THE **CONFERENCE BOARD**

Global Business Cycle Indicators During the Pandemic
Pre-Conference Workshop of the 35th CIRET Conference
Ataman Ozyildirim 14 September 2021

Business Cycle Indicators (BCI - LEI) Program

- First developed at the NBER, then published by the BEA
- Transfer from BEA 1995 (Leading Index, BCI Database) to The Conference Board
- The Conference Board: evaluation and updating composite indicators, 1996
- Global Indicators since 2000
- Economic theory informs selection of indicators but country specific features influence choice
- Updated LEI methodology in 2001 and 2005
- Introduction of statistical imputation, 2001
- Comprehensive benchmark revisions, 2012
- "Real" time analytic and production goals
- http://www.conference-board.org/economics/bci

Global Business Cycle Indicators Program (BCI - LEI)

- The Conference Board introduced indexes for twelve new countries or economies since 2000

- Australia, Brazil, China, Euro Area, France, Germany, India, Japan, Mexico, South Korea, Spain, United Kingdom
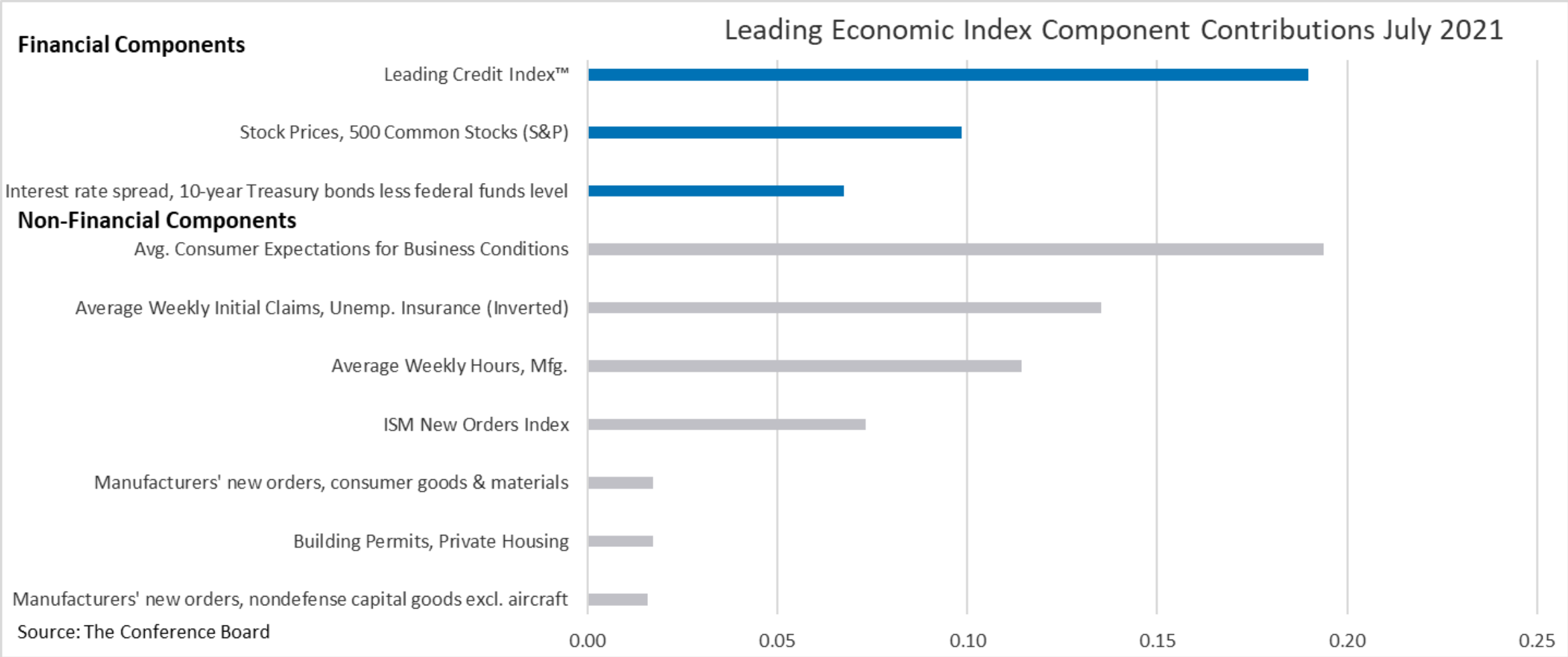
- Consistent methodology allows international comparisons

Selection criteria for LEI components

- Consistent timing
- Conformity
- Smoothness
- Economic significance
- Statistical adequacy
- Currency

As summary measures Leading Indexes are composed of quantitative and qualitative indicators which help to identify assumptions and risks in the economy
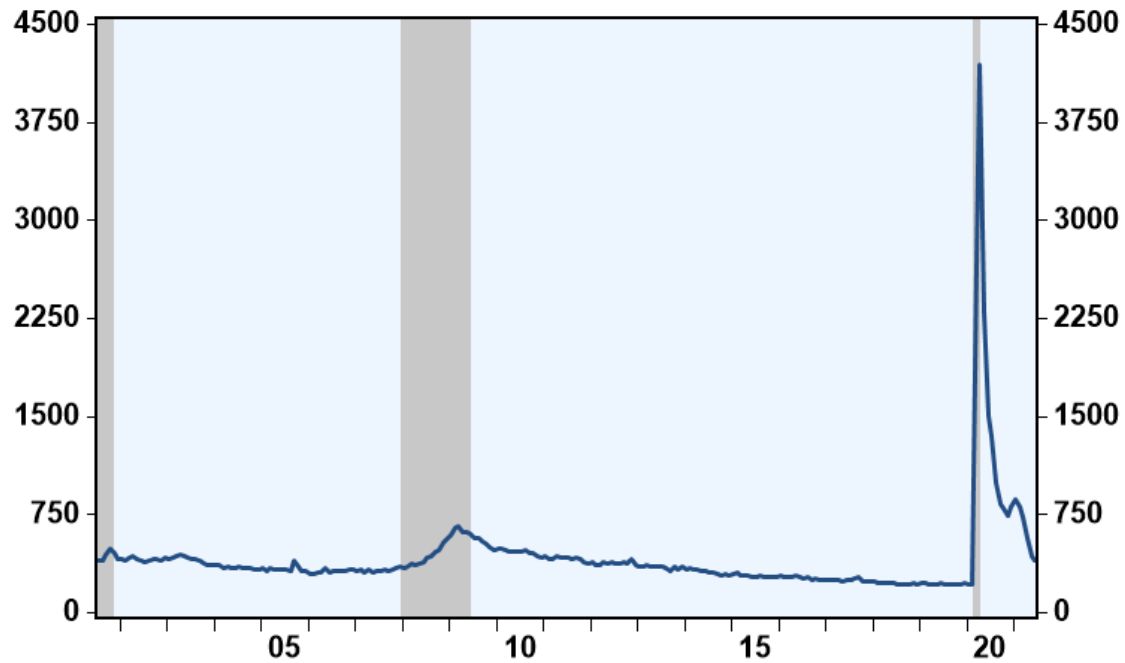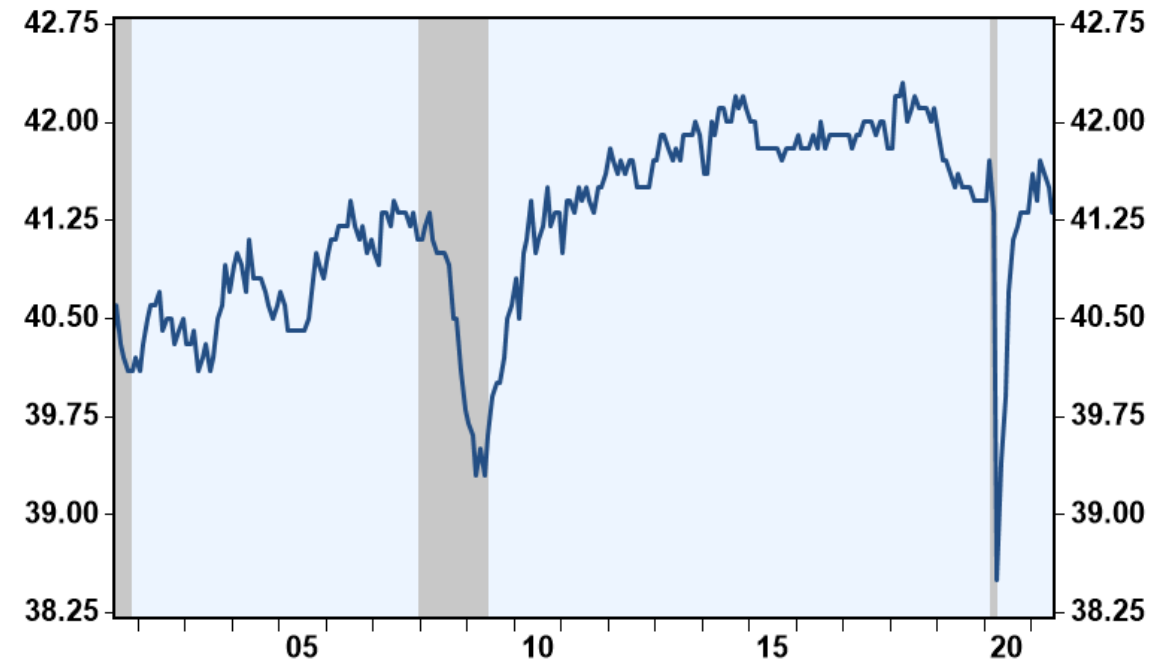

Leading Economic Index Component Contributions July 2021

Financial Components
- Leading Credit Index™
- Stock Prices, 500 Common Stocks (S&P)
- Interest rate spread, 10-year Treasury bonds less federal funds level

Non-Financial Components
- Avg. Consumer Expectations for Business Conditions
- Average Weekly Initial Claims, Unemp. Insurance (Inverted)
- Average Weekly Hours, Mfg.
- ISM New Orders Index
- Manufacturers' new orders, consumer goods & materials
- Building Permits, Private Housing
- Manufacturers' new orders, nondefense capital goods excl. aircraft

