HARVARD UNIVERSITY

# Comment on "Understanding U.S. Inflation During the COVID Era"


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**Brookings Papers on Economic Activity**

**Washington, DC**

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# Key points

1. I hope the paper is wrong
2. V/U (or U/V) is the best slack variable
3. Median CPI is the right measure of inflation
4. “Headline shocks” reflect an unknown combination of supply and demand
5. Paper may neglect nonlinearities and timing effects from the American Rescue Plan
6. Hope is not a strategy: policy implications

# 1. I hope the paper is wrong

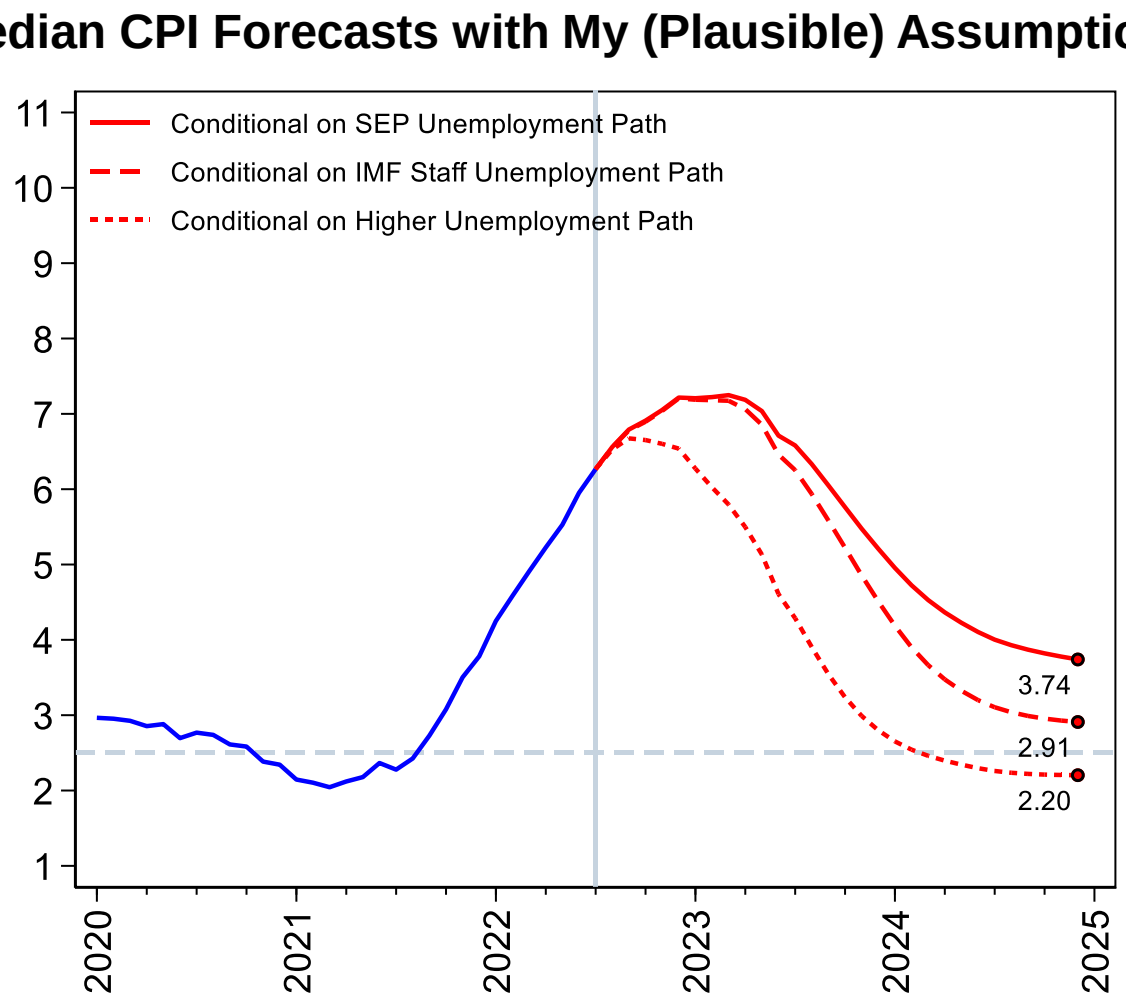
## Choose your own adventure: my assumptions

