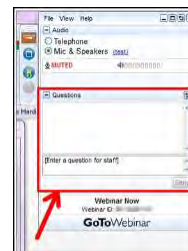




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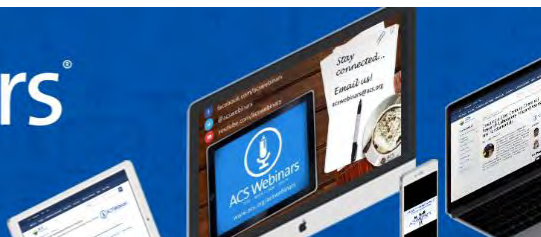
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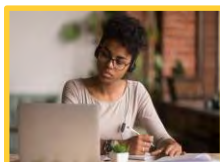
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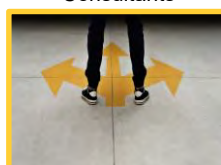
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Global
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Making Sense of the Global Economy: U.S. Manufacturing, the Chemical Industry, and You



Robert Fry
Chief Economist,
Robert Fry Economics LLC



Keith Wing
Founder,
Keith Wing Consulting

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Making Sense of the Global Economy: U.S. Manufacturing, the Chemical Industry, and You

April 8, 2021

Robert Fry

Chief Economist, Robert Fry Economics LLC



Robert Fry

Chief Economist
Robert Fry Economics LLC



Keith Wing

Consultant- Industrial Biochemistry
Joseph Priestley Society Committee Member



Economic Outlook Robert Fry

Robert Fry Economics LLC

Joseph Priestley Society
American Chemical Society
April 8, 2021

RobertFryEconomics.com

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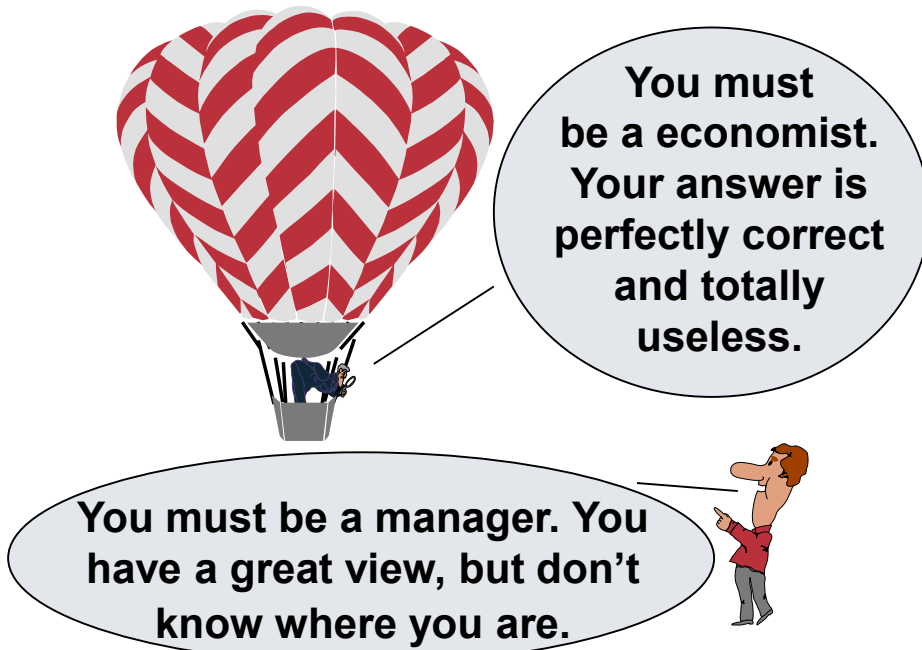
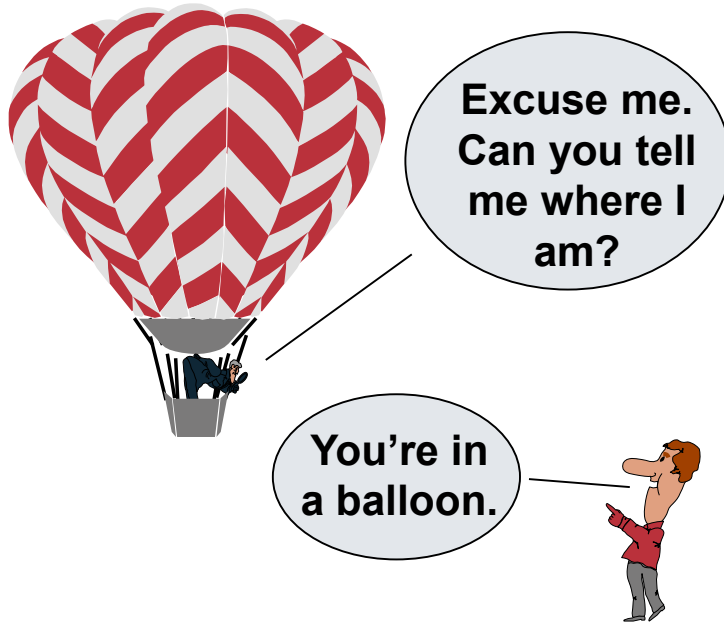
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Where the US economy stood on February 19, 2020:

Real GDP growing at a 2.1% annual rate, showing signs of acceleration.

- Grew at 3.1% rate from 2017Q2 through 2018Q3. (Tax cuts, deregulation.)
- Growth fell back to 2.1% in 2018Q4. (Fed tightening, tariffs, slowing in rest of world.)

Unemployment rate at a 50-year low.

Employment growing rapidly. (Unsustainably so.)

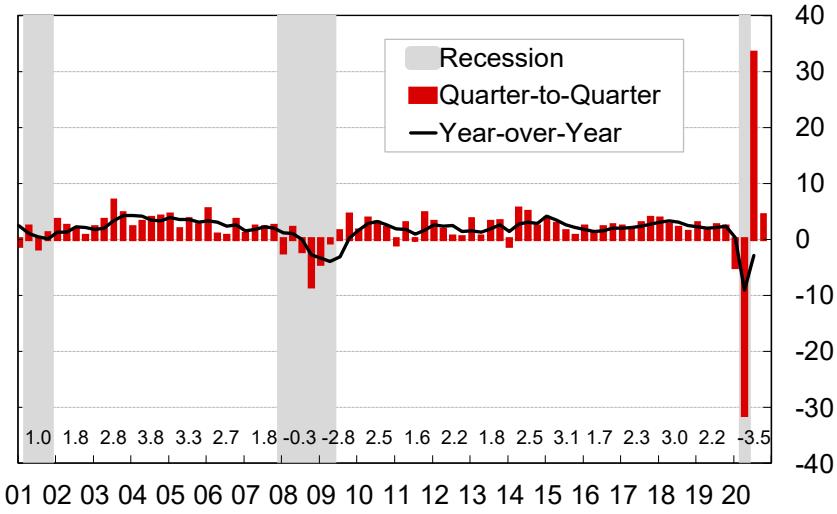
Manufacturing stabilizing after decline from December 2018.

