

JANUARY 2021

ECONOMIC OUTLOOK

Just when you thought 2021 couldn't possibly be worse than 2020, we start the year with an attack on the U.S. Capitol. Two days later, daily COVID deaths breach 4,000 for the first time. We are one month into the new year, and it is already abundantly clear that the next 12 months will remain challenging.

In many ways, the economy in 2020 was not nearly as bad as it could have been. And while historically bad, our forecasts improved (became less bad) as the economy crawled its way out of the crater created by the pandemic. Early fiscal and monetary stimulus provided households with additional disposable income at the same time the pandemic hamstrung many service industries. As a result, households quarantined at home and bought durable goods like computers. Even new vehicles, hard hit in the early months of the pandemic, staged a remarkable recovery in the final months of the year.

The positive stimulus effects appeared to be waning in the last few months of the year. The situation was made worse by rapidly rising cases of COVID that pushed renewed restrictions in the U.S., Europe, and elsewhere. In the U.S., retail sales, while strongly positive on a year-over-year basis, fell month-over-month in the final three months of 2020. Likewise, retail sales in Europe have either fallen or been weak in recent months. Retail sales fell abruptly in November. The U.S. economy shed 140,000 jobs in December, the first decline since the early months of the pandemic. Momentum was slipping, and COVID was raging.

Both the U.S. and Europe have added significantly to stimulus measures in recent months, and more still are likely to come, at least in the U.S. This will likely buoy the U.S. economy, at least in the short-run. We are not likely to see additional stimulus, at least in the near-term, in Europe. This in turn will hinder economic activity and as a result our forecast is for muted growth. While we expect a small contraction in consumer spending in the early months of 2021, direct payments and expanded unemployment benefits should add to income and drive consumer spending.

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The pandemic's fallout continues to be primarily isolated to the service sector, while the goods economy continues to do well. Manufacturing sentiment has hit multi-year highs in both the U.S. and Europe. Capacity utilization continues a broad recovery as demand remains firm. While sectors like aerospace continue to reel under the burden of the pandemic, other sectors, like auto, have experienced v-shape recovers. In the U.S., manufacturers added workers in December while others were reducing their workforce. The electronics industry continues to be an economic leader in terms of both jobs and production.

If all goes according to plan, something that rarely happens, 2021 will be a year of recovery. The U.S. economy should add back over 6 million jobs. To be sure, a historic number but still far fewer jobs than were lost to the pandemic. The start of the year will remain muted in both the U.S. and Europe, but COVID cases appear to have peaked and are on the decline despite increasing cases in places like France. Vaccines are now being administered by the millions. And the coming months should bring warmer weather. Couple that together with a still historically high savings rate (meaning there is excess cash waiting to be spent) and millions of people who are likely ready to get out of their houses and the second half of the year could bring strong economic activity, especially in the service sector. There is pent-up demand that, starting in the second quarter, we believe will be unleashed.

Elsewhere in the world, China's economy continues to roll forward. China's fourth-quarter GDP figures showed 2.6 percent growth (6.5 percent year-over-

year). Growth was a bit better than expected, including revisions to prior quarters. The secondary sector, which includes manufacturing, rose 6.8 percent year-over-year. Growth in the final quarter was the highest growth recorded since the close of 2018 and was arguably above the growth trend before the pandemic. China's V-shape recovery is complete, an absolutely spectacular performance given everything that happened in 2020. Recently, there have been a few hundred new cases of COVID, which have in turn led to a lockdown of 11 million people in the Hebei province. A significant outbreak will drive equally significant lockdowns that will slow the economy there.

While manufacturing helped propel China forward in 2020, consumer spending lagged. Retail sales in 2020 were 3.9 percent lower than in 2019. Looking out at 2021, China will be looking to balance growth across the broader economy by increasing consumer consumption. But international trade will still remain a key focus. The U.S. trade deficit with China increased in 2020 (after falling 8.5 percent in 2019). The incoming Biden administration has committed to keeping existing tariffs in place, at least for now.

There remain risks on the horizon. New variants of COVID have emerged throughout the globe. There remain a lot of unknowns. Shipping rates remain extremely high, and a shortage of containers coupled with strong demand continues to exert upward pressure on pricing. For the most part, financial markets have shrugged off what at times has felt like catastrophes in the near-term. Instead, they have focused on a more positive medium and long-run outlook. Here's hoping that outlook materializes soon.

5,400

The U.S. electronics industry added 5,400 jobs in December while the overall economy shed 140,000 jobs

6.5%

China's economy grew 6.5 percent year-over-year in the final quarter of 2020, above the pre-pandemic trend

0.4%

Europe's economy will be essentially flat in 1Q21, after declining roughly 2.2% in 4Q20

5.2%

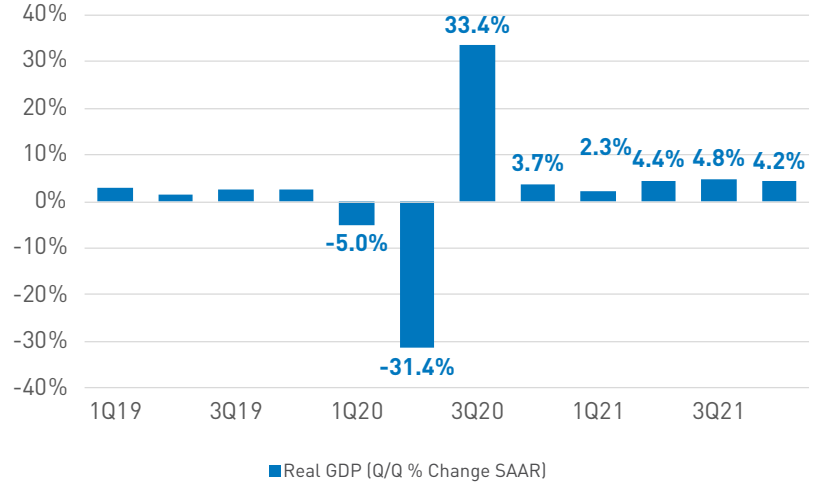
The global economy declined 3.7 percent in 2020 and is set to grow 5.2% in 2021

U.S. OUTLOOK

ECONOMIC GROWTH

The economy likely grew a bit less than 4 percent in the final quarter of 2020. For the full year, the economy slipped roughly 3.5 percent, much better than anticipated in the early months of the pandemic. For example, our June 2020 forecast had the economy declining 6 percent for the year.

