What’s Coming Next? Economic Forecast and Global Supply Chain Challenges….

March 2022

EY
Building a better working world

Today's speaker

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EY Parthenon

Polling question

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In one word, what would you like to take away from this conversation?

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Polling question

Go to Slido.com and enter #556719 and select the area of the construction industry your company primarily supplies:

1. Commercial building
2. Industrial construction
3. Residential
4. General construction (all types)
5. Highly specialized jobs

Select the area of construction that you primarily supply.

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Agenda

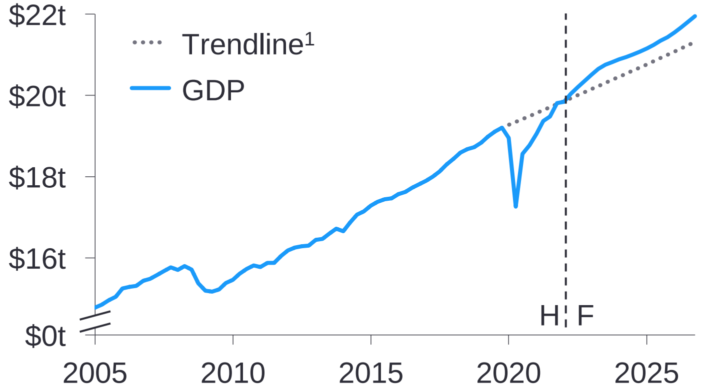
- Macroeconomic scenario update
- Legislative update
  - The bipartisan infrastructure investment and jobs act (IIJA)
- Collaborative contracting

Macroeconomic snapshot: forecast for 2022

3.5% GDP growth (2022 forecast)

- Strong economy
- Cooling consumption growth
- Resilient business capex
- Modestly slower housing activity
- Softer fiscal tailwind

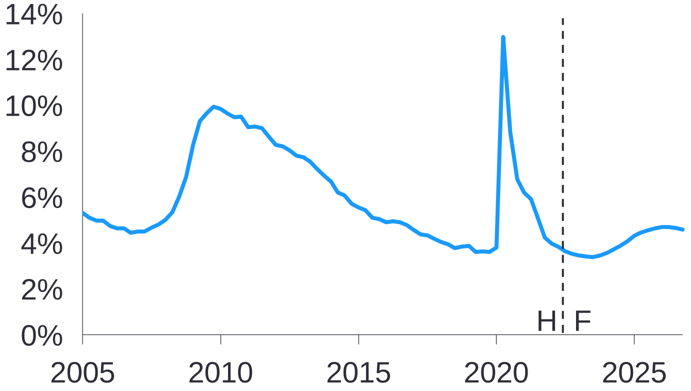
US real GDP, 2005 – 26F[1,2]



3.3% unemployment rate (Q4 2022 forecast)

- Robust labor market recovery
- Unemployment rate falling below pre-Covid-19 level in H2 2022
- Rebounding labor force participation
- Accelerating wage growth through late 2022

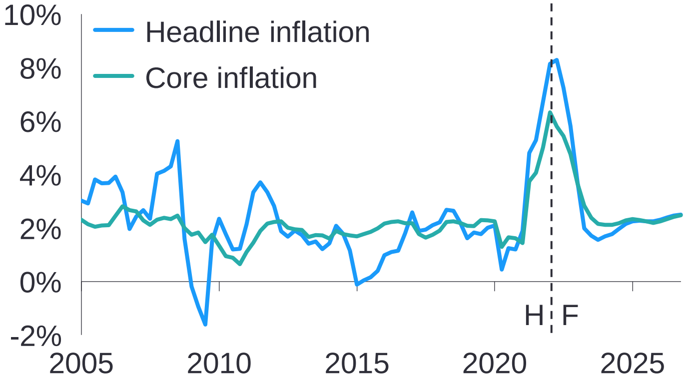
Unemployment rate, 2005 – 26F



5.8% y/y CPI inflation (Q4 2022 forecast)

- Persistently elevated inflation lifted by the commodities price surge and firming wage growth
- Gradual downward pressure from:
  - Cooler consumer spending growth
  - Rotation in spending mix toward services
  - Easing supply constraints

Y/y percent change in CPI, 2005 – 26F



Key risks: Covid-19, inflation, excessive Fed tightening, geopolitical tensions, supply constraints

1. Pre-Covid-19 trendline illustrates extrapolation of the 2019 Q4 trend through 2026Q4.
2. Show graphs and all subsequent graphs seasonally adjusted unless otherwise indicated.

Source: EY-Parthenon analysis; EY-Parthenon macroeconomic model

The war in Ukraine represents a key risk for the global economy

Degree of disruption varies greatly

Surging commodities prices	Financial market stress	Trade disruptions	Falling confidence
…against an inflationary backdrop.	…as markets were just getting adjusted to the prospect of tighter global monetary policy.	…as global supply chains were already strained.	…at a time when elevated inflation and volatile stock markets were weighing on sentiment.

Household spending

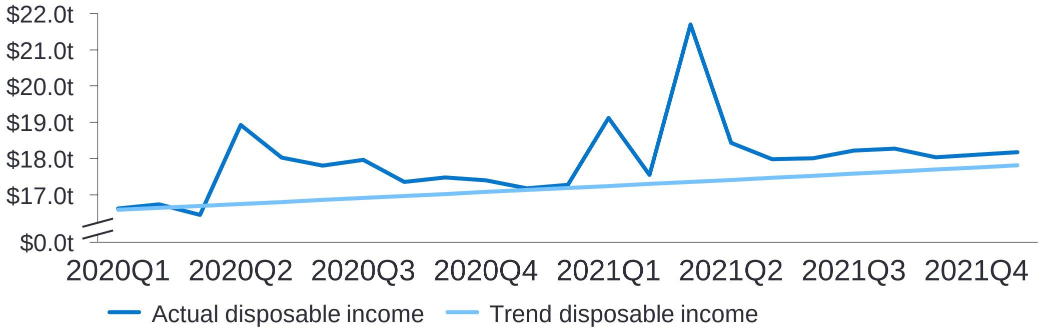
Business activity

Central bank policy

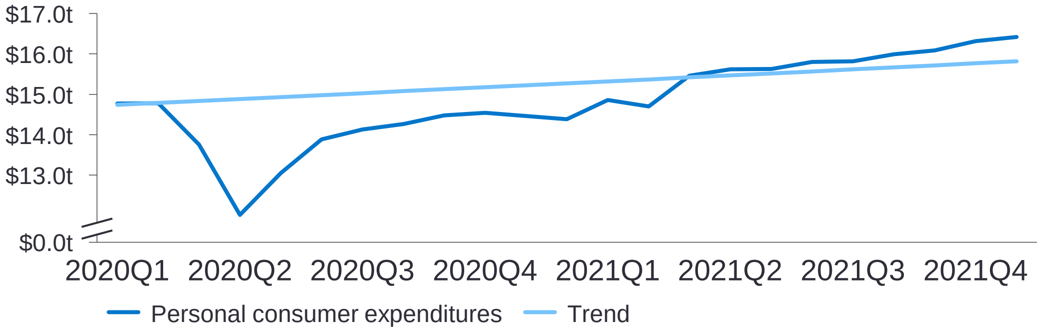
Source: EY-Parthenon analysis

Consumers had plenty of spending power entering 2022

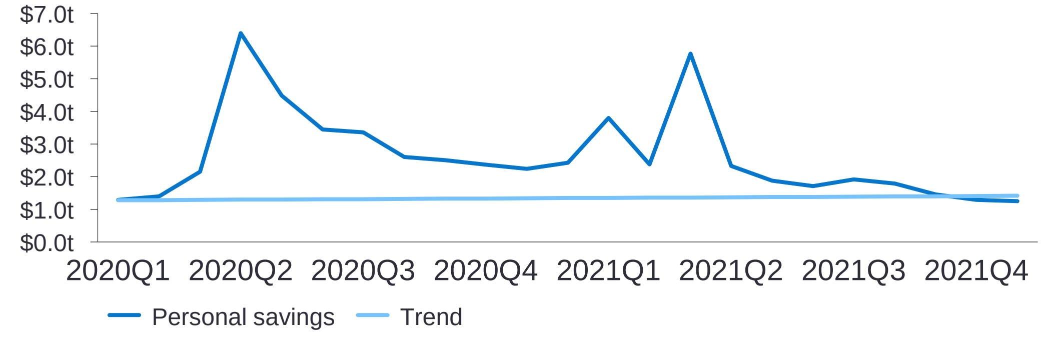
Personal Disposable Income ($ trillions, annual rate)
Jan 2020 - Nov 2021



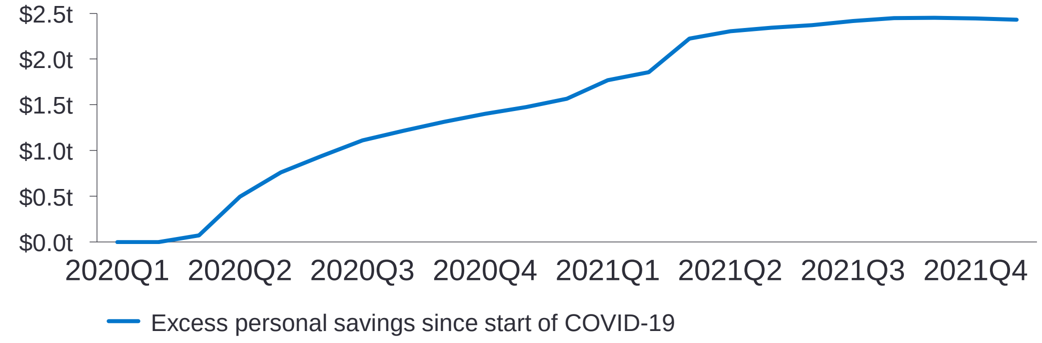
Consumer Spending ($ trillions, annual rate)
Jan 2020 - Nov 2021