1. Beveridge curve shifts two-thirds back to pre-pandemic *(corresponds to a 0.7pp increase in the NAIRU)*

2. Expectations exogenously adjust halfway back to pre-pandemic and are as anchored as pre-pandemic ($\gamma = 0.99$)

3. Negative headline shock of -1 p.p. for August to December 2022 and zero thereafter

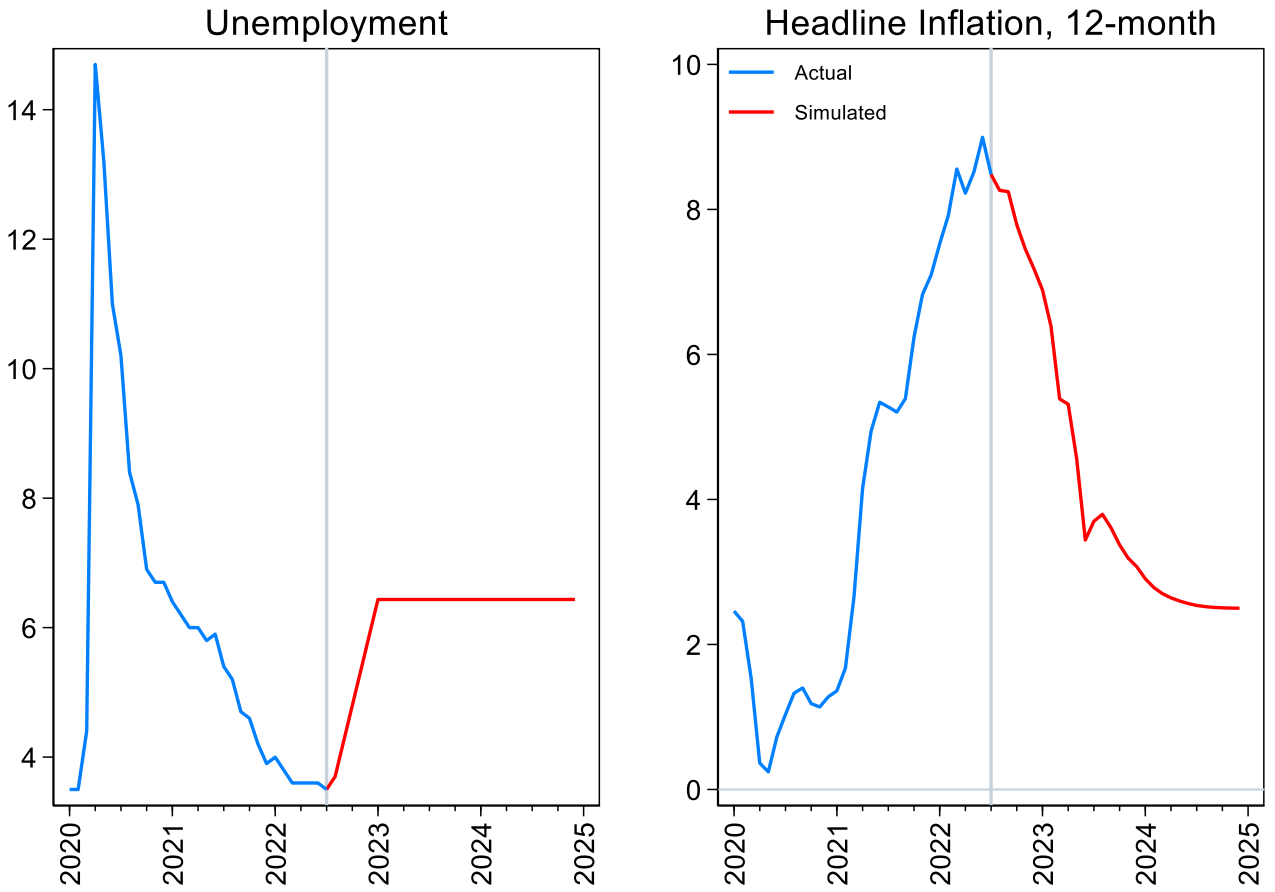
# Median CPI forecasts under the authors' three unemployment rate scenarios




Source: Author's calculations based on Ball, Leigh, and Mishra (2022).