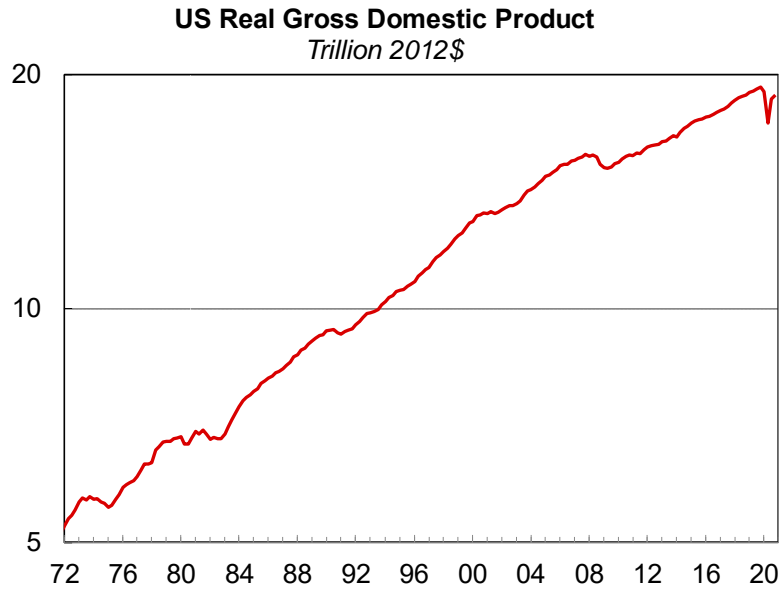
Housing sector at cyclical highs after weakness in 2018 and early 2019.

Oil production at record highs and surging.

Stock market at all-time high.

US Real Gross Domestic Product
Annualized Growth Rates





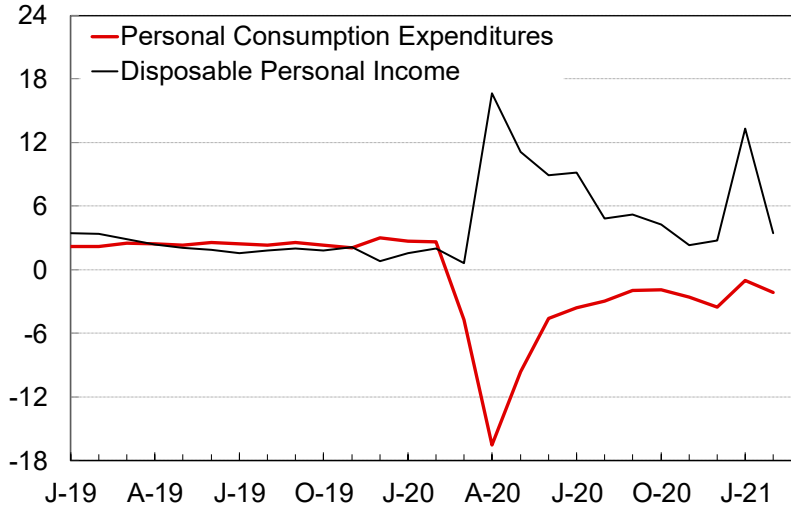
Source: U.S. Bureau of Economic Analysis/FRED

Recession:

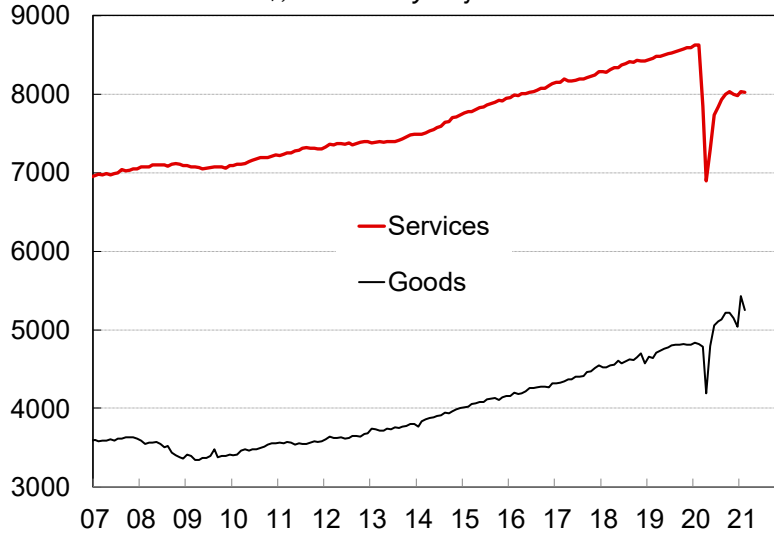
A period when money is returned to its rightful owners.

-- Anonymous

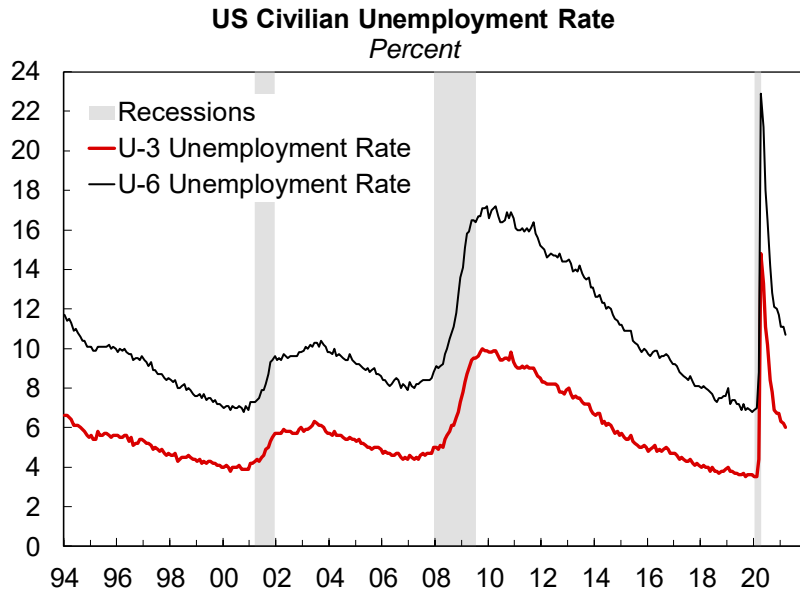
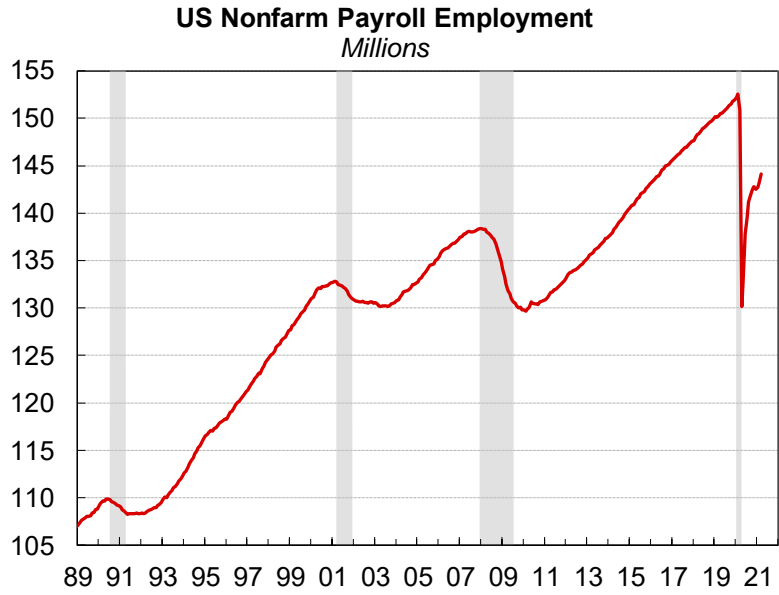
US Real Consumer Spending & Disposable Income
Percent Change from Year Ago, Chained 2012 Dollars



