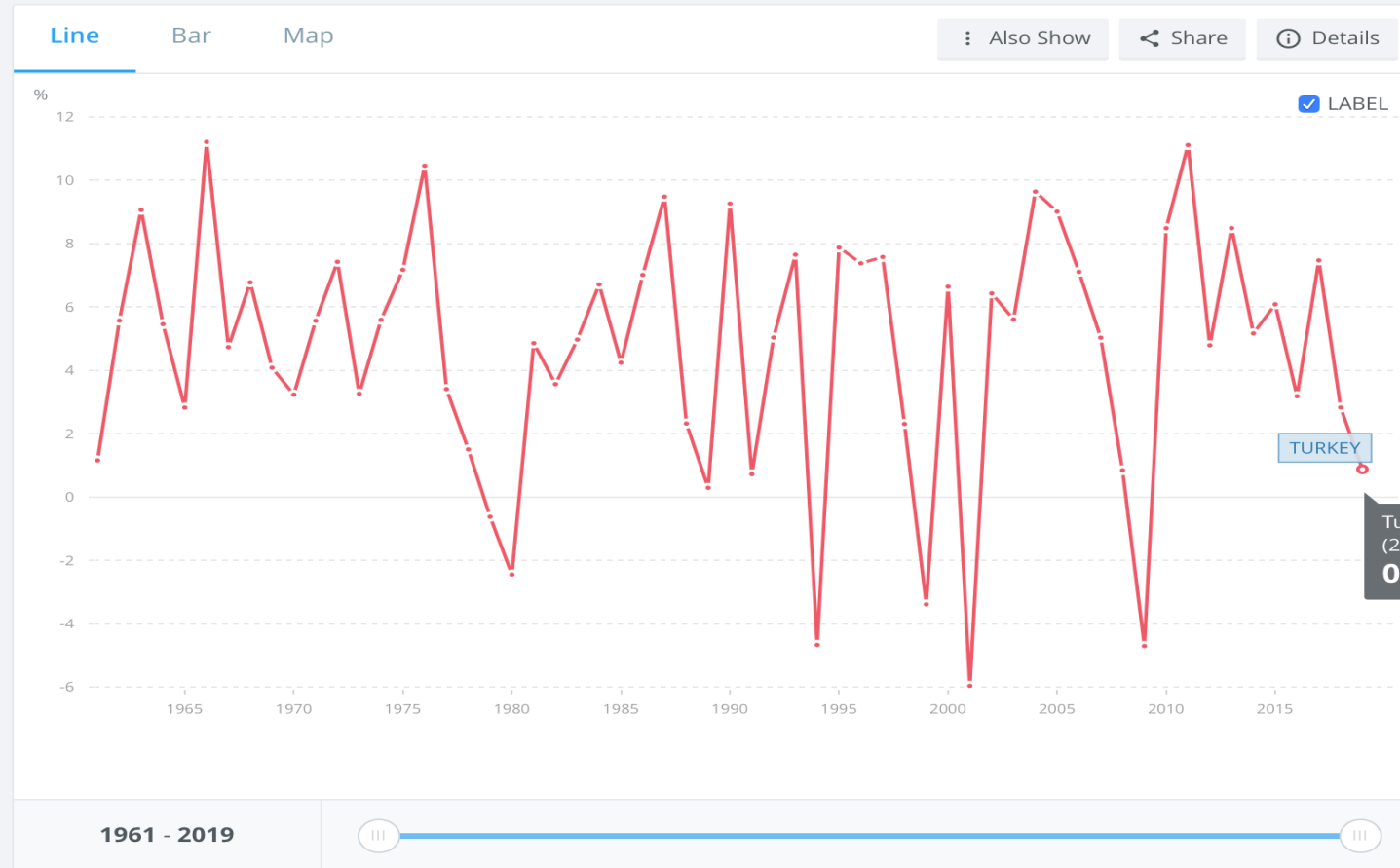
$$GDP(growth) = g = \frac{\Delta Y_t}{Y_t} = \frac{Y_t - Y_{t-1}}{Y_{t-1}}$$



GDP growth (annual %) - Turkey

World Bank national accounts data, and OECD National Accounts data files.

