The Global Economy
Introduction & Overview

This course is about countries
• Their economic and business environments
• Featuring
  – Data
  – Economics

Three modules
• Long-term economic performance
  – What are the challenges of running a business in [Argentina | France | Brazil | China | India]?
• Short-term economic performance
  – How's the economy doing?
  – How does it affect my business?
• Economic crises
  – Are there signs of serious trouble on the horizon?
  – What can I do about it?

Long-term economic conditions

Gapminder
• What do you see?
  http://www.gapminder.org/world/
  (growth, human development index, etc)
• Questions that might cross your mind
  – What do you see?
  – Where are the business opportunities? The “challenges”?
  – What's going on in [China | India | Argentina | Brazil | ...]?
  – Other thoughts?

About participation
• An important part of the class
  – More fun for all of us if you pitch in
• Ways to participate
  – Make a comment
  – Ask a question
  – Share an experience
  – Post a comment or link on Announcements & Discussion
About participation

• Guidelines
  – Feel free to disagree — politely, please!
  – Also with me (I was wrong once)
  – Facts are always good
  – Novices: please ask questions, it helps everyone
  – Experts: don’t scare your classmates

What’s happening?

• Regular feature
• Bring your ideas, I’ll bring mine
• Read The Economist
  – Order now if you haven’t already

What’s happening?

• Fed decided not to “taper”
  – Fed has been purchasing lots of long-term assets
  – Suggested earlier it would slow down – “taper”
  – Announced last week it would keep buying for now
  – Stock market soared
  – Also emerging market currencies
• What’s going on here? Does it make any sense to you?
• Tyler Cowen:
  – “None of [us] understand what is going on here.”

What’s happening?

• Anything else cross your mind?

Short-term economic conditions
Current conditions in the US

- How’s the economy doing?
- Where is it headed?
- What does that mean for your business?

Current conditions in the US

- What do conditions mean for
  - Johnson & Johnson?
  - Google?
  - Morgan Stanley’s fixed income trading desk?
  - Your company?

Real GDP

Source: FRED.

Real GDP

Source: Cooley-Rupert Snapshot

Real GDP

Source: Cooley-Rupert Snapshot

Consumption

Source: Cooley-Rupert Snapshot
Current conditions revisited

- How’s the economy doing?
- Where is it headed?
- What does that mean for your business?

Economic crises

Europe

- What countries are in trouble?
- Why?
European employment

About the course

- It’s about economic performance
  - Of countries
  - And the businesses in them

About the course website

- Everything’s on the website:
  - [https://sites.google.com/site/nyusternglobal/](https://sites.google.com/site/nyusternglobal/)
  - Or search: #nyuecon global
- The outline contains
  - Topic summaries
  - Assignments (with links!)
  - Slides, video, and more

About Announcements & Discussion

- Access by
  - Signing up for email delivery
  - Or viewing online
- You can use it to
  - Find a group
  - Post comments and links
  - Ask questions about assignments
  - Answer questions asked by others
- I’ll use it to
  - Post announcements about the course
  - Answer questions

About slides

- Catalyst for class discussion
- Not intended to be read on their own
- More than we need: don’t panic if we skip some
- Subject to change without notice
About assignments

• Problem Set #0
  – Individual – everyone must do it
  – Math and spreadsheet review
  – Due at the start of our next class
• Problem Sets #1 to #4
  – Do in groups of up to four people
  – Unlimited marriage and divorce
  – Due dates noted in red on website
• Practice Problems A to D
  – Not graded
  – Useful review and preparation for exams

About quantitative content

• Course is a mixture of quantitative and qualitative
• Like business
• Like life?

About quantitative content

• Spreadsheets
  – Used extensively (essential life skill)
  – Read “Math Review” to get up to speed
• Exponents and logarithms
  – Used extensively in first half
  – Read “Math Review” to get up to speed
• Calculus
  – Used a little
  – Not required for exams
  – Read “Math Review” to get up to speed

About the book

• Custom designed for this course (“bespoke”)
• More focused and concise than most
• Free online and under $10 on Amazon
• [Extra credit: write a good review?]
• Skim before class, read again afterwards

About me

• Grew up in Pittsburgh
• PhD Yale
• Research interests
  – International capital flows
  – Fixed income and currency markets
  – Emerging markets
• Other interests
  – The Steelers
  – Basketball, biking, Buffy, books, beer