Excess Personal Savings ($ trillions, annual rate)
Jan 2020 - Nov 2021



Cumulative Excess Personal Savings ($ trillions)
Jan 2020 – Nov 2021

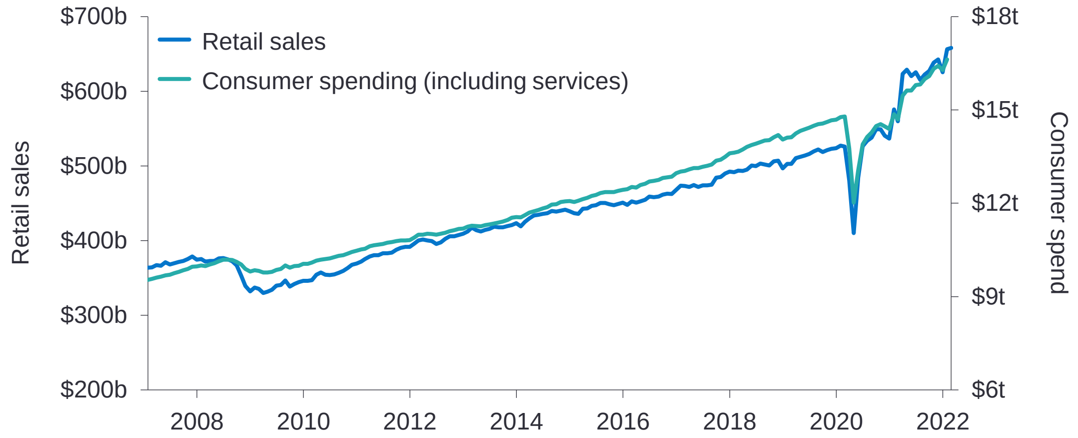


Source: BEA; EY-Parthenon Analysis

EY Parthenon

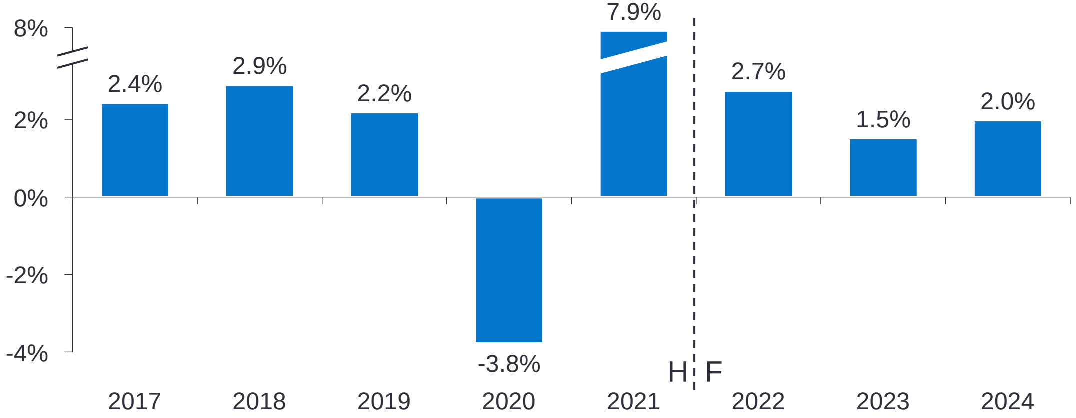
Consumer spending should remain robust in 2022 driven by firm employment and wage growth, but high inflation and reduced fiscal transfers will be headwinds

Total retail sales and consumer spend
January 2007 – February 2022[1]



- Following a January splurge, US consumers were more hesitant in February as retail sales registered a modest 0.3% advance, after an upwardly revised 4.9% (+1.1%) gain in January. Core retail sales – a good gauge of consumer spending trends – fell 1.2% in February after posting their strongest gain (+6.7%) in 11 months in January.
- Looking at the broad picture, the retail sector looks healthy with retail sales up 18% y/y and core sales up a sturdy 13% y/y. Compared with their pre-Covid level, retail sales are 25% higher, and they are about 17% higher than their pre-Covid trend.
- EY-Parthenon foresees robust consumer spending activity through the year as rising employment and firming wage growth support household income growth. Still, persistently elevated inflation, reduced fiscal transfers, tightening monetary policy, and the looming risk of renewed Covid waves (as observed in Europe and China) will limit the upside to growth.

Year-over-year percent change in real personal consumer expenditures
2017 – 24F



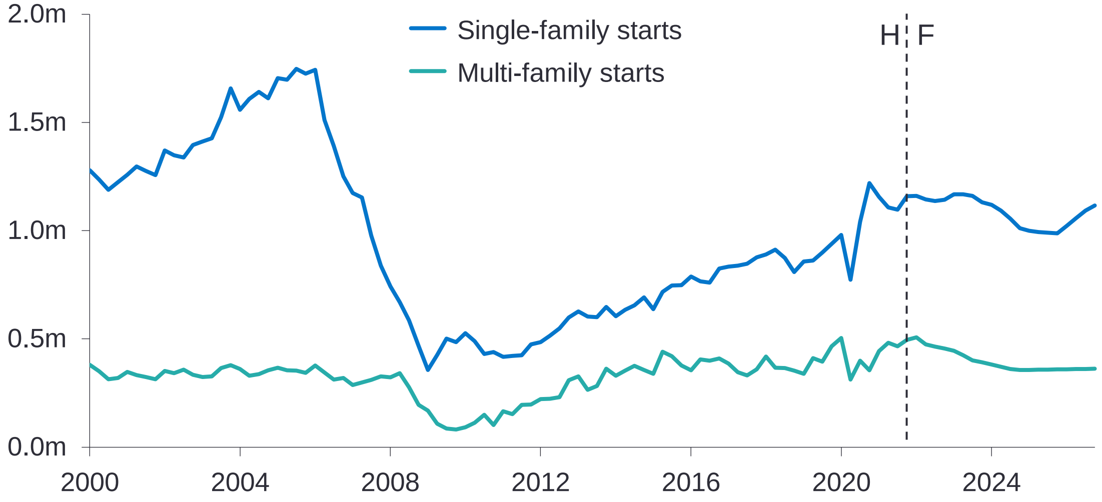
- Consumer spending rebounded 7.9% in 2021 – its strongest performance since 1946 – with outlays adjusted for inflation on par with their pre-Covid-19 trend.
- We foresee robust consumer spending growth in 2022, but the drivers of growth will shift a demand for cools and outlays on services pick up. Rising employment, firming wage growth and healthy household balance sheets will support consumer spending growth.
- Still, elevated food, gas and goods price inflation and rising consumer interest rates will limit the upside to spending growth, especially for lower income households. The personal saving rate fell to 6.4% in January – its lowest level since 2013 – indicating households have started to dip into the excess savings acquired during the pandemic.

1. Consumer spending data available through January 2022.

Source: US Census; BEA; EY-Parthenon analysis

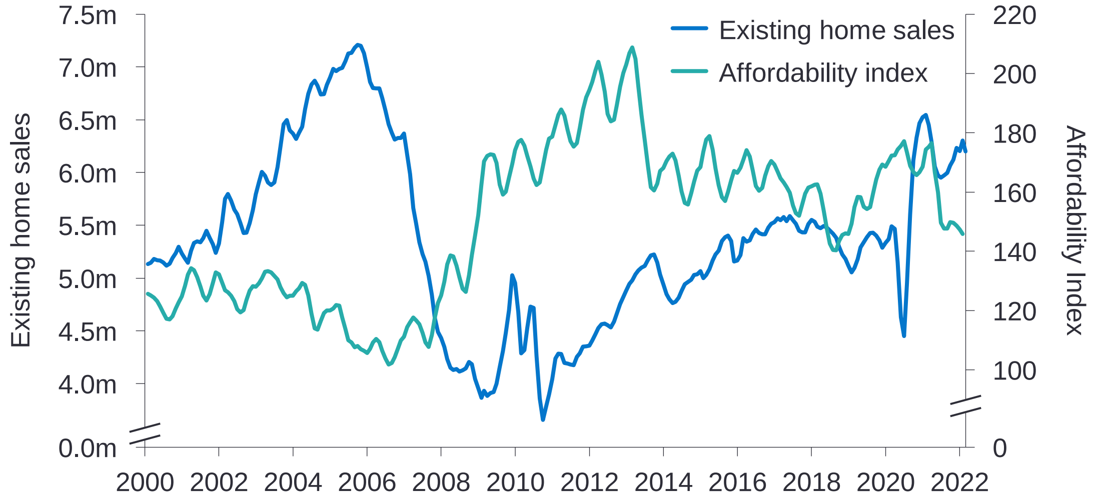
Reduced affordability from high home prices, inflation, and rising mortgage rates will slow home sales growth in 2022, but construction activity should continue to firm

New housing starts
2020 – 24F



- Housing activity is expected to consolidate over the course of 2022 following two very strong years.
- Higher mortgage rates, up about 130 basis points since the start of the year and elevated prices will weigh on home sales, but low inventories of existing homes and gradually easing capital and labor supply constraints should support construction activity.
- Total housing starts grew 6.8% to 1.77 million units from January 2022 to February 2022 with strong gains in single- and multi-family starts.

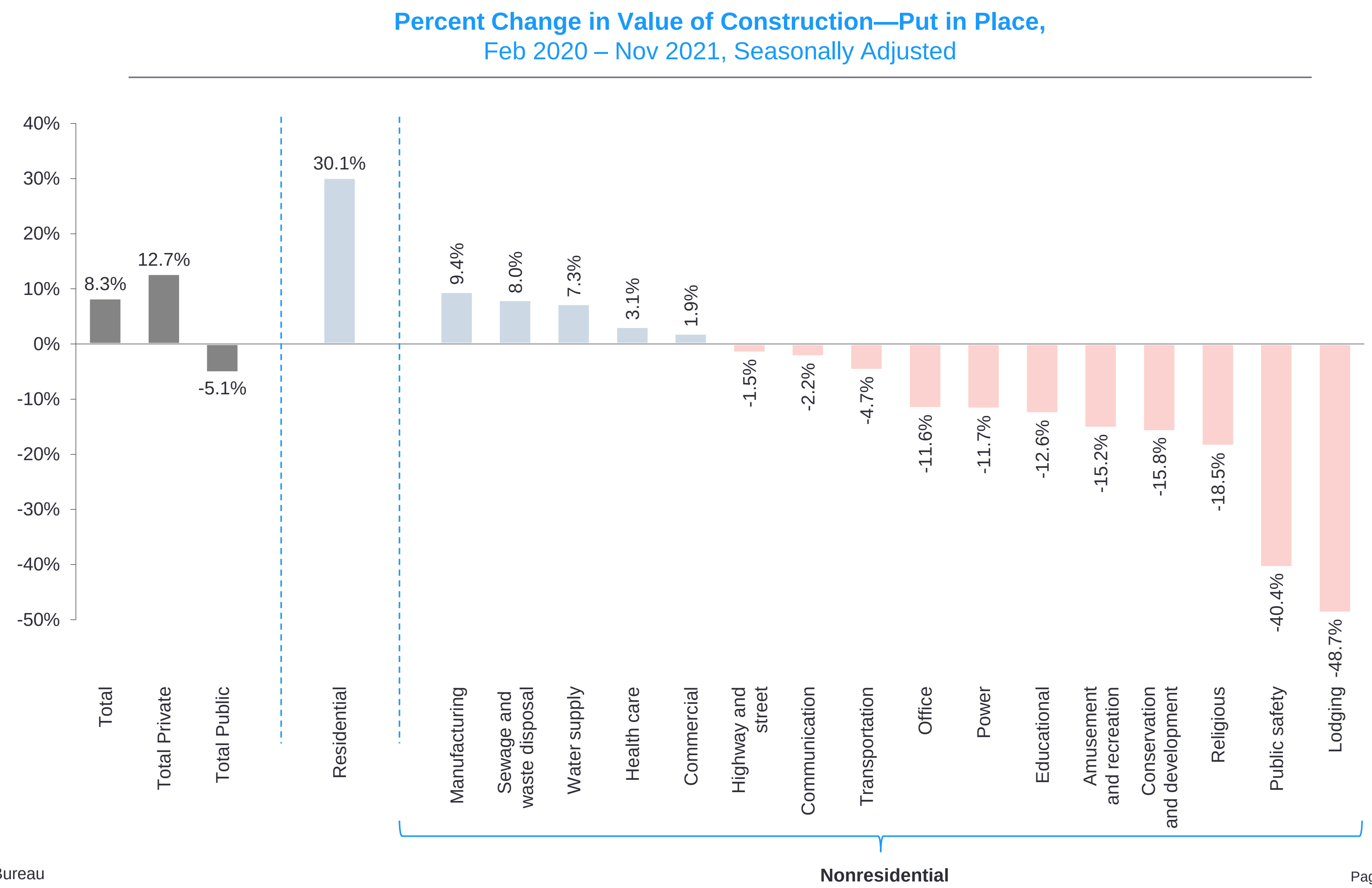
Existing home sales and affordability (three-month moving average)
January 2000 – February 2022[1]



- New home sales fell 2% in February to 772 thousand units as higher mortgage rates and prices weighed on demand.
- Existing home sales fell 7.2% to 6.0 million units in February – their lowest level since sine August 2021 – driven by a surge in cash buyers.
- Sales fell across all regions with inventories falling to a record low of 1.7 months (at the current pace of sales) and existing home prices rising 15% year-over-year.
- Looking ahead, we foresee elevated prices and higher mortgage rates weighing on home sales through 2022.