License : CC BY-4.0 [i](#)



RDGP GROWTH IN TURKEY AND WORLD

- <https://www.ceicdata.com/en/indicator/turkey/real-gdp-growth>



ECONOMIC PERFORMANCE

- Best indicator of Economic Performance?

GDP? GDP growth? NGDP? NGDP growth?

RGDP? RGDP per capita

$$\text{Real GDP per capita} = RGDP_{\text{percapita}} = \frac{RGDP}{\text{Population}}$$



GDP VS. GNP

- Gross Domestic Product (GDP)
- Gross National Product(GNP)
- GNP:Counts all the output produced by Turkish owned inputs.
- GDP: Counts all the output produced in Turkey(country of concern).



- A Turkish firms production in China: included in GNP of Turkey and GDP of China but not GNP of China or GDP of Turkey.
- Toyota (a Japanese firm) produce in Turkey: included in GNP of Japan, GDP of Turkey but not in GNP in Turkey or GDP in Japan.



2) MEASUREMENT OF UNEMPLOYMENT

- Employment = # of people having a job
- Unemployment = # of people a) who do not have a job but b) are looking for a job
- Labor Force (L) = Employment (E) + Unemployment (U)
- Unemployment Rate = $u = U/L$



- No job & not looking for a job=not in the labor force=can be discouraged workers

In recessions what happens to

(a) the unemployment rate?

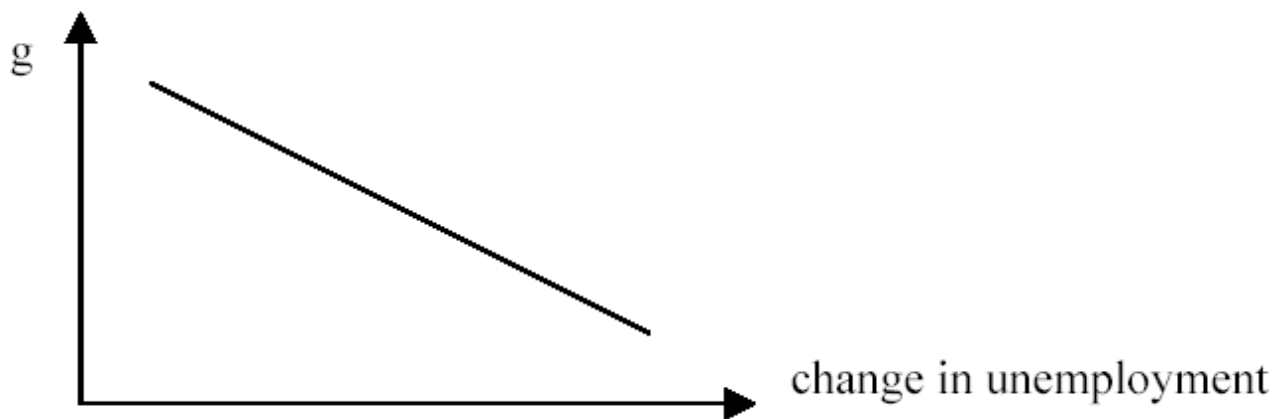
(b) discouraged workers?

(c) participation rate?

Participation rate=Labor Force/ Total Population at the working age



- OKUN's LAW: Negative relation between unemployment and GDP.
(Employed actually help to increase GDP)



UNEMPLOYMENT RATE IN TURKEY

- <https://www.dw.com/tr/ekim-ayında-işsizlik-yüzde-134e-yükseldi/a-51952351>
- September Unemployment rate is 13,4%
- 15-24 young unemployment rate increased by 3 basis points to 25,3%
- Unemployment benefits started to be paid by 5th of October in Turkey.



3) MEASUREMENT OF INFLATION

- Inflation rate: Percentage change in *price level*
- Inflation (increase in price level)
- Deflation (decrease in price level)
- Two measures of price level (price indexes)
 - (a) GDP Deflator
 - (b) CPI (Consumer Price Index)



(A) GDP DEFLATOR

- Nominal GDP = Real GDP * GDP Def.