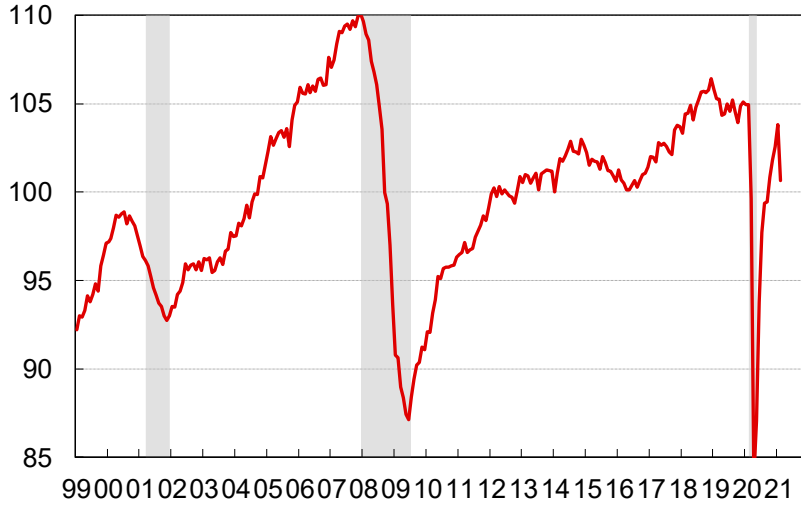
US Real Personal Consumption Expenditures
Billion 2012 \$, Seasonally Adjusted Annual Rates



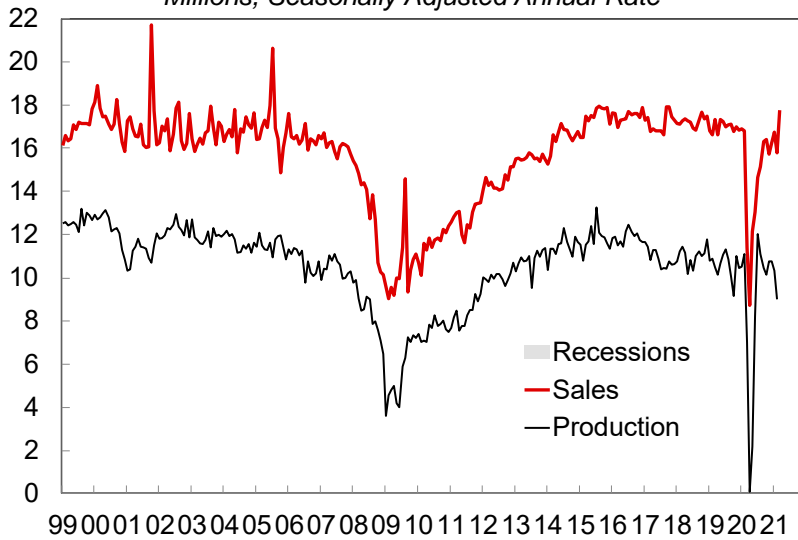
Source: U.S. Bureau of Economic Analysis/FRED



US Industrial Production: Manufacturing
Index, 2012=100



US Light Vehicle Sales & Production
Millions, Seasonally Adjusted Annual Rate



COVID-19 caused worst recession since Great Depression

2020 Q2 decline in real GDP was, by far, the biggest ever.

- April declines in employment, retail sales, industrial production were worst ever.
- Annual decline in GDP was worst since 1946.

Unemployment soared to highest levels since Great Depression.

Despite strong rebound, economy remains below pre-recession peak.

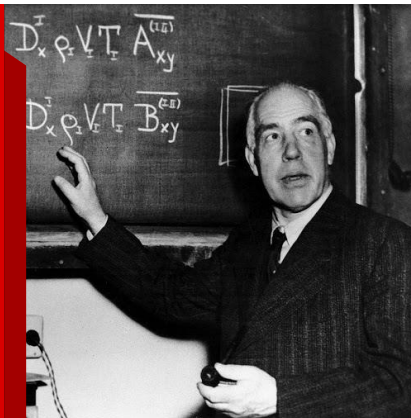
Unlike most recessions, where all industries contract, this recession and recovery have been marked by extreme losers and big winners:

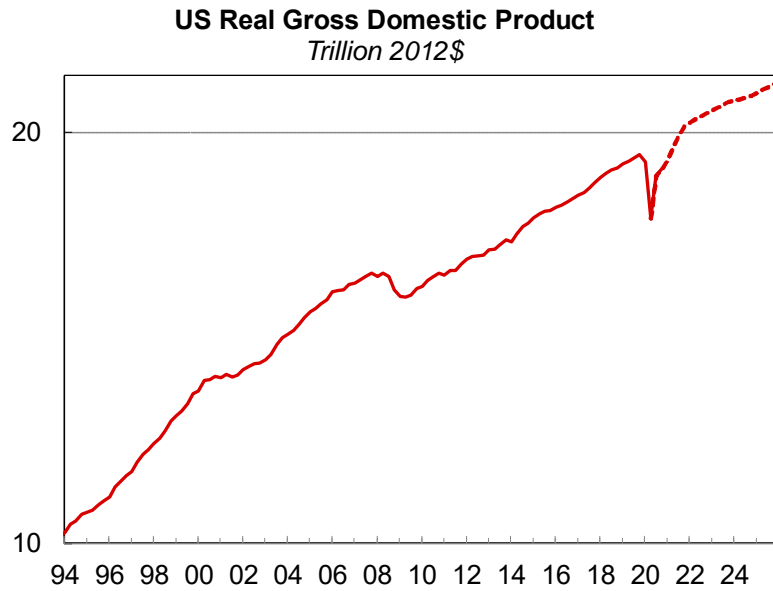
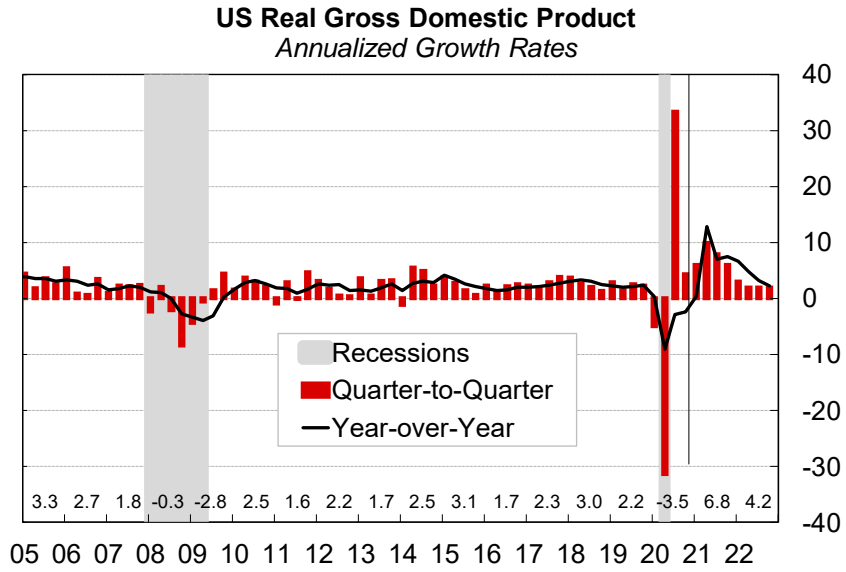
- Goods have done much better than services
- Winners: online retailers, tech companies, grocery stores (and shareholders)
- Losers: restaurants, travel, entertainment (and their employees), landlords

Technically, the recession is over.