# It would take a ~6½ percent unemployment rate to hit the Fed's target under these assumptions

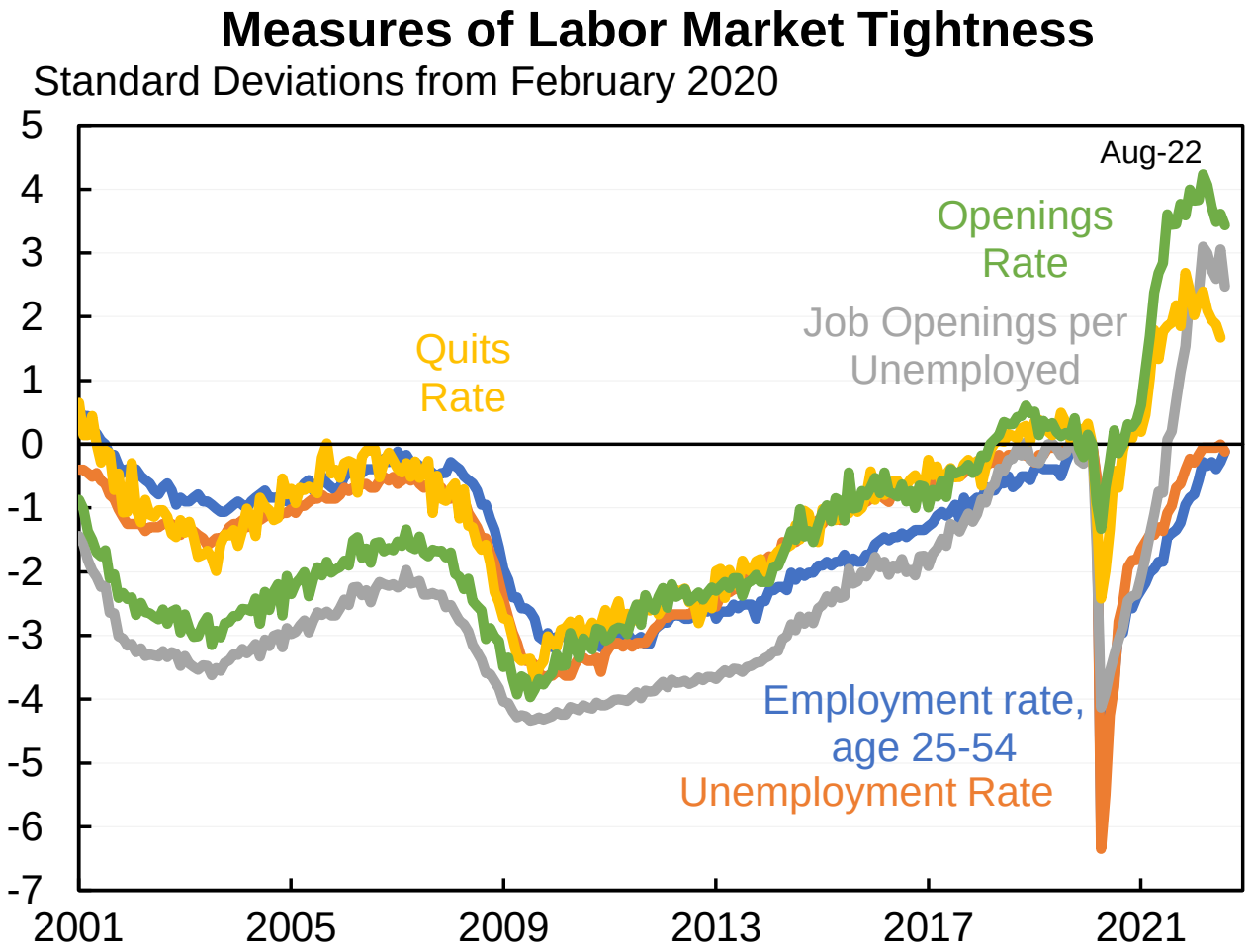
**Using My (Plausible) Assumptions to Achieve Median CPI = 2.5 by Dec. 2024**




Source: Author's calculations based on Ball, Leigh, and Mishra (2022).

# 2. V/U (or U/V) is the right slack variable

# Different measures of slack told different stories




Note: Measures standardized using standard deviation from 2001 through 2018 and indexed to equal 0 in February 2020. Prime-age employment is the share of the civilian population aged 25-54 that is employed. Unemployment rate is the U-3 unemployment rate. The quits rate is quits divided by total nonfarm employment. The openings rate is openings divided by the sum of total nonfarm employment and openings. Job openings for August 2022 are estimated based on Indeed Hiring Lab job postings. The unemployment rate is plotted so that higher values correspond with a greater degree of labor market tightness, consistent with other measures.
Source: Bureau of Labor Statistics and Indeed Hiring Lab via Macrobond; authors' calculations.

# U/V is as/more predictive than other variables (and for U/V vs. V/U depend on functional form)

| Adjusted $R^2$ in Phillips Curve Regressions for CPI | | | | |
|---|---|---|---|---|
| | | | | **Median** |
| **Unemployed per Job Opening** | | | | 0.68 |
| **Quits Rate** | | | | 0.67 |
| **Unemployment Rate** | | | | 0.56 |
| **Job Openings per Unemployed** | | | | 0.46 |
| **Openings Rate** | | | | 0.43 |
| **Prime-age Employment Rate** | | | | 0.40 |

*The best slack variable to predict median CPI in the pre-pandemic period (2001-2019) in a linear model is unemployed per job opening.*

Regression: $Inflation_{\text{t to t}_{+}4\text{q}} = \beta_0 + \beta_1 * Slack_t + \varepsilon$

Source: Bureau of Labor Statistics via Macrobond; author's calculations.

# 3. Median CPI is the right inflation measure
## More predictable than other inflation measures

| Adjusted $R^2$ in Phillips Curve Regressions for CPI | | | | |
|---|---|---|---|---|
| | **Overall** | **Ex Food & Energy** | **Trimmed-mean** | **Median** |
| **Unemployed per Job Opening** | -0.01 | 0.42 | 0.30 | 0.68 |
| **Quits Rate** | 0.01 | 0.41 | 0.35 | 0.67 |
| **Unemployment Rate** | -0.01 | 0.33 | 0.27 | 0.56 |
| **Job Openings per Unemployed** | -0.01 | 0.29 | 0.19 | 0.46 |
| **Openings Rate** | -0.01 | 0.28 | 0.13 | 0.43 |
| **Prime-age Employment Rate** | 0.03 | 0.22 | 0.28 | 0.40 |

