Data 88: Economic Models

Lecture 12: Macroeconomic Policy and the Coronavirus

Announcements

- There is no class next week in observance of Thanksgiving break.
- We will have special guest lecturers presenting work in data science and economics next class on 12/1. Please try to attend in person if you can!
- Project 5 is due 11/30 11:59pm PST
- Lab 11 will be due 11/23 11:59pm PST.
- Apply to be a connector assistant (on Piazza) and other Spring 2021 opportunities at DSEP (https://sites.google.com/berkeley.edu/datascienceineconomics)
- There's a workshop tomorrow on Data Science + Economics! (https://data.berkeley.edu/academics/resources/student-opportunities/undergraduate-student-opportunities-application-hub)

Today’s class

A crash course in Macroeconomic policy: theory and rationale

Monetary and Fiscal Policy during the COVID-19 pandemic

Lab: Examining stimulus payments in a historical context

CORONAVIRUS

It's the end of the world economy as we know it

By NEIL IRWIN
THE NEW YORK TI

Coronavirus
recession si

By Szu Ping Chan
Business reporter, BBC News

ployment

s, inflicting a toll on
ssion.

The headlines today

DATA88 EconModels

TheUpshot

The Economy Is Healing. But Not Fast Enough to Prevent Serious Damage.

The jobs report suggests a continued rebound but also long-lasting scars.

Millions Face Loss of Jobless Aid: 'Without It, I'm Dead in the Water'

Emergency federal programs to assist the unemployed in the pandemic will expire at year's end if there is no congressional action.

New Unemployment Claims Dip, but Economic Pain Persists

"Technically it looks like we're in a recovery," one economist said, "but we're still so much in the hole."

The policy discussion today

ECONOMY | U.S. ECONOMY

Central Bank Is Committed to Using All Available Tools to Boost Economy, Top Fed Official Says

Richard Clarida, the Fed's vice chairman, details how the central bank's new framework works in theory and practice

Economic Risks Are High as Chances for Quick Stimulus Narrow

The Federal Reserve chief warned that a vaccine was still too uncertain to count on, and lawmakers signaled that more support was not imminent.

Fed Holds Rates Steady and Signals Continued Wariness

The Federal Reserve made few changes to its policy statement during a week fraught with uncertainty.

Macroeconomic Indicators

Inflation (π)
US consumer prices in March fell by the most in the last 5 years → deflation (WSJ)
Inflation at 1.2% (BLS)

Real interest rate (r)
Fed set FFR to 0% in March

Unemployment (u)
723,000 unemployment claims last month
6.9% unemployment rate for November, down from 15-17% in March (WaPo)
33% of unemployed workers have been without a job for 27+ weeks (NY Times)

Output/GDP (Y)
US GDP Q2 growth rate: -31.4%
US GDP Q3 growth rate: 33.1%
(BEA)

Macroeconomic Laws

+

Inflation (π) — Taylor rule — Real interest rate (r)

invest:

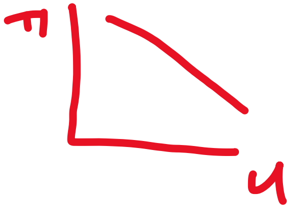
$r \, r^e$

$>$

r

P.C.

−



IS curve

−

Unemployment (u) — Okun's Law — Output/GDP (Y)

−

Two fundamental tools

Monetary policy: Changes in interest rates and the money supply of a country (the amount of money circulating) as done by the central bank

Δr

Fiscal policy: In most countries, this is done by the government through changes in government spending (welfare, stimulus payments, benefits, subsidies) or taxes

Monetary policy

Central banks

The financial institution that controls the production and distribution of money and credit. It exists independently of the rest of the government so it, in theory, won't be affected by political pressure or partisan gridlock.