Source: The Conference Board

For more information: https://www.conference-board.org/data/bcicountry.cfm?cid=1

Labor market disruption during the pandemic recession also disrupts the LEI

For more information: https://www.conference-board.org/data/bcicountry.cfm?cid=1
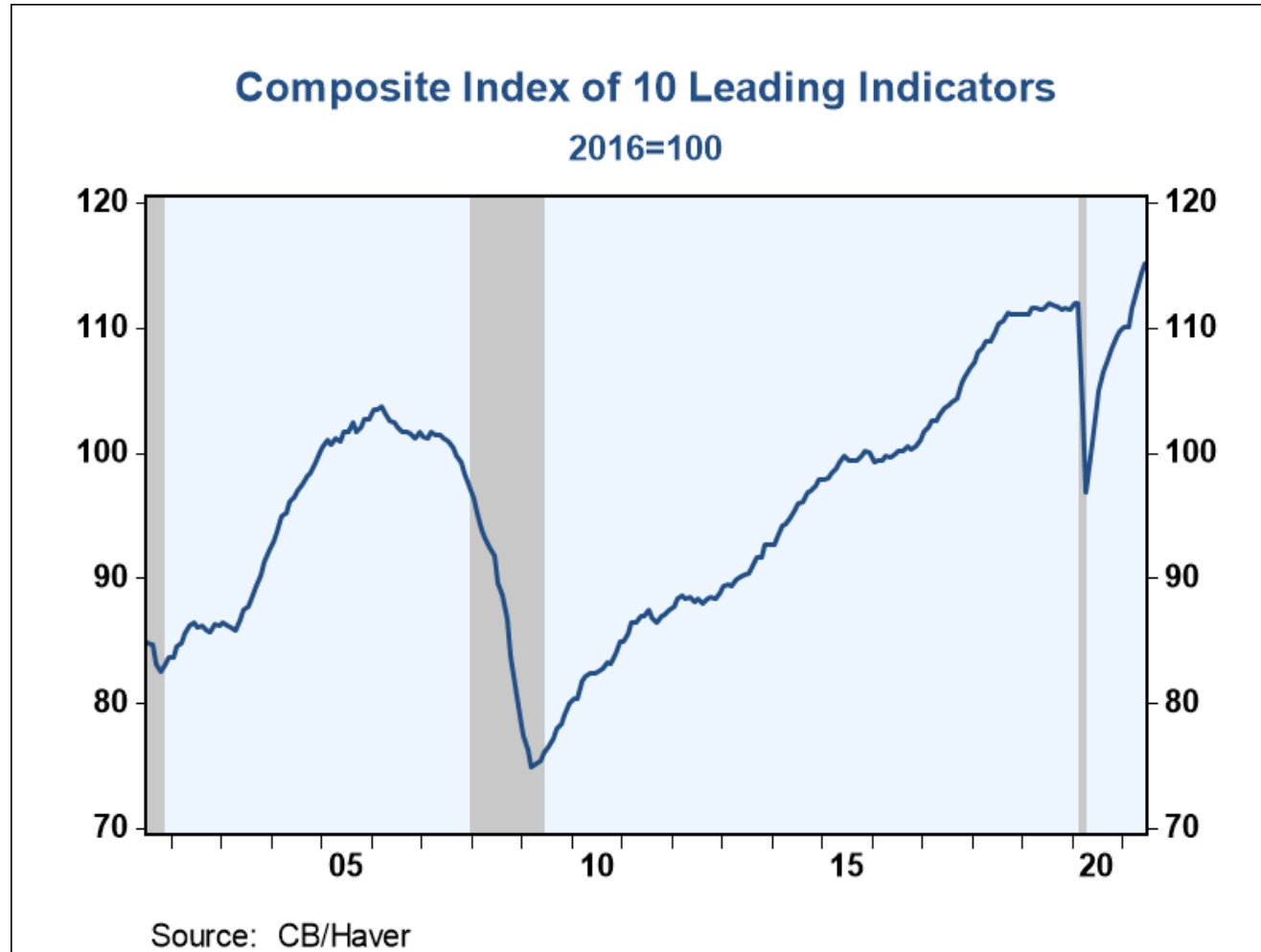
Because of the sudden-stop supply shock LEI contraction shows a different evolution of the recession and recovery than the Great Financial Crisis of 2008-2009

Composite Index of 10 Leading Indicators

2016=100

Source: CB/Haver

For more information: https://www.conference-board.org/data/bcicountry.cfm?cid=1

Another highly synchronized global downturn: Global Coincident Economic Index (CEI) is a monthly measure of the global cycle and the LEI leads its peaks
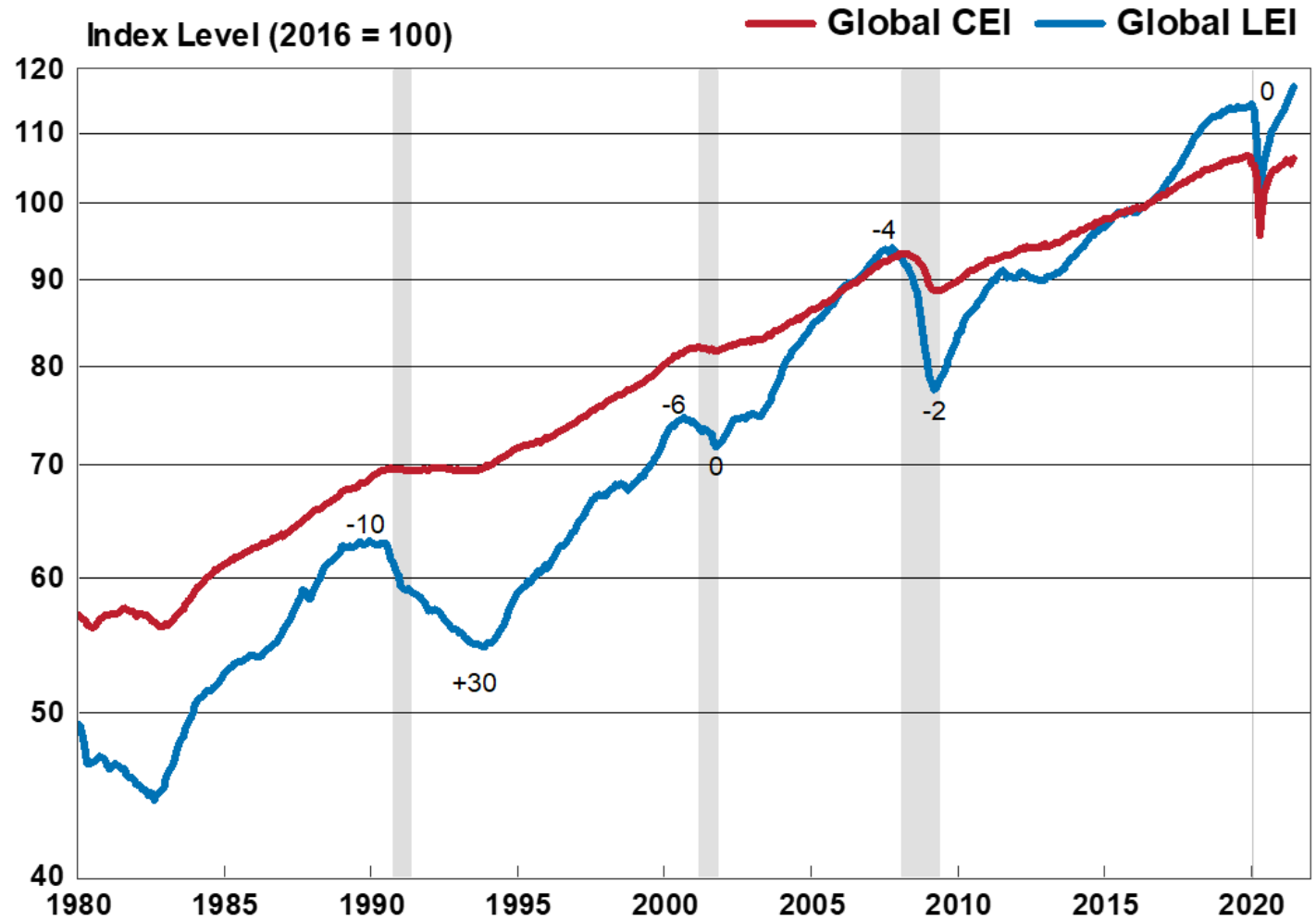
Note: Shaded areas represent business cycle chronologies derived from the Global CEI; determined by The Conference Board using the Bry-Boschan (1971) algorithm.
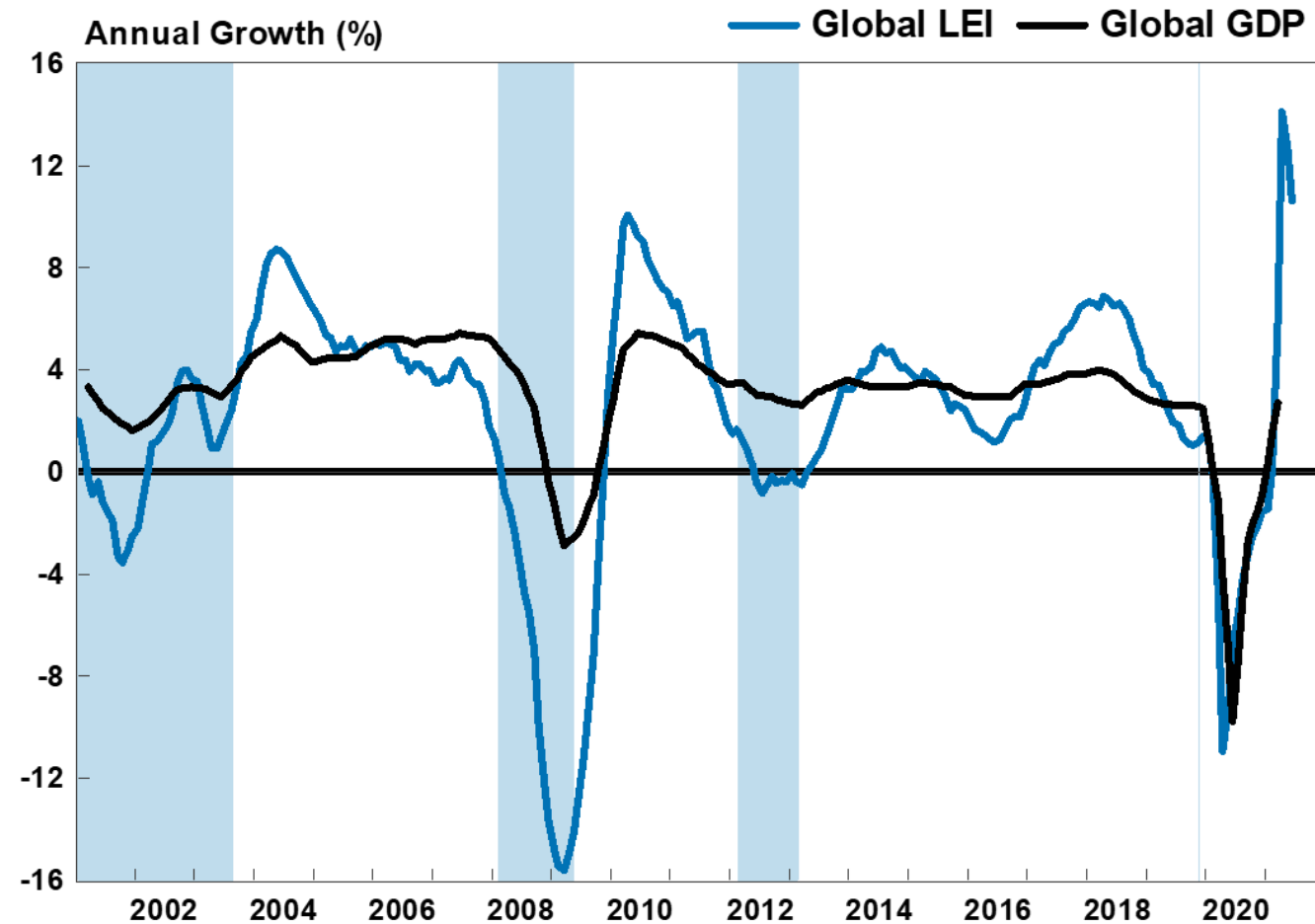Source: The Conference Board

