INTERMEDIATE MACROECONOMICS

1 - INTRODUCTION & DEFINITIONS

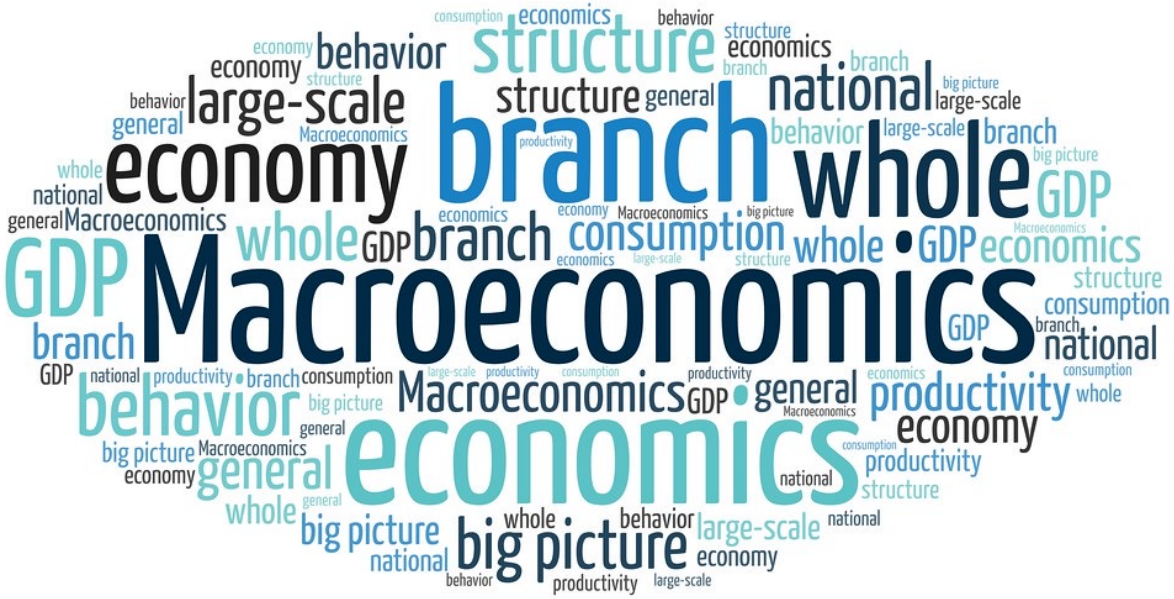
University of Massachusetts Amherst

Write down 3 things you remember from Tuesday's class

(If you weren't here on Tuesday, name 3 things that come to your mind when you think "Macroeconomics")

1 – Introduction & Definitions

- What is macroeconomics?
- What is it for?
- How do we measure and monitor the economy?



Section 1: The roadmap

1. What is Macroeconomics?
2. Measuring aggregate output.
3. Measuring the labor market.
4. Measuring inflation.
5. Okun's law & the Phillips Curve

Section 1: The main ideas

- Macro studies the economy as a whole and focuses on some key aggregate variables.
- Real GDP measures aggregate production.
- Unemployment rate = share of workforce that can't find a job.
- Inflation is the rate at which prices increase.
- There tends to be systematic relations between these 3 variables (Okun's law & Phillips curve).