About getting help

• With problem sets
  – Post questions on Announcements & Discussion
  – Check same to see what others have asked
  – Email me: I’ll respond directly AND update Announcements
• With anything else
  – Post a question on Announcements & Discussion
  – Email me
  – Stop by any afternoon
  – Buy me a beer or coffee after class
About grades

<table>
<thead>
<tr>
<th>Participation</th>
<th>Outliers &amp; Tiebreakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Sets</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>35%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>45%</td>
</tr>
</tbody>
</table>

About class videos

- Available roughly an hour after class
- Link on course website (when I track it down)

About the syllabus

- Read it, it’s a contract between us

What have we learned?

As Haiku

Read book before class
If you need help ask for it
Website is knowledge

Objective

- Know what these headline numbers are
  - (Real) GDP: how much stuff did we produce? growth rate?
  - Inflation: how much did average prices change?
- Why do we need this?
  - Common vocabulary (like financial statements for businesses)
- Do at high speed now, reinforce with constant use

The Global Economy

Macroeconomic Data
US (real) GDP growth

Source: FRED

US inflation

Source: FRED

GDP per capita (USD, PPP adj)

Source: World Bank, World Development Indicators

Growth in GDP per capita (20-year avg)

Source: Penn World Tables.

Growth in GDP per capita (2013 est)

Source: OECD

Roadmap

- GDP: Gross Domestic Product
- Expenditures and financial flows (“identities”)
- Prices and quantities
- Second thoughts

Roadmap

- GDP: Gross Domestic Product
- Expenditures and financial flows (“identities”)
- Prices and quantities
- Second thoughts
**GDP**

- GDP = Gross Domestic Product – and Income
- Total value of production in a geographic area
  - Sum value added across all production units
  - By convention we don’t subtract depreciation (“gross”)
- Three approaches to the same answer
  - Value added
  - Income (value added is income for someone)
  - Final sales (the end of the value chain)

**Final sales**

- Common way to report data
  - Who buys the good at the end of the value chain?
- Two approaches
  - Include all producers

**GDP: example 1**

- Example
  - Farmer produces wheat, sells it for 100
  - Miller buys the wheat, produces flour, sells it for 175
  - Baker buys the flour, makes bread, sells it for 300
- What is value-added for each producer?
- What is GDP?
- What is total income for the economy?
- Who eats the bread?

<table>
<thead>
<tr>
<th>Producer</th>
<th>Farmer</th>
<th>Miller</th>
<th>Baker</th>
<th>GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value-added</td>
<td>100</td>
<td>75</td>
<td>125</td>
<td>300</td>
</tr>
<tr>
<td>Final sales</td>
<td>0</td>
<td>0</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
GDP: example 2

- Barley farmer
  - Sales = 10
  - Rent = 3
  - Farmer’s profit = 7
- Brewer
  - Sales = 110
  - Rent = 30
  - Wages = 70
  - Barley input = 10 (COGS)

GDP: example 2

<table>
<thead>
<tr>
<th>Producer</th>
<th>Farmer</th>
<th>Brewer</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value-added</td>
<td>10</td>
<td>100</td>
<td>110</td>
</tr>
<tr>
<td>Income</td>
<td>10</td>
<td>100</td>
<td>110</td>
</tr>
<tr>
<td>Final sales</td>
<td>0</td>
<td>110</td>
<td>110</td>
</tr>
</tbody>
</table>

GDP: investment & government

- Investment not an input cost
  - Like corporate financial statements
  - Except: we never do subtract depreciation
- Government purchases valued at cost
  - If the government produces goods and services, we value the output at whatever the input cost is

GDP: example 3

- Computer maker
  - Sales = 100
  - Wages = 65
  - Materials = 10
  - Owners’ income = 25
  - New building = 15
- What is value added?
- What is income?
- What is final sales?

<table>
<thead>
<tr>
<th>Concept</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value-added</td>
<td>90</td>
</tr>
<tr>
<td>Income</td>
<td>90</td>
</tr>
<tr>
<td>Final sales</td>
<td>100*</td>
</tr>
</tbody>
</table>

* Includes 10 from materials producer
GDP: example 4

- Government
  - Wages = 75
  - Rent = 25
- What is value added?
- What is income?
- What is final sales?