Global Coincident Economic Index and Global GDP are highly correlated: annual growth rates vs. the global growth cycle. Composite indexes can help forecast the recovery (if not the specific peak of February 2020)
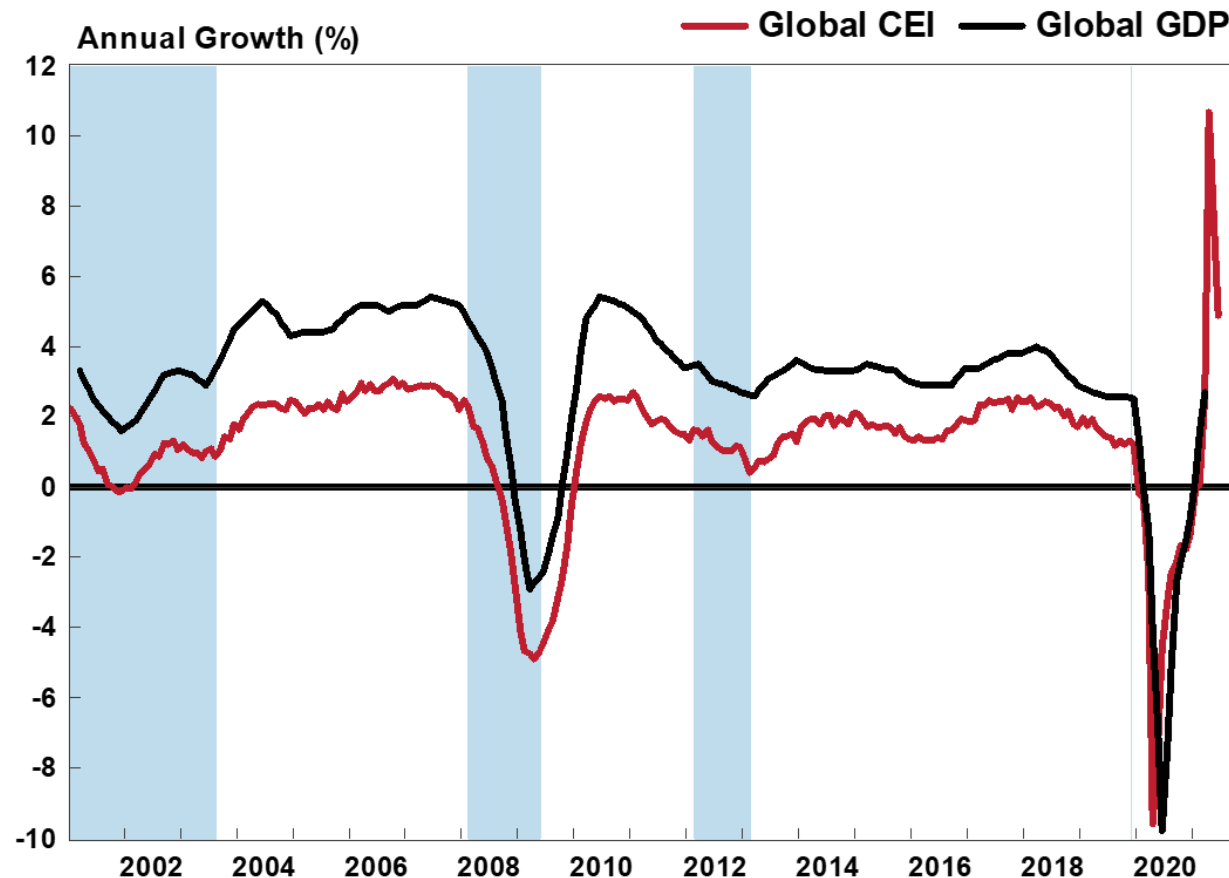
Note: Shaded areas represent growth cycle chronologies derived from the de-trended Global CEI; determined by The Conference Board using Bry-Boschan (1971) algorithm.
Source: The Conference Board

Global Leading Economic Index and Global GDP: annual growth rates vs. the global growth cycle

Note: Shaded areas represent growth cycle chronologies derived from the de-trended Global CEI; determined by The Conference Board using Bry-Boschan (1971) algorithm.
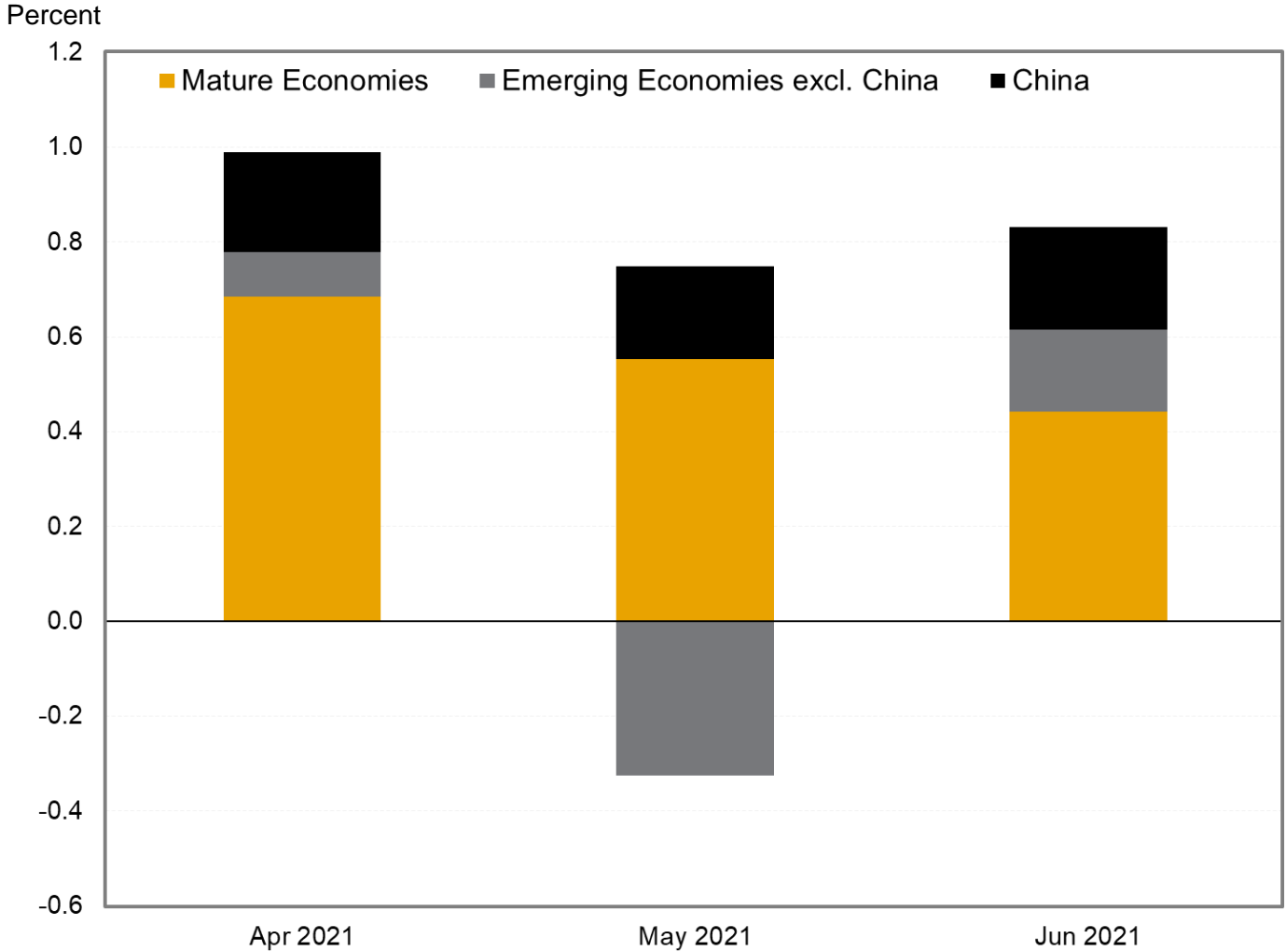Source: The Conference Board

Contributions of Mature and Emerging Economies excl. China to Monthly Growth in Global LEI

Source: The Conference Board

Cumulative Contribution to Global LEI point to broad based global recovery in 2021

Percent

Cumulative Contribution to the Global LEI

Legend:
- Other Emerging Economies
- China
- Other Mature Economies
- Euro Area
- United States

(Jan '20 - Jun '20)   (Jul '20 - Dec '20)   (Jan '21 - Jun '21)
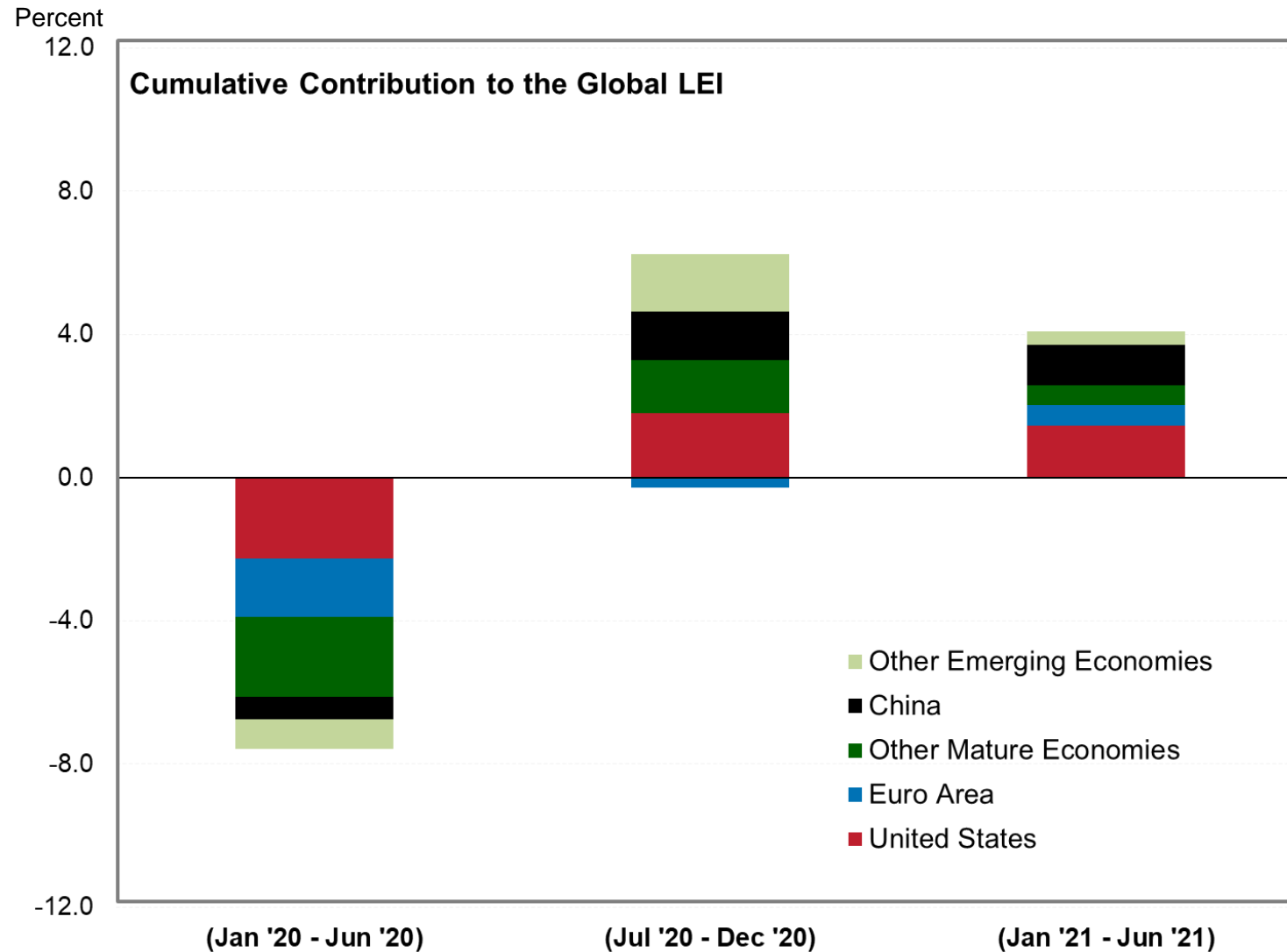
Source: The Conference Board

