ECONOMIC GROWTH AND ITS MEASURES

Question: Where would you rather live?

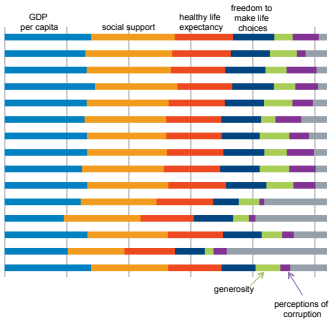
USA vs. Uganda
Mexico vs. Iran
Japan vs. China
Germany vs. Ukraine

What criteria do we use to choose?

Better/worse economy
More/less freedom
People are more/less equal
More/less stable political situation

WORLD HAPPINESS REPORT 2015

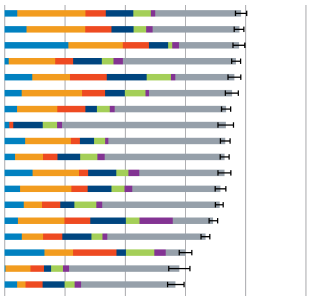
1. Switzerland (7.587)
2. Iceland (7.561)
3. Denmark (7.527)
4. Norway (7.522)
5. Canada (7.427)
6. Finland (7.406)
7. Netherlands (7.378)
8. Sweden (7.364)
9. New Zealand (7.286)
10. Australia (7.284)
11. Israel (7.278)
12. Costa Rica (7.226)
13. Austria (7.200)
14. Mexico (7.187)
15. United States (7.119)



Sourse: http://worldhappiness.report/download/

WORLD HAPPINESS REPORT 2015

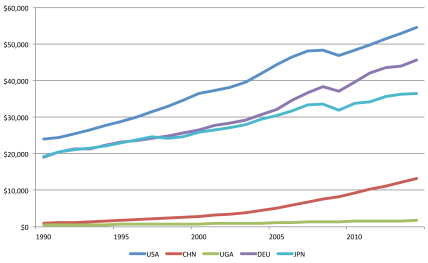
141. Uganda (3.931)
142. Senegal (3.904)
143. Gabon (3.896)
144. Niger (3.845)
145. Cambodia (3.819)
146. Tanzania (3.781)
147. Madagascar (3.681)
148. Central African Republic (3.678)
149. Chad (3.667)
150. Guinea (3.656)
151. Ivory Coast (3.655)
152. Burkina Faso (3.587)
153. Afghanistan (3.575)
154. Rwanda (3.465)
155. Benin (3.340)
156. Syria (3.006)
157. Burundi (2.906)
158. Togo (2.839)



GDP PER CAPITA IN US DOLLARS, 2014

Economists study all of these!

But GDP per capita is a good proxi in general



Sourse: http://databank.worldbank.org/

GROSS DOMESTIC PRODUCT

Market value of all *final goods and services* produced in a country in a given time period.

** Market value means goods and services are valued at market prices.

** A final good (or service) is an item bought by its final user:
- excluding the value of intermediate goods and services avoids counting the same value more than once.

GROSS DOMESTIC PRODUCT

Domestic product is production *within a country*.
It contrasts with *national* product, which is the value of goods and services produced anywhere in the world by the residents of a nation.

Gross means *before* deducting the depreciation of capital.
Depreciation is the decrease in the value of a firm's capital that results from wear and tear and obsolescence.

VALUE ADDED

Value of output net of value of inputs:

- Farmer organically grows a bushel of wheat, $1
- Miller turns the $1 of wheat into $3 flour
- Baker turns the $3 flour into $10 of bread
- Retailer turns $10 of bread into $12 on the shelf

ECONOMY'S INCOME AND EXPENDITURE

All income earned domestically
=
Total expenditure on final goods and services
=
All value added domestically

ACCOUNTING IDENTITY

$$Y = C + I + G + NX$$

- *Y = GDP*
- C = consumption
- I = investment
- G = government purchases
- NX = net exports