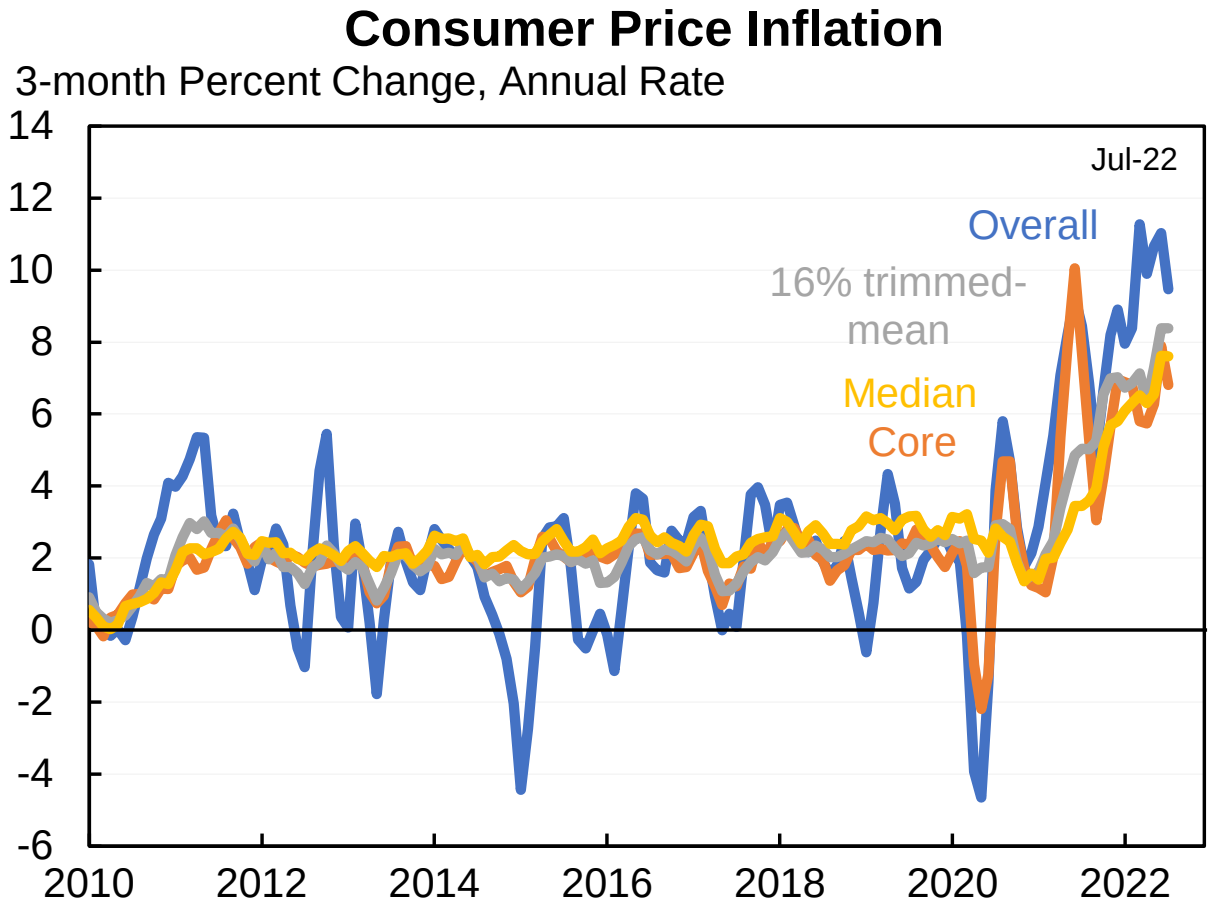
Regression: $Inflation_{\text{t to t}_{+4q}} = \beta_0 + \beta_1 * Slack_t + \varepsilon$

*For every slack variable median CPI is much more predictable than other concepts of core inflation.*

*Median CPI also has lower variance than the other inflation measures and is just as good a univariate predictor of future overall CPI as the other "core" concepts.*

Source: Bureau of Labor Statistics via Macrobond; author's calculations.

# Reason to be nervous: median inflation is running stronger than excluding food & energy




*Note: Over the three months through July, PCE excluding food and energy rose 4.3 percent (annualized) while median PCE rose 6.6 percent.*