Evolution of the Global LEI over the last six months
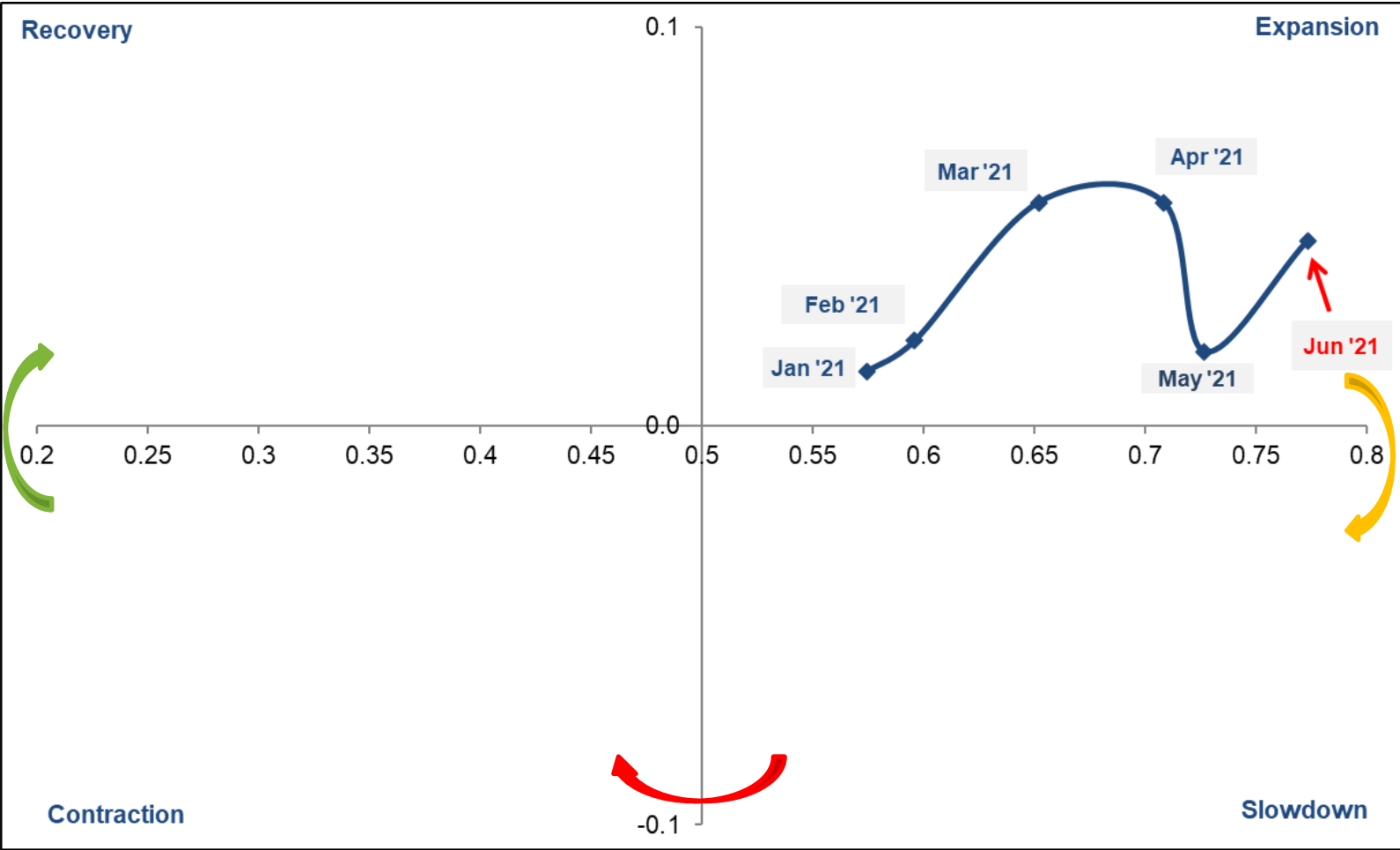
Note: The figure shows the time evolution of the Global LEI over the last seven months. Scatterplots depict X-axis values as normalized deviation from trend (so that x= 0.5 corresponds to trend) and Y-values are the monthly change in the normalized deviation from trend. Deviations from trend are calculated using a Hodrick-Prescott filter with λ = 129,600. Source: The Conference Board

Latest monthly LEI data for the thirteen economies
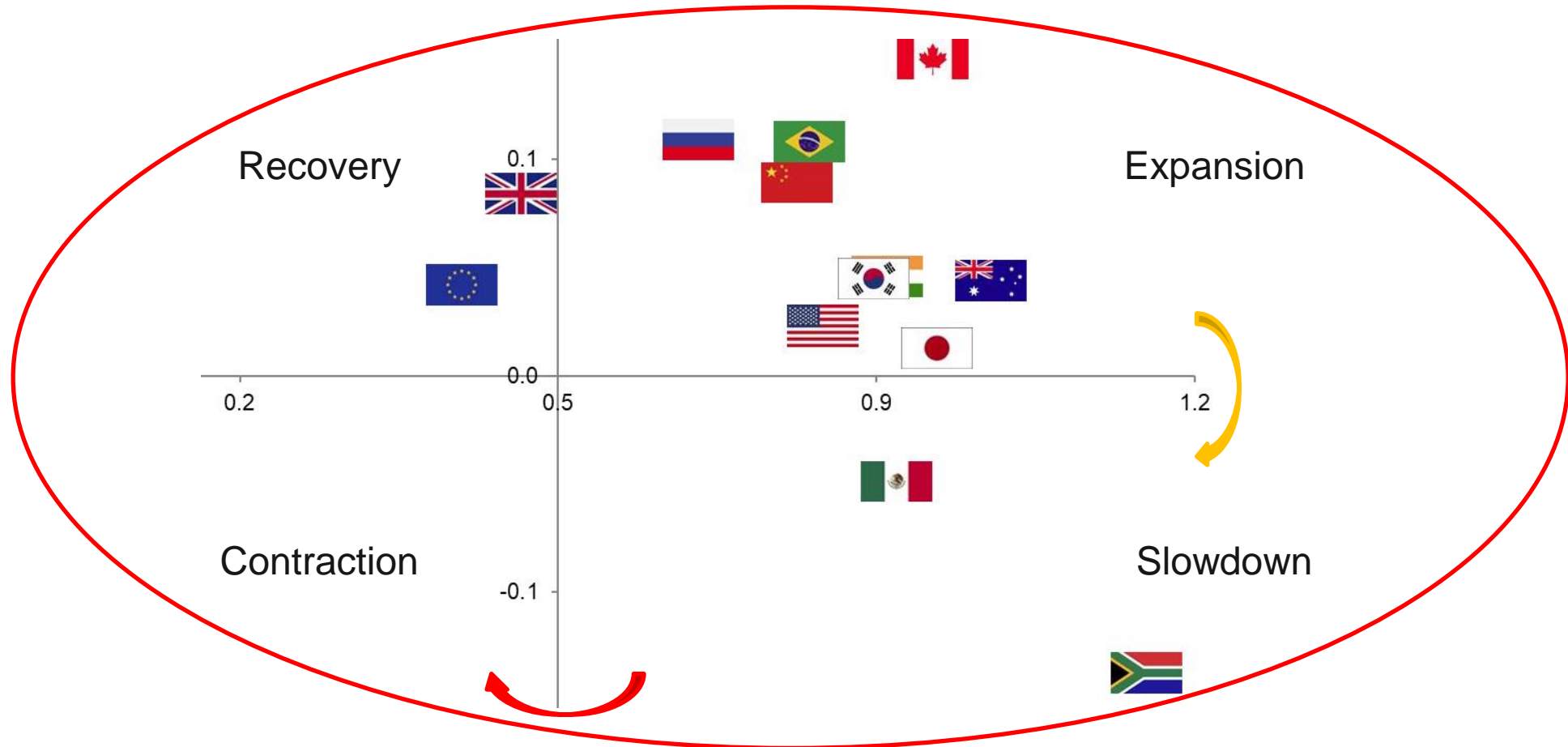
Note: The figure shows the latest monthly LEI data for all thirteen economies. Scatterplots depict X-axis values as normalized deviation from trend (so that x= 0.5 corresponds to trend) and Y-values are the monthly change in the normalized deviation from trend. Deviations from trend are calculated using a Hodrick-Prescott filter with λ = 129,600. Source: The Conference Board

THANK YOU!

ADDITIONAL SLIDES

US LEI Components

- Yield Spread (10-Year T-bills minus Federal Funds)
- Leading Credit Index™
- Stock Prices (S & P 500)
- Average Weekly Hours for Manufacturing
- Building Permits, Private Housing
- Average Weekly Initial Claims for Unemployment Insurance
- ISM New Orders Index
- Manufacturer's New Orders for Non-Defense Capital Goods (ex-aircraft)
- Manufacturer's New Orders for Consumer Goods and Materials
- Consumer Expectations of Business and Economic Conditions

Summary: index construction

- Index should improve on the performance of the individual indicators.
    - ✓ Eliminate or reduce missed or extra cycles.
    - ✓ Result in leads or lags in more useful leads.

- Mechanics
    - ✓ Volatility adjustments – use factors that are inversely related to the standard deviation of monthly changes in component
    - ✓ Equal weights
    - ✓ Trend adjustment
    - ✓ Interpolation, moving average

Current composition comprises 73.8% of global output

Share of Global GDP (PPP adjusted)

1. **Australia - 1.1%**
2. Brazil - 2.5%
3. **Canada - 1.5%**
4. China - 16.1%
5. **Euro Area - 13.1%**
6. India - 7.6%
7. **Japan - 4.2%**
8. **South Korea - 1.9%**
9. Mexico - 2.0%
10. Russia - 3.3%
11. South Africa - 0.6%
12. **United Kingdom - 2.5%**
13. **United States - 17.3%**

Note: This calculation includes the entire Euro Area and excludes France, Germany, and Spain where The Conference Board publishes individual country indexes.
Source: The Conference Board, Total Economy Database (TED), November 2020. Mature Economies are shown in bold.

Global Coincident Economic Index (CEI) is a measure of the global cycle and the LEI tends to lead its peaks and troughs
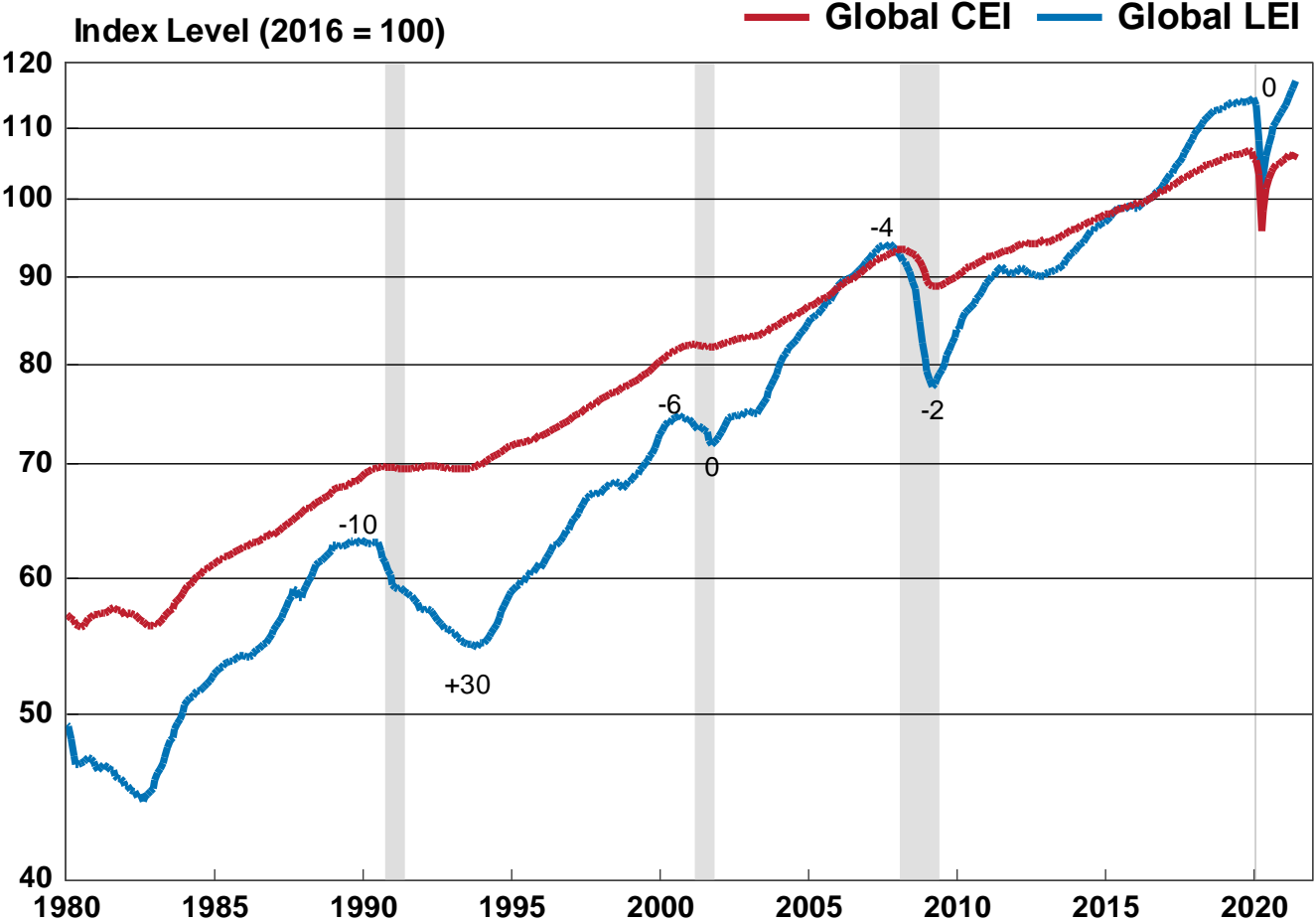
Index Level (2016 = 100)