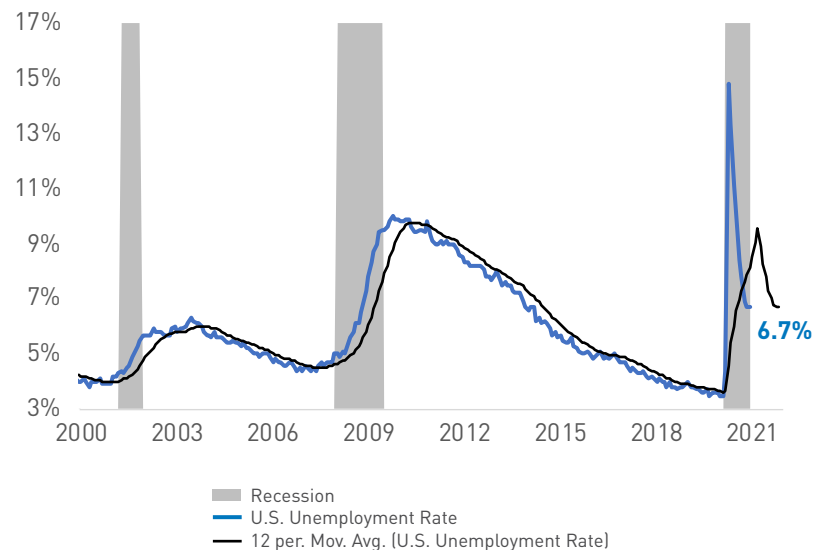
The first quarter of 2021 will see growth moderate somewhat, as COVID and corresponding restrictions continue to weigh on the economy. We currently expect GDP to rise by 2.3 percent in the quarter and avoid a double-dip recession for now. Additional stimulus could drive growth higher, and we do expect growth to improve as we move further into the year.



	2021 ECONOMIC GROWTH (GDP % Change)	2022 ECONOMIC GROWTH (GDP % Change)	2021 EXCHANGE RATE (v. USD)	2022 EXCHANGE RATE (v. USD)
UNITED STATES	4.2%	3.4%	N/A	N/A
CANADA	4.5%	3.5%	1.28	1.26
MEXICO	3.8%	3.1%	20.33	19.84
EURO AREA	4.7%	3.8%	1.23	1.26
CHINA	8.2%	5.4%	6.46	6.50

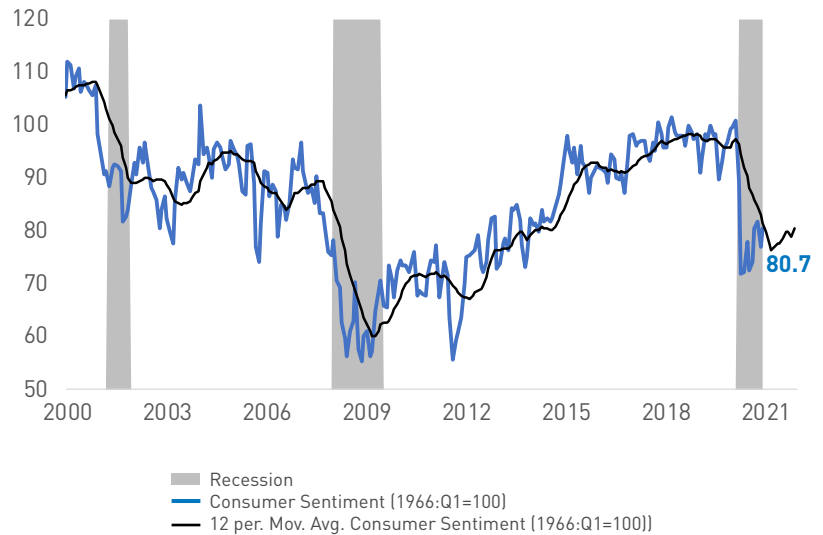
EMPLOYMENT

The economy lost 140,000 jobs in December, the first monthly decline since the massive 20.8 million jobs lost in April 2020. Starting in November, numerous states renewed COVID-19 restrictions that curtailed economic activity and resulted in businesses reducing their workforce. Job loss during the month was concentrated in the service sector. Leisure and hospitality were especially hard hit, shedding 498,000 jobs in December. This included 372,000 jobs lost by restaurants and bars. Manufacturing gained 38,000 jobs (roughly 0.3%). The overall unemployment rate remained unchanged at 6.7 percent.



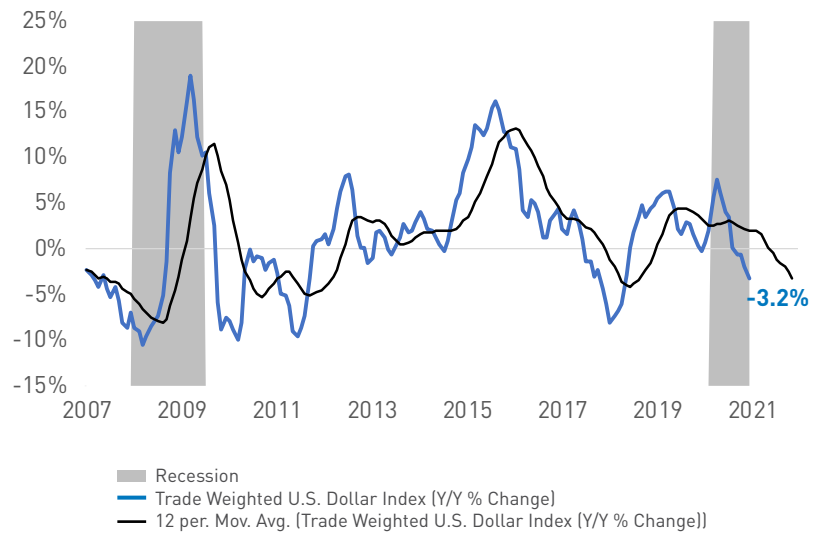
SENTIMENT

The Consumer Sentiment Index moved higher in December, rising to 80.7 for the month. This is, however, 18.7 points below December 2019. The Current Economic Conditions Index rose 3.4 points to 90.0 but remains 22.1 points below December 2019. The Consumer Expectations Index rose 5.8 points to 74.6 but remains 16.1 points below the year-ago level. Sentiment slipped marginally in early January, far less than might have been expected given extremely high COVID-19 figures and the Capitol attack. The near-term outlook continues to weigh on overall sentiment while consumers are showing a bit more optimism toward the longer-term prospect of the economy.