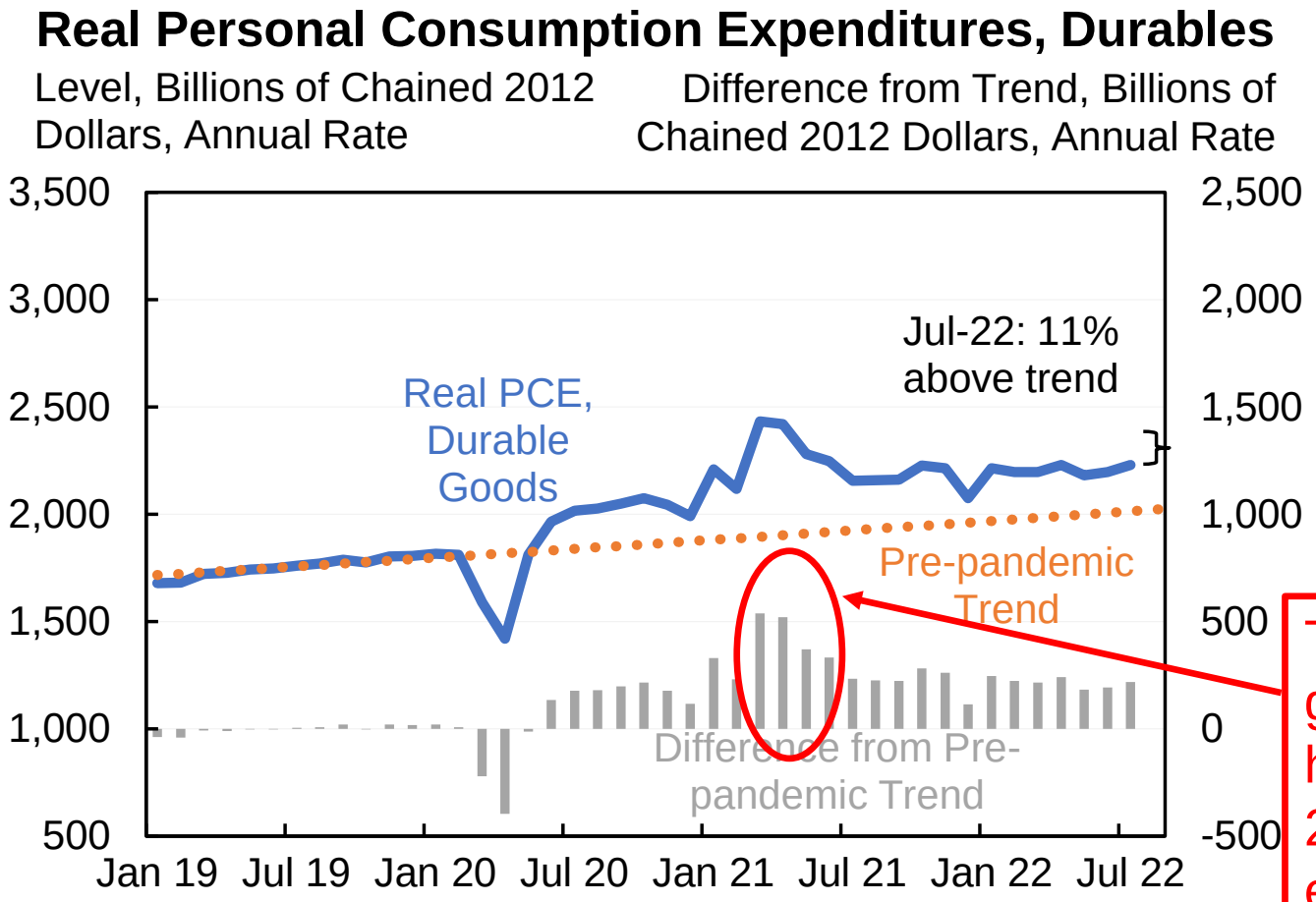
Source: Bureau of Labor Statistics; Federal Reserve Bank of Cleveland; Macrobond; author's calculations.

# 4. Headline shocks reflect supply *and* demand

# Huge "supply" improvement in 2008-H2!


Source: Federal Reserve Bank of New York; Macrobond.

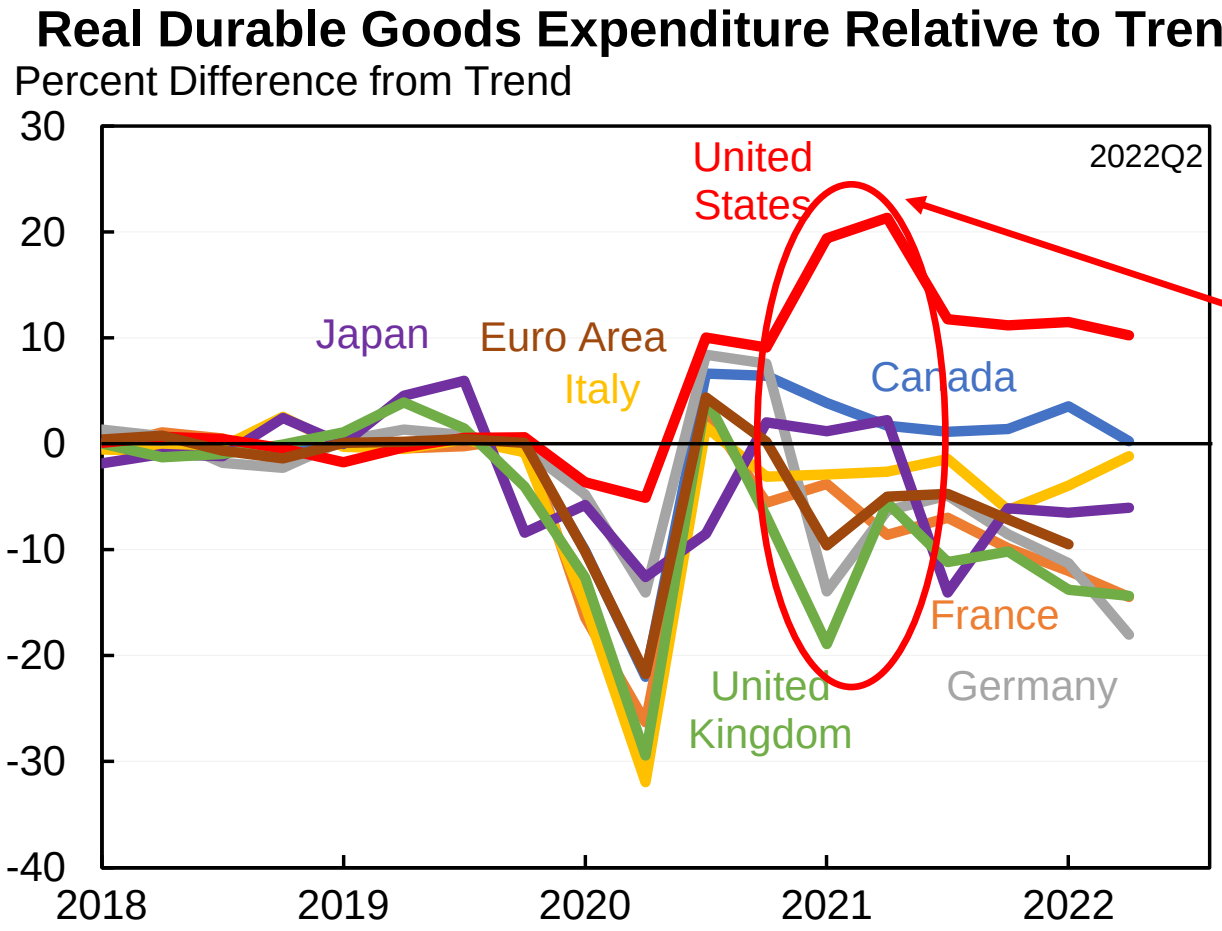
# The increase in durable goods spending is more of a demand than supply shock (i)