Global CEI   Global LEI

Note: Shaded areas represent business cycle chronologies derived from the Global CEI; determined by The Conference Board using the Bry-Boschan (1971) algorithm.
Source: The Conference Board

Global, Mature and Emerging Economies Leading Economic Indexes vs. global business cycle

Note: Shaded areas represent business cycle chronologies derived from the Global CEI; determined by The Conference Board using the Bry-Boschan (1971) algorithm.
Source: The Conference Board

Global, Mature and Emerging Economies Leading Economic Indexes : annual growth vs. growth cycles
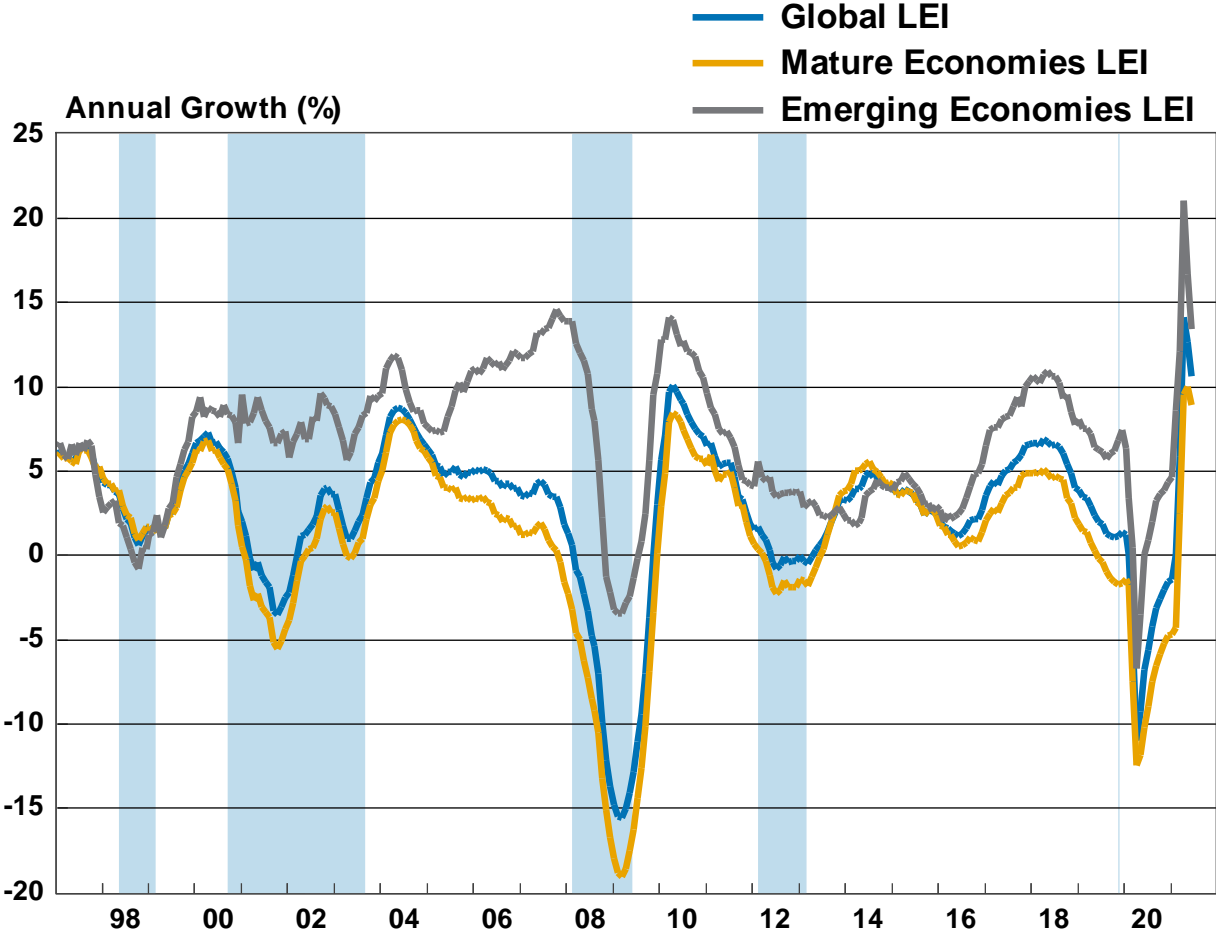
Global LEI
Mature Economies LEI
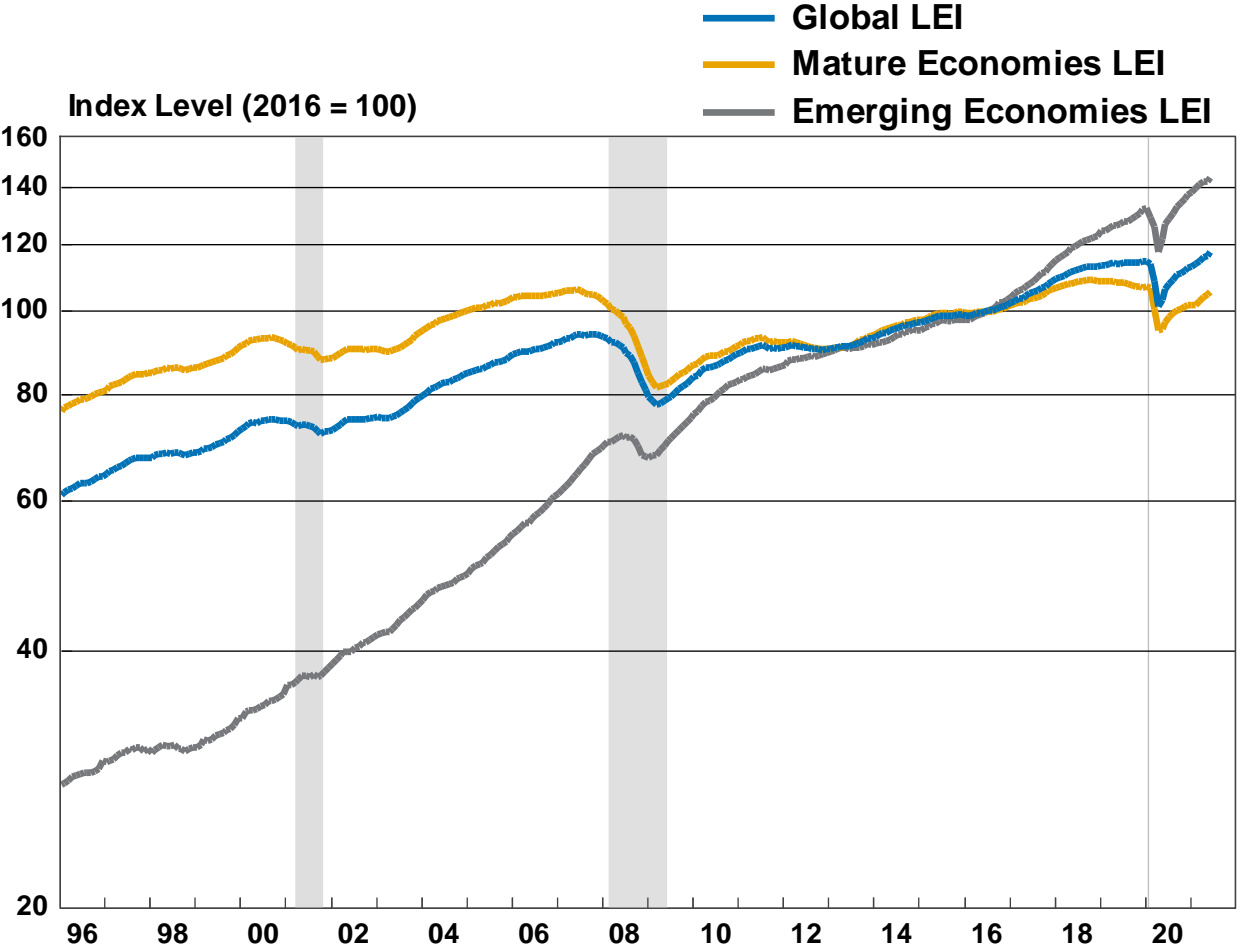**Emerging Economies LEI**

Annual Growth (%)

Note: Shaded areas represent growth cycle chronologies derived from the de-trended Global CEI; determined by The Conference Board using Bry-Boschan (1971) algorithm.
Source: The Conference Board

Consumer Confidence Index® (2006 – Present)

Consumer Confidence Index®

Index, 1985 = 100
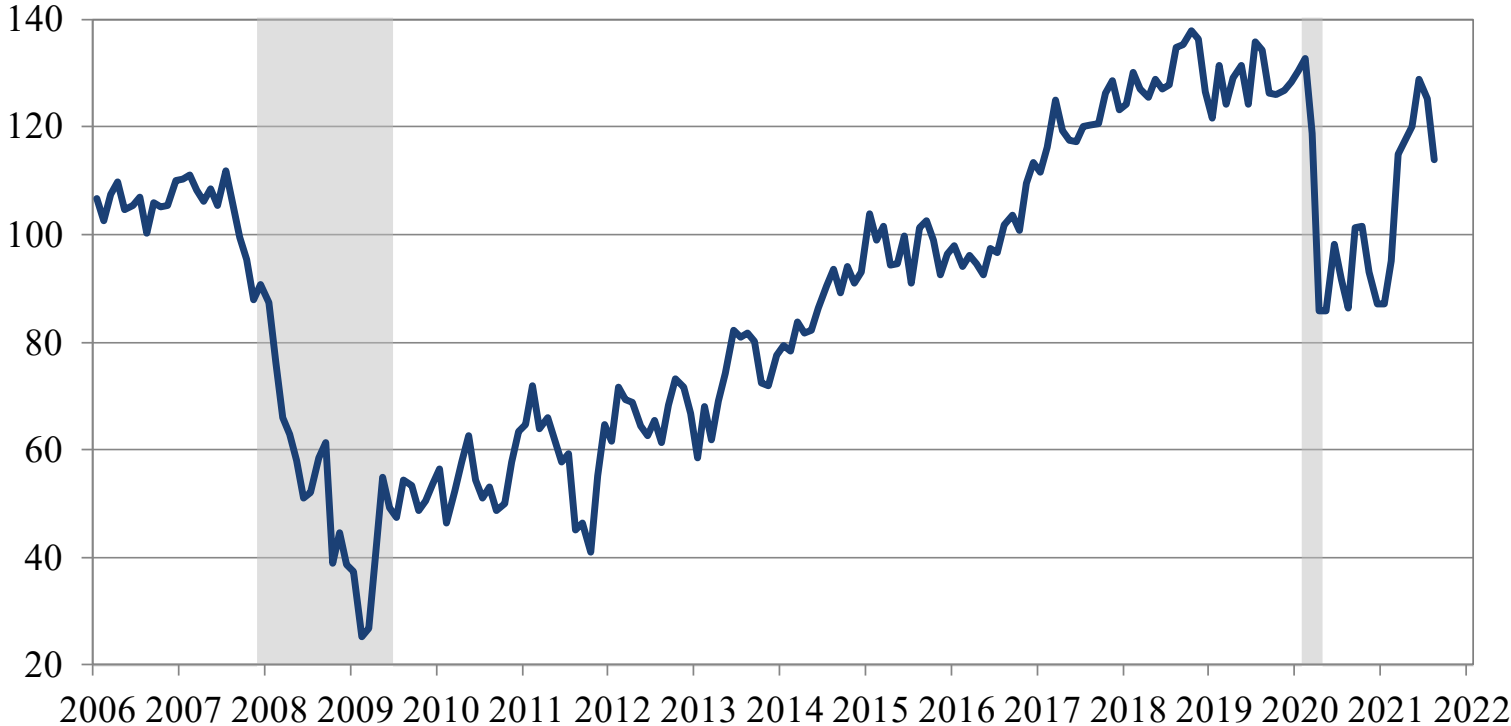
*Shaded areas represent periods of recession.
Sources: The Conference Board; NBER
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For more information: http://www.conference-board.org/data/consumerdata.cfm