1. The affordability index data is available through January 2022.
Source: Mortgage Bankers Association; US Census Bureau; National Association of Realtors; EY-Parthenon macroeconomic model; EY-Parthenon analysis

Residential construction investment remains elevated, while most categories of non-residential construction are still below pre-pandemic levels

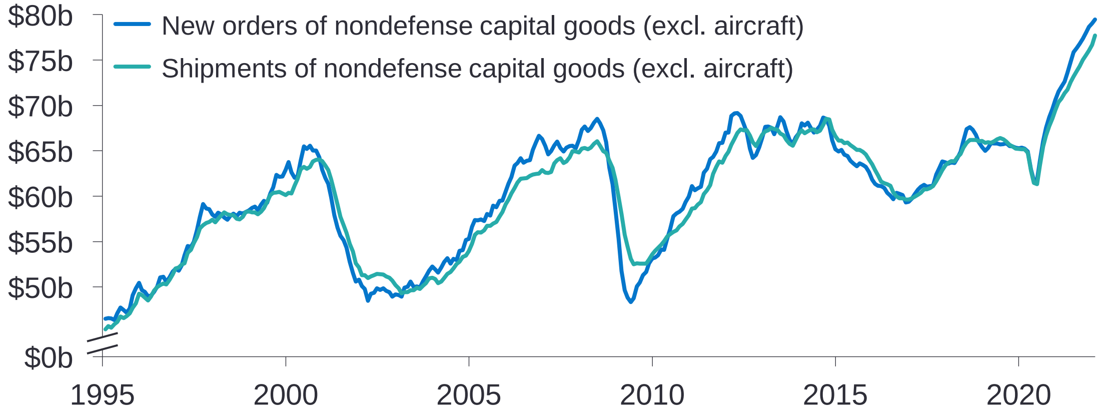


Source: U.S. Census Bureau

EY Parthenon

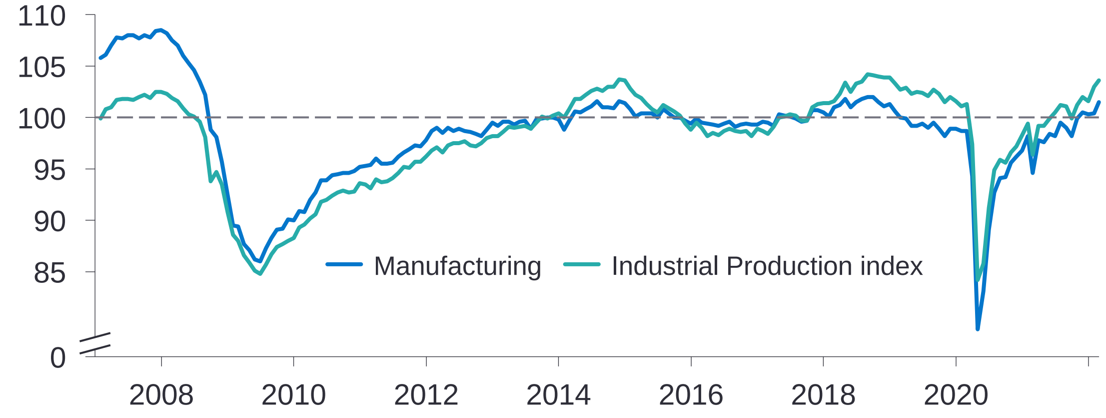
Business investment activity will continue to firm in 2022 driven by robust demand and easing supply chain strains; higher input and labor costs will remain headwinds

Value of new orders and shipments of nondefense capital goods (three-month moving average)
January 1995 – January 2022



- Durable goods orders fell 2.2% in February – the first decline in five months – with lower autos and aircraft orders leading the decrease. Broad-based weakness across major categories points to increased business caution in the face of renewed global geopolitical and economic uncertainty.
- Core orders – nondefense capital goods orders excluding aircraft – posted their first decline in a year, down 0.3%. Encouragingly though, core shipments – a solid business investment gauge – rose 0.5%.
- With durable goods orders 18% above their pre-pandemic level, we continue to see solid capex prospects for 2022 despite persistently high inflation, rising borrowing costs and renewed supply chain issues.

US industrial production indices
January 2007 – February 2022 (2017 = 100)



- Industrial production continued to firm in February, up 0.5%, driven by stronger manufacturing output, up 1.2%. Gains across manufacturing subsectors were broad-based except for autos.
- Overall, industrial activity remains strong with manufacturing output up 7.4% over last year and manufacturing capacity utilization at 78% -- just shy of its most recent high of 78.2% in August 2018.
- An elevated level of unfilled orders should keep industrial production strong, but the rise in commodities prices fueling inflation and renewed lockdowns in China exacerbating supply chain strains represent downside risks.

Source: US Census Bureau; EY-Parthenon analysis

The snap-back from COVID has distressed global supply chains

Import and logistics

2x
Delay in shipping days

Between January 2020 to July 2021, the transit time to ship goods from ports in China to Los Angeles doubled from 30.6 days to 62.2 days.

30%
Increase in containers stuck on dock

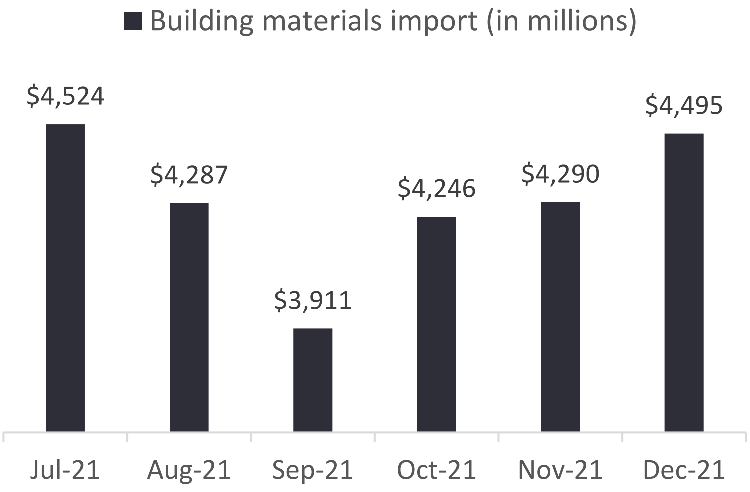
33% of containers waited for 5 or more days to be unloaded in September 2021 compared to only 3% in January 2021.

600%
Increase in container shipping rates

600% increase in container shipping rates due to increased demand between April 2021 and Sep 2021.

US's reliance on imports

- US imports reached a **record high** of **$308.9B** with an increase of **1.6%** or **$4.8B** from Nov 2021 to December 2021.
- Import of **building materials** is demonstrating a strong growth trajectory, indicating greater reliance on imports.



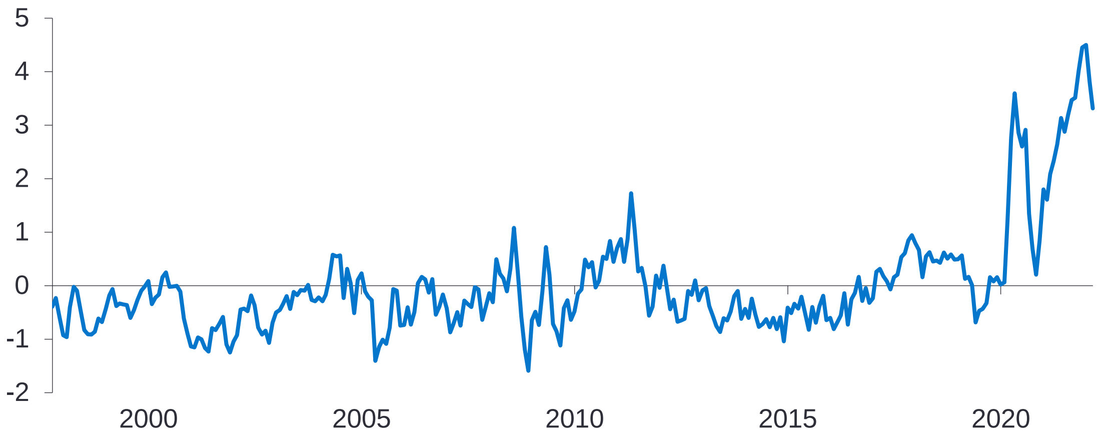
Impact on construction

- **Delayed shipments** of building materials, such as **doors and equipment with computer chips,** are **stalling construction, thereby delaying occupancy permits.**
- In January 2022, North America was ranked 6th as per the **construction project momentum index**. **China** was ranked **1st**. Considering the US imports many of its building materials from China, this dichotomy displays the **importance of domestic sourcing.**
- In November 2021, the Biden Administration **doubled "trade remedy"** duties on Canadian lumber imports to **promote domestic sourcing** and reduce reliance on imports.
- Congress **in January 2022** moves to fund $52M for CHIPS Act, aimed at strengthening US semiconductor supply.

Source: Bloomberg, Agistix, Trading economics, Investment Monitor, Cato Institute

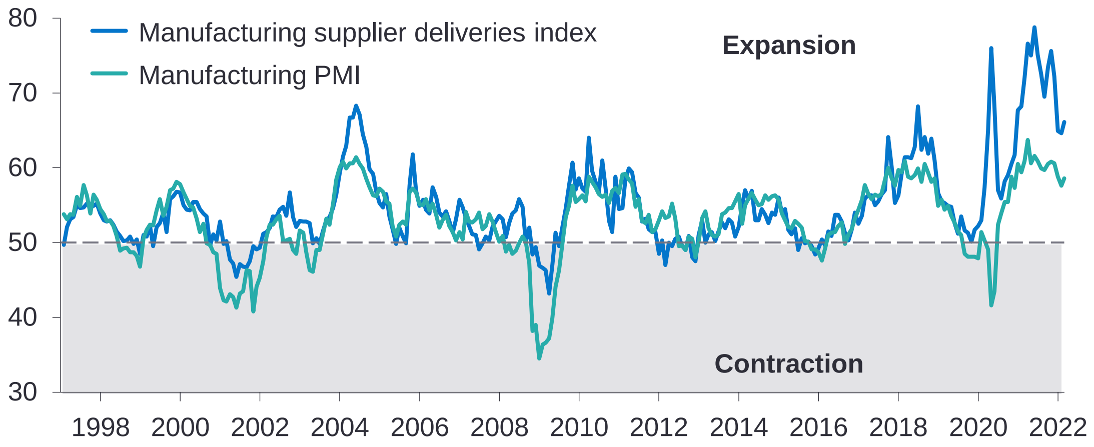
Global supply chain stress should ease in 2022 on cooler demand and stronger supply capacity, but renewed lockdowns in China and the war in Ukraine will slow the process

Global supply chain pressure index (GSCPI)[1]
September 1997 – February 2022



- Global supply chain pressures remained elevated in early 2022, but they fell back modestly in February on reduced backlogs and faster delivery times. Shipping costs have fallen back to their spring-2021 levels.
- There were some signs of easing pressures in China, South Korea, and Taiwan even though the easing in China continues to lag other economies.
- The war in Ukraine and renewed lockdowns in China will lead to renewed supply chain stress that should dissipate over the summer.