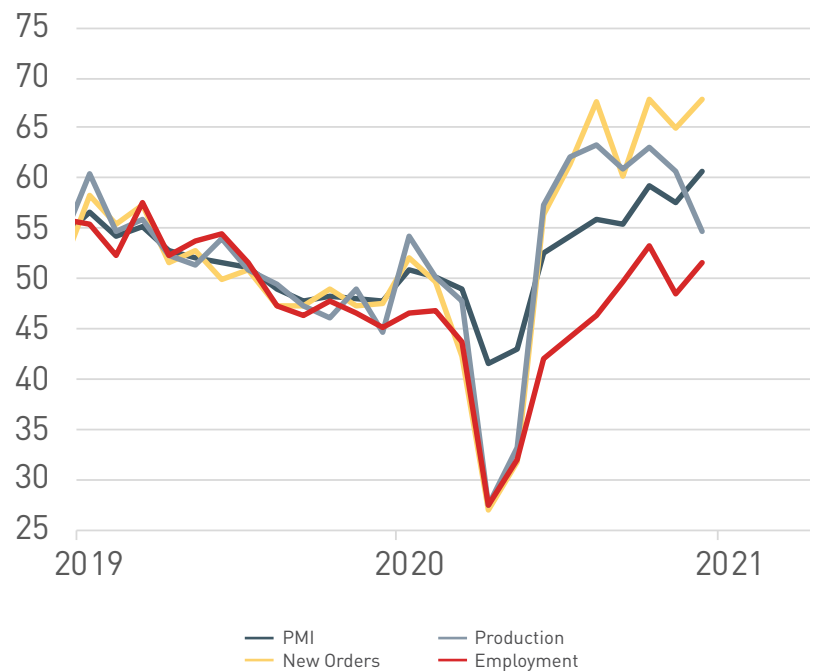
TRADE-WEIGHTED U.S. DOLLAR INDEX

The trade-weighted dollar index fell 1.9 percent in December and is down 3.2 percent over the last year. We could see the dollar strengthen in the short-term, but a weaker dollar is likely in store for the balance of 2021. A number of emerging market currencies are currently at substantial discounts, suggesting they may have more room to strengthen against the dollar. The Federal Reserve continues to provide very accommodative monetary policy. The Federal Reserve has nearly doubled the size of its assets from under \$4.2 trillion in February to \$7.4 trillion today. Moreover, counter-cyclical government support has pushed greenbacks into the global economy, placing downward pressure on dollar valuation.



MANUFACTURERS' SENTIMENT (PMI)

The manufacturing sector continues to expand and sentiment improved in December, marking the eighth consecutive month of expansion. The manufacturing PMI index increased to 60.7, the highest level since February 2018. The New Orders Index also increased, rising to 67.9 from 65.1. While the Production Index slipped somewhat during the month, it remains in expansionary territory. The Employment Index, which had slipped last month and indicated manufacturer employment was contracting, inched above 50 to 51.5, suggesting the expansion here as well. COVID-19 protocols continue to exert some strain on manufacturers. These strains are materializing in the form of new operating procedures that are less efficient at times, absenteeism, and short-term shutdowns to clean facilities.

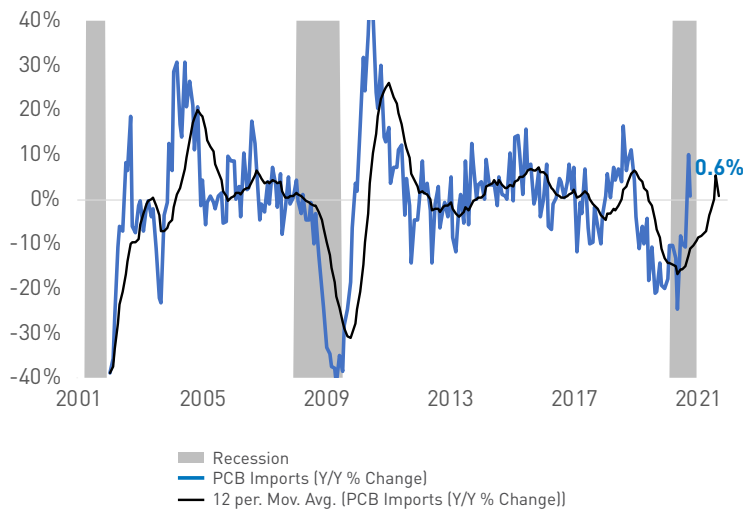


U.S. PCB DEMAND & INDUSTRY EMPLOYMENT

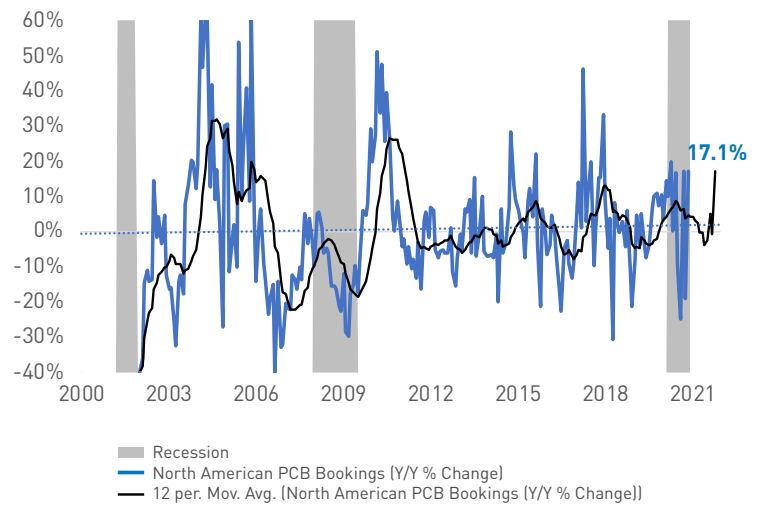
PCB INDUSTRY

PCB orders and shipments ended 2020 on a strong note. Orders in December were up 9.1 percent from the prior month, and shipments were up 9.8 percent. For the year, orders were up 4.5 percent, and shipments were up 2.4 percent. Orders continue to outpace shipments for the second straight month, suggesting shipments should remain strong in the coming months. PCB imports were down 1.3 percent in November but were up 8 percent compared to last year.