The big increase in goods spending happened in March 2021—as the economy was rapidly reopening.

Note: Pre-pandemic trend based on log-linear regression for Jan-18 to Dec-19.
Source: Bureau of Economic Analysis; Macrobond; author's calculations.

# The increase in durable goods spending is more of a demand than supply shock (ii)

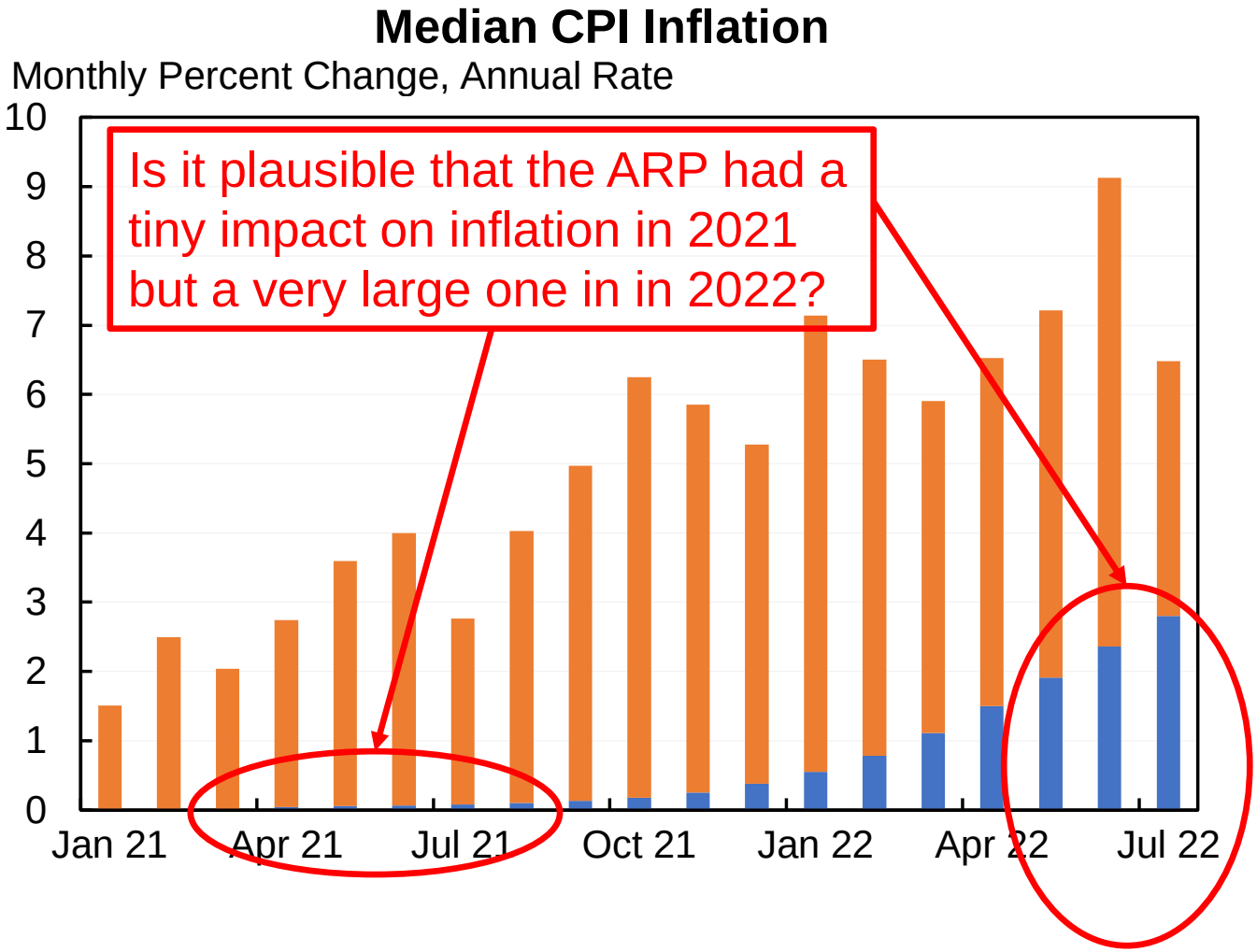



The big difference between the United States and other countries happened in 2021—even as the U.S. economy reopened *faster* than elsewhere.