“Prediction is very difficult, especially about the future.”

Niels Bohr, 1885-1962
Nobel Laureate, 1922





Source: U.S. Bureau of Economic Analysis/FRED

What this recovery looks like: a script V

2020 Q3 GDP growth was the strongest ever.

Growth slowed in 2020Q4.

Growth accelerated in January.

- First vaccines given December 14, 2020.
- New COVID-19 cases peaked week ending January 12.
- February was down because of fiscal lull and extreme cold in Texas.

GDP will surpass its pre-recession level in 2021Q3.

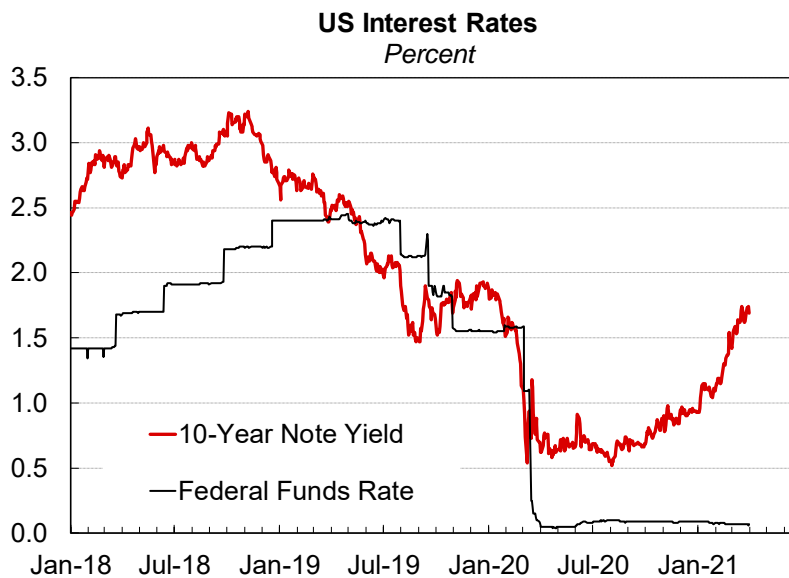
- Employment will take longer to recover.

Pace of recovery has been boosted by:

- Shifting resources to activities that can be done safely.
- **Rapid** rollout of fiscal/monetary policy.

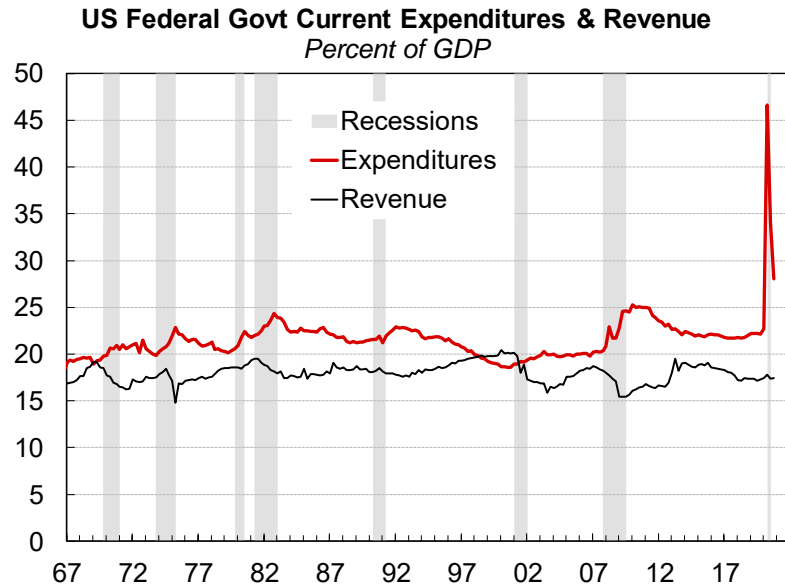
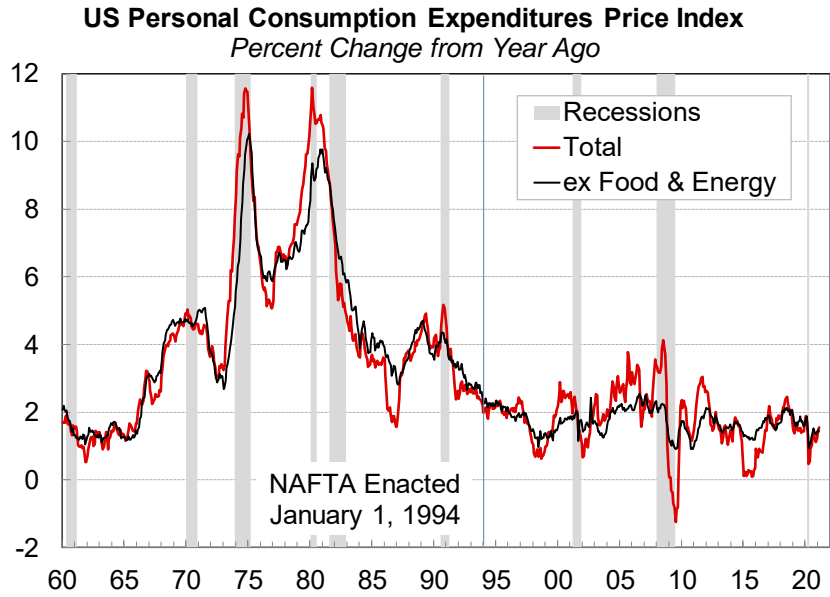
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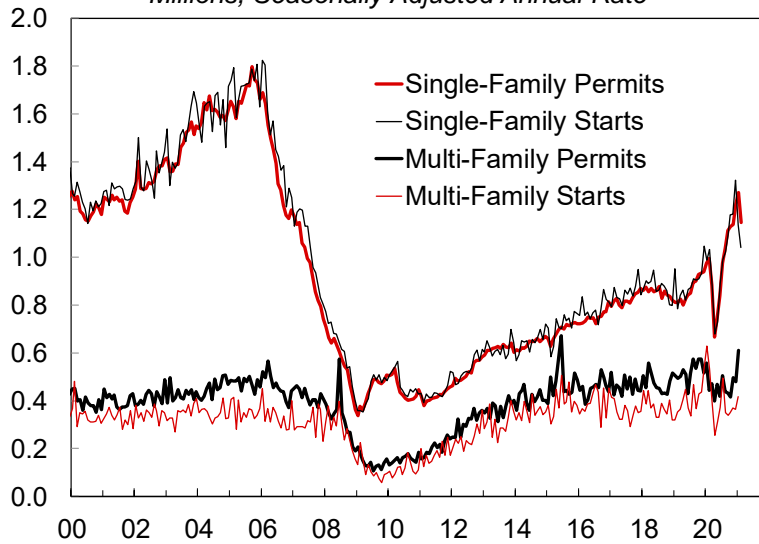