PCB Imports (Y/Y % Change)



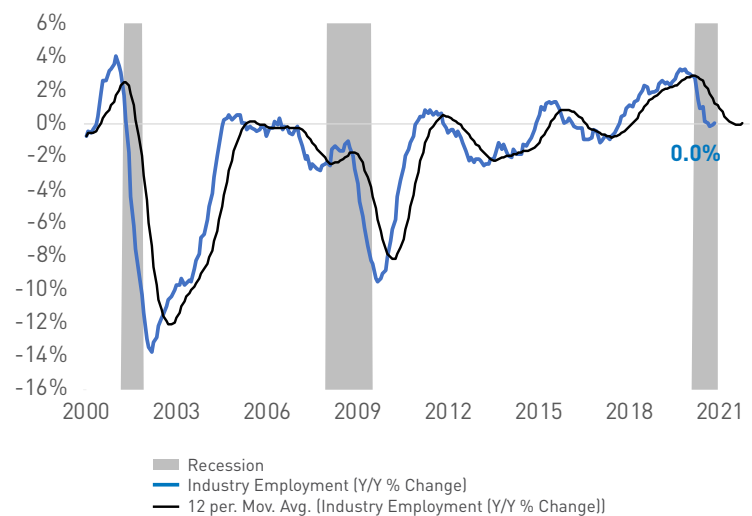
North American PCB Bookings (Y/Y % Change)



INDUSTRY EMPLOYMENT

The electronics industry added 5,400 jobs in December (3,500 jobs on a seasonally-adjusted basis). This follows an upwardly revised addition of 5,900 in November (500 jobs on a seasonally-adjusted basis). Industry employment is down roughly 2,700 jobs over the last year. The broader manufacturing industry continues to add jobs each month as it continues to recover. The overall manufacturing workforce is still down from pre-pandemic levels and down roughly 4.7 percent from last year. The electronics industry is off about 0.2 percent over the last year, so essentially flat. Finding qualified workers likely remains a challenge for electronics manufacturers.

Industry Employment (Y/Y % Change)



U.S. END MARKETS FOR ELECTRONICS

Industrial Production continues to recover. It rose 1.6 percent in December, the largest monthly gain since July, and is down just 3.6 percent from a year ago. Remember, Industrial Production had fallen 16.5 percent from February to April. The manufacturing component increased 0.9 percent during the month, and prior month gains were revised higher.



AUTOMOTIVE PRODUCTS

Auto production declined 1.5 percent during the month. But auto production is up 6.2 percent over the last year thanks to a strong recovery in production in recent months.



TRANSIT EQUIPMENT

Transit equipment production increased 0.5 percent, and the prior month increase was revised higher to 8.3 percent. The sector remains down 14.1 percent from last year.



INFORMATION PROCESSING & RELATED EQUIPMENT

Production in the information processing and related equipment sector decreased 1 percent during the month. The sector is down 0.9 percent over the last year.



INDUSTRIAL & OTHER EQUIPMENT

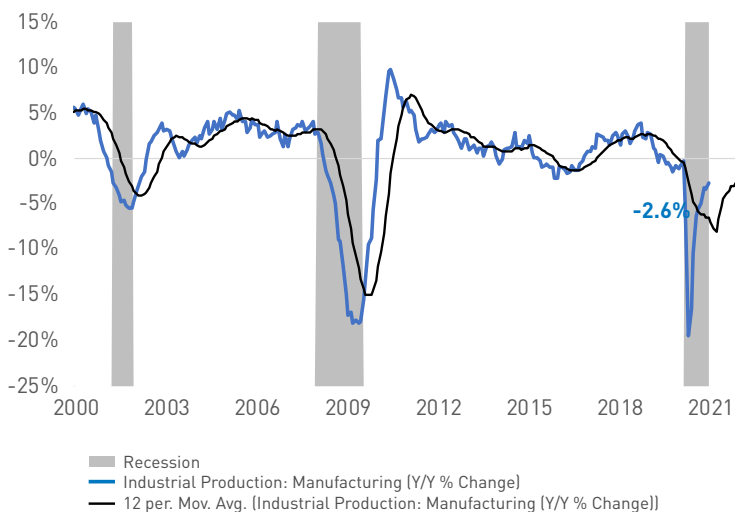
The industrial segment grew 1.4 percent. The sector is down 6.8 percent over the last year.



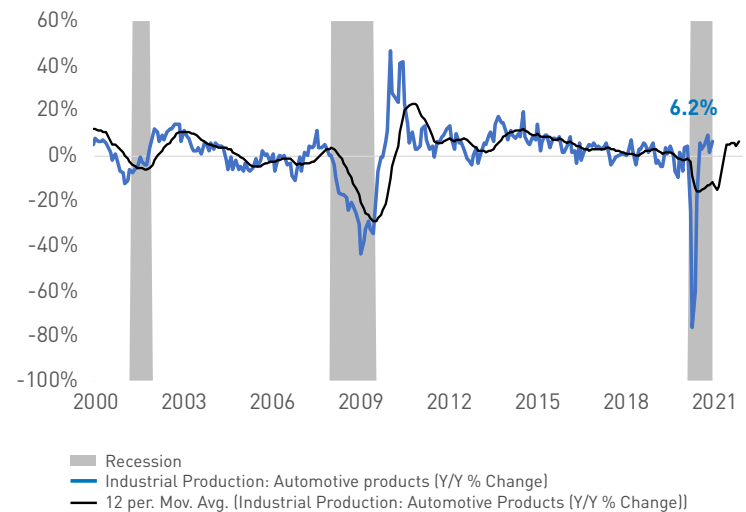
DEFENSE & SPACE EQUIPMENT

The defense and space equipment segment increased 1.3 percent in December after an upwardly revised 1 percent gain in the prior month. The sector is now up 0.7 percent over the last year.