Note: Pre-pandemic trend based on log-linear regression for 2018Q1 to 2019Q4. Euro Area excludes Cyprus.
Source: Organisation for Economic Co-operation and Development; Macrobond; author's calculations.

# 5. Timing & nonlinearity issues w/ ARP estimate

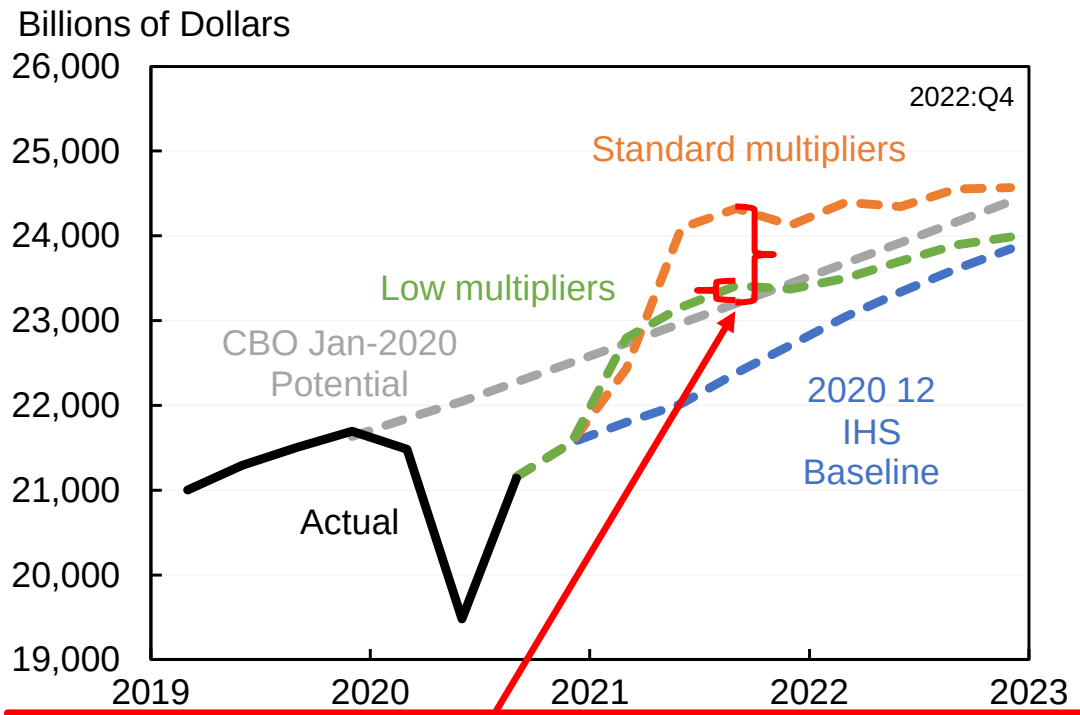
## The ARP has a growing impact on inflation




Source: Ball, Leigh, and Mishra (2022).

# Standard multiplier models predicted a *huge* increase in output

**Estimated Effect of December and March Fiscal Stimulus on Nominal GDP**




IF output could return to pre-pandemic potential by 2021-Q3 then prices would have been 0.9 to 4.8 percentage points higher then.

*Nominal GDP (PY) based on Keynesian multipliers.*

*Real GDP (Y) based on the maximum capacity of the economy coming out of the pandemic.*

*Inflation (P) is the residual.*

**Cumulative 4 Quarter Multiplier**

| | Normal |
|---|---|
| Public Investment Outlays | 1.44 |
| Individual Tax Cuts | 0.66 |
| State Fiscal Relief | 0.98 |
| Aid to Directly Impacted Individuals | 1.44 |
| Business Tax Incentives | 0.08 |

| | Low due to NPIs |
|---|---|
| Enhanced Unemployment | 0.66 |
| Recovery Rebates | 0.44 |
| Direct Assistance to State and Local Govt | 0.59 |
| Business Tax Provisions | 0.07 |
| PPP | 0.27 |

Note: Normal multipliers based on CEA (2009, 2014); low multipliers based on CBO (2020).
Source: Congressional Budget Office; IHS Markit; Council of Economic Advisers; Bureau of Economic Analysis, Macrobond; author's calculations.