US manufacturing PMI and supplier deliveries subindex[2]
January 1997 – February 2022



- Manufacturing activity was quick to rebound from the omicron disruption. The ISM manufacturing index rose from 57.7 to 58.6 in February.
- However, the ISM manufacturing supplier deliveries index jumped 1.5 points pointing to increase supply chain stress while the order backlogs fell by 6.4 points to a 15-month.

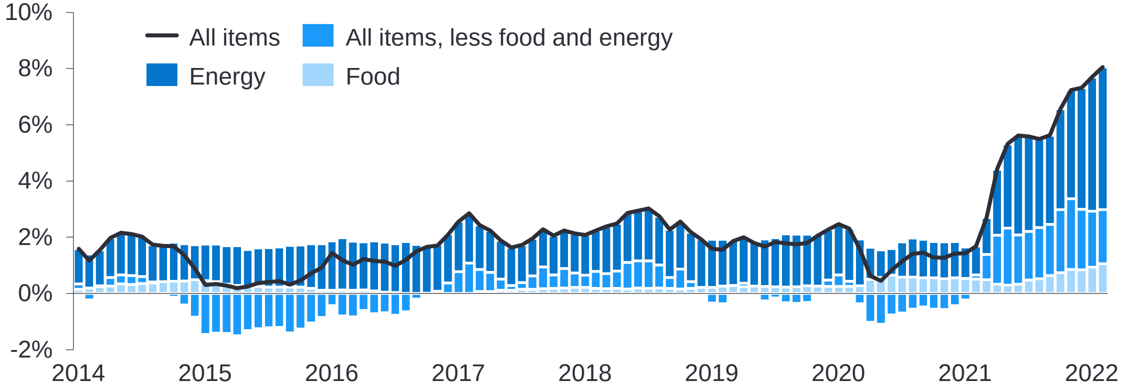
1. Index scaled by its standard deviation (0=average value).
2. The ISM (Institute for Supply Management) measures PMI (Purchasing Managers' Index) by surveying manufacturing and service firms on their orders, production, employment, deliveries, and inventories. The index indicates business activity in both sectors. This is a diffusion index with readings above 50 indicating expansion and reading below 50 indicating contraction in activity.

Source: Federal Reserve Bank of New York; ISM; EY-Parthenon analysis

EY Parthenon

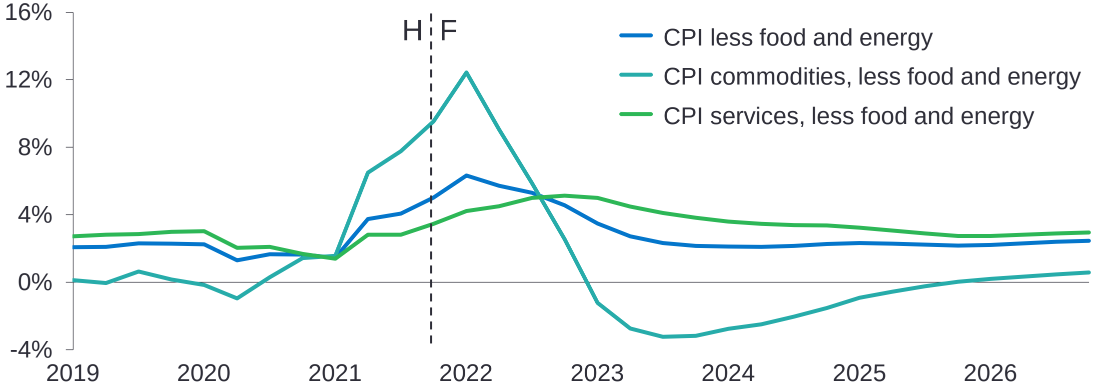
Inflation is likely to peak in the spring at a 40-year high above 8% led by higher food, gas and goods prices; inflation should fall back from H2, but the process will be slow

Year-over-year percent change in CPI
January 2014 – February 2022; not seasonally adjusted



- Inflation rose to its highest level in 40 years in February. Headline CPI rose 0.8% m/m while core CPI rose 0.5% m/m, pushing headline and core CPI inflation up +0.4 points to 7.9% y/y and 6.0% y/y, respectively – both record highs since 1982.
- Sequential inflation momentum was tilted to the upside with the headline CPI rising by the most in 5 months and the core CPI increasing in line with its 5-month average.
- We believe inflation could surpass 8.5% y/y in March. The war in Ukraine and severe economic sanctions imposed on Russia led to a surge in commodities prices that is filtering through to food, gas and goods prices, further fueling the current inflationary environment.
- An additional risk comes from the renewed lockdowns across China which could lead to re-intensifying supply chain strains.

Year-over-year percent change in CPI excluding food and energy
2019 – 26F

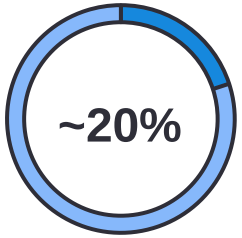


- Surging commodities prices will further fuel inflation in the near-term, but cooler demand growth, a rotation in the spending mix, and easing supply constraints should help slowly reduce inflationary pressures in H2 2022. Still, we believe CPI inflation could have a 5%-handle at the end of the year.
- Over the past 30 years, energy price shocks have generally been disinflationary over the medium-term, as they caused a drag on economic activity and lowered inflation. This could still hold true today, but stagflation (high inflation and economic stagnation) is a key risk given today's unique inflationary backdrop.
- The CPI for goods (commodities less food and energy) is expected to decline in 2023 as prices for cars (used and new), household furniture, and electronic equipment gradually realign with their pre-Covid-19 trends.

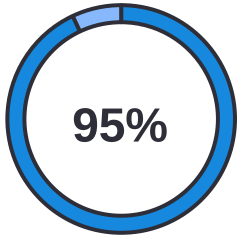
Source: BLS; EY-Parthenon macroeconomic model; EY-Parthenon analysis

Construction materials prices have risen dramatically

Material inflation is threatening the positive growth outlook of the US construction industry. The Producer Price Index (PPI) for materials displays **massive cost increases year-on-year**, creating **challenges** for contractors and owners **to accurately perform estimating**, especially for major capital projects constructed over several years.



Average price increase of commercial construction materials in 2021 as compared to 12.5% annual increase in bid price PPI



According to the US Chamber of Commerce Commercial Construction Index, **95% of contractors faced at least one material shortage in the last quarter of 2021**

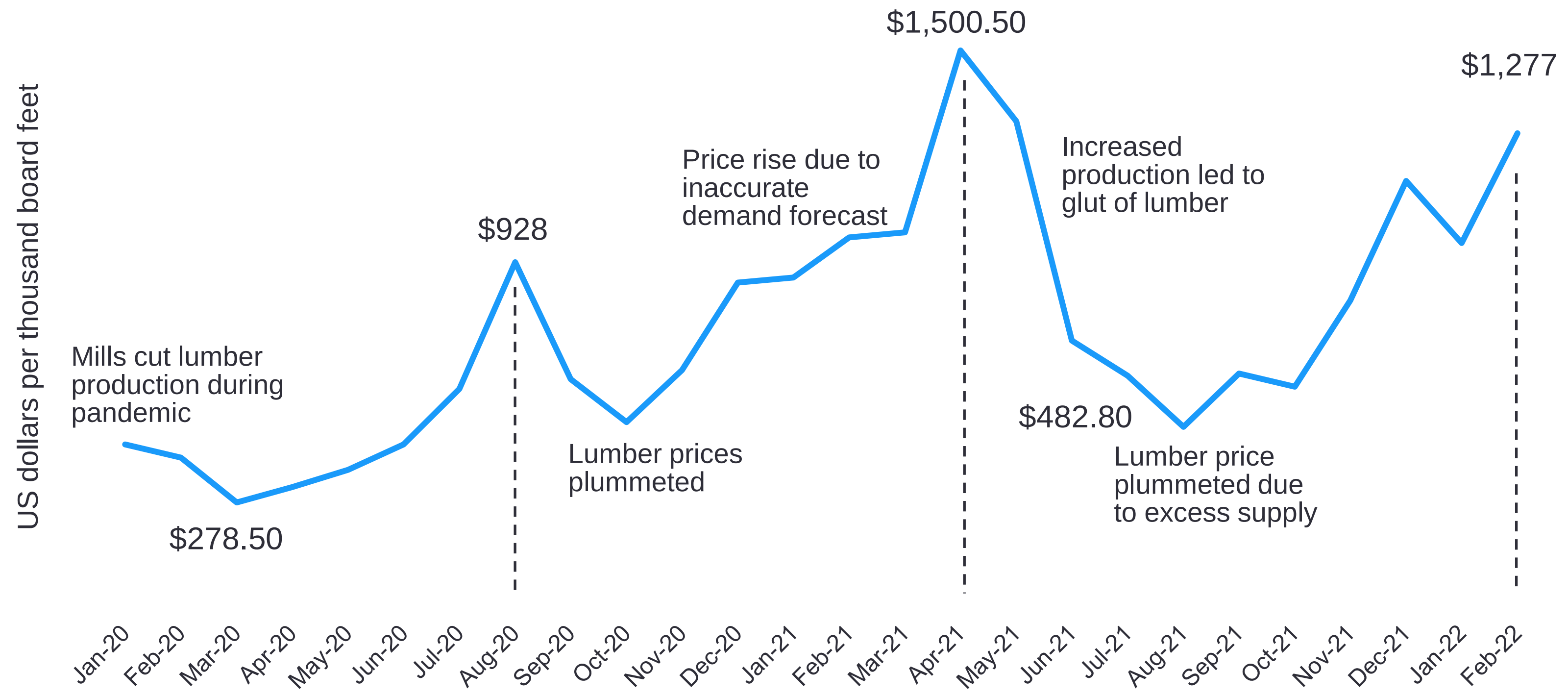
YoY% change in PPI for construction materials

Source: Associated General Contractors of America, Supply chain dive, US Chamber of commerce

Double-click: The bullwhip effect

The bullwhip effect is the impact of evolving consumer demand to changing inventory levels as the material moves through the supply chain. The largest wave of the whip hits the raw material supplier.