They have many functions:

- Maintaining smooth changes in prices
- Achieving maximum employment
- Steady economic growth
- Set interest rates (and by extension exchange rates)
- Issues and purchases government bonds
- Control required reserve ratios
- Acts as a lender of last resort

Dual mandate:

Price stability + full employment

($\pi \sim 2\%$) $\sim 2\%$

Taylor Rule:

$$r_{target} = r_0 + \alpha(\pi - \overbrace{\pi_{target}}^{2\%}) + \beta \underbrace{\left(\frac{Y - Y^*}{Y^*}\right)}_{\text{unemp.}}$$

The Federal Reserve is committed to using its full range of tools to support the U.S. economy in this challenging time, thereby **promoting its maximum employment and price stability goals.**

11/5/20

The Federal Reserve's Perspective

The Federal Reserve is committed to using its full range of tools to support the U.S. economy in this challenging time, thereby **promoting its maximum employment and price stability goals.**

[...] Economic activity and employment have continued to recover but remain well below their levels at the beginning of the year. ~~Weaker demand and earlier declines in oil prices have been holding down consumer price inflation~~. [...]

The path of the economy will depend significantly on the course of the virus. The ongoing public health crisis will continue to weigh on economic activity, employment, and inflation in the near term, and **poses considerable risks to the economic outlook over the medium term.**

FOMC

11/5/20

How interest rates affect output, inflation and unemployment

Federal Funds Rate (FFR) ~ r

$\Delta FFR \approx \Delta r$

- Businesses ⇔ Investment → $r\,r^e > r$ (↑r → ↓I)

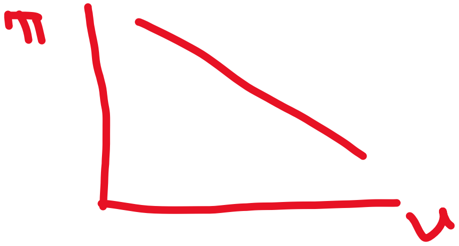
  8% 5%
- Consumers ⇔ Consumption vs. saving

↑r ↓C, ↑s ⇒ ↓Y

Without any external events (ceteris paribus): Fed increases FFR → r increases → Investment decreases and savings increases → Output decreases and unemployment increases → Wage inflation decreases → Inflation decreases

TLDR: ↑ r → ↓Y → ↑ u → ↓π

IS O.L PC



The Committee seeks to achieve maximum employment and inflation at the rate of 2 percent over the longer run. [...] **The Committee decided to keep the target range for the federal funds rate at 0 to 1/4 percent and expects it will be appropriate to maintain this target range** until labor market conditions have reached levels consistent with the Committee's assessments of maximum employment and inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time.

- Federal Open Market Committee, 11/5/20

$-r$? ? ?

What would happen if interest rates went below 0%?

Zero Lower Bound (ZLB)

The Fed has hit the ZLB, which is the idea that interest rates cannot go negative

Businesses

$rr^e > r$

Consumers/Households

What tools aside from changing the FFR does the Fed have to combat an economic downturn?

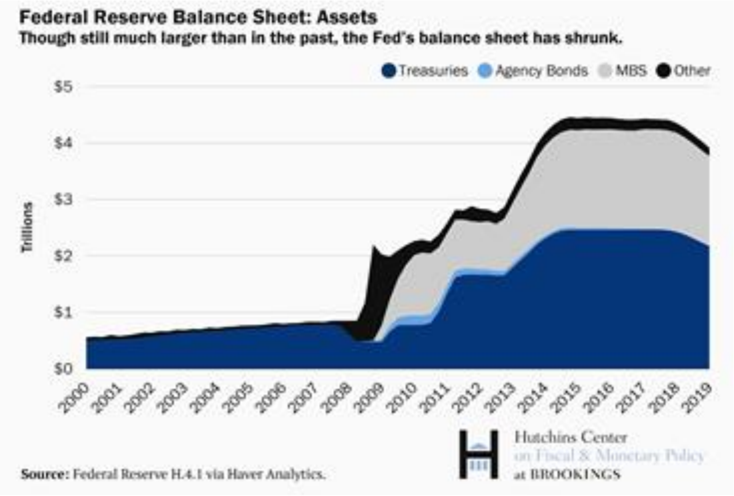
Quantitative Easing (QE)