1.1 WHAT IS MACROECONOMICS?

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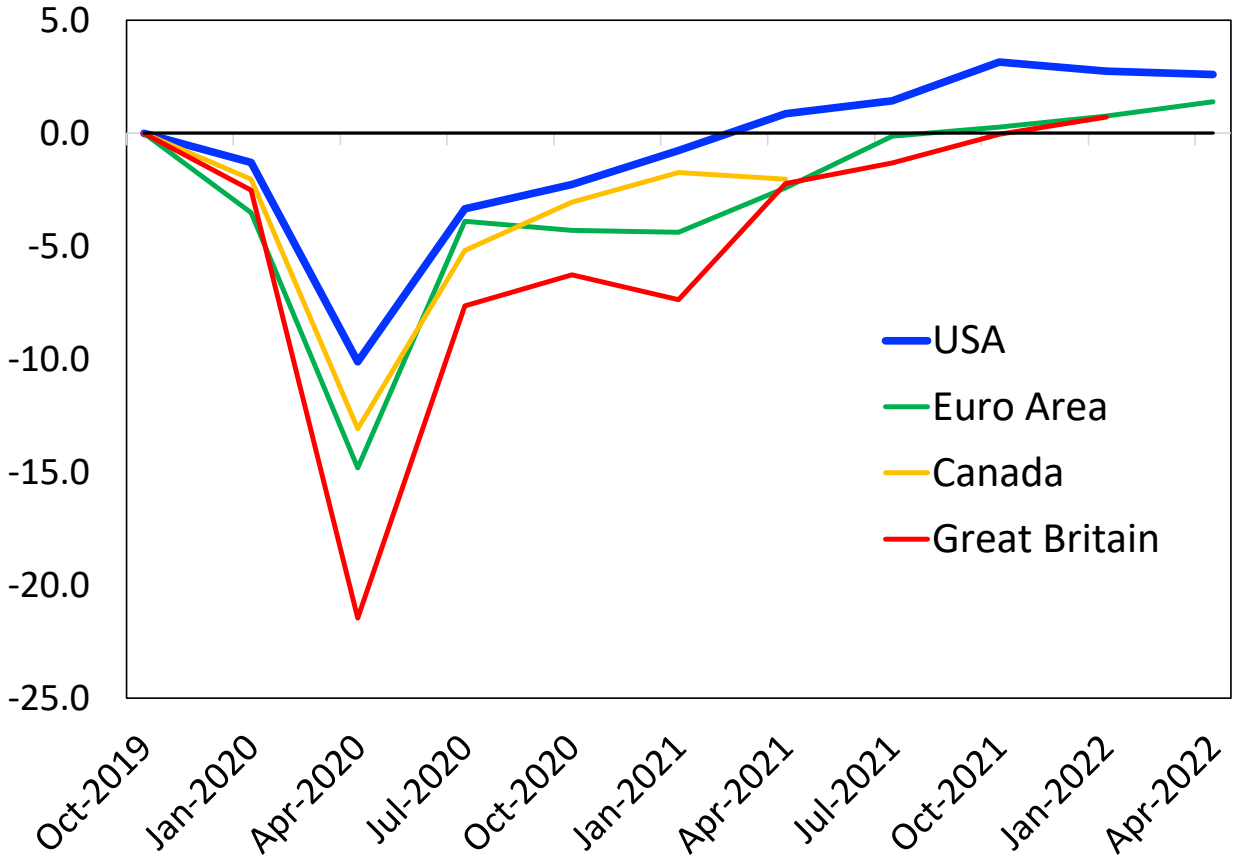
Instructor: Daniele Girardi

What is Macroeconomics?

- *Macroeconomics* studies the behavior of the economy taken as a whole.
- It tries to explain the evolution of some key *aggregate* variables that describe the state of the economy.
  - ✓ output (GDP).
  - ✓ employment and unemployment.
  - ✓ wages.
  - ✓ inflation.
  - ✓ interest rates.