The bullwhip effect on lumber prices in the US (2020 – 2022)



Source: Trading economics, Materials risk

> "Our forecasts of the future are often just projections of the present
>
> Daniel Stanton, supplychained.com

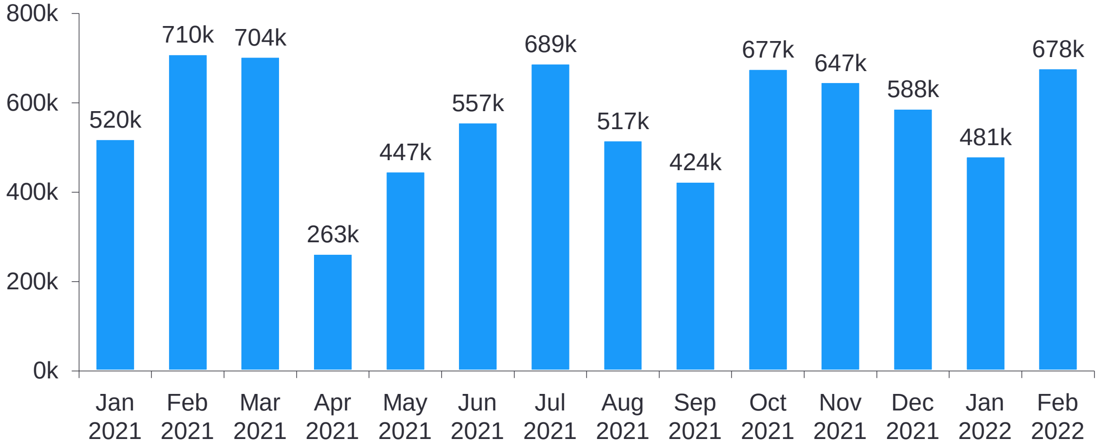
Taking the whip by it's handle

- Streamline supply chain operations
- Avoid bulk discounts
- Consistent but small order batches
- Reduce lead time

EY Parthenon

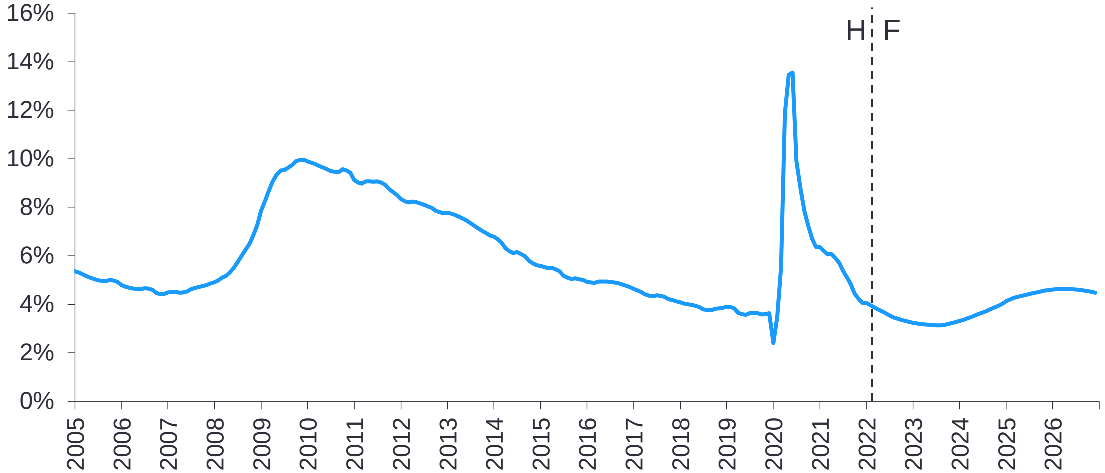
Labor market recovery remains robust in early 2022 with strong jobs growth and an unemployment rate falling close to pre-pandemic levels

Month-over-month change in total nonfarm employment[1,2]
January 2021 – February 2022



- A historically tight labor market continues to entice employers to focus on talent acquisition and retention despite successive waves of Covid-19 infections.
- Nonfarm payrolls rose a strong 678k in February – the largest gain in 8 months -- as workers rejoined the labor force in large numbers. The services sector led the gains with a robust 549k jobs advance.
- As the omicron wave dissipated, there were 1.5 million workers reporting being absent from work due to illness, down from 3.6 million in January.
- The jobs shortfall relative to pre-Covid-19 now stands at 2.1 million which means that over the past two years, the US economy has recouped over 90% of the pandemic-related job losses.

US historical and projected unemployment rate
2005 – 26F



- The unemployment rate fell 0.2 percentage points to a new post-pandemic low of 3.8% in February with the number of layoff remaining near historical lows.
- As such the unemployment rate is only marginally higher than its pre-pandemic 50-year low of 3.5%.
- We anticipate the economy will add over 4 million jobs in 2022 with the unemployment rate moving toward 3.3% by year-end.
- The resulting labor market tightness will maintain strong upward pressure on wage growth.

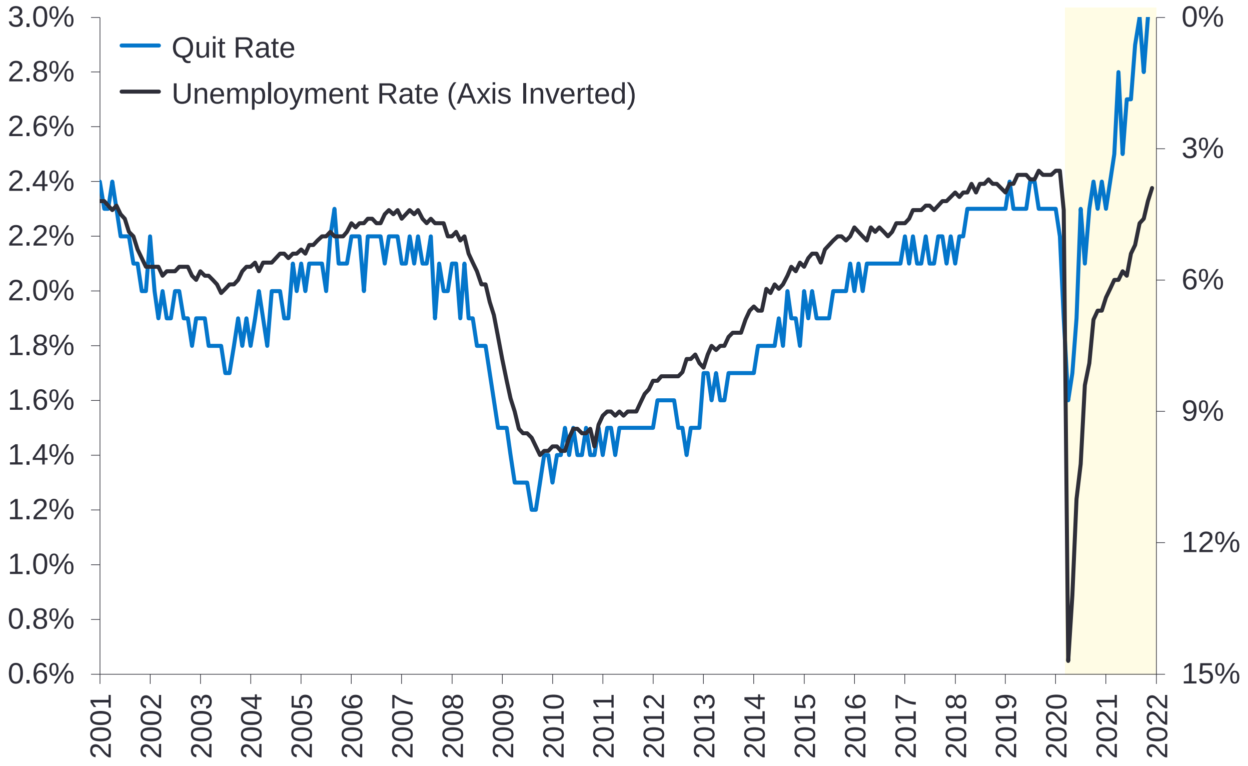
1. Month-over-month change in total nonfarm employment data comes from the BLS Establishment Survey; unemployment rate data comes from the BLS Household Survey.
2. January 2021 and February 2022 data is preliminary.
Source: BLS; EY-Parthenon analysis

EY Parthenon

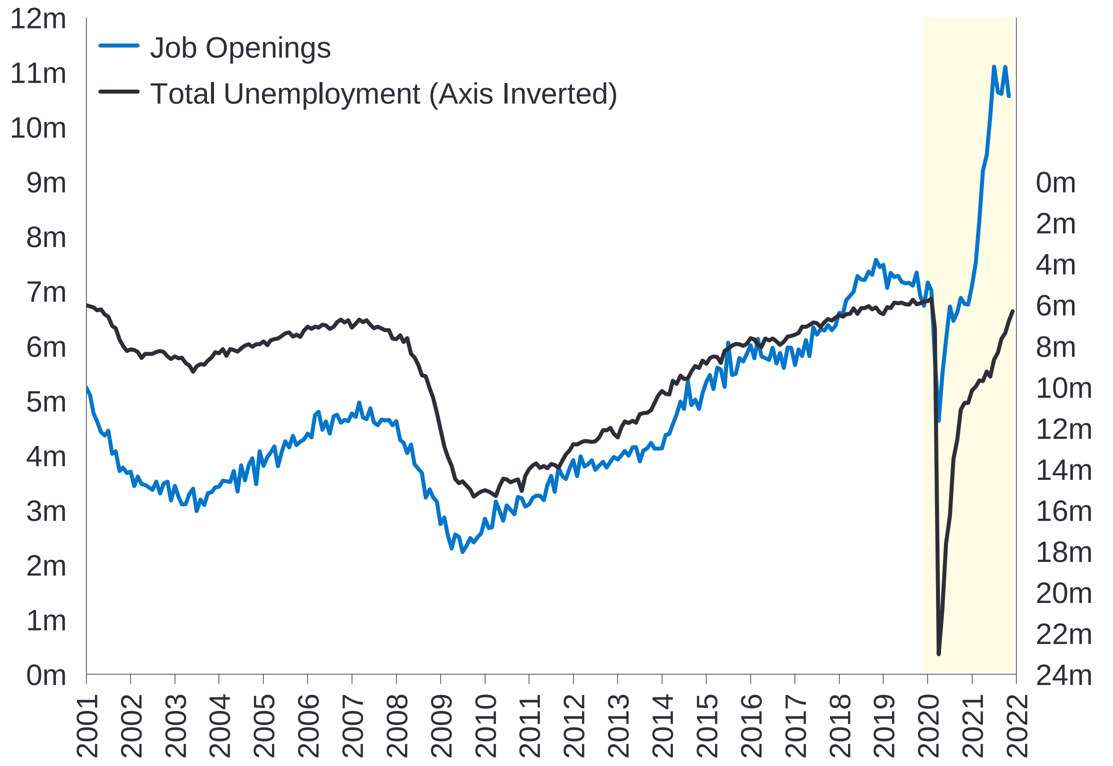
The elevated levels of the “quit rate” and of job openings indicate that the labor market is even tighter than the current 3.9% unemployment rate indicates

