The Economic Impacts of COVID-19: Evidence from a New Public Database Built Using Private Sector Data

FTA Talks
October 15, 2020
Motivation: Measuring the Impacts of COVID-19

- How has COVID-19 affected the American economy and what policies can best mitigate its adverse impacts going forward?

- Since Kuznets (1941), macroeconomic policy decisions have been based on data from surveys of households and businesses

- These data provide vital aggregate information (GDP, unemployment rates), but have two key limitations
  
  1. Available only at low frequencies, often with significant lags
  2. Cannot be disaggregated to examine variation across areas or subgroups
This Project

- We build a publicly available economic tracker using transaction data from several private companies to measure daily economic activity by ZIP code, income group, and industry.

- Use these new data to analyze economic impacts of COVID-19 pandemic:
  2. [Policy Responses] Causal effects of fiscal stabilization policies enacted to date.
Outline

1. Data

2. Impacts of COVID-19

3. Impacts of Stabilization Policies

4. Policy Implications
Data

- Impacts of COVID-19
- Impacts of Stabilization Policies
- Policy Implications
Data Partners

Consumer Spending
- affinity solutions
- MasterCard
- COINOUT

Small Business Revenues
- WOMPLY
- MasterCard

Employment
- PAYCHEX
- Intuit
- earnin
- KRONOS

Job Postings
- burningglass

Education
- ZEARN
Changes in Consumer Spending: National Accounts vs. Credit/Debit Card Data

Food Services in Affinity Solutions Purchase Data vs. Monthly Retail Trade Survey

Total Revenue (Indexed to 1 in January 2020)

RMSE: 0.04
Changes in Consumer Spending: National Accounts vs. Credit/Debit Card Data

Retail Services in Affinity Solutions Purchase Data vs. Monthly Retail Trade Survey

![Graph showing changes in consumer spending between National Accounts and Credit/Debit Card Data]
Impacts of COVID-19
Consumer Spending by Income Quartile

- 2019 Bottom Income Quartile
- 2020 Bottom Income Quartile
- 2019 Top Income Quartile
- 2020 Top Income Quartile

- $3.1 Billion (-40.0%)
- $0.77 Billion (-9.9%)
**Consumer Spending by Income Quartile**

- **2019 Bottom Income Quartile**: -$3.1 Billion (-40.0%)
- **2020 Bottom Income Quartile**: -$0.77 Billion (-9.9%)
- **2019 Top Income Quartile**: -$1.0 Billion (-30.5%)
- **2020 Top Income Quartile**: -$0.06 Billion (-1.8%)
Consumer Spending by Income Quartile

Top quartile accounts for more than half of aggregate spending reduction

- $3.1 Billion (-40.0%)
- $1.0 Billion (-30.5%)
- $0.77 Billion (-9.9%)
- $0.06 Billion (-1.8%)
Changes in Consumer Spending by Sub-Category

- At-Home Swim Pools
- Landscaping
- Restaurants and Eating Places
- Barbers and Beauty Shops
- Airlines

Change in Consumer Spending vs. Jan. Level (%)

Date:
- Feb 4
- Feb 18
- Mar 3
- Mar 17
- Mar 31
- Apr 14
- Apr 28
Business Revenues
Changes in Small Business Revenues from January to April by ZIP Code
New York
Changes in Small Business Revenues vs. Rent, by ZIP Code

Slope = -13.00 per Thousand Dollars (SE = 0.38)
Employment
Employment Changes by Wage Quartile

Top Wage Quartile
Third Quartile (<$60)
Second Quartile (<$37K)
Bottom Wage Quartile (<$27K)
Predicted Using Time Sheet Data

Percent Change in Employment Rates Since January 2020

-10% (3.1m jobs lost)
-16% (5.0m)
-22% (7.1m)
-32% (10.1m)
-14% (4.6m)
-1% (0.3m)
-4% (1.4m)
-6% (2.0m)
-14% (4.4m)
Changes in Employment Rates by ZIP Code
New York
Changes in Bottom-Wage-Quartile Employment Rates vs. Rent, by ZIP Code
From January to April 2020