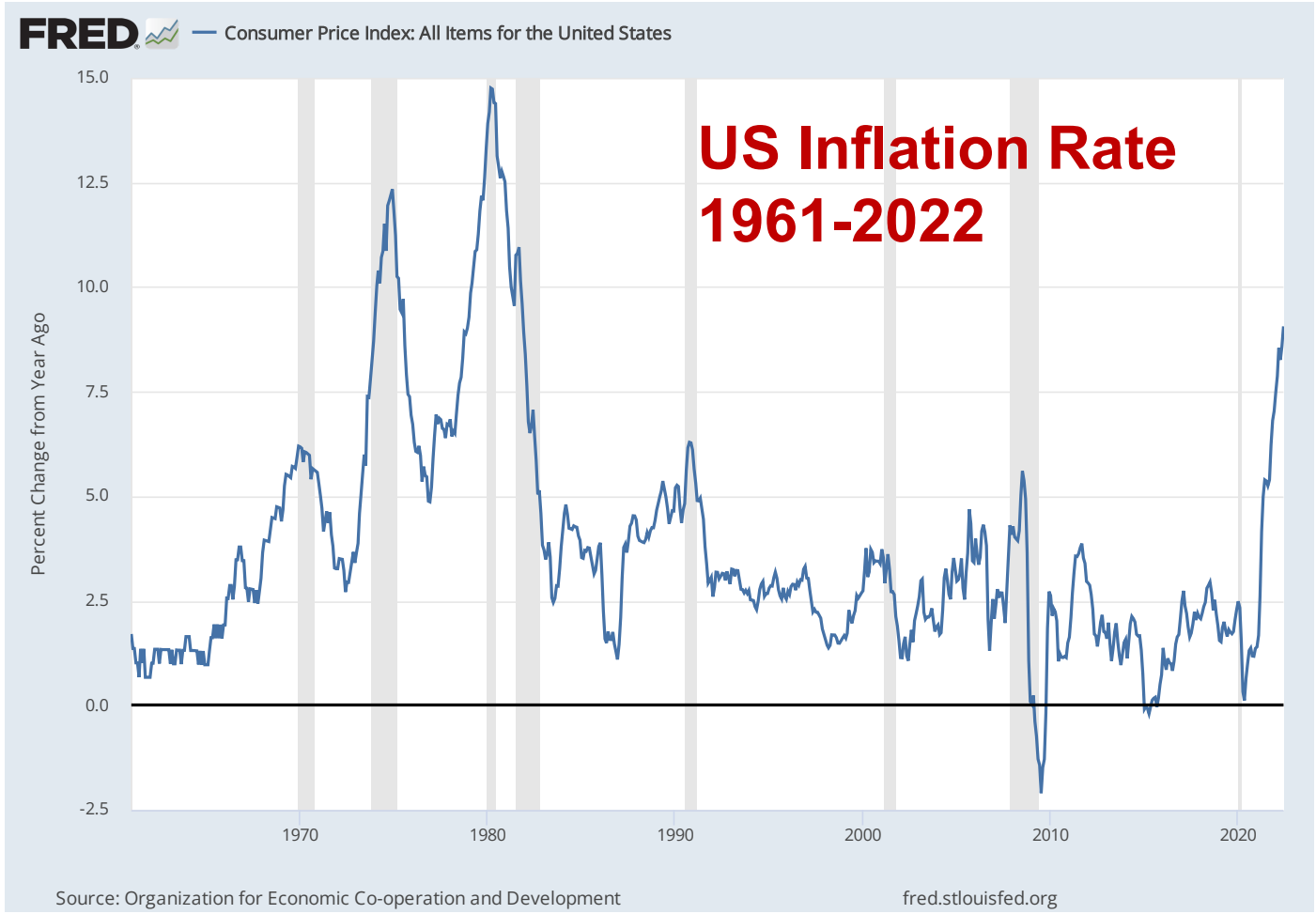
Facts that we would like Macro to explain

The US economy has done better than other rich economies during the Covid-19 pandemics.