There are 5 million more job openings then unemployed people

Unemployment Rate vs JOLTS[1] Quit Rate[2],
Jan 2001 – Dec 2021



JOLTS Job Openings[2] vs U.S. Unemployment,
Jan 2001 – Dec 2021



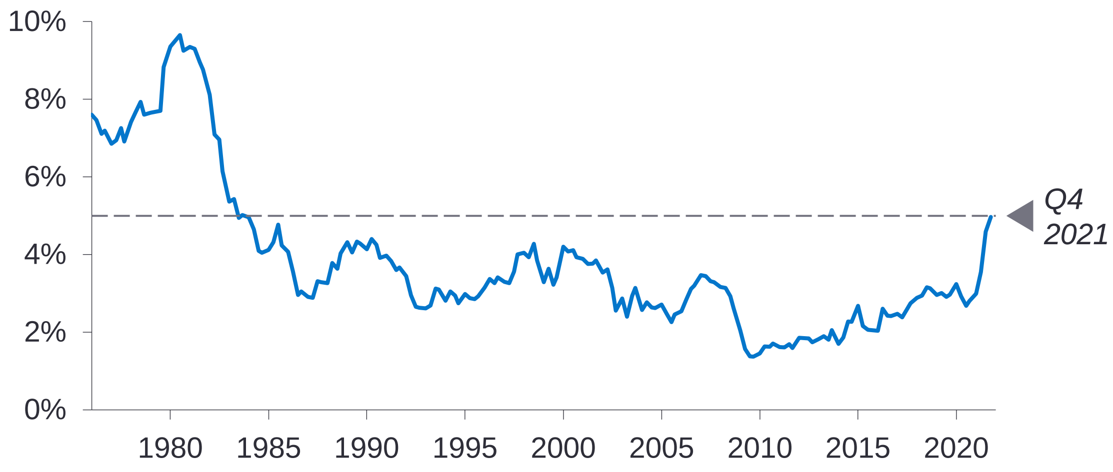
1. JOLTS is the Job Openings and Labor Turnover Survey
2. Quit rate and job openings only shown through November 2021

Source: BLS

EY Parthenon

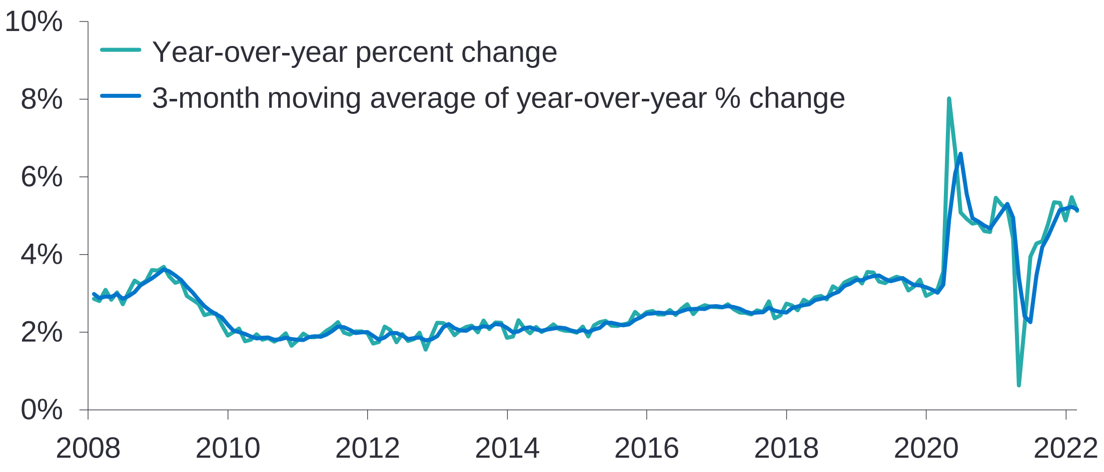
A historically tight labor market has led to a strong and broad acceleration in wage growth; greater labor force participation should help gradually ease pressures in 2022

Year-over-year percent change in employment cost index for private wages and salaries
1976Q1 – 2021Q4



- An extremely tight labor market has led to a historic acceleration in wage growth.
- The Employment Cost Index (ECI), which adjusts for compositional shifts in employment, rose 4.0% y/y in Q4 2021, while our favored wage gauge, the ECI private wages and salaries subindex, rose 5.0% y/y, the strongest rise since the early 1990s.

Year-over-year percent change in private average hourly earnings
January 2008 – February 2022

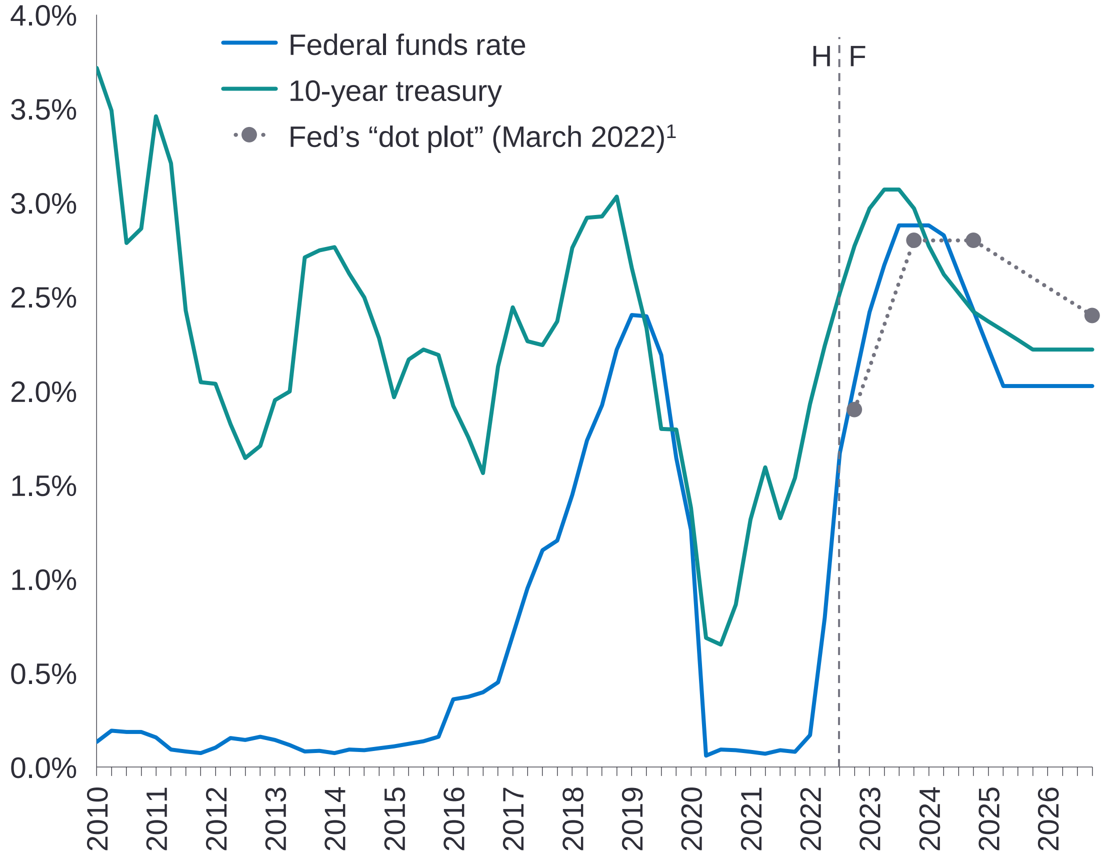


- Average hourly earning were flat in February, with wage growth decelerating 0.4 percentage points to 5.1% y/y.
- We anticipate wage growth will accelerate through the first half of 2022, and should start to gradually ease in the latter part of the year as more workers return to the labor market and help ease the labor supply constraints.
- Still, the rebound in the labor force participation rate will take time, and with the unemployment rate expected to fall below its pre-pandemic level by year-end, efforts to retain existing talent and acquire new talent will keep upward pressure on wage growth.

Source: BLS; EY-Parthenon analysis

The Fed is "fully committed" to reasserting price stability in the face of persistently high inflation and stands ready to use all of the policy tools at its disposal

Interest rate forecasts, federal funds rate and 10-year treasury yields
2010 – 26F



- The March FOMC policy statement and Fed Chair Powell did more than just crystalize the Fed's hawkish pivot in the face of persistently elevated inflation. They signaled a full commitment to combatting inflation with all the tools at their disposal in order to reestablish price stability.
- The Fed is now "acutely" aware that time has come to raise rates and reduce the size of its balance sheet in order to bring down inflation. FOMC participants believe the economy is strong enough to withstand tighter monetary policy via an increase in real interest rates.
- While interest rate liftoffs have, in the past, been the most difficult act to execute for the Fed, the 25 basis point rate hike was well telegraphed. This time around the difficulty will be in calibrating the rate of ascent as well as the ideal cruising altitude.
- This delicate monetary policy rebalancing act will be made much more difficult in the context of the war in Ukraine and renewed lockdowns in China. Surging commodities prices, renewed supply chain strains and tightening financial conditions will be key factors determining the speed of monetary policy tightening in 2022.
- With the median (dot plot) rate hike expectations showing 175bps of fed funds rate increases in 2022, and another 90bps expected in 2023, the Fed anticipates the federal funds rate will reach 2.8% by the end of 2023 – well above the long-run neutral estimate of 2.4%.
- **EY-Parthenon now anticipates 200bps of fed funds rate increases in 2022 with a strong possibility of 50bp rate increases in May and June.**

1. "Dot plot" charts the median forecasted interest rate by the members of the Federal Open Market Committee (FOMC, a committee within the Federal Reserve) members, as of March 16, 2022
Source: Federal Reserve; EY-Parthenon macroeconomic model; EY-Parthenon analysis

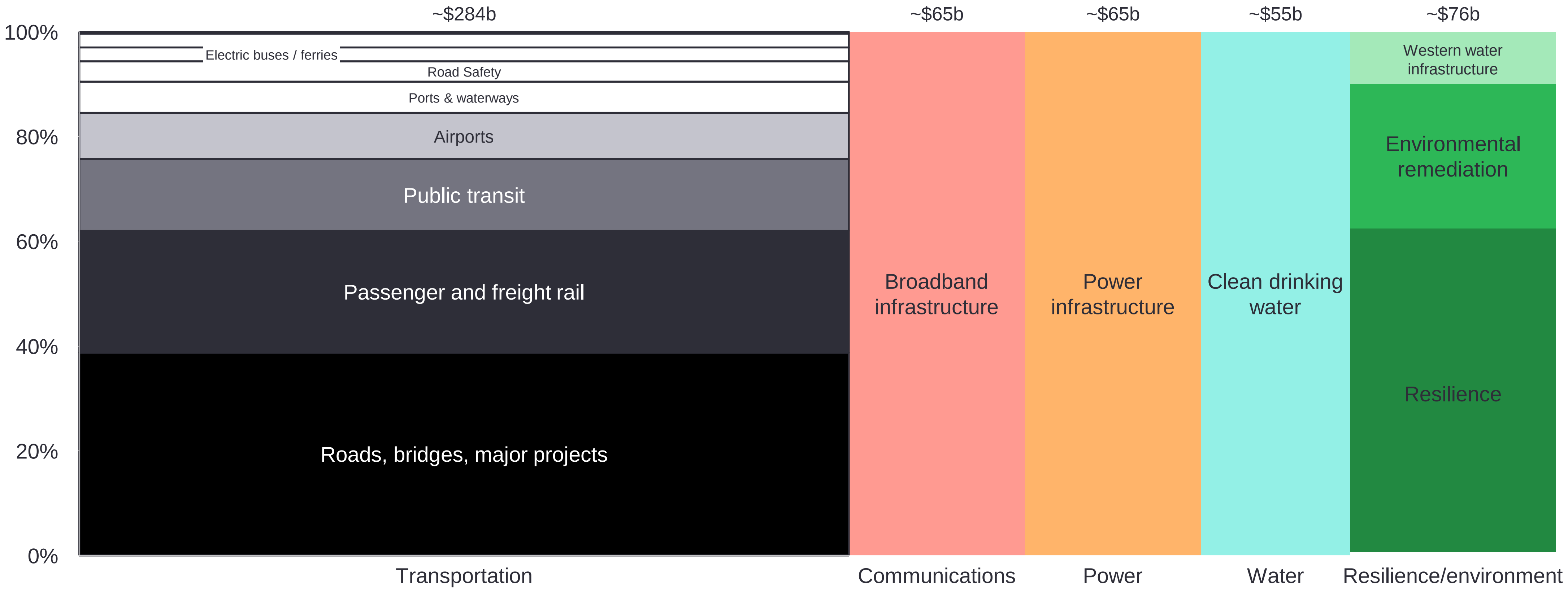
Agenda

- Macroeconomic scenario update
- Legislative update
  - The bipartisan infrastructure investment and jobs act (IIJA)
- Collaborative contracting