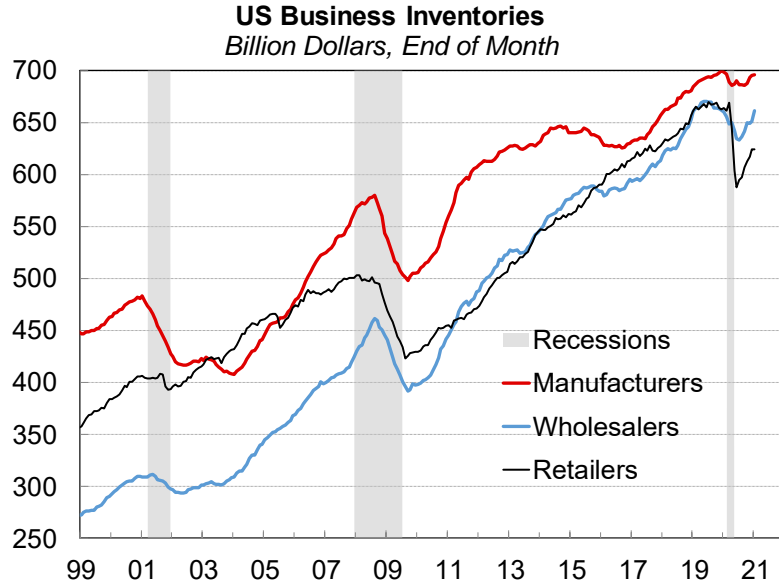
Source: U.S. Bureau of Economic Analysis/FRED

S&P 500 Stock Price Index



US Housing Starts & Building Permits *Millions, Seasonally Adjusted Annual Rate*

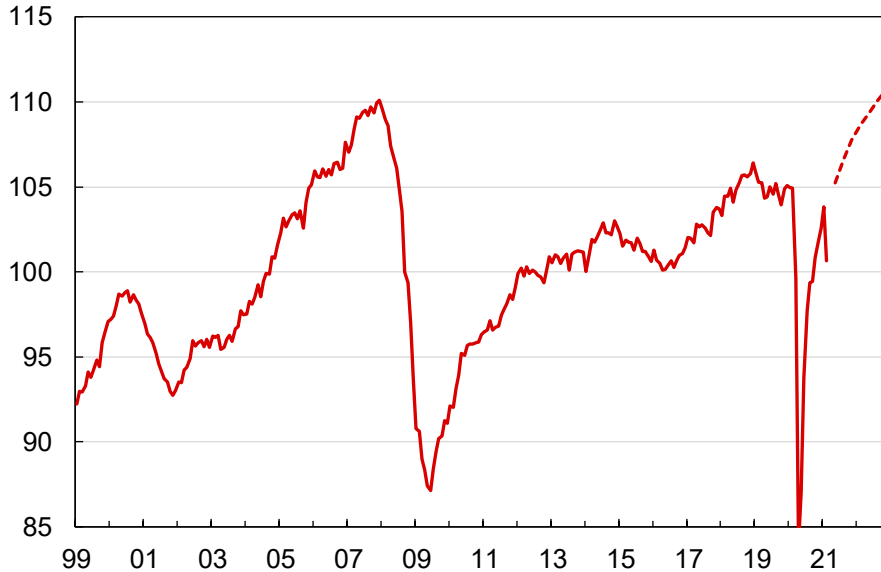


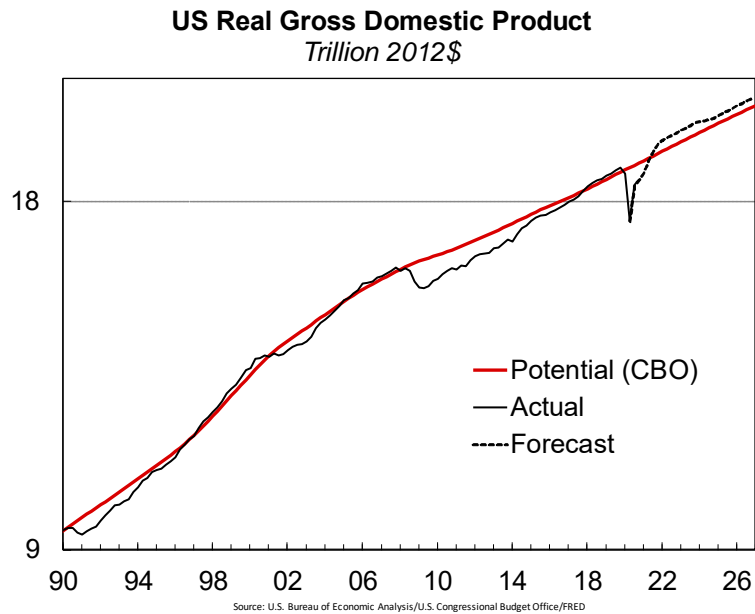


Source: U.S. Census Bureau/FRED

US Industrial Production: Manufacturing

Index, 2012=100





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Audience Challenge Question

ANSWER THE QUESTION ON BLUE SCREEN IN ONE MOMENT



What has been your experience during the pandemic?

- I could not satisfy demand because of an inability to hire enough workers
- I could not satisfy demand because of insufficient supplies of materials
- Both of the above
- I have not suffered any negative demand experiences
- Other (Tell us more in the chat)



** If your answer differs greatly from the choices above tell us in the chat!*

As bad as things have been, growth has exceeded expectations

Possible explanations:

- Stimulus worked better than in past (and better than expected). (Keynes)
- Workers have shifted to higher-productivity jobs. (Schumpeter)

Implications:

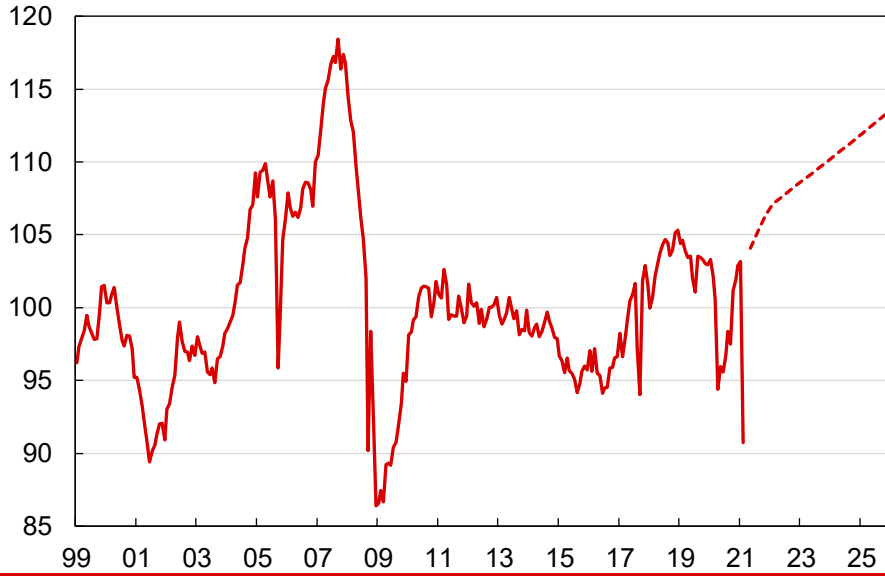
- GDP will exceed CBO estimate of potential GDP earlier than we thought.
- **Unless CBO is wrong about potential GDP**, inflation will accelerate unless growth slows sharply in 2022.