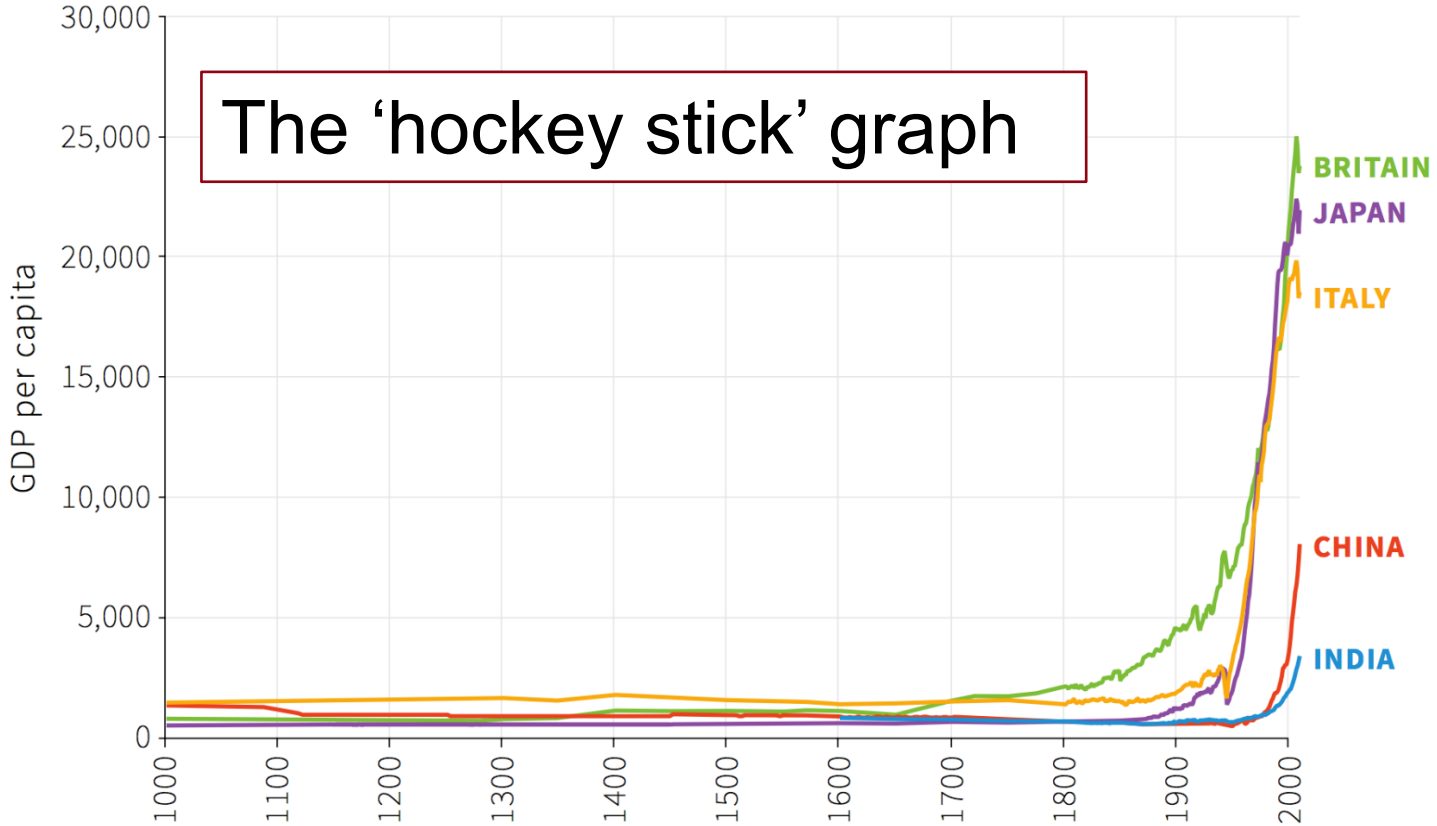


Facts that we would like Macro to explain

Inflation is making a comeback.



What this course will *not* attempt to explain.