The Bipartisan Infrastructure Investment and Jobs Act allocates about half of its spending to transportation

Bipartisan Infrastructure Investment and Jobs Act
per 8/02/21 White House release

~$545b in spending authority over 5 years
(outlays will be spread over more than 5 years)

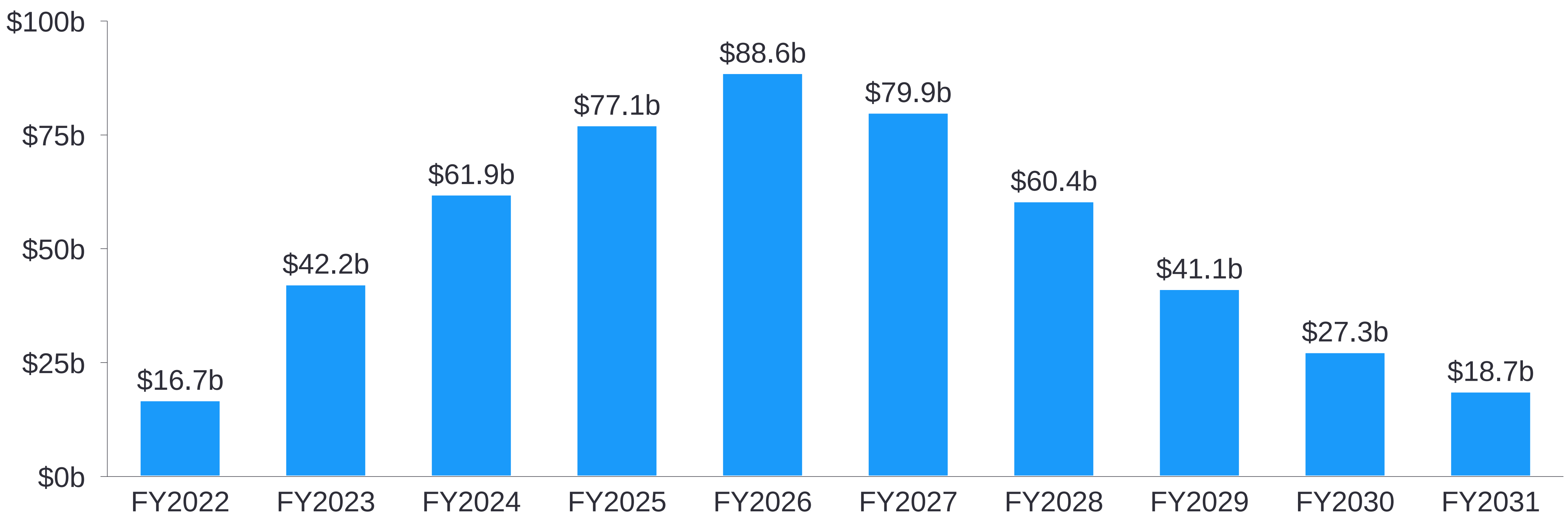


Source: White House Briefing Room Statement; NY Times; EY-Parthenon Analysis

EY Parthenon

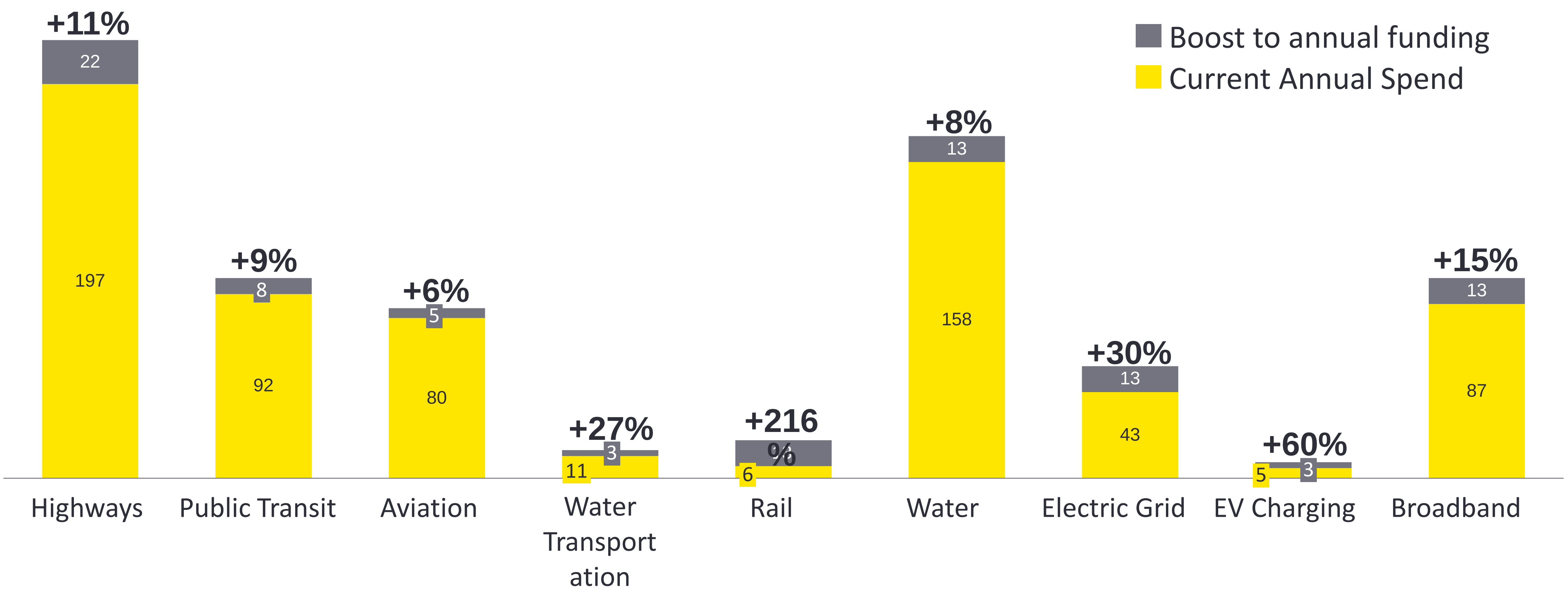
Outlays from the Bipartisan Infrastructure Investment and Jobs Act are expected to peak in fiscal year 2026, with ~$90b of spending in that year

Bipartisan Infrastructure Investment and Jobs Act,
Total Outlays by Fiscal Year, Projected ($b)
2021-2031



Source: CBO; EY-Parthenon Analysis

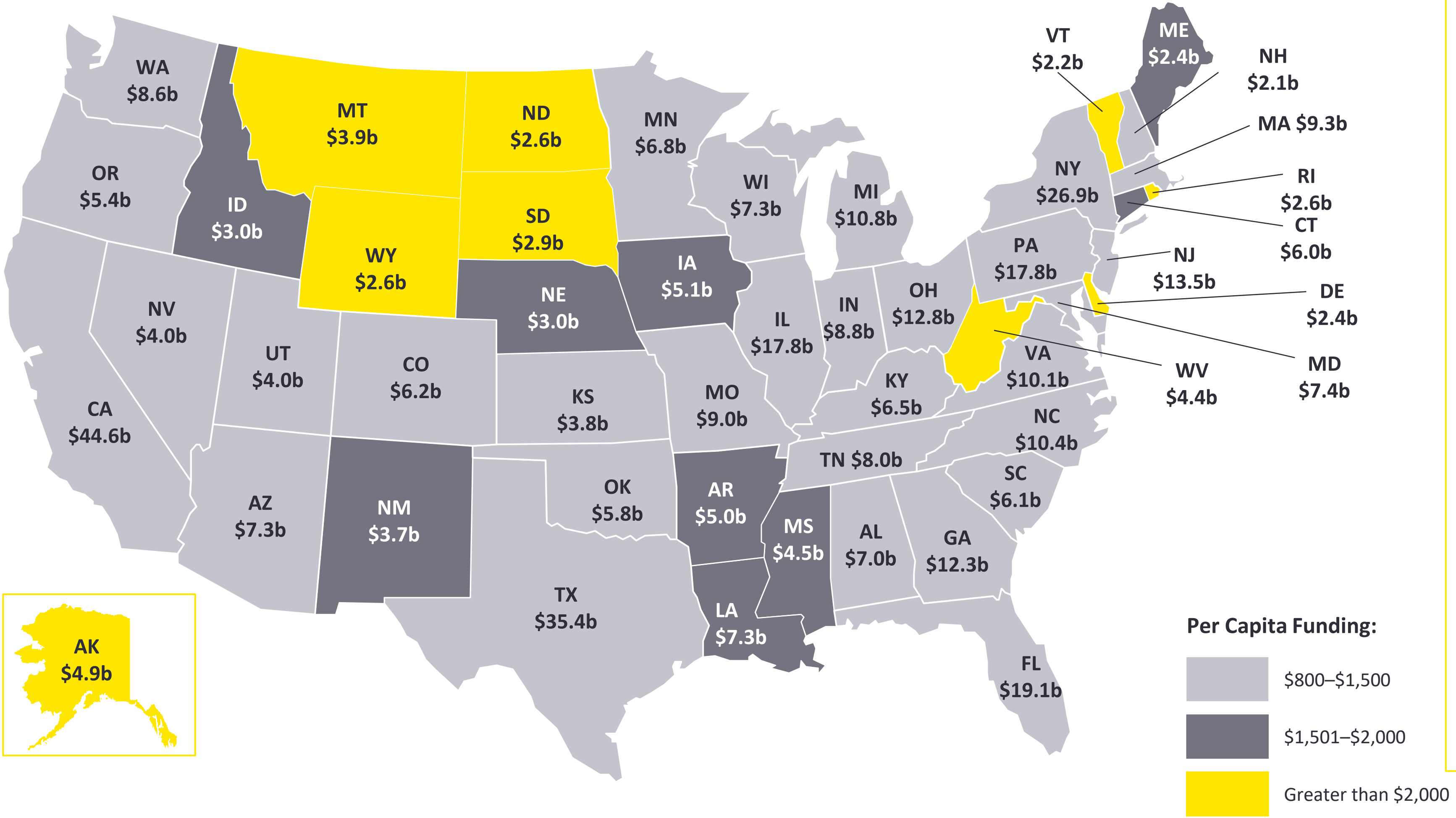
Annual boost to current sector funding on account of the Infrastructure Investment and Jobs Act



Source: CBO; EY-Parthenon Analysis

EY Parthenon

States such as CA, TX, NY are the biggest beneficiaries, with $25b each in formula funding.