Blanchard, Questions and Problems #4

(continue)

$$GDP_{2003}^{nom} = \$25,000, GDP_{2004}^{nom} = \$40,000,$$

$$GDP_{2003}^{real} = GDP_{2003}^{nom} = \$25,000, GDP_{2004}^{real} = \$31,000$$

- What is the GDP deflator in 2003 and 2004? What is the rate of inflation?



$$GDP_t^{deflator} = \frac{GDP_t^{nom}}{GDP_t^{real}} \times 100$$

$$GDP_{2003}^{deflator} = 100(\text{base } 2003)$$

$$GDP_{2004}^{deflator} = 40 / 31 \times 100 \simeq 132$$

$$Inflation = \frac{132 - 100}{100} \times 100 = 32\%$$



2) CONSUMER PRICE INDEX (CPI)

- CPI: measures the price level of goods purchased by the consumers.
- GDP Deflator: measures the price level of output, all final goods and services *produced* in the economy.



- Calculation of CPI in 2004, Assume that the consumption basket includes 5 basket of apples & 2 oranges a month where 2002 is the base year.

$$CPI_{2004} = \left(\frac{(5 \times P_{2004}^{apples}) + (2 \times P_{2004}^{oranges})}{(5 \times P_{2002(base)}^{apples}) + (2 \times P_{2002(base)}^{oranges})} \right)$$



- Biases in CPI (overstate inflation by nearly

A) Commodity substitution

B) New goods and quality change

- Why do we care about inflation?