Present Situation and Expectations (2006 – Present)

Present Situation and Expectations Index
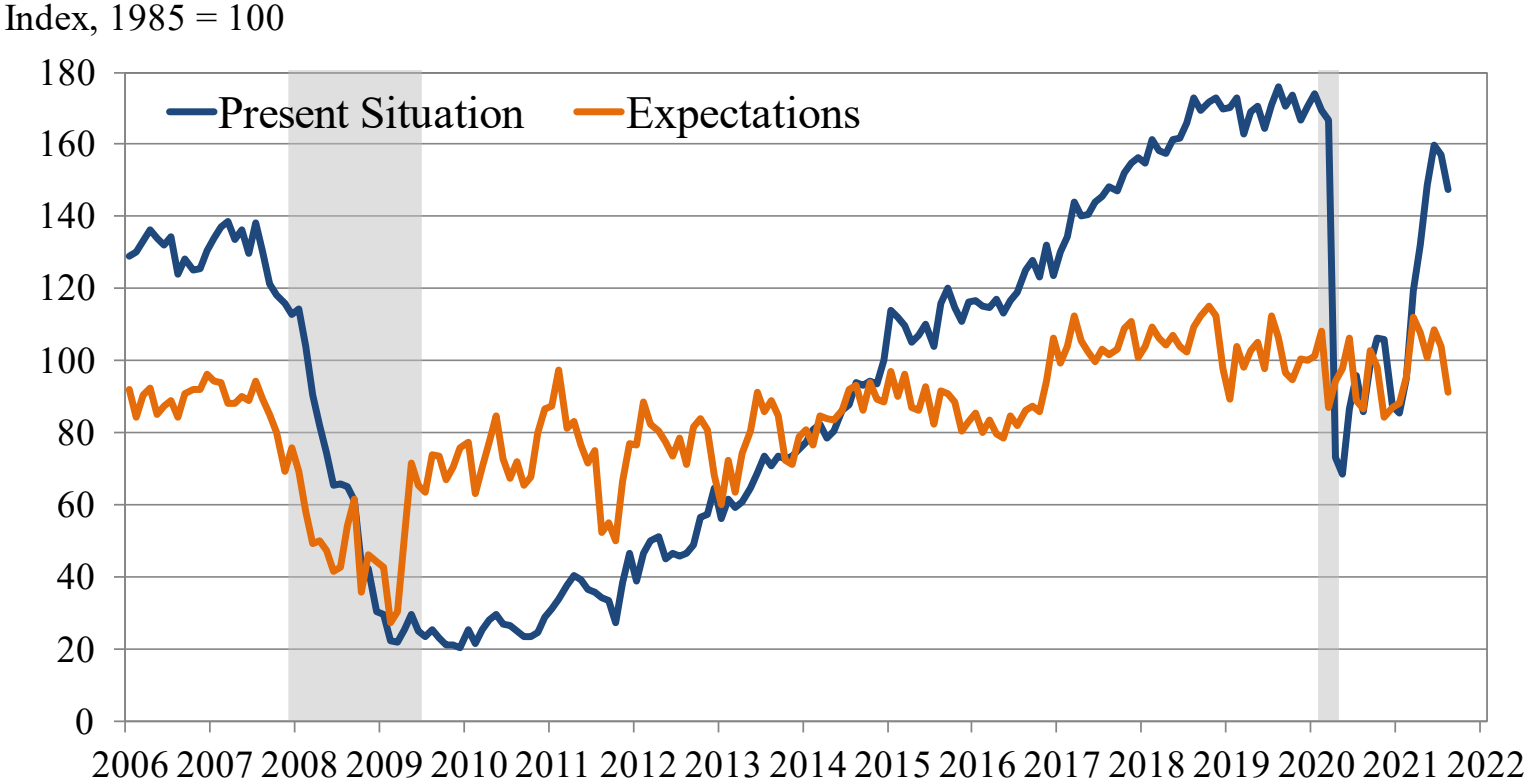
Index, 1985 = 100

*Shaded areas represent periods of recession.
Sources: The Conference Board; NBER
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For more information: http://www.conference-board.org/data/consumerdata.cfm

The Conference Board *Measure of CEO Confidence*™

CEO Confidence
(2021 Q2 Measure: 82)

GDP*
(bars)
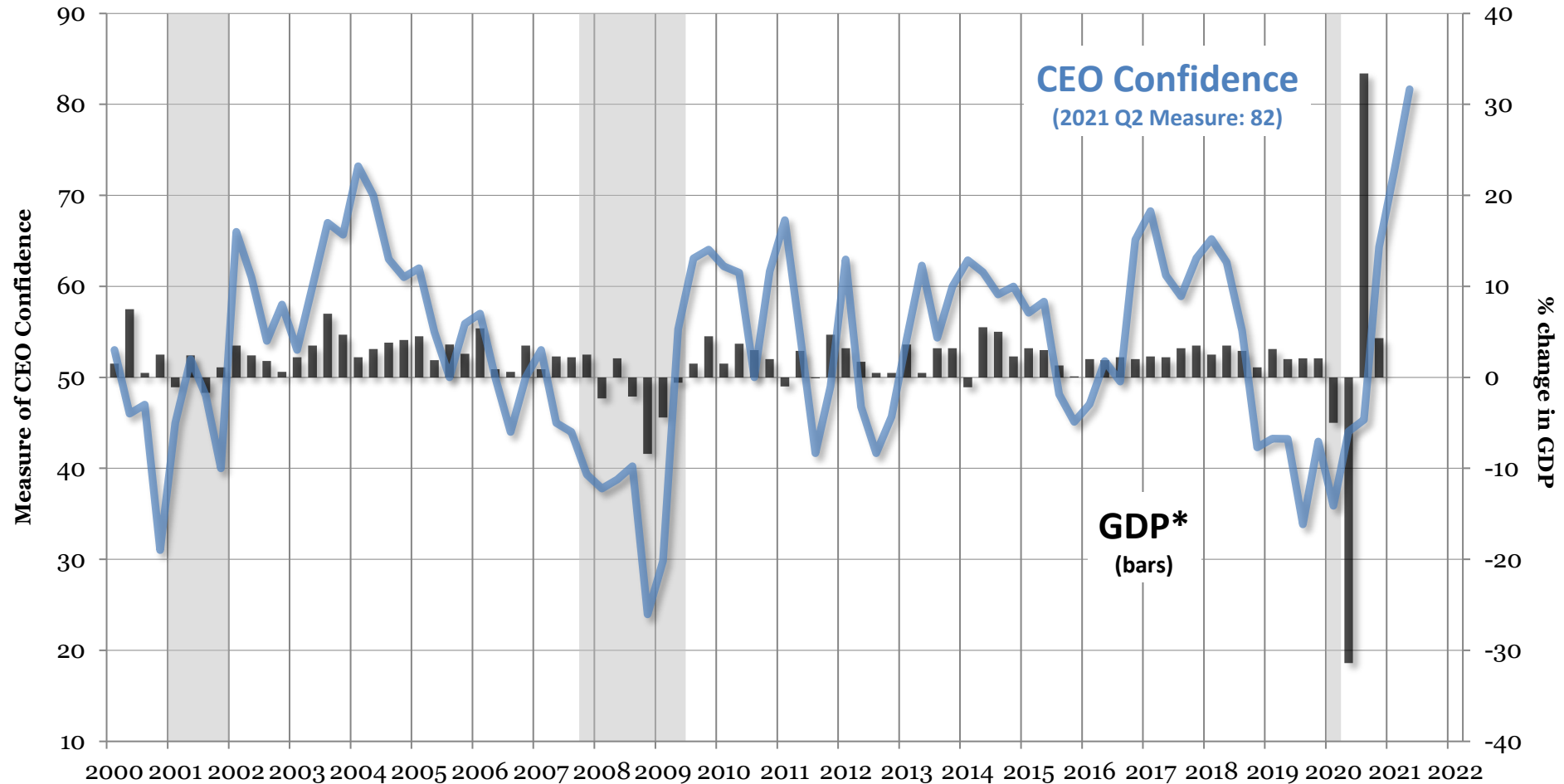
*Quarterly changes in real Gross Domestic Product at annual rates, based on chain-type 2005 weighted measures.
Note: Shaded areas indicate periods of recession.
Sources: The Conference Board; The Business Council; U.S. Department of Commerce; NBER

Coincident Economic Index Components: 13 economies

	United States	Mexico	Canada	Euro Area	United Kingdom	Russia	Australia	Japan	Korea	China	India	Brazil	South Africa
Retail	Manufacturing and Trade Sales	Retail Sales	Manufacturing & Trade Sales	Retail Trade	Retail Sales	Retail Sales	Retail Sales	Retail, Wholesale, and Manufacturing Sales	Wholesale and Retail Sales	Retail Sales of Consumer Goods	Car Sales: Passenger Vehicles	Volume of Sales of the Retail Market	Value of Retial and New Vehicle Sales
Employment	Non-Agricultural Employment	Employment: IMSS Beneficiaries	Non-Agricultural Employment	Employment	Employment LFS	Construction Production	Employed Persons	Number of Employed Persons	Total Employment	Employment: Manufacturing		Occupied Employed Population	Formal Non-Agricultural Employment
					Employment Workforce	Services Production				Passenger Carried Volume			
Income	Personal Income less Transfer Payments		Real Average Weekly Earnings		Real Household Disposable Income		Household Gross Disposable Income	Wage and Salary Income	Monthly Cash Earnings			Average Real Income of Workers	
Production	Industrial Production	Industrial Production	Gross Domestic Product	Industrial Production	Industrial Production	Mining Production	Industrial Production	Industrial Production	Industrial Production	Industrial Production: Value-Added	Industrial Production	Industrial Production	Gross Value Added ex. Ag., Forrestry, and Fishing
						Manufacturing Production				Electricity Production		Industrial Electric Energy Consumption	Industrial Produciton Index
			Utilization of Production Capacity	Manufacturing Turnover		Agricultural Production						Shipments of Corrugated Paper	Utilization of Production Capacity in Mfg.
						Transportation Turnover					Total Imports		