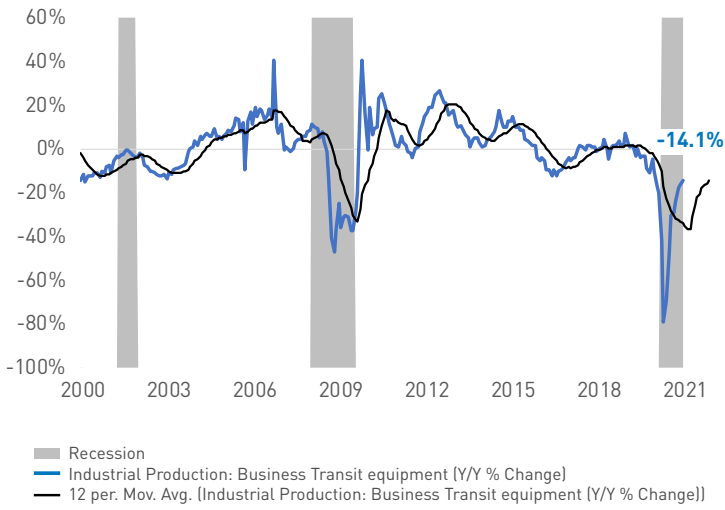
Manufacturing



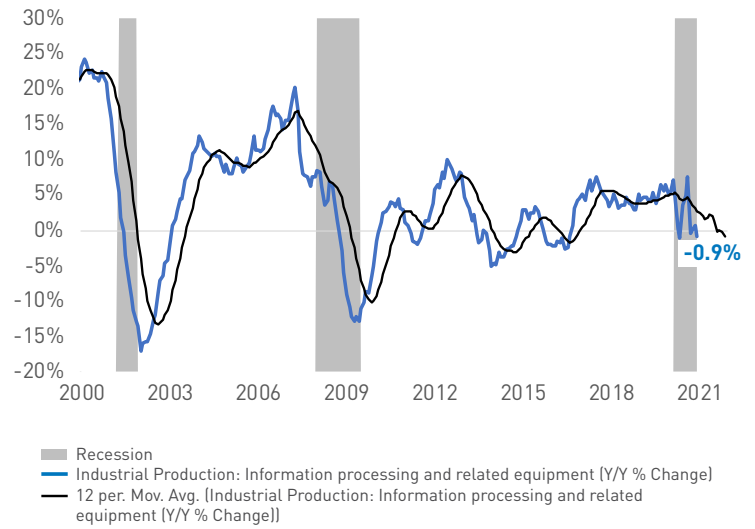
Automotive Products



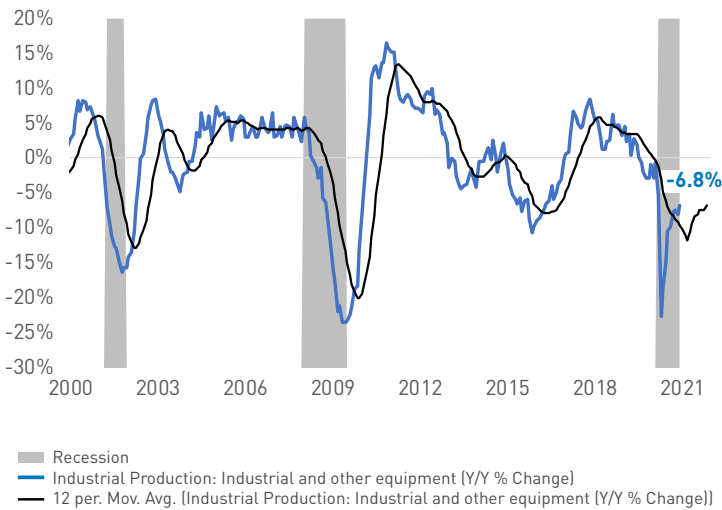
Business Transit Equipment (Y/Y % Change)



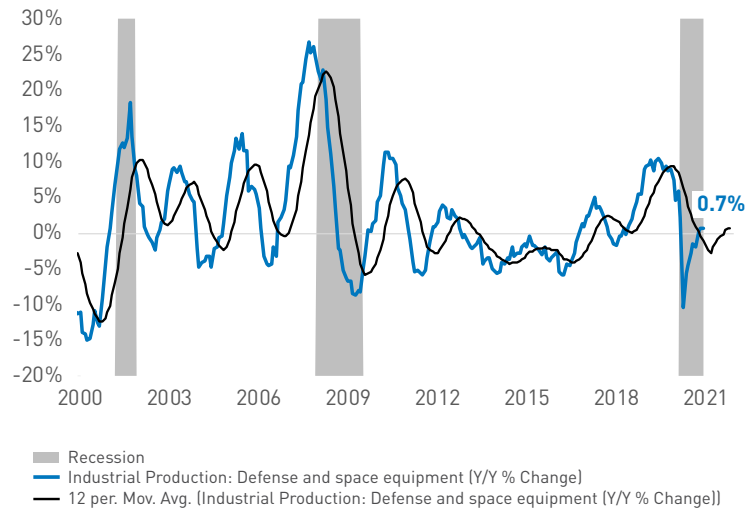
Information Processing & Related Equipment (Y/Y % Change)



Industrial & Other Equipment (Y/Y % Change)