1) Distort income distribution

2) Distort firm decisions / Result in uncertainties

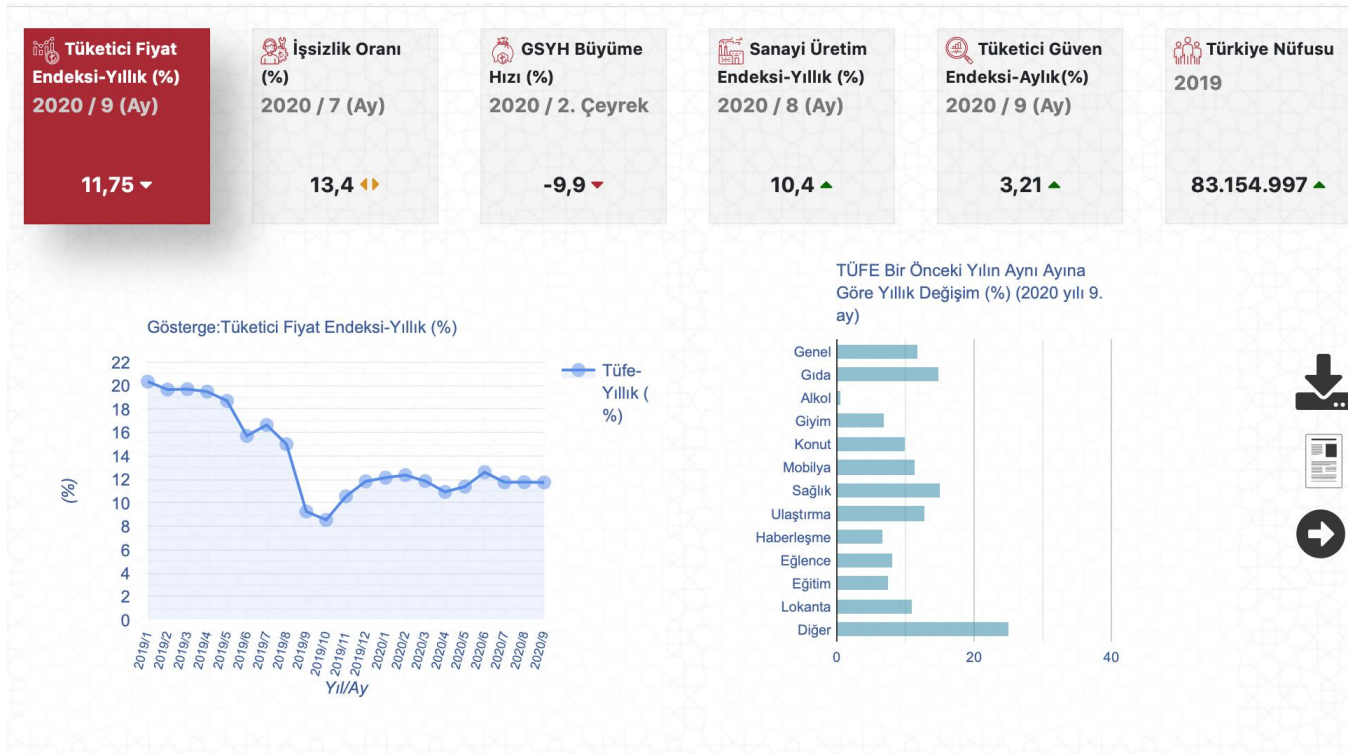
3) Distortions in tax brackets



TURKISH INFLATION

- Turkish data on CPI Inflation:

<https://www.tcmb.gov.tr/wps/wcm/connect/TR/TCMB+TR/Main+Menu/Istatistikler/Enflasyon+Verileri/Tuketici+Fiyatlari>



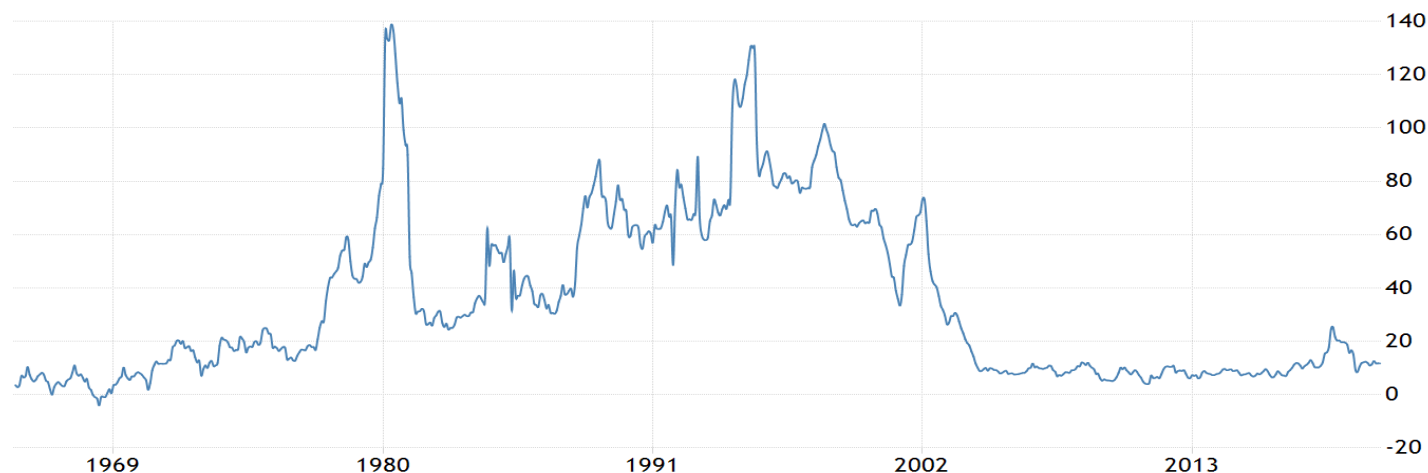
Turkey Inflation Rate 1965-2020 Data | 2021-2022 Forecast | Calendar | Historical

[Summary](#)[Calendar](#)[Forecast](#)[Stats](#)[Download ▾](#)[Alerts](#)

Turkey's consumer price inflation rate stood at 11.75 percent year-on-year in September 2020, little-changed from the previous two months and compared to market expectations 12.13 percent, as the lira hit multiple record lows. Main upward pressure came from food and non-alcoholic beverages (14.95 percent vs 13.51 percent), transportation (12.95 percent vs 12.69 percent), housing and utilities (10.0 percent vs 11.34 percent), hotels, cafes and restaurants (10.92 percent vs 11.80 percent), furnishing and household equipment (11.34 percent vs 8.90 percent), clothing and footwear (6.91 percent vs 9.22 percent), alcoholic beverages and tobacco (0.68 percent vs 2.44 percent) and miscellaneous goods and services (25.17 percent vs 26.99 percent).

