

## TRACKING THE MACROECONOMY: FIVE KEY AGGREGATES

1. Consumer price index (CPI)
2. Gross Domestic Product (GDP)
3. *Real* GDP
4. GDP deflator
5. Unemployment rate

## CONSUMER PRICE INDEX

Suppose that a frost in Florida destroys most of the citrus harvest. As a result of that frost the price of oranges rises from \$.20 each to \$.40 each; the price of grapefruit rises from \$.60 to \$1.00; and the price of lemons rises from \$.25 to \$.45. How much has the price of citrus fruit increased?

*Answer:* no “true” answer\*. But suppose that before the frost a typical consumer could expect to buy 200 oranges, 100 lemons, and 50 grapefruit over the course of a year. Then the price of that “market basket” has risen from

$$200 \times \$0.20 + 100 \times \$0.25 + 50 \times \$0.60 = \$95.00$$

to

$$200 \times \$0.40 + 100 \times \$0.45 + 50 \times \$1.00 = \$175.00.$$

an increase of 84.2 percent. So we might say that the price of citrus fruit has increased 84.2 percent.

A *price index* measures changes in the price of a market basket. It is usually normalized to equal 100 in the year for which the market basket was estimated.

*\*In principle, we could calculate an “ideal” price index, which measures how much more income people would need to be equally well off.*

## PROBLEMS WITH THE CPI:

1. *Substitution bias*: people may change consumption pattern in response to changing prices. “Ideal” price index would fix this; attempts in progress to approximate this (e.g., geometric CPI)

2. *Quality change*: Is it really the same good? “Hedonic” indices.

3. *New goods*: The wonder drug problem

*GDP: Total value of goods and services produced in the economy*

Imaginary economy 1: produces 1 million apples@\$.50, 1 million oranges@\$.75. GDP = \$1.25 million: sum of *value* of apple and orange production.

Imaginary economy 2: Produces 1 million engines@\$5000, then 1 million autos@\$15,000. How large is GDP?

Suppose you added sales of engine producers and auto producers. Two problems. First, you would be counting engines twice, once when sold to auto producer and again when sold as part of a car to consumer. Second, GDP would change if companies merged, even with no change in anything else.

Two answers:

1. Count only *value-added*: \$5 billion in engines, plus \$10 billion in autos.
2. Count only *final sales*: \$15 billion in autos.

Equivalent in principle. “Statistical discrepancy” in actual numbers - but small.

## PROBLEMS WITH GDP

1. *Non market activities*: If I eat out, the food preparation counts; if I cook for myself, it doesn't. Some nonmarket activities are "imputed" in the accounts, especially services of owner-occupied housing.

2. *Data collection*: Some activities simply get missed. Nannies, plumbers, and the "black economy"

## CALCULATING REAL GDP

	Year 1	Year 2
Output of apples (trillions)	1.0	1.1
Price per apple	\$0.50	\$0.60
Output of oranges (trillions)	1.0	1.2
Price per orange	\$0.50	\$0.70
GDP (trillions)	1.0	1.5
Real GDP in year 1 prices	1.0	1.15

GDP deflator: ratio of nominal to real GDP. 1 in year 1; 1.5/1.15 in year 2.

UNEMPLOYMENT RATE: based on a monthly survey of households. Respondents are asked:

1. Are you working?
2. If not, have you been actively looking for work in the past 2 weeks?

Problems with this measure: Some people may have given up looking; some people may not be looking “seriously”.

NB: International comparisons of unemployment are tricky. Many countries measure it by # of people receiving unemployment insurance – but many US unemployed do not receive insurance. This biases #s down abroad – e.g. Japan’s 4.5 percent is widely believed to be equivalent to ~8 percent US.

On the other hand, other factors bias US #s downward – e.g., more than 1% of labor force in prison.