Accelerating inflation wouldn't mean stimulus was wrong; it would mean that policy-makers didn't undo stimulus quickly enough.

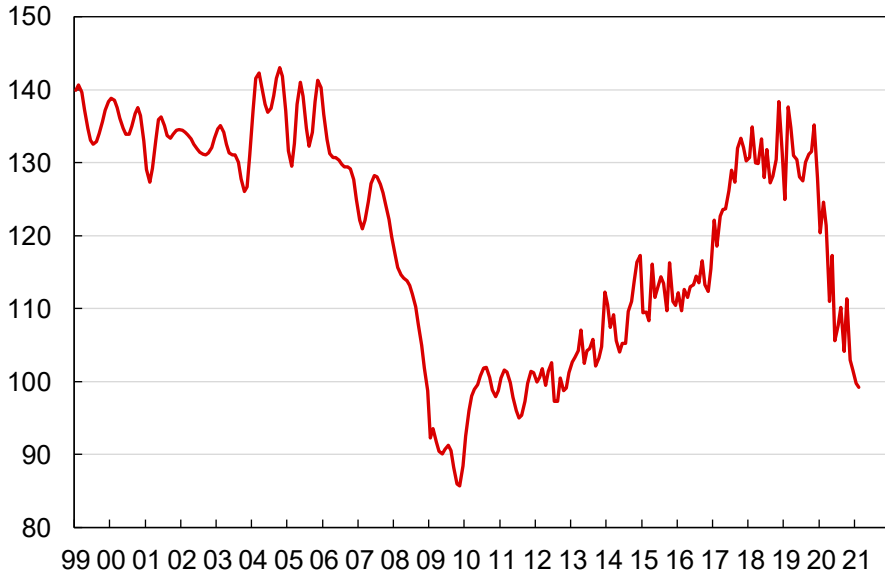
- Many oppose fiscal and monetary stimulus because they (consciously or subconsciously) believe that government spending programs will never go away and the Fed won't take away the punchbowl quickly enough.

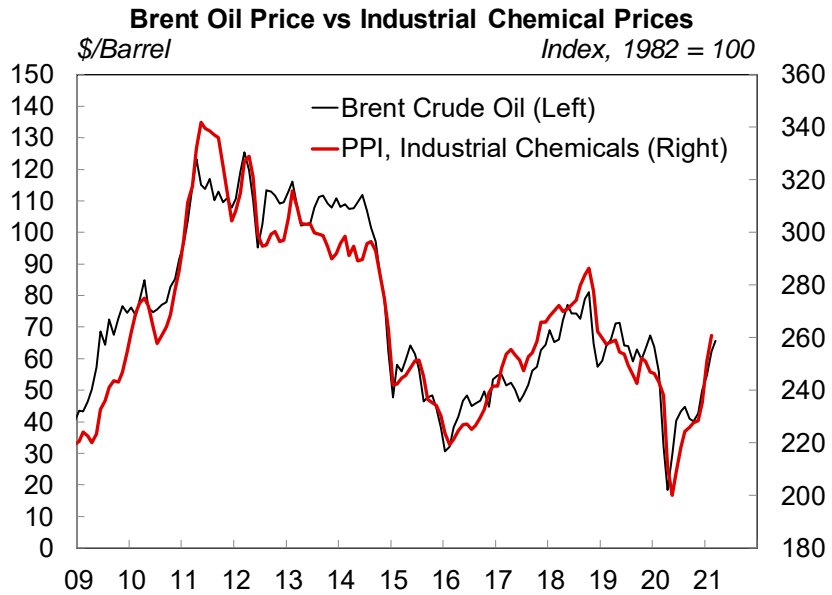
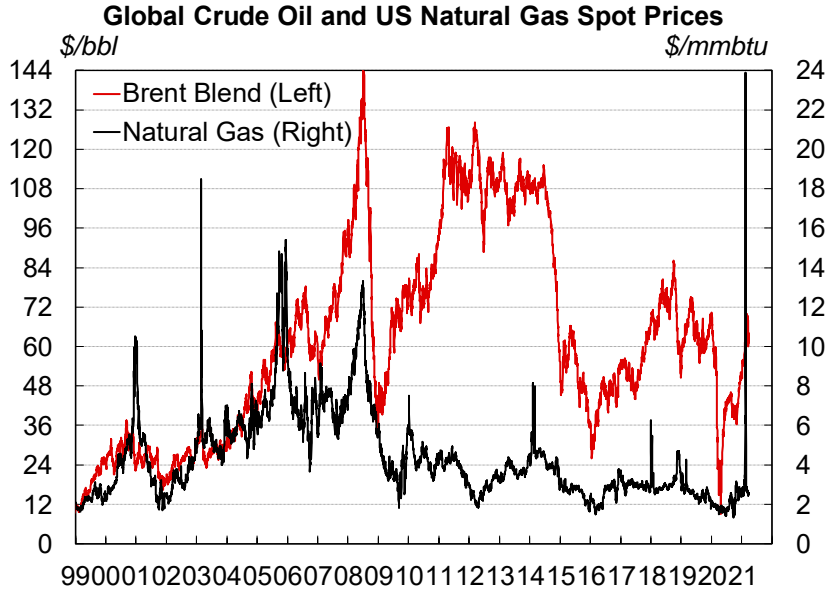
Industry Detail