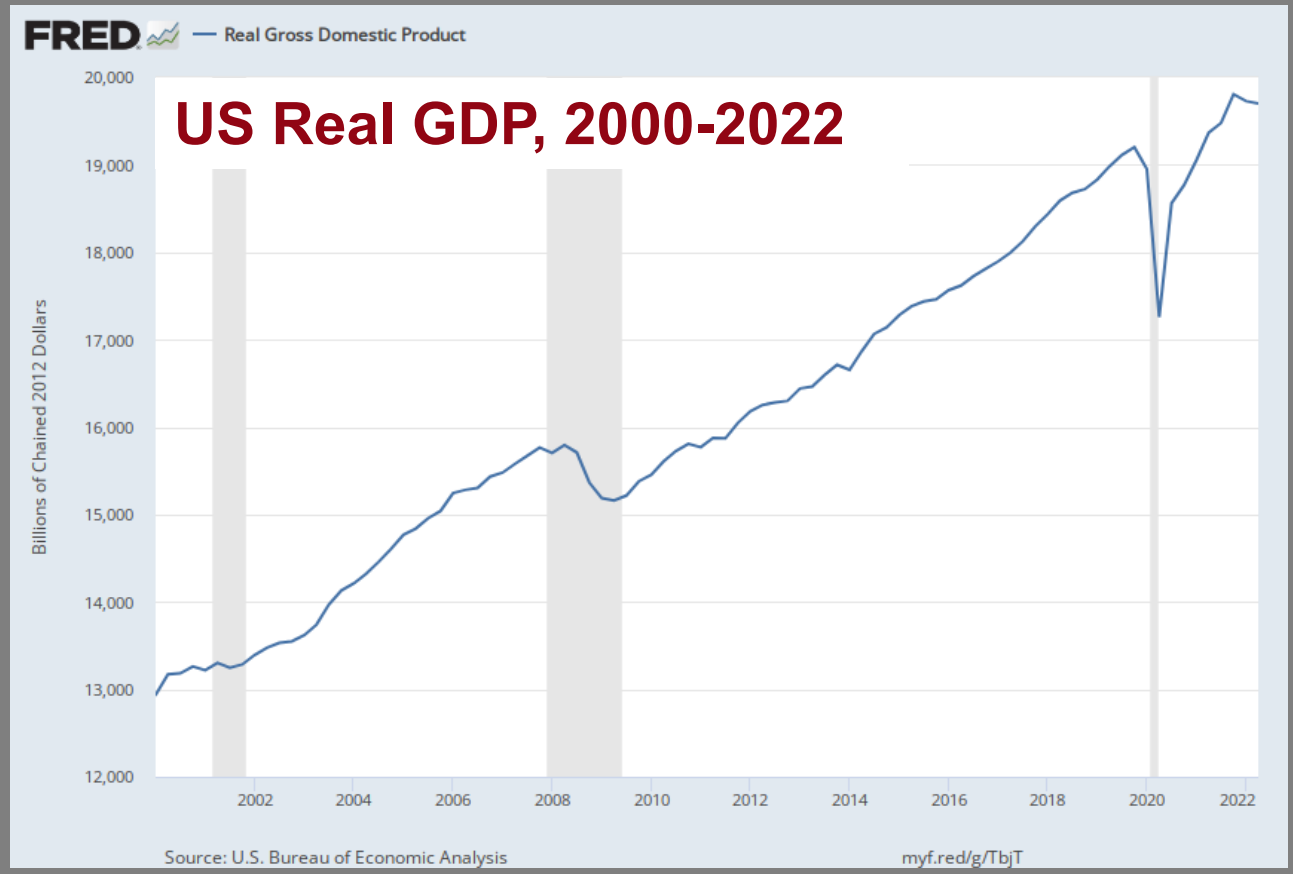


- Emergence of capitalism.
- Industrial revolution.
- Structural change (from agrarian to industrial).
- We will take for granted an industrialized market economy.

What do macroeconomists do?

- *Private sector*: help firms or banks assess the macroeconomic context and what it means for them.
- *Government or international institutions:* make macroeconomic forecasts, help design & evaluate macroeconomic policies.
- *Academia*: research & teaching.