Slope = -12.7%/$1000 (s.e. = 0.53)
Impacts of Stabilization Policies
State-Ordered Reopenings
Causal Effect of Re-Opening on Consumer Spending
Case Study of New Mexico vs. Colorado
Stimulus Payments
Impact of Stimulus Payments on Consumer Spending, by Income Quartile

-40%
-30%
-20%
-10%
0%

Seasonally Adj. Pct. Change in Spending

Jan 7  Jan 21  Feb 4  Feb 18  Mar 3  Mar 17  Mar 31  Apr 14  Apr 28  May 12  May 26  Jun 9

Bottom Income Quartile
Q1 Apr 7-13: -28.1%
Q4 Apr 7-13: -36.3%

Top Income Quartile
Q1 Apr 15-21: -10.3%
Q4 Apr 15-21: -29.8%
Loans to Small Businesses
Impact of Paycheck Protection Program on Low-Wage Employment

Change in Employment Rates by PPP Eligibility, Reweighted to Match Industries, Excl. Food Services

- 1-500 Employees (Eligible for PPP)
- 501-1000 Employees (Ineligible)

Change in Employment Since January

Date:
- Feb 12
- Feb 26
- Mar 11
- Mar 25
- Apr 8
- Apr 22
- May 6
- May 20
- Jun 3
- Jun 17
- Jul 1
- Jul 15

PPP Program Begins

Change in Employment Rates: 
- 50%
- 40%
- 30%
- 20%
- 10%
- 0%
Impact of Paycheck Protection Program on Low-Wage Employment
Change in Employment Rates by PPP Eligibility, Reweighted to Match Industries, Excl. Food Services

PPP Program Begins

DD Estimate of PPP Impact: +1.9% (s.e. = 0.8%)
Impact of Paycheck Protection Program on Low-Wage Employment
Change in Employment Rates by PPP Eligibility, Reweighted to Match Industries, Excl. Food Services

Cost Per Job Saved = $289K
($163K at lower bound of 95% CI)

DD Estimate of PPP Impact: +1.9% (s.e. = 0.8%)

1-500 Employees (Eligible for PPP)
501-1000 Employees (Ineligible)
Long-Term Impacts
Effects of COVID on Educational Progress by Income Group

Math Lessons Completed on Zearn Platform

- Top Income Quartile
- Bottom Income Quartile
Impacts of COVID-19 on Employment and Mortality by Race

**Employment Loss**
- **White**: 9.6%
- **Black**: 14.5%

**Mortality Rates**
- **White**: 32.4
- **Black**: 73.7

Data Source: APM Research Lab
Policy Implications
Policy Implications

- Limited capacity to restore consumer spending via traditional economic tools in the midst of the pandemic

- Impacts of stimulus and loans/payroll tax cuts to small businesses blunted when spending is constrained by health concerns

- Long-term solution lies in addressing virus itself and public health efforts to restore consumer confidence
**Short-Term Policy Implications**

- In the meantime, may be most fruitful to use economic policy to limit hardship among low-income workers who have lost their jobs.
  - Extending unemployment benefits and social safety net may be a more impactful use of scarce resources than stimulus checks to all households or loans to all businesses.
  - May be a role for sectoral training programs and place-based policies targeting hardest hit areas (e.g., low-income workers in affluent counties).
  - Important to take potential long-term impacts on children into account, e.g. in decisions on when to re-open schools vs. businesses.
A New Approach to Economic Policy in the Age of Big Data

- You can see how these metrics are evolving in real-time yourself in your county at [www.tracktherecovery.org](http://www.tracktherecovery.org)

- Partnering with government statistical agencies and additional companies to build this into a new platform of “real time national accounts”

- Will support a new approach to public policy in the age of big data: precise feedback as you make policy decisions, permitting adjustments as you go
Opportunity Insights Team