US Industrial Production: Chemicals ex pharma
Index, 2012=100

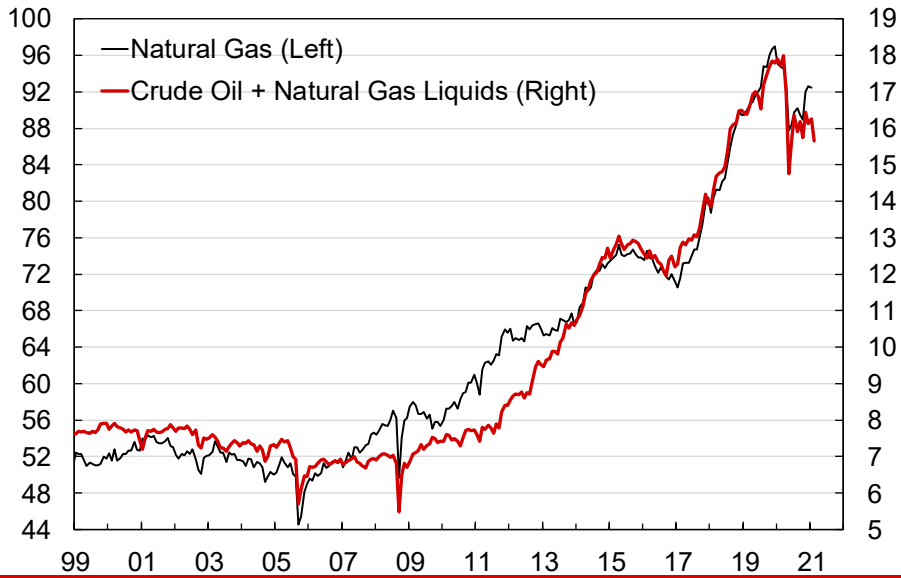


US Industrial Production: Paints & Coatings
Index, 2012=100



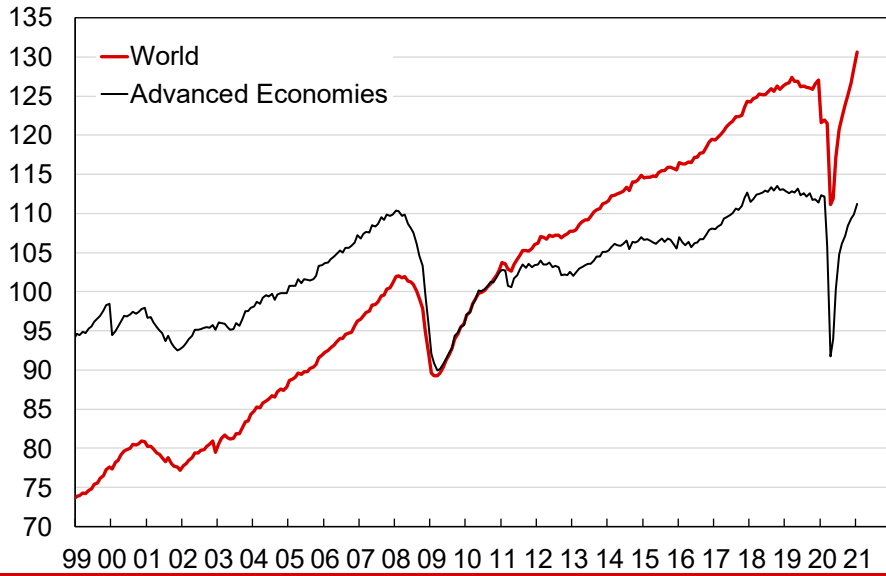


US Oil & Gas Production
Billion Cubic Feet per Day *Million Barrels per Day*

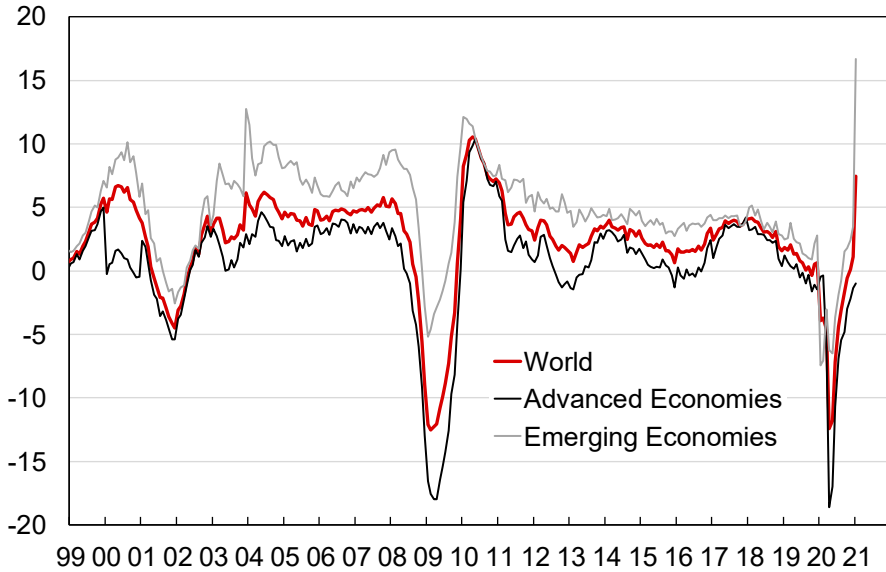


Global Overview

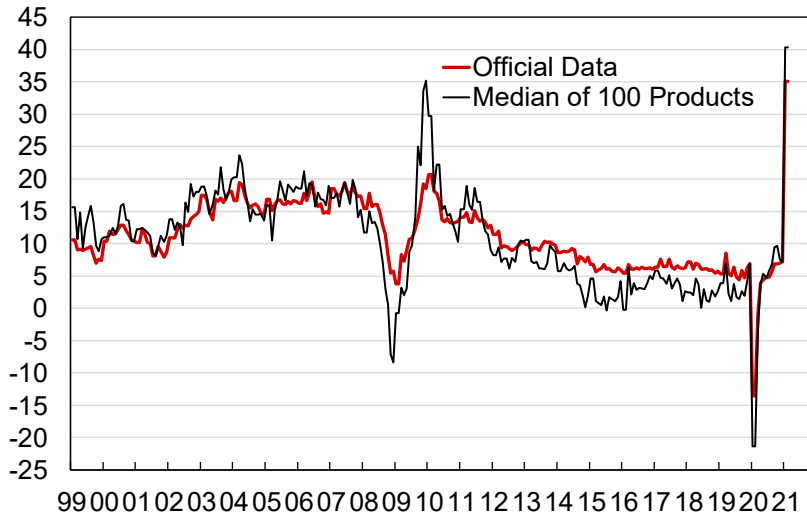
Industrial Production ex Construction
Index, 2010 = 100



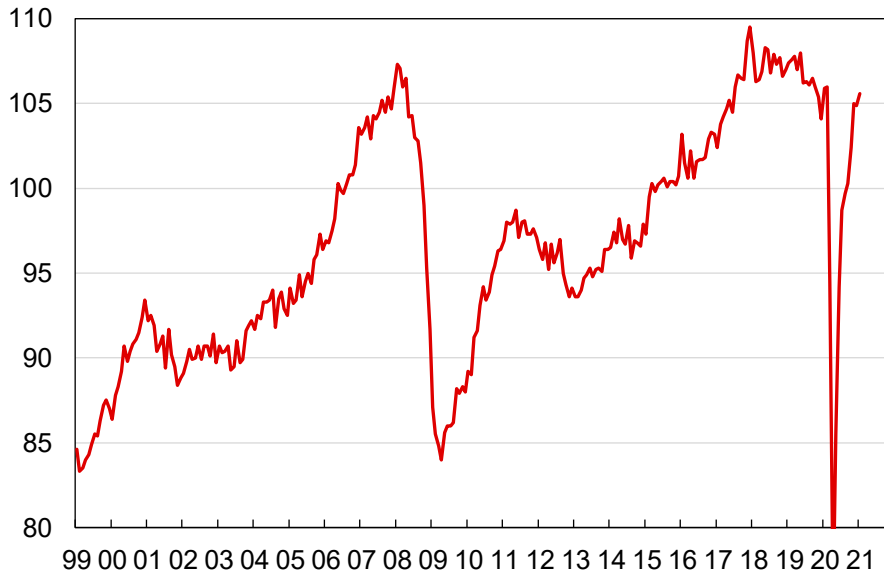
Industrial Production ex Construction
Percent Change from Year Ago