1.2 MEASURING AGGREGATE OUTPUT



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GDP: A measure of aggregate output

- Gross domestic product (GDP).
- Calculated since 1948
    - National Income and Product Accounts (NIPA)
- How would *you* define aggregate output in the economy?

An economy with just 2 firms:

Steel Company (Firm 1)			Car Company (Firm 2)		
Revenues from sales		$100	Revenues from sales		$200
Expenses		$80	Expenses		$170
Wages	$80		Wages	$70	
			Steel purchases	$100	
Profit		$20	Profit		$30

- How do we sum up quantities of different goods?
- Is GDP the sum of values of all goods produced ($300)?
- Or just the value of cars ($200)?
- Steel = *intermediate* good, Car = *final* good.

Three equivalent definitions of GDP:

1. The value of final goods and services produced in the economy during a given period.
2. The sum of value added in the economy during a given period.
3. The sum of all incomes earned in the economy during a given period.

1. GDP is the value of final goods and services produced in the economy during a given period.

- We want to count only *final* goods, not intermediate goods.
- GDP in the steel & car economy is just the value of cars ($200)

⇢ production-side GDP is $200.

2. GDP is the sum of value added in the economy during a given period.

- The value added (VA) by each firm equals:

$$value\ of\ final\ production\ -\ value\ of\ intermediate\ goods\ used\ up$$

- Steel company VA: $\$100$
- Car company VA: $\$200\ -\$100 = 100\$$
- Aggregate VA: $\text{Steel company}\ VA\ +\ Car\ company\ VA\ =\ \$200$

⇢ Value added-based GDP is $200.

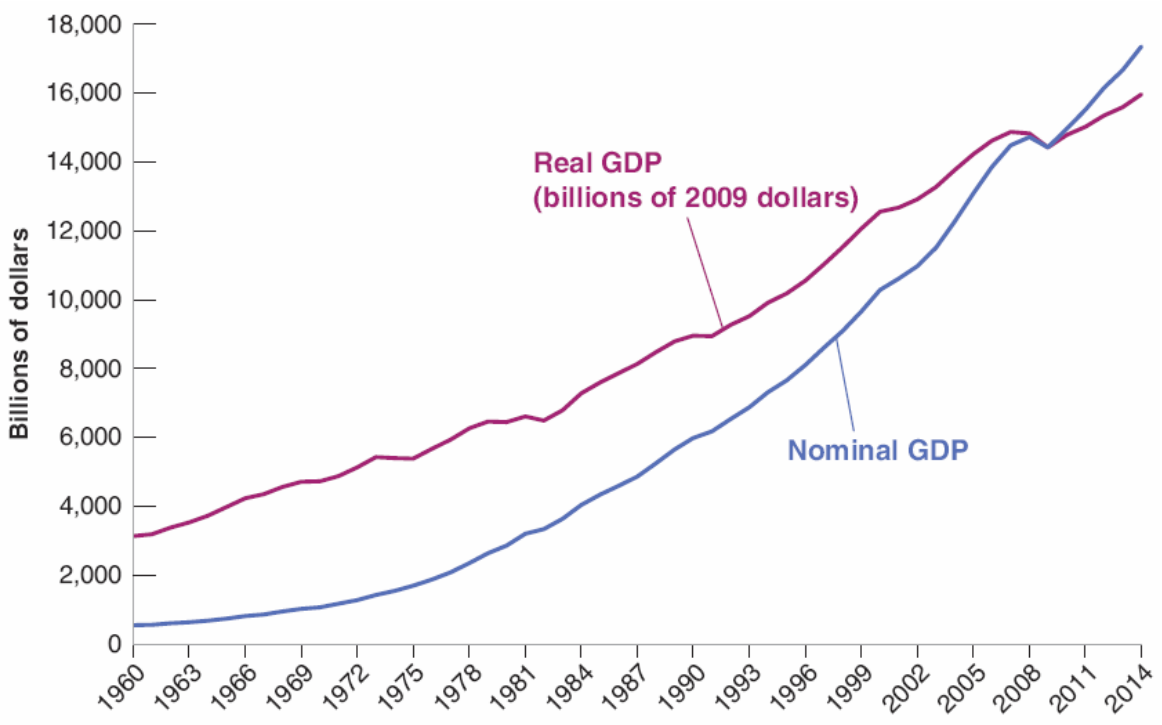
3. GDP is the sum of all incomes earned in the economy during a given period.