COMPONENTS OF GDP

- **Consumption, C**
  - Spending by households on goods and services
  - Exception: purchases of new housing
- **Investment, I**
  - Spending on capital equipment, inventories, and structures
  - Household purchases of new housing
  - Inventory accumulation

COMPONENTS OF GDP

- **Government purchases, G**
  - Government consumption expenditure and gross investment
  - Spending on goods and services
  - By local, state, and federal governments
  - **Does not include transfer payments**

COMPONENTS OF GDP

- **Net exports, NX = Exports - Imports**
  - Exports
    - Spending on domestically produced goods by foreigners
  - Imports
    - Spending on foreign goods by domestic residents

MEASURING U.S. GDP

– The Bureau of Economic Analysis uses two approaches to measure GDP:

- The expenditure approach
- The income approach

MEASURING U.S. GDP

- **The Expenditure Approach**

  Measures GDP as the sum of consumption expenditure, investment, government expenditure on goods and services, and net exports.

$$GDP = C + I + G + (X - M)$$

TABLE 4.1 GDP: The Expenditure Approach

Item	Symbol	Amount in 2014 (billions of dollars)	Percentage of GDP
Personal consumption expenditures	*C*	11,729	68.8
Gross private domestic investment	*I*	2,714	15.9
Government expenditure on goods and services	*G*	3,139	18.4
Net exports of goods and services	*X–M*	–538	–3.2
Gross domestic product	***Y***	**17,044**	**100.0**

Source of data: U.S. Department of Commerce, Bureau of Economic Analysis. The data are for the first quarter of 2014 at an annual rate.

MEASURING U.S. GDP

– **The Income Approach**

Measures GDP by summing the incomes that firms pay households for the factors of production they hire:

1. Wages, salaries, and other labor income

2. Other factor incomes:

- interest
- rent
- profit
- some labor income from self-employment

TABLE 4.2 GDP: The Income Approach

Item	Amount in 2014 (billions of dollars)	Percentage of GDP
Compensation of employees	9,109	53.4
Net interest	685	4.0
Rental income	623	3.7
Corporate profits	1,514	8.9
Proprietors' income	1,351	7.9
Net domestic income at factor cost	13,282	77.9
Indirect taxes *less* subsidies	1,244	7.3
Net domestic income at market prices	14,526	85.2
Depreciation	2,699	15.8
GDP (income approach)	**17,225**	**101.1**
Statistical discrepancy	−181	−1.1
GDP (expenditure approach)	**17,044**	**100.0**

Source of data: U.S. Department of Commerce, Bureau of Economic Analysis. The data are for the first quarter of 2014 at annual rate.

EXPENDITURE VS. INCOME APPROACH

- The table shows data from the United Kingdom in 2005:

Wages paid to labor	685
Consumption expenditure	791
Taxes	394
Transfer payments	267
Profits	273
Investment	209
Government expenditure	267
Exports	322
Saving	38
Imports	366

- Calculate GDP in the United Kingdom.
- Explain the approach that you used to calculate GDP.

VALUE ADDED

- The tires that come with the car is <u>not</u> counted as a final good

- However if you get a flat and buy the same tire it is counted as a final good

- To correct for this problem economist have created the **Value Added approach**
- Also referred to as **Production approach**

VALUE ADDED EXAMPLE

- Value Added Approach Eliminates Double Counting

Participants	Cost of Materials	Value of Sales	Value Added
Farmer	$ 0	$ 100	$ 100
Cone factory and ice cream-maker	100	250	150
Middleperson	250	400	150
Vendor	400	500	100
Totals	$ 750	$1,250	$500

VALUE ADDED EXAMPLE

Stage of Production	Sales Value of Materials or Product	Value Added
	$ 0 →	$ 90 (=$ 90 - $ 0)
Firm A, metal mining	90 →	60 (= 150 - 90)
Firm B, metal processing	150 →	250 (= 400 - 150)
Firm C, frame creation	400 →	100 (= 500 - 400)
Firm D, bicycle wholesaler	500 →	200 (= 700 - 500)
Firm E, bike shop	**700**	
Total Sales Value	$1840	
Value Added		**$700**

MEASURING U.S. GDP

- **Nominal GDP vs. Real GDP**

Real GDP is the value of final goods and services produced in a given year when *valued at the prices of a reference base year*.