[←](#)

Ads by Google

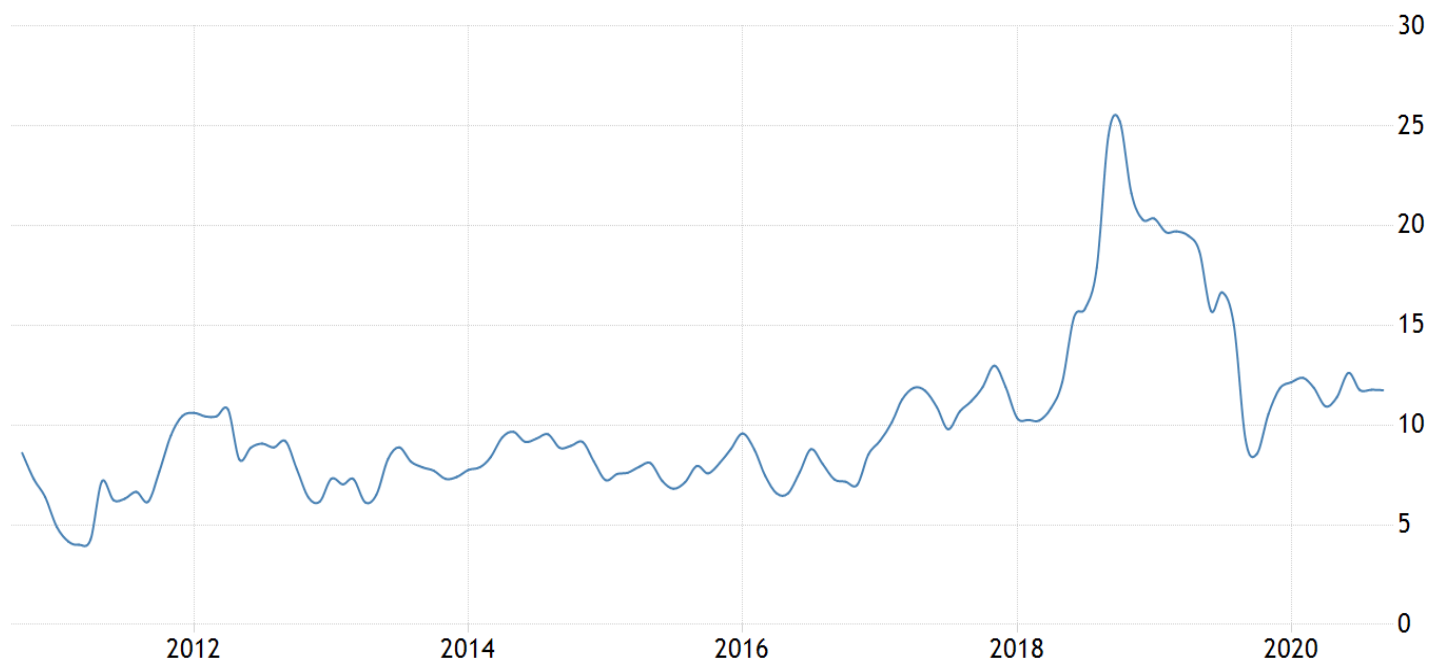
[Send feedback](#)[Why this ad? ⓘ](#)[1Y](#)[5Y](#)[10Y](#)[25Y](#)[MAX](#)[Chart](#)[Compare](#)[Export](#)[API](#)[Embed](#)

SOURCE: TRADINGECONOMICS.COM | TURKISH STATISTICAL INSTITUTE



RECENT INFLATION IN TURKEY

 1Y 5Y 10Y 25Y MAX  Chart  Compare  Export  API  Embed



SOURCE: TRADINGECONOMICS.COM | TURKISH STATISTICAL INSTITUTE



WHAT DETERMINES AGGREGATE OUTPUT IN THE ECONOMY?

- 1) Short-Run (a few years): Δ in **demand** consumer confidence/interest rate
- 2) Medium-Run (a decade): Δ in **supply**
Capital stock, technology, productivity, size of the labor force
- 3) Long Run (Half century or more): political system, education, savings