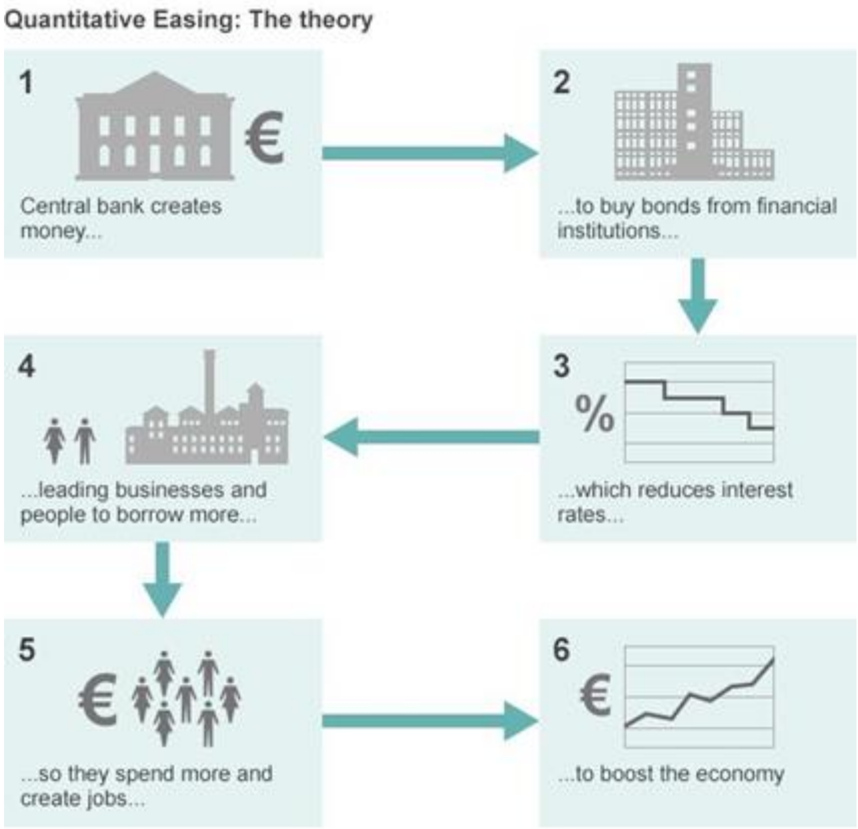
"In addition, over coming months the Federal Reserve will **increase its holdings of Treasury securities and agency mortgage-backed securities** at least at the current pace to sustain smooth market functioning and help **foster accommodative financial conditions, thereby supporting the flow of credit to households and businesses**."

ECONOMY

Federal Reserve cuts rates to zero and launches massive $700 billion quantitative easing program

What is QE?





Goal: Increase the money supply and provide banks with liquidity, allowing them to increase lending, while decreasing risk (lower risk premia) and uncertainty in the market

Forward Guidance

"The Committee decided to keep the target range for the federal funds rate at 0 to 1/4 percent and expects it will be appropriate to maintain this target range until labor market conditions have reached levels consistent with the Committee's assessments of maximum employment and inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time."

- Federal Open Market Committee, 11/5/20

Lower expected future short rates → lower current long rates (long rates are average of expected future short rates) → cheaper credit → higher spending

$$\underset{\downarrow}{r_t^{10y}} = \frac{1}{10}\left(\overset{\text{FFR}}{\overset{=}{r_t^{1y}}} + \underset{\downarrow}{E[r_{t+1}^{1y}]} + \ldots + \underset{\downarrow}{E[r_{t+9}^{1y}]}\right)$$

Marginal Propensity to Consume (MPC)

Multiplier Effect: The total change in output is greater than the initial change because of further rounds of spending