- In the two-firms example:

labor income ($150) + *profit* income ($50) = tot. income ($200).

⇢ GDP from the income side is $200.

Nominal GDP and Real GDP



- Nominal GDP:
  quantities produced x *current* prices.
- But prices can change over time!
- Real GDP:
  quantities produced x *constant* prices.

Nominal GDP and Real GDP

Example: Real and Nominal GDP in a one-good economy

Year	Quantity of Cars	Price of Cars	Nominal GDP	Real GDP (in 2009 dollars)
2008	10	$20,000	$200,000	$240,000
2009	12	$24,000	$288,000	$288,000
2010	13	$26,000	$338,000	$312,000

Nominal GDP and Real GDP

With many goods?

- Can still use the prices of a given year as weights.
  - Real GDP in 2009$ dollars
  - Real GDP in 2010$ dollars
  - Real GDP in 2011$ dollars
  - ….

Nominal GDP and Real GDP

- Example: an economy producing wine & potatoes.
- Your turn! Calculate:
  1. Nominal GDP growth
  2. Real GDP growth in Year 0 dollars
  3. Real GDP growth in Year 1 dollars.

Nominal GDP in Year 0 and in Year 1.

	Year 0		
	Quantity	$ Price	$ Value
Potatoes (pounds)	10	1	10
Wine (bottles),	5	2	10
Nominal GDP			20
	Year 1		
	Quantity	$ Price	$ Value
Potatoes (pounds)	15	1	15
Wine (bottles),	5	3	15
Nominal GDP			30

Clicker questions

What is nominal GDP growth in the 'wine & potatoes' economy?

A. 10% C. 25%
B. 20% **D. 50%**

What is real GDP grov

A. 10% **C. 25%**
B. 20% D. 50%

- Problem: Real GDP *and real GDP growth* depend on the year chosen.
- Solution: Chained Real GDP.

What is real GDP growth in constant year 1 dollars?

A. 10% C. 25%
B. 20% D. 50%

Chained Real GDP

Computed in 4 steps:

1. Compute Real GDP growth between two years in two ways:
   a. Using prices from year *t* as the set of common prices
   b. Using prices from year *t+1* as the set of common prices
2. Real GDP growth between *t* and *t+1* = average of (a) and (b)
3. Build a real GDP index:
   a. set it equal to 100 in a base year;
   b. then apply the growth rates of step 2 to obtain values for the other years.
4. Multiply this index by nominal GDP in the *base year.*

→ Chained Real GDP still depends on the base year, *but its growth rate doesn't*

Chained Real GDP in the 'wine & potatoes' economy

Your turn!

Calculate Chained Real GDP for the wine & potatoes economy.

Use year 0 as the base year.

Nominal GDP in Year 0 and in Year 1.

	Year 0		
	Quantity	$ Price	$ Value
Potatoes (pounds)	10	1	10
Wine (bottles),	5	2	10
Nominal GDP			20
	Year 1		
	Quantity	$ Price	$ Value
Potatoes (pounds)	15	1	15
Wine (bottles),	5	3	15
Nominal GDP			30

Clicker question

What is *Chained Real GDP growth* in the 'wine & potatoes' economy?

A. 15.8%

B. 22.5%

C. 25.5%

D. 40.0%

Clicker question

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