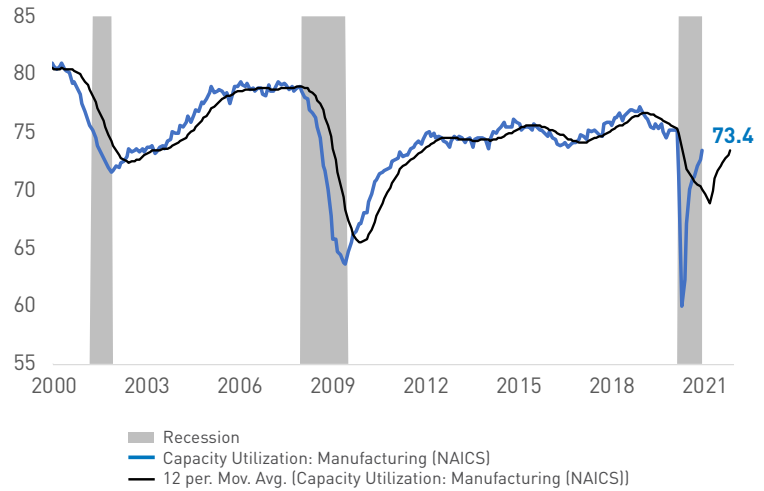
Defense & Space Equipment (Y/Y % Change)



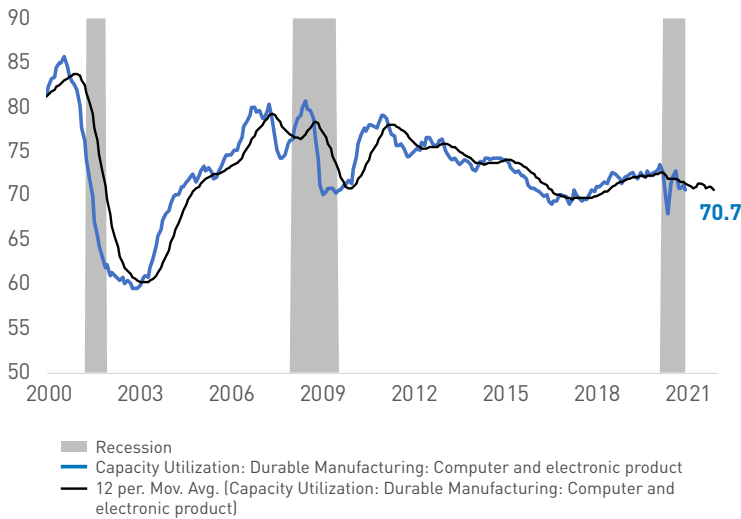
MANUFACTURING CAPACITY UTILIZATION

Recovery in the industrial and manufacturing sectors continues. Overall, capacity utilization increased to 74.5 percent in December, up from 73.4 percent in November. Manufacturing capacity rose to 73.4 percent, from 72.7 percent during the month. Capacity utilization in Aerospace and Miscellaneous Transportation Equipment also increased to 69.9 percent. Utilization in the Computer and Electronic Product sector declined slightly to 70.7. Likewise, utilization in the Motor Vehicles and Parts sector dropped to 76.6, but utilization in the month is higher than the prior year. Finally, capacity utilization for Electrical Equipment, Appliance, and Components increased from 72.3 to 73.7 and is in line with last December.

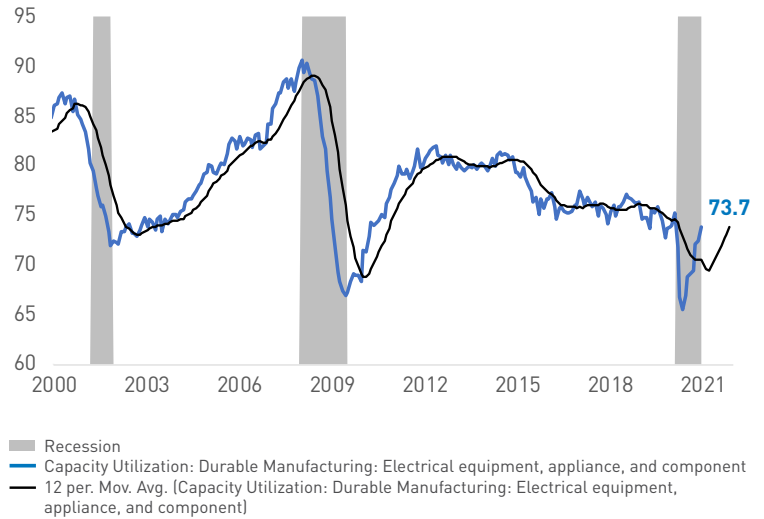
Manufacturing (NAICS)



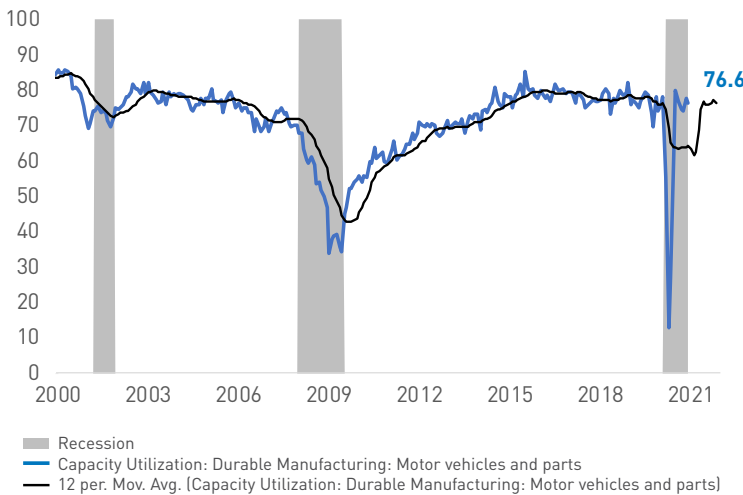
Computer & Electronic Product



Electrical Equipment, Appliance, & Component



Motor Vehicles & Parts



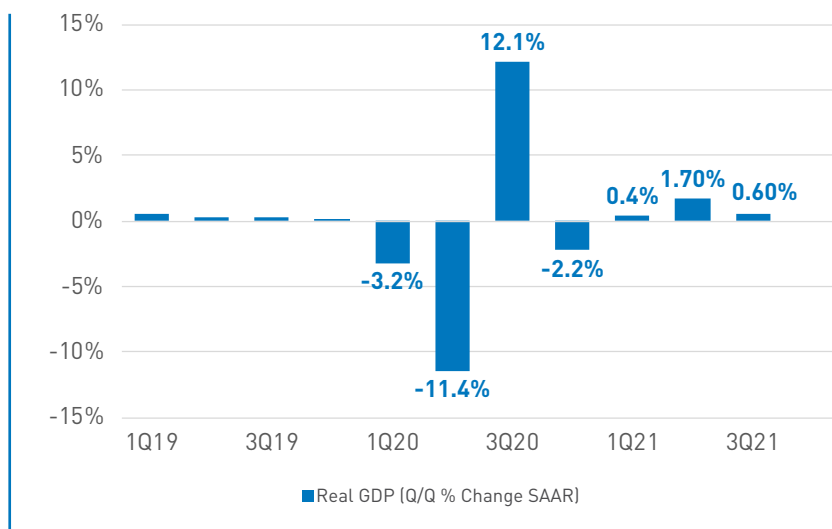
Aerospace & Miscellaneous Transportation Equipment