Leading Economic Index Components: 13 economies

	United States	Mexico	Canada	Euro Area	United Kingdom	Russia	Australia	Japan	Korea	China	India	Brazil	South Africa
Financial	Interest Rate Spread (10-yr T-Bond Less FFR) (cumulated)	Federal Funds Rate	Interest Rate Differential	Yield Spread (cumulated)	Yield Spread (cumulated)	MIACR Overnight Rate (monthly average)	Yield Spread, 10-yr less Policy Rate (cumulated)	Yield Spread (cumulated)	Yield of Government Public Bonds		Yield Spread (10 Yr less 90 Day)	1-Year Swap Rate	Yield Spread (10 Yr less 91 Day)
	Index of Stock Prices, 500 Common Stocks	Stock Prices	S&P/TSX Composite Index	Eurostoxx Index	Share Price Index, Stock	Stock Market Index RTS	Stock Price Index, Ordinary Share	Stock Prices	Stock Prices		BSE: Index: Monthly: SENSES: Average	Stock Prices (Bovespa Index)	
	Leading Credit Index (st. dev)		Systemic Stress Indicator			M2: Money Aggregate	Money Supply, M3	Real Money Supply, M2		Loan: Financial Institution	M3: Bank Credit to Commercial Sector		Real M1: 6M Smoothed Growth Rate
External		Real Exchange Rate	Energy Price Index			Real Effective Exchange Rate					REER: 36 Currencies	Terms of Trade Index	Commodity Price Basket Index
							Rural Goods Exports		Real Exports, FOB	Exports FOB	Merchandise Exports	Exports Volume Index	LEIs of Major Trading Partners
Business Activity & Investment	Mfrs New Orders, Capital Goods, Non-defense excl. Aircraft		New Orders, Durable Manufactured Goods	New Orders of Capital Goods	Order Book Volume	Markit PMI: Quantity of Purchases	Gross Operating Surplus	Tankan Business Conditions Survey	Value of Machinery Orders	PMI: Mfg New Export Order	IP: Capital Goods	Consumer Durable Goods Production Index	Net Balance of Manufacturing Orders Received
	Mfrs New Orders, Consumer Goods & Materials			Markit PMI Manufacturing New Orders		Markit PMI: New Orders		New Orders for Machinery and Construction		5000 Ind Enterprises Diffusion Index: General Business Condition		Manufacturing Survey: Expectations Index, %	RMB/BER Business Confidence Index
	ISM New Order Index	Manufacturing Inventories, Opinion Balance		Markit Business Expectations, Services	Volume of Expected Output	Assessment of Demand 6 Months ahead, Bal.	Ratio of Sales to Inventories, Nonfarm	New Orders for Machinery and Construction	Index of Inventories to Shipment	PMI: Mfg Supplier Delivery	PMI: Services Business Activity	Services Sector Survey: Expectations Index, %	Net Balance of Average Hours Worked
				Operating Surplus of Corporations	Urals Crude Oil Production			Real Operating Profits			Cargo Handles		Gross Operating Surplus
	Building permits for new private housing units	Industrial Production, Construction	Building Permits	Building Permits			Building Approvals	Dwelling Units	Private Construction Orders	Floor Space Started			Residential Building Permits
Consumers & Expectations	Avg. Consumer Expectations for Business Conditions	U.S. Refiners' Acquisition Cost of Domestic & Imported Crude Oil	Consumer Confidence	Consumer Expectation of General Economy in Next 12 Months	Consumer Confidence			Business Failures		Consumer Expectation Index		Consumers Survey: Expectations Index, %	New Passenger Vehicles Sold
	Average Weekly Hours, Manufacturing		Average Work Week					Index of Overtime Worked					
	Average Weekly Claims, Unemployment Insurance		Employment Insurance Beneficiaries		Productivity for Whole Economy			6-Month Growth Rate of Labor Productivity					Job Advertisement Space

Business Cycle Reference Dates

SE CONFERENCE BOARD — Trusted Insights for Business Worldwide

	North America		Europe					Asia-Pacific					Latin America
	U.S.	Mexico	Euro Area	France	Spain	Germany	U.K.	Australia	Japan	Korea	China	India	Brazil
Dates at Business Cycle Peaks													
1940s	Feb-45												
	Nov-48												
1950s	Jul-53												
	Aug-57												
1960s	Apr-60					May-66		Dec-60					
	Dec-69												
1970s	Nov-73			Aug-74		May-73	Jun-73	Aug-74	Feb-73	Jun-79			
							Nov-79						
1980s	Jan-80	Nov-81		Feb-80		Mar-80		May-82					
	Jul-81	Aug-85		Oct-82									
1990s	Jul-90	Nov-94	Feb-92	Feb-92	Feb-92	Feb-91	May-90	May-90	Feb-92	Aug-97		Mar-91	Oct-97
						May-95			Mar-97				
2000s	Mar-01	Oct-00	Feb-08	Nov-02	Feb-08	Mar-01	May-08		Dec-00			Sep-08	Dec-00
	Dec-07	Jun-08		Feb-08		Feb-08			Feb-08	Jan-08			Oct-02
													Jul-08
2010s		Jun-19	Jul-11	Feb-11	Jun-10	Nov-19			Sep-10	Dec-19	Dec-19		Mar-14
			Nov-19	Nov-19	Nov-19				Feb-12				
									Nov-18				
2020s	Feb-20						Jan-20	Mar-20				Feb-20	Feb-20
Dates at Business Cycle Troughs													
1940s	Oct-45												
	Oct-49												
1950s	May-54												
	Apr-58												
1960s	Feb-61					Apr-67		May-61					
1970s	Nov-70			Mar-75		Oct-75	Aug-75	Jan-75	Apr-75				
	Mar-75												
1980s	Jul-80	Jun-83		Aug-81		Nov-82	Dec-81	Mar-83		May-80			
	Nov-82	Jan-87		Nov-84									
1990s	Mar-91	Jul-95	May-93	Nov-93	Apr-93	Jul-93	Nov-91	Jun-91	Aug-93	Jul-98	Feb-90	Nov-91	Feb-99
						Feb-96			Feb-99				
2000s	Nov-01	Mar-02	Aug-09	May-03	May-09	Aug-03	May-09		Jan-02	Dec-08		Jan-09	Sep-01
	Jun-09	May-09		Apr-09		Apr-09			Mar-09				Jun-03
													Jan-09
2010s			Feb-13	Jan-13	Feb-13				Apr-11				Dec-16
									Sep-12				
2020s								May-20					

Source: NBER; IBRE/FGV; The Conference Board

Notes: U.S. and Brazil business cycle chronologies are determined by the NBER and CODACE Business Cycle Dating Committees, respectively; all other business cycle reference dates are determined by The Conference Board using a business cycle dating algorithm (see Bry and Boschan (1971) and Harding and Pagan (2002)).

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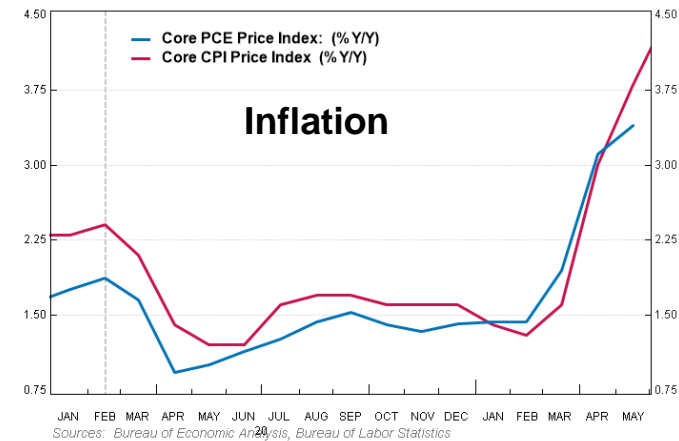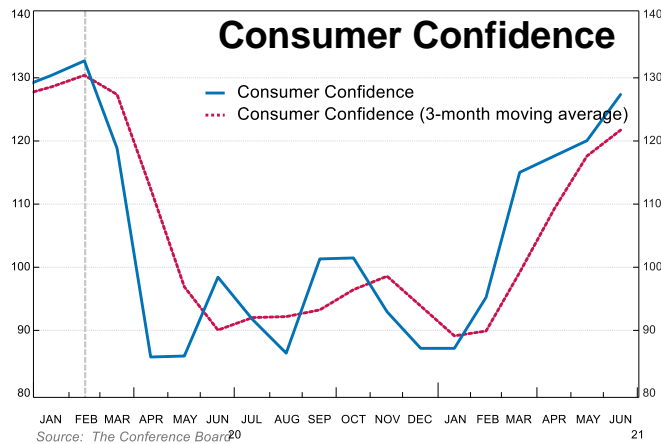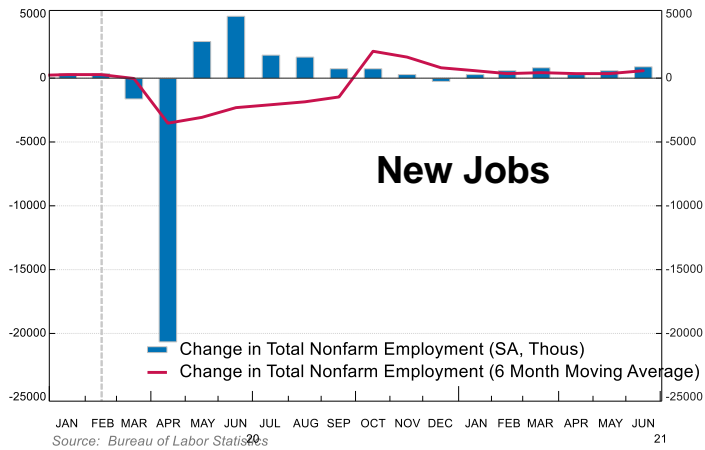
Global Business & Growth Cycle Chronology

Business Cycle Chronology				Growth Cycle Chronology			
Peaks	LEI Peaks	Troughs	LEI Troughs	Peaks	LEI Peaks	Troughs	LEI Troughs
		Dec-82	-4			Dec-82	-4
				Mar-85	miss	Jan-87	miss
Oct-90	-10	May-91	+30	Jul-90	-7	Aug-93	3
				Dec-94	miss	Jan-96	miss
				May-98	miss	Feb-99	miss
Mar-01	-6	Oct-01	0	Sep-00	0	Aug-03	-22
Feb-08	-4	May-09	-2	Feb-08	-4	May-09	-2
				Feb-12	-7	Feb-13	-3
*Jan-20	0			Nov-19	2		