Value Added of Industry (Industrial Production): China
Percent Change from Year Ago



Industrial Production, Manufacturing: European Union
Index, 2015 = 100



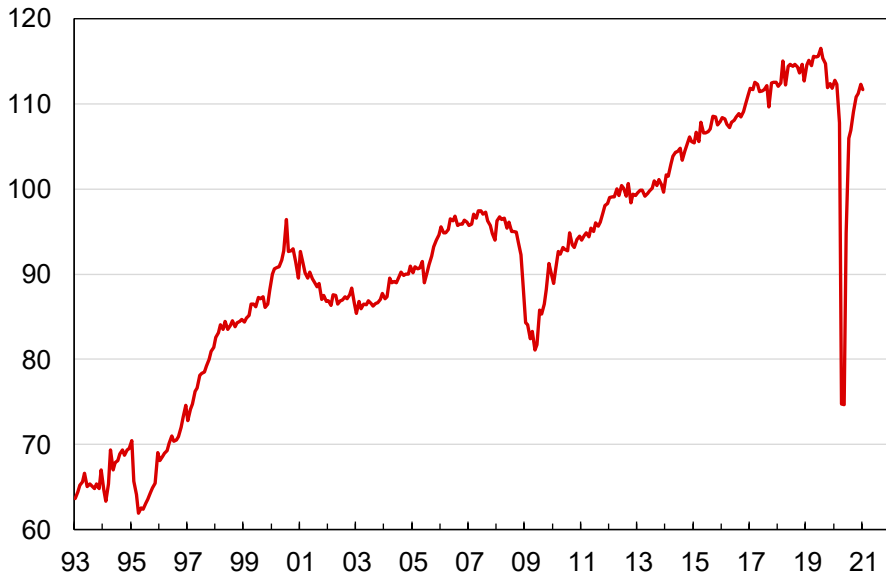
Industrial Production, Manufacturing: Japan
Index, 2015 = 100



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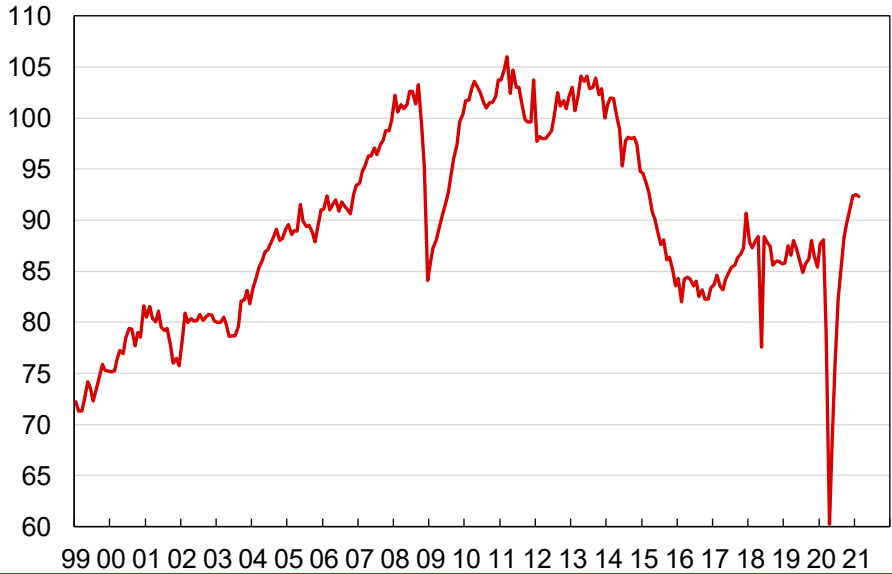
Industrial Production, Manufacturing: Mexico
Index, 2013 = 100



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Industrial Production, Manufacturing: Brazil
Index, 2012 = 100



Real GDP
 (Annual % Change)

	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>
World	2.3	-4.1	5.4	4.2	3.0
United States	2.2	-3.5	6.8	4.2	2.0
Latin America (x Mex)	0.1	-7.5	3.3	2.8	2.7
Western Europe	1.3	-6.8	4.1	4.2	2.1
C & E Europe	2.3	-4.2	4.1	3.6	3.2
Middle East & Africa	1.2	-4.6	2.9	3.6	3.3
Asia/Pacific	3.7	-1.9	6.3	4.7	4.3
China	6.0	2.3	8.4	5.4	5.0
Japan	0.3	-4.9	2.8	2.3	1.2

Key Takeaways

COVID-19 caused the deepest recession since the Great Depression.

To economists, the recession is over, making it the shortest ever.

To non-economists, the recession lasts until we fully recover.

- For GDP and industrial production, that will probably be in 2021Q3.
- For employment, that won't be until well into 2022.

Growth will be extremely strong in 2021.

Unless CBO is wrong about potential GDP, growth will slow sharply in 2022 or inflation will accelerate (or both).

- Can the economy handle all the stimulus? Can supply meet the demand?

In most recessions, everybody loses. In this recession and recovery, there have been big winners and big losers.

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Publications by Robert Fry

- **Low Interest Rates Are Hurting Growth:**

<https://www.forbes.com/sites/realspin/2016/10/04/low-interest-rates-are-hurting-growth/#58cff2edb605>

- **Put An Economist on Your Board:**

http://media.wix.com/ugd/d2d439_73ba8ec9866a4c5c859d79effe7c60e1.pdf

- **10 Things To Look For In A Fed Governor:**

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What You Will Learn:

- Fundamental understanding of the five platforms for additive manufacturing of polymers
- Awareness of the synergy of designing polymer reactivity with tailored functionality, required process viscosity that aligns with various printing platforms, and the opportunities for resolution and geometric control of printed objects
- Appreciation for current trends in the literature for additive manufacturing of polymers and the design of polymer structure for rapidly emerging printing platforms

Co-produced with: ACS Applied Polymer Materials and the ACS Division of Polymer Chemistry



Date: Thursday, April 15, 2021 @ 2-3pm ET
 Speaker: Jordan Harshman, Auburn University and Anne Kondo, Indiana University Pennsylvania
 Moderator: Marian Gindy, Merck

[Register for Free!](#)

What You Will Learn:

- What collaborative work involves
- What team skills employers expect
- How professional skills are acquired

Co-produced with: ACS Education



Date: Wednesday, April 21, 2021 @ 2-3pm ET
 Speakers: Patricia Simpson, Game Changing Etiquette and the University of Illinois at Urbana-Champaign
 Moderator: Matt Grandbols, DuPont Electronics & Industrial

[Register for Free!](#)

What You Will Learn:

- Why is business acumen important for all employees
- What are the core elements of a business acumen
- How to develop or enhance your business acumen

Co-produced with: ACS Division of Professional Relations

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