EUROPEAN OUTLOOK

ECONOMIC GROWTH

The economic recovery underway in the aftermath of the pandemic has ground to a halt in Europe. Rising COVID infections in the last few months have led to renewed restrictions. Germany has extended its partial lockdown until February 14th. France has implemented a 6 PM curfew, which has led to a number of recent demonstrations across the country. GDP figures for the third quarter were little changed. Euro area GDP increased 12.4 percent in the third quarter (11.5 percent in the EU), the strongest quarterly growth since records began in 1995. We expect the Eurozone to contract 2.2 percent in the fourth quarter. While Germany will show only a small decline, we estimate France will see GDP fall by 4.8 percent.



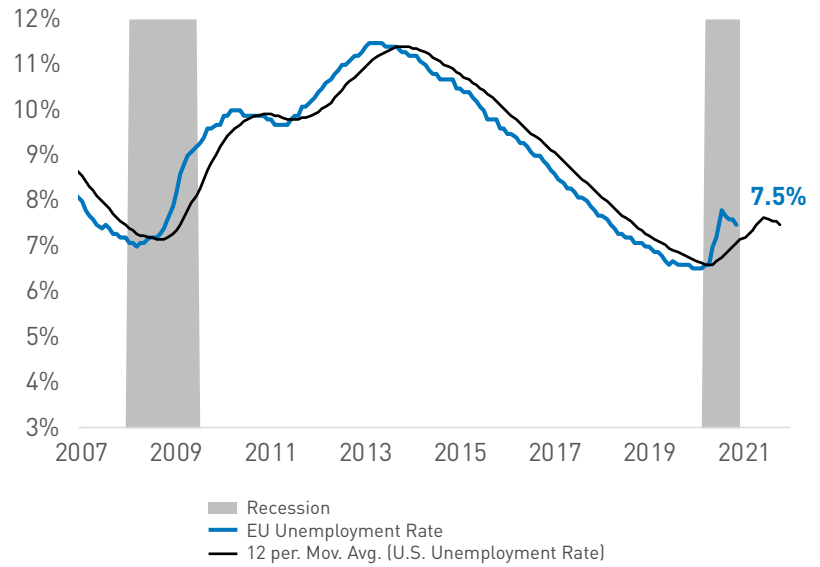
The ECB governing council added 500 billion euros to its pandemic stimulus bond purchases, bringing the total to 1.85 trillion euros. They also extended regular purchases through to at least March 2022. Roughly half of this total is still waiting to be deployed in the coming months and should help provide a partial backstop to the decline. We expect GDP to rise only 0.4 percent in the first quarter, so growth in the Eurozone will remain muted for several months.

	Q/Q PERCENTAGE CHANGE				Y/Y PERCENTAGE CHANGE			
	2019Q4	2020Q1	2020Q2	2020Q3	2019Q4	2020Q1	2020Q2	2020Q3
EURO AREA	0.1%	-3.7%	-11.7%	-12.4%	1.0%	-3.2%	-14.7%	-4.3%
EU (27)	0.2%	-3.3%	-11.4%	11.5%	1.3%	-2.6%	-13.9%	-4.2%
GERMANY	0.0%	-1.9%	-9.8%	8.5%	0.4%	-2.1%	-11.2%	-4.0%
FRANCE	-0.2%	-5.9%	-13.8%	18.7%	0.8%	-5.7%	-18.9%	-3.9%
ITALY	-0.3%	-5.5%	-13%	15.9%	0.1%	-5.6%	-18.0%	-5.0%
SPAIN	0.4%	-5.2%	-17.9%	16.4%	1.7%	-4.2%	-21.9%	-9.0%

	2021 ECONOMIC GROWTH (GDP % CHANGE)	2022 ECONOMIC GROWTH (GDP % CHANGE)
EURO AREA	-4.7%	3.8%
GERMANY	-3.8%	3.7%
FRANCE	-6.0%	4.2%

EMPLOYMENT

Despite rising cases of COVID-19 and mandated restrictions, the unemployment rate in the EU fell one-tenth of a percentage point in November to 7.5 percent. In the Eurozone, unemployment also fell one-tenth of a percentage point to 8.3 percent. In the Eurozone, the number of unemployed workers fell by 172,000 (and 222,000 in the EU), though this figure is up 1.425 million from a year ago. The youth unemployment rate remains extremely high. For those under 25 years old, the unemployment rate increased from 18 percent to 18.4 percent. Short-time work programs continue to help to mitigate the impact of the pandemic on employment.



MANUFACTURERS' SENTIMENT (PMI)

The Eurozone's manufacturing PMI increased to 55.2, ending 2020 on a solid note. The final December reading was slightly below the initial 55.5 flash estimate. Despite a decline in overall economic activity in the final months of the year, the manufacturing sector continues to expand and retrace lost ground. New orders saw strong demand to wrap up the year, though some of this was driven by last-minute spikes in demand for German goods from England prior to Brexit at the end of the year. Factories also report one of the strongest order backlogs in nearly three years. Despite solid demand, job growth in the manufacturing sector remains tepid, and the employment index suggests the workforce is contracting.