$\Delta Y > \Delta G$

G

\$3.2tr \$2tr

Automatic stabilizers = Social Welfare Net

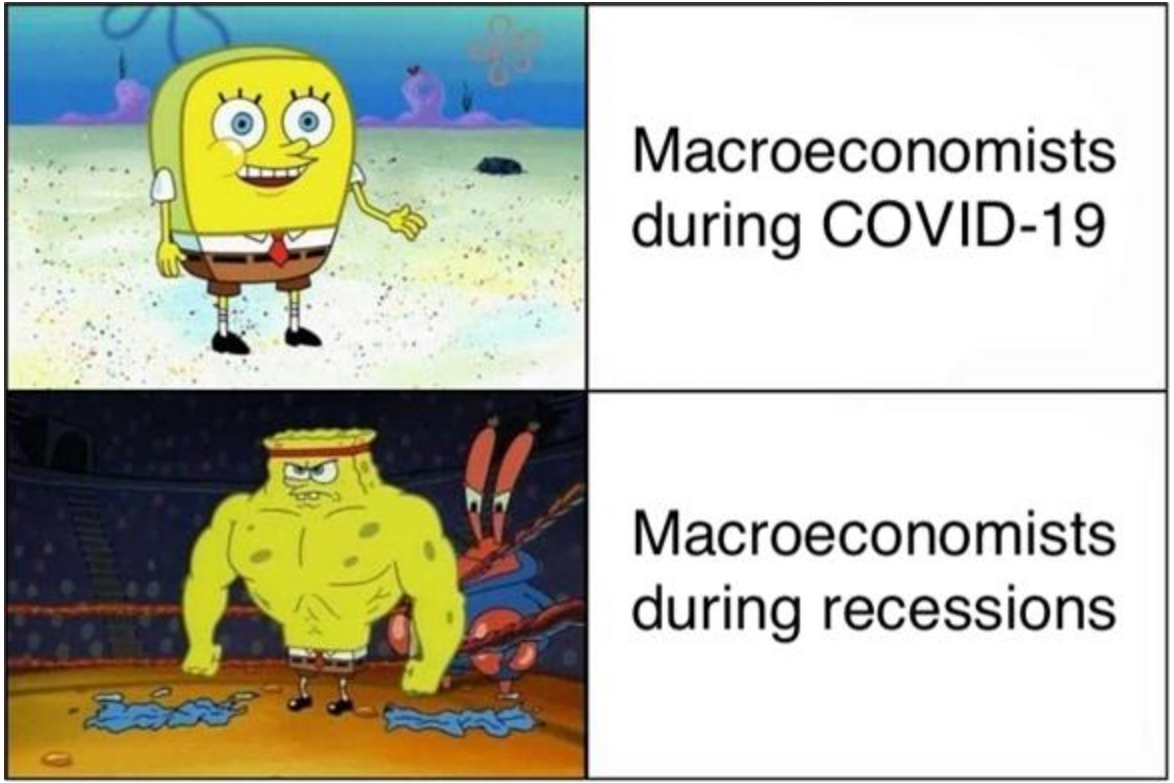
Unemployment insurance, social security payments

$\downarrow Y \rightarrow \uparrow u$

Rationale for government stimulus

Keynes: The government should act as a benevolent social planner during times of high unemployment

Which part of society has the largest MPC?
A: The bottom 20% in incomes
B: The middle class
C: The top 1%


Macroeconomists during COVID-19
Macroeconomists during recessions

How the pandemic breaks macroeconomic theory

“And this plunge isn’t just quantitatively off the charts; **it’s qualitatively different from anything we’ve seen before**. … So far this slump mainly reflects the deliberate, necessary shutdown of activities that increase the rate of infection.”
- Paul Krugman

(2008)