*The peak date for the global recession in 2020 is placed in January 2020 when the World Health Organization declared a global health emergency.
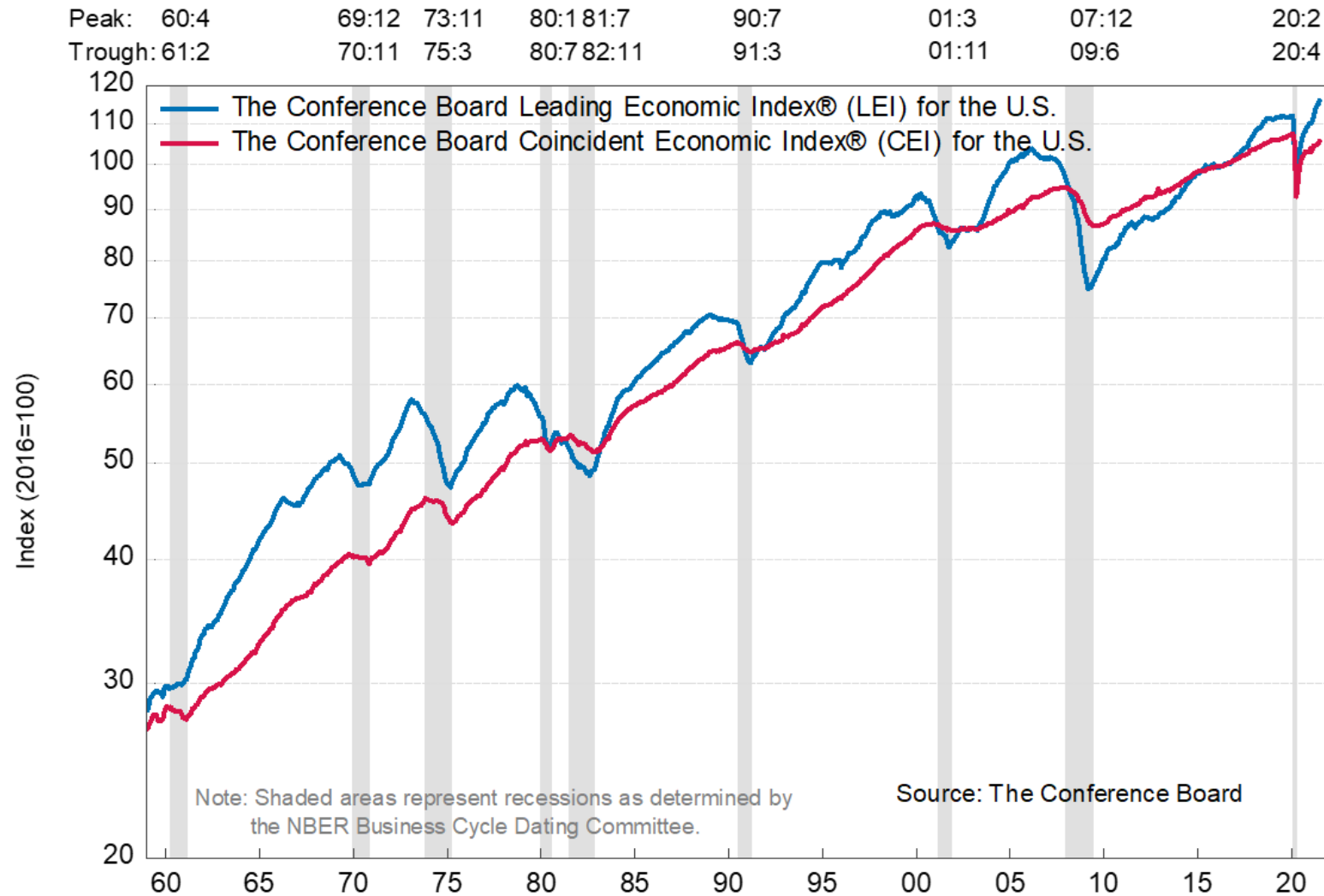
Note: Business cycle chronologies are derived from the Global CEI, while growth cycle chronologies derived from the de-trended Global CEI; both chronologies are determined by the Bry-Boschan (1971) business cycle dating algorithm.

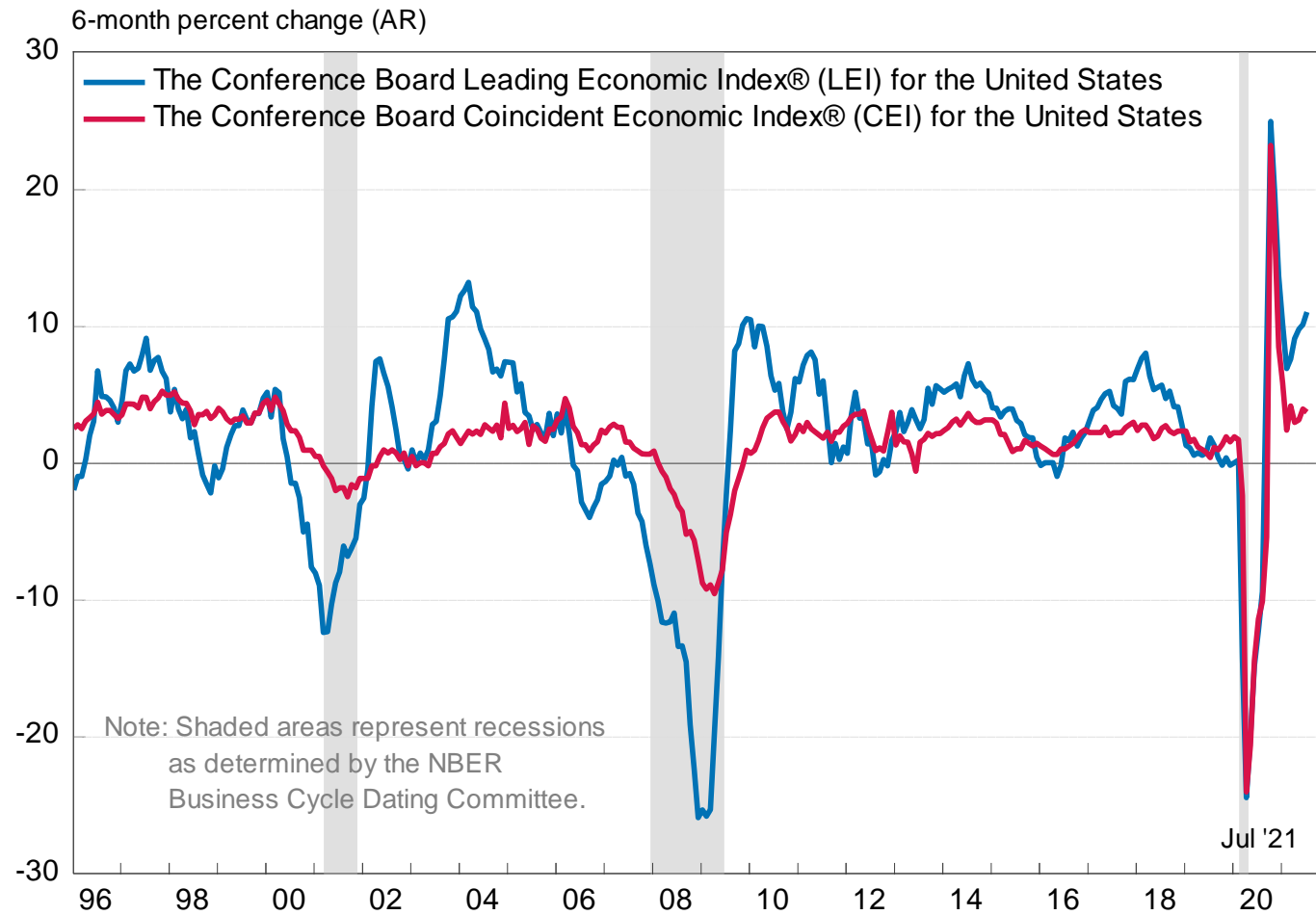# Macro data continue to show strength across the US economy
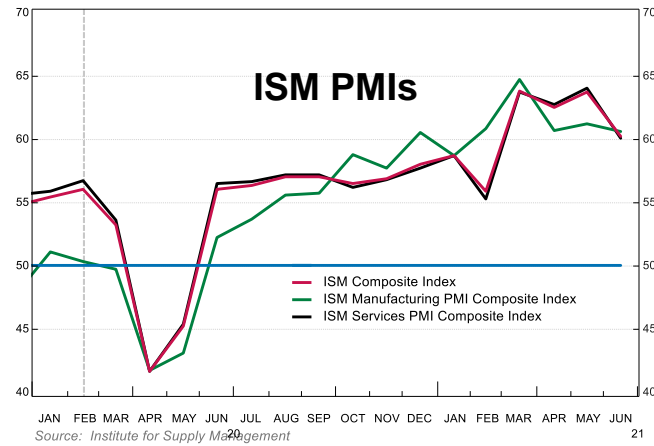
Leading and Coincident Economic Indexes show the US economy in expansion

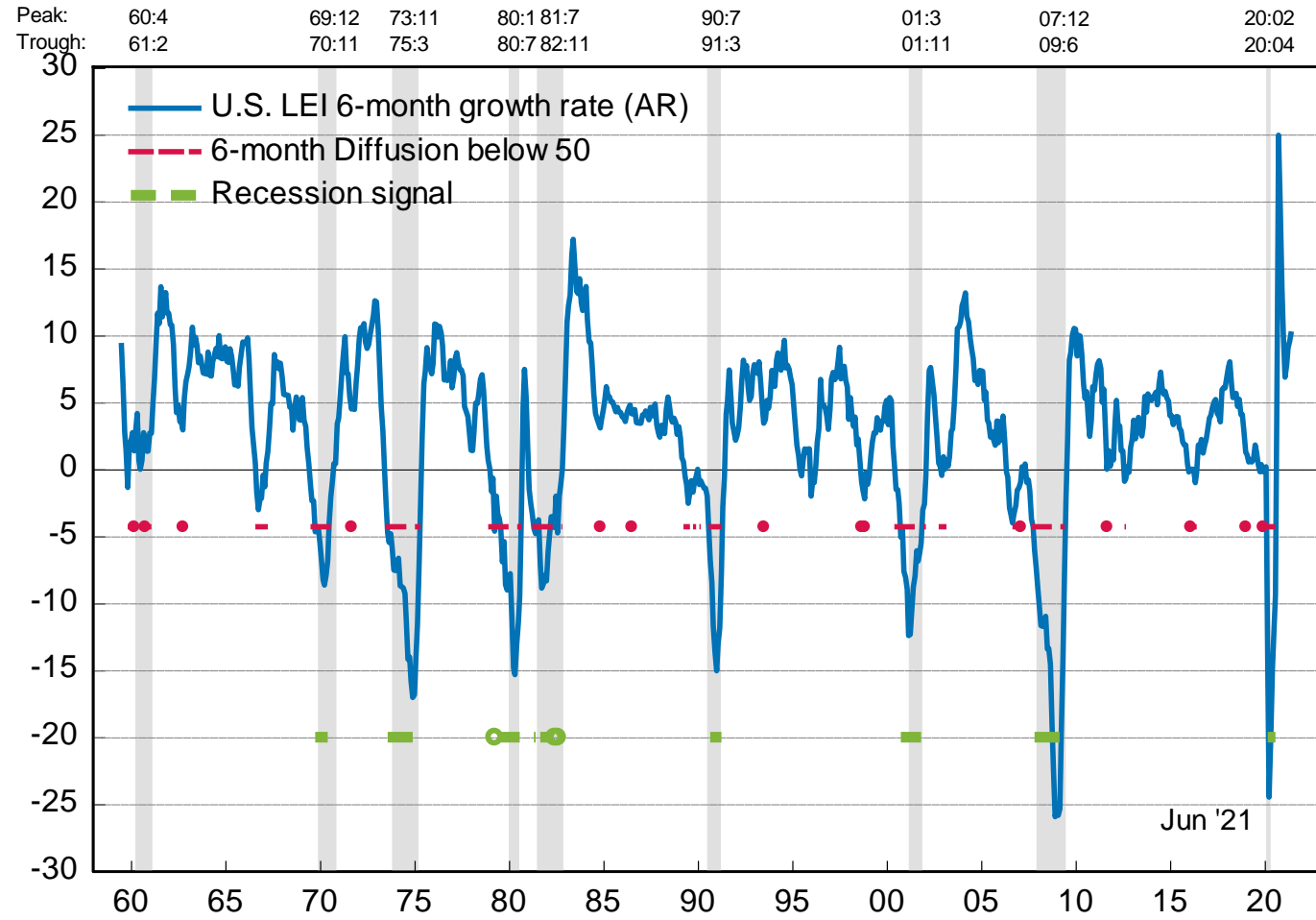Note: Shaded areas represent recessions as determined by the NBER Business Cycle Dating Committee.

Source: The Conference Board

For more information: https://www.conference-board.org/data/bcicountry.cfm?cid=1

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6-month percent change (AR)

The Conference Board Leading Economic Index® (LEI) for the United States
The Conference Board Coincident Economic Index® (CEI) for the United States

Note: Shaded areas represent recessions
as determined by the NBER
Business Cycle Dating Committee.

Jul '21

For more information: https://www.conference-board.org/data/bcicountry.cfm?cid=1

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Strengths among the leading indicators are very widespread

Diffusion Index of Leading Indicators

6-Mo % Rising

Source: CB/Haver