Currently, the reference base year is 2009 and we describe real GDP as measured in 2009 dollars.

Nominal GDP is the value of goods and services produced during a given year valued at the prices that prevailed in that same year.

MEASURING U.S. GDP

TABLE 4.3 Calculating Nominal GDP and Real GDP

	Item	Quantity (millions)	Price (dollars)	Expenditure (millions of dollars)
(a) In 2009				
C	T-shirts	10	5	50
I	Computer chips	3	10	30
G	Security services	1	20	20
Y	Real GDP in 2009			100

MEASURING U.S. GDP

TABLE 4.3 Calculating Nominal GDP and Real GDP

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G	Security services	1	20	20
Y	Real GDP in 2009			100
(b) In 2014				
C	T-shirts	4	5	20
I	Computer chips	2	20	40
G	Security services	6	40	240
Y	Nominal GDP in 2014			300

MEASURING U.S. GDP

TABLE 4.3 Calculating Nominal GDP and Real GDP

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(a) In 2009				
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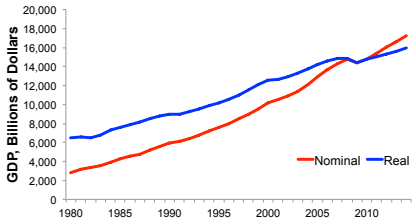
Y	Real GDP in 2009			100
(b) In 2014				
C	T-shirts	4	5	20
I	Computer chips	2	20	40
G	Security services	6	40	240
Y	Nominal GDP in 2014			300
(c) Quantities of 2014 valued at prices of 2009				
C	T-shirts	4	5	20
I	Computer chips	2	10	20
G	Security services	6	20	120
Y	Real GDP in 2014			160

REAL VS. NOMINAL GDP IN THE U.S.



- Real GDP excludes the price effect
- Helps us better understand the concept of economic growth

REAL VS. NOMINAL GDP IN THE U.S.

- One more example

TOTAL GDP VS. GDP PER CAPITA

- We want to make comparisons by country
- **Relative** performance of the countries

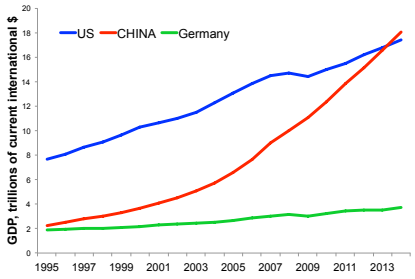
TOTAL GDP VS. GDP PER CAPITA

- We want to make comparisons by country
- **Relative** performance of the countries

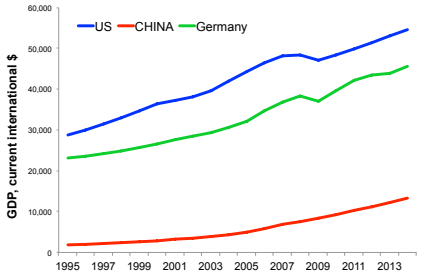
	Population	GDP	GDP per capita
US	318,857,056	$17.42 trillion	**$54,629.50**
Germany	80,889,497	$3.68 trillion	**$45,615.81**
China	1,364,270,000	$18.03 trillion	**$13,216.54**

- GDP per capita is GDP divided by *midyear population*

TOTAL GDP BY COUNTRY



GDP PER CAPITA BY COUNTRY



DATA

My go-to data sources:

- https://research.stlouisfed.org/fred2/
- http://databank.worldbank.org/data/databases.aspx

ADDITIONAL DISCUSSION

- Does my purchase of a used domestically produced Ford automobile that was manufactured in 2010 add to the current U.S. GDP?

ADDITIONAL DISCUSSION

- If a homeowner cuts his or her lawn, is the value of this work included in real GDP?
- Suppose that the homeowner hires a neighborhood kid to cut the lawn. Is this activity included in real GDP?

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