<table>
<thead>
<tr>
<th>Concept</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value-added</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
</tr>
<tr>
<td>Final sales</td>
<td></td>
</tr>
</tbody>
</table>

GDP: example 4

- Government
  - Wages = 75
  - Rent = 25
- What is value added?
- What is income?
- What is final sales?

<table>
<thead>
<tr>
<th>Concept</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value-added</td>
<td>100</td>
</tr>
<tr>
<td>Income</td>
<td>100</td>
</tr>
<tr>
<td>Final sales</td>
<td>100</td>
</tr>
</tbody>
</table>

GDP: imports & exports

- The issue
  - GDP is what we make
  - Final sales is what we buy
  - How do we reconcile the former with the latter?
- Solution: add exports, subtract imports
  - Exports are things we make but don’t buy
  - Imports are things we buy but don’t make

GDP: example 2 revisited

- Barley farmer in Canada
  - Sales = 10
  - Rent = 3
  - Farmer’s profit = 7
- Brewer in the US
  - Sales = 110
  - Rent = 30
  - Wages = 70
  - Barley input = 10 (COGS)

GDP: example 2 revisited

<table>
<thead>
<tr>
<th></th>
<th>Canada</th>
<th>US</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producer</td>
<td>Farmer</td>
<td>Brewer</td>
<td>US Total</td>
</tr>
<tr>
<td>Value-added</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final sales</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

GDP: example 2 revisited

<table>
<thead>
<tr>
<th></th>
<th>Canada</th>
<th>US</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producer</td>
<td>Farmer</td>
<td>Brewer</td>
<td>US Total</td>
</tr>
<tr>
<td>Value-added</td>
<td>10</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Income</td>
<td>10</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Final sales</td>
<td>10</td>
<td>110 – 10*</td>
<td>100</td>
</tr>
</tbody>
</table>

* Remember: subtract imports
GDP: example 5

- Import-export firm
  - Sales = 140
  - Of which: 120 local, 20 abroad
  - Material inputs = 25 from abroad, 10 local

- What is value added?
- Income?
- Final sales?

<table>
<thead>
<tr>
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<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value-added</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
</tr>
<tr>
<td>Final sales</td>
<td></td>
</tr>
</tbody>
</table>

GDP: example 5

- Import-export firm
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  - Of which: 120 local, 20 abroad
  - Material inputs = 25 from abroad, 10 local

- What is value added?
- Income?
- Final sales?

<table>
<thead>
<tr>
<th>Concept</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value-added</td>
<td>105</td>
</tr>
<tr>
<td>Income</td>
<td>105</td>
</tr>
<tr>
<td>Final sales</td>
<td>140−25 ≈ 115</td>
</tr>
</tbody>
</table>

* Remember: add exports
** And: subtract imports

GDP as value added by industry

<table>
<thead>
<tr>
<th>Year</th>
<th>share of GDP (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>5</td>
</tr>
<tr>
<td>1960</td>
<td>7</td>
</tr>
<tr>
<td>1970</td>
<td>10</td>
</tr>
<tr>
<td>1980</td>
<td>12</td>
</tr>
<tr>
<td>1990</td>
<td>14</td>
</tr>
<tr>
<td>2000</td>
<td>16</td>
</tr>
<tr>
<td>2010</td>
<td>18</td>
</tr>
</tbody>
</table>

Source: BEA

GDP as income by type

<table>
<thead>
<tr>
<th>Year</th>
<th>share of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>0.0</td>
</tr>
<tr>
<td>1960</td>
<td>0.01</td>
</tr>
<tr>
<td>1970</td>
<td>0.02</td>
</tr>
<tr>
<td>1980</td>
<td>0.03</td>
</tr>
<tr>
<td>1990</td>
<td>0.04</td>
</tr>
<tr>
<td>2000</td>
<td>0.05</td>
</tr>
<tr>
<td>2010</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Source: BEA

Expenditure flows

- Allocate GDP among purchasers of final goods:
  \[ Y = C + I + G + NX \]
  - \( Y \) = GDP
  - \( C \) = sales to households ("consumption")
  - \( I \) = sales of capital goods to firms ("investment" = "capex")
  - \( G \) = purchases of goods and services by government
  - \( NX \) = net exports (exports minus imports)
Saving flows 1
- Allocate flows of assets
  \[ Y - C - G = I + NX \]
  \[ S = I + NX \]
  - \( S \) = gross domestic saving (purchases of assets)
  - \( NX \) = net purchases of foreign assets

Saving flows 2
- Separate household and government
  \[(Y - C - T) + (T - G) = I + NX\]
  \[ S_p + S_g = I + NX \]
  - \( T \) = taxes net of transfers paid by households to govt
- Warning: many measures of saving, all different
- Call me if this ever comes up

Saving flows 3
- Do Americans save too little?