Key Beneficiaries

Largest fund allocations:

- **$45b — California** ($1,127 per capita)
- **$35b — Texas** with ($1,216 per capita)
- **$27b — New York** with ($1,333 per capita)

Largest percentage increases:

- **Illinois –** 174% increase
- **Georgia –** 137%
- **New York –** 43%
- **Florida –** 38%
- **California -** 37%
- **Texas -** 34%

EY Parthenon

IIJA concerns and items to manage

- **Supply chain pressures on infrastructure programs**
  - Impact of inflation and labor and materials shortages, compounded by the Russian/Ukrainian war
  - Port capacity, transportation labor
  - Capacity of the contractor and DBE sub-contractor community to deliver
- **Government workforce and systems readiness**
  - Capacity issues, exacerbated by accelerated retirements, in the face of labor shortage
  - Agencies/departments not organized or budgeted for the new scale of activity
- **Program and grant management complexity**
  - New programs require coordination among multiple government and private stakeholders
  - Multiple layers of plans to be submitted
  - Competitive grant programs with stringent requirements
  - Compliance and reporting is complex
- **Pressure to act quickly**
  - Uptick in infrastructure development demand will outstrip supply of engineering services, construction services, materials and more—first movers win, others lose
  - Media scrutiny on inability to spend money quickly to deliver desired outcomes

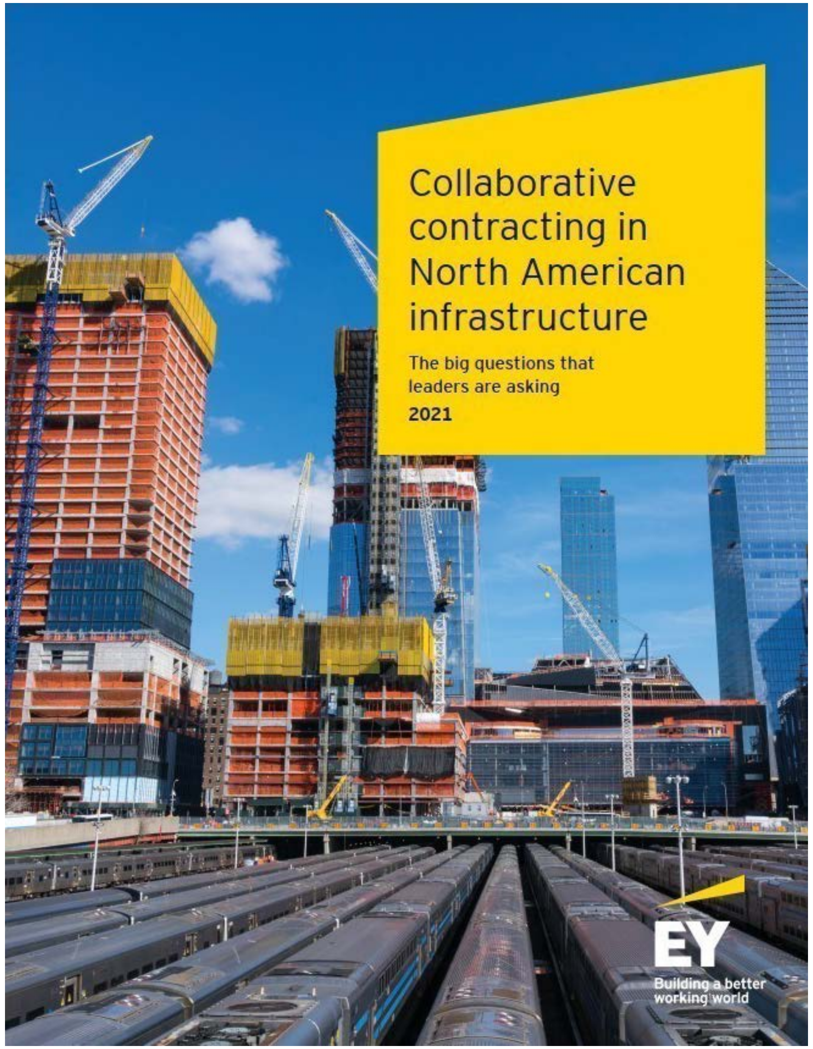
Agenda

- Macroeconomic scenario update
- Legislative update
  - The bipartisan infrastructure investment and jobs act (IIJA)
- Collaborative contracting

To get the best out of the construction market and its supply chain, state and local owners will need to carefully weigh project delivery models and match risk/reward to market dynamics

- **Owners and contractors have both had their share of challenges over the last 10 years:**
  - Big increase in number of complex megaprojects ($1b+)
  - Trend toward fixed-price hard-bid models (design-build, public-private partnership)
  - Intense competition among contractors
  - Pervasive cost overruns, schedule delays and high-profile contractual disputes

- **Growing interest in doing things differently:**
  - Renewed focus on project readiness
  - Splitting big programs into packages
  - Exploring “collaborative” delivery models and the benefits of early contractor involvement (construction manager at-risk, construction manager/general contractor, progressive design-build, others)



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A look at collaborative contracting methods….

Collaborative contracting models				
	Two-stage contracting		Relationship contracting	
Model	CMAR and CM-GC	P-DB and PDA	DP	Alliance and IPD
Overview	Owner appoints a design team and retains overall responsibility for design. Owner then appoints a construction manager (CM) to inform design and scope definition. The CM ultimately negotiates a guaranteed maximum price (GMP) proposal for construction.	Owner initially appoints an Owner's engineer to undertake concept-stage design. Owner then engages a Contractor or developer, with its own design team, to support development of the specification, and ultimately develop and negotiate a DB contract and price.	DP integrates with the Owner team to provide management services and resources to delive the project or program. DP supports Owner in procurement for work packages and is incentivized through a degree of risk sharing to linked to key project outcomes.	
Collaboration and cost optimization	CM collaborates with the design team, providing constructability input, open-book cost estimating and scheduling.	CM collaborates with the design team, providing constructability input, open-book cost estimating and scheduling. Close DB relationship can enhance designer efficiency and innovation.	DP is fully embedded into Owner team and highly incentivized through sharing mechanisms to collaborate throughout project delivery to achieve value.	
Risk allocation or sharing	Design and scope risks are largely retained by Owner. Contractor responsible for progressing construction and managing sub-trades.	Contractor assumes final design, and potentially O&M risk, and also potentially development-stage risks (e.g., permitting), which can drive better innovation.	Owner is the prime for work package contracts but the DP shares risk through painshare-gainshare mechanisms.	participants throughout the design and construction.

Collaborative contracting models				
	Two-stage contracting		Relationship contracting	
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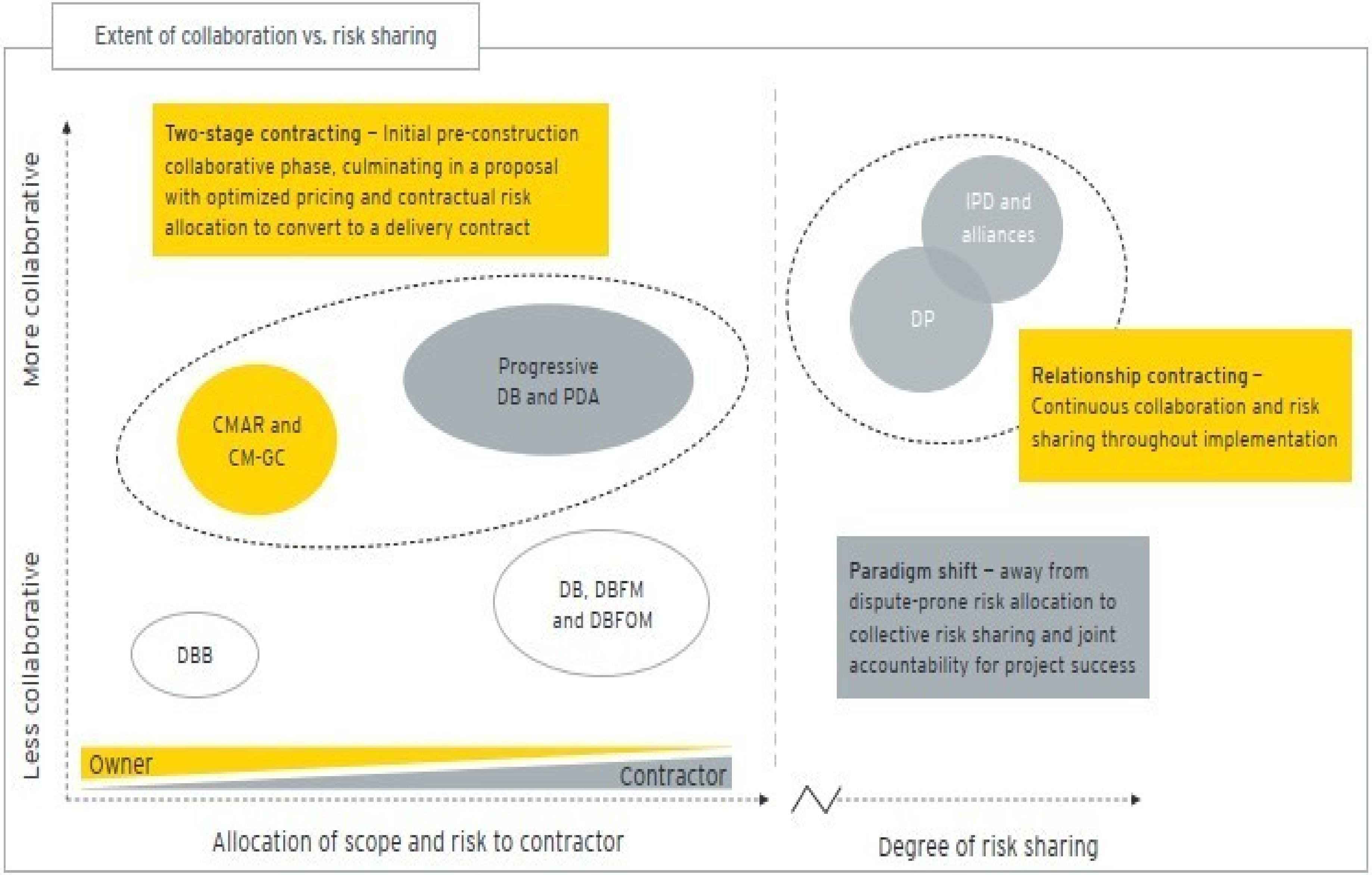
A look at collaborative contracting methods….



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Polling question

Go to Slido.com and enter #556719 ……Have you participated in any form of early-contractor involvement (such as IPD, progressive design build, CMAR, etc.)?

a) **Yes**

b) **No**

slido

Have you participated in any form of early-contractor involvement (such as IPD, progressive design build, CMAR, etc.)?

ⓘ Start presenting to display the poll results on this slide.

What’s the most valuable thing you learned today?

ⓘ Start presenting to display the poll results on this slide.

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EY-Parthenon teams work with clients to navigate complexity by helping them to reimagine their eco-systems, reshape their portfolios and reinvent themselves for a better future. With global connectivity and scale, EY-Parthenon teams focus on Strategy Realized — helping CEOs design and deliver strategies to better manage challenges while maximizing opportunities as they look to transform their businesses. From idea to implementation, EY-Parthenon teams help organizations to build a better working world by fostering long-term value. EY-Parthenon is a brand under which a number of EY member firms across the globe provide strategy consulting services. For more information, please visit ey.com/parthenon.

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ED None

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