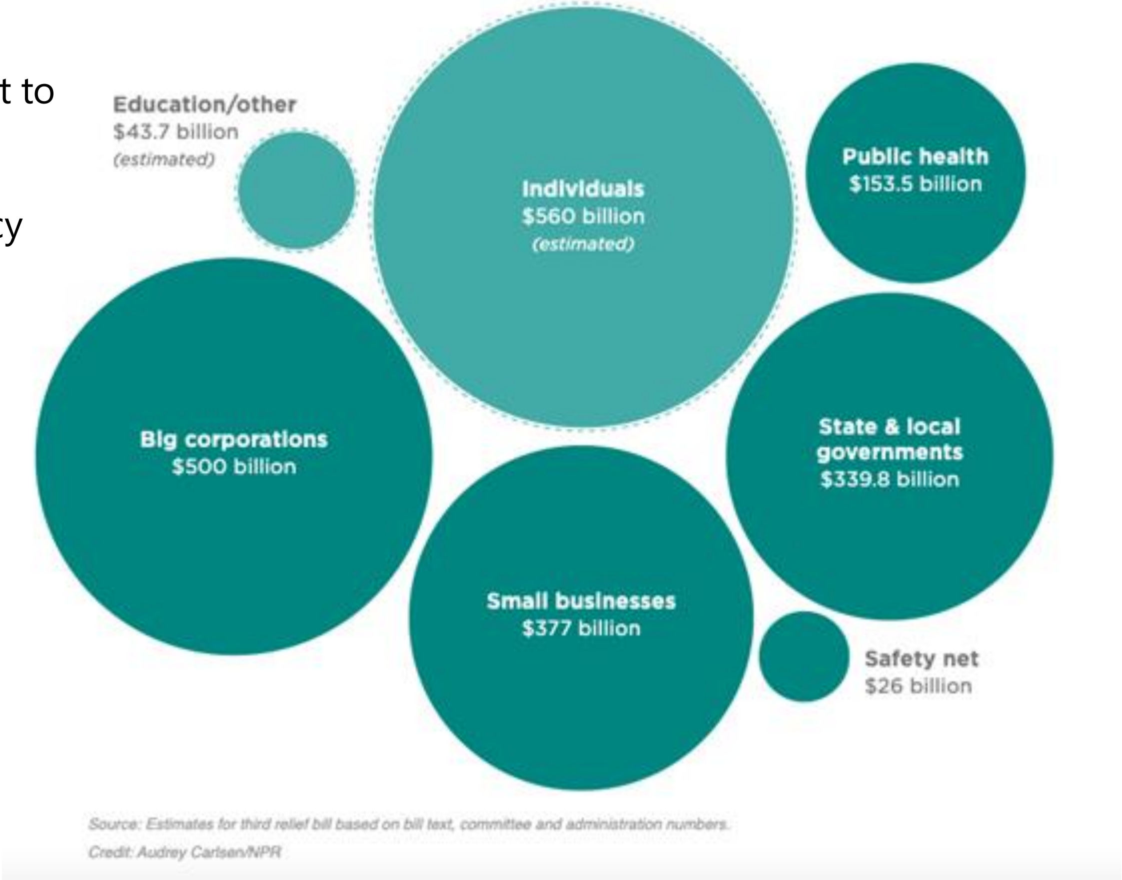
Policy during a recession driven by a slump in demand: broad-based economic stimulus

Policy during this pandemic: Helping those who are most in need to survive health-wise and economically

Fiscal Policy in action: CARES Act (3/21/2020)

Many policies are set to expire in December (Of note: Federal Pandemic Emergency Unemployment Compensation)

$2 tr



Where do we go from here?

UBI?
$1200 once vs $2000/mo

More comprehensive social welfare net:
Medicare for all?
Lowering Medicare age
Expanding MediCal
More accommodating unemployment benefits?

Inflation from fiscal stimulus?

Ballooning national debt?
Debt defaults? (Greece Eurozone crisis, 2015)

Credit freeze?

Interested in the macroeconomic implications? Take Econ 134 with Professor Emi Nakamura!

Coronavirus checks

Friedman’s Permanent Income Hypothesis

A counterclaim to Keynes’ idea of MPC

Assumes consumers are constantly forward-looking: they anticipate future changes in their income and smooth their consumption as appropriate

Why “permanent”?

What does this imply for someone’s MPC? Effectivity of fiscal stimulus?

Onto Lab:
Johnson, Parker and Souleles (JPS) on the economic impact of stimulus payments