US saving and investment

Household net worth

Source: Flow of Funds Accounts
Prices and quantities

• What we’ve seen so far is “nominal GDP”
  – GDP measured at current prices, in local currency units
• If nominal GDP goes up
  – How much is more stuff? (more “real GDP”)
  – And how much higher prices? (“inflation”)
• [We could ask the same of a firm’s sales]
• Problem
  – There’s no clear answer
  – Or rather: several answers, equally sensible but different

Prices and quantities

• Our problem: find P and Q so that
  \[ NY = PQ = p_1q_1 + p_2q_2 + \text{etc} \]
  – \( NY = \text{Nominal GDP} = \text{GDP at current prices (a “value”) } \)
  – \( p,q = \text{price and quantity of a specific product} \)
  – \( P,Q = \text{“average” price (“price level”) and quantity (“real GDP”) } \)

• Growth rates
  – Of \( Q \): real GDP growth
  – Of \( P \): inflation
• How do we compute \( P \) and \( Q \)?

Prices and quantities

• Method 1 (“fixed price method”)
  – Find average quantity \( Q \) using “base-year” prices
  – Find “average” price from \( P = NY/Q \) (“deflator”)
• Method 2 (“fixed quantity method”)
  – Find average price \( P \) using “base-year” quantities
  – Find “average” quantity from \( Q = NY/P \)
• Problems
  – Both make sense, but answers are different
  – Choice of base year matters too
  – We don’t need to know the details

Prices in Argentina

• Former president instituted “new methodology”
  – Only certain products are in the official price index
  – Prices of those products subject to “persuasion”
  – Inflation lower with new method

• What happened next
  – Official products cheap, but not available (why?)
  – Unofficial estimates of inflation more than double official rate
  – Economists arrested for producing private inflation estimates
  – [Search: “inflation Argentina”]

Prices in Argentina

• “The IMF and Argentina,” The Economist, Feb 9, 2013:

[Graph showing official and unofficial inflation rates]
Second thoughts

Do we care about GDP?

- Bill Gates
  - “You can’t eat GDP.”
- Bill Easterly
  - “Mr Gates apparently missed the economics lecture that listed the components of GDP, such as food.”
  - WSJ, March 2007

Do we care about GDP?

Per capita GDP: $47k
Avg weekly hours: 35

Per capita GDP: $34k
Avg weekly hours: 29

Do we care about GDP?

- The obvious
  - GDP per person reflects income and standard of living
- The less obvious
  - Correlated with many other things we care about: life expectancy, child mortality, poverty
  - Recall Gapminder
- But it’s one number, not the answer to all questions

Do we care about GDP?

- Jones and Klenow, “Beyond GDP”
  - Compute economic welfare by combining measures of consumption
  - Result: correlation with GDP per person is 0.95

Source: Jones and Klenow, “Beyond GDP”
Do we care about GDP? (growth, 1980-2000)

Source: Jones and Klenow, "Beyond GDP"

Fine points

- Home production not counted in GDP
- Black market transactions not counted either
- Some “income” not in GDP
  - Capital gains (houses, equity)
  - Interest on government debt
  - Returns on foreign assets
- Call me if you ever have to deal with this

Macroeconomic data

- Caption for old New Yorker cartoon:
  - “Final, revised government figures for the fourth quarter of 1981 now indicate that the Yankees, not the Dodgers, won the World Series.”

What have we learned?

- GDP measures output, income, and expenditure
  - Per capita GDP is wildly different across countries
  - Labor gets about 2/3, “capital” 1/3
  - Expenditures: \( Y = C + I + G + NX \)
- Real GDP measures the quantity of output
- Inflation measures the change in average prices
- Macroeconomic data are like sausages

Problem Set #0

- Due at start of next class
- Should look professional
- Start now!

Something for the ride home

- Are natural resources critical to economic growth?
- Why? Or why not?
- Examples?
- Add your thoughts on the discussion page