# 6. Hope is not a strategy: policy implications

## (i) De-anchoring is costly so be aggressive, (ii) Be willing to tolerate additional unemployment if needed

| Inflation Expectations | Unemployment in 2023 and 2024 Needed for 2% PCE Inflation | Point Years of Added Unemployment |
|---|---|---|
| $\gamma = 0.90$ | 8.2 | 9.8 |
| $\gamma = 0.94$ (1985 - 1998) | 8.0 | 9.2 |
| $\gamma = 0.99$ (2009 – 2019) | 7.5 | 8.3 |
| $\gamma = 0.99$ + 0.3pp exogenous reduction | 6.4 | 5.9 |
| Revert to 2.2 | 4.9 | 2.7 |

Source: Author's calculations based on Ball, Leigh, and Mishra (2022).

# (iii) Seriously consider raising the inflation target to something like 3 percent

| PCE Inflation at End of 2024 | Unemployment in 2023 and 2024 | Point Years of Added Unemployment | Sacrifice Ratio |
|---|---|---|---|
| 2.0 | 6.4 | 5.9 | |
| 2.5 | 4.6 | 2.0 | 8.0 |
| 3.0 | 4.0 | 0.7 | 2.4 |
| 3.5 | 3.8 | 0.2 | 1.0 |
| 4.0 | 3.7 | -0.1 | 0.6 |

*Caveat: These all assume the same expectations process. But if inflation stabilizes well above 2 percent then the inflation expectations process could be much less anchored. For example, stabilizing at 4.0 percent PCE inflation with inflation anchored at 0.9 would require a 4.3 percent unemployment rate.*

Source: Author's calculations based on Ball, Leigh, and Mishra (2022).

# Reprise

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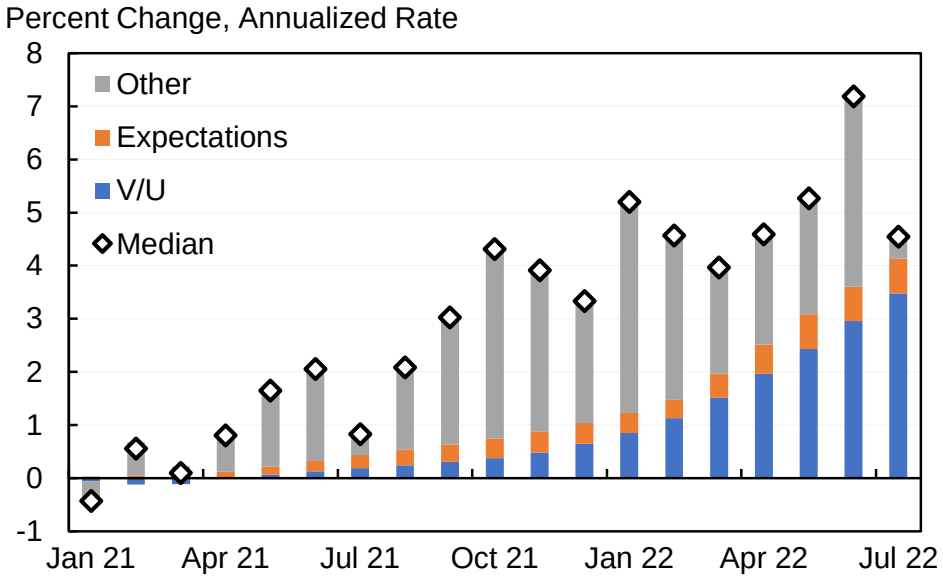
# Appendix: Contributions to inflation per Ball, Leigh and Mishra

**Contribution to Change in Monthly Median CPI Inflation Relative to December 2020**

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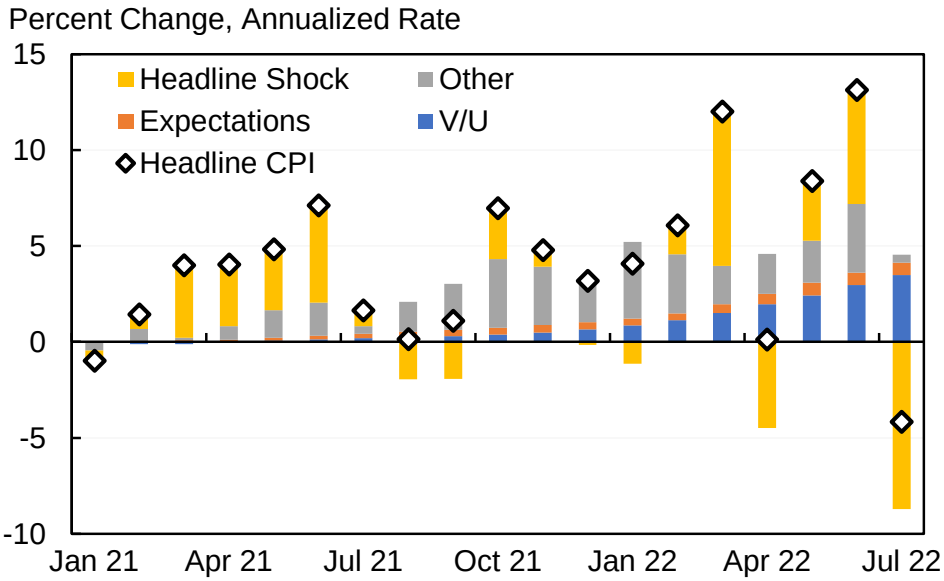


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