E.U. END MARKETS FOR ELECTRONICS

While renewed restrictions have reduced mobility and curtailed some spending, the industrial sector in Europe continues to recover. The manufacturing output index for the EU rose strongly in November, increasing 2.8 percent over the last month. Manufacturing output is flat compared to last year.



COMPUTER, ELECTRONIC & OPTICAL PRODUCTS

The electronics industry, which includes categories such as components, loaded boards, computers, communications equipment, and consumer electronics, increased a reported 33.7 percent in November. The sector is now up 23 percent from last year.



MOTOR VEHICLES

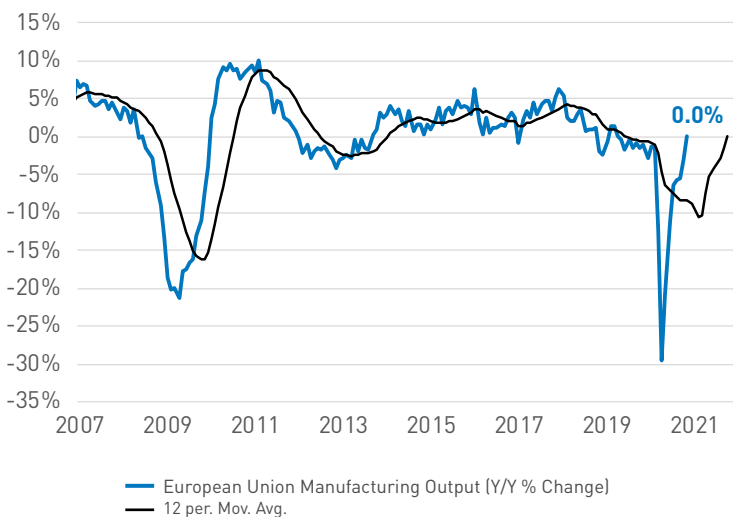
The Motor vehicle manufacturing production index increased 1.8 percent in November, after increasing 8.4 percent in the prior month. Auto production in the EU is off 4.3 percent from a year ago.



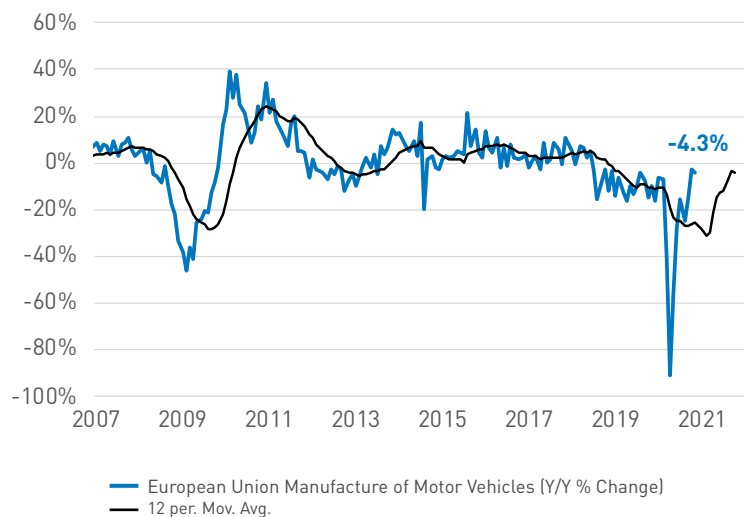
AIR & SPACECRAFT & RELATED MACHINERY

The air and spacecraft manufacturing sector continues to struggle. Not surprising given the collapse in air travel. The production index increased 4.1 percent in November, though, after declining 4.1 percent in the prior month. The sector remains down significantly, off 23.5 percent from last year.

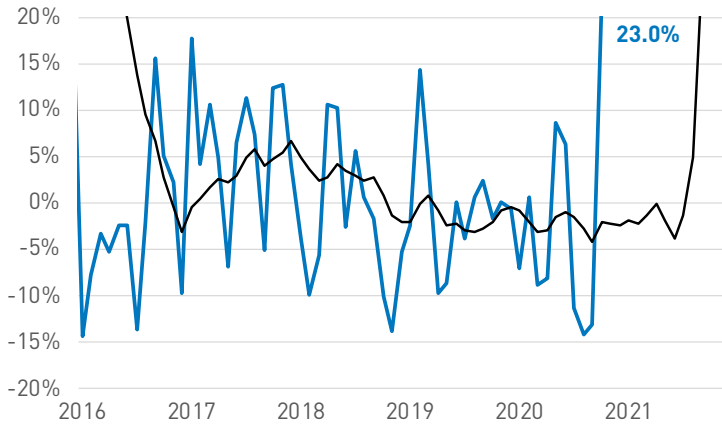
E.U. Manufacturing Output



E.U. Manufacture of Motor Vehicles

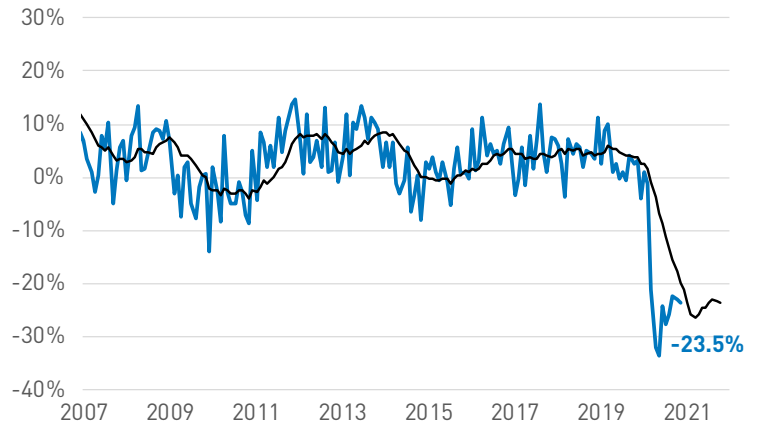


E.U. Manufacture of Computer, Electronic & Optical Products (Y/Y % Change)



— European Union Manufacture of computer, electronic and optical products (Y/Y % Change)
 — 12 per. Mov. Avg.

E.U. Manufacture of Air & Spacecraft & Related Machinery (Y/Y % Change)



— European Union Manufacture of air and spacecraft and related machinery (Y/Y % Change)
 — 12 per. Mov. Avg.