BUILD ELECTRONICS BETTER

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ECONOMIC OUTLOOK

Russia's invasion of Ukraine has rightfully dominated headlines in the last week. The commodity and equity markets were extremely volatile in the immediate aftermath of the attack as traders worked to understand the impact it would have on markets.

Both Russia and Ukraine are major exporters of commodities. Russia is the world's largest exporter of wheat and the second-largest exporter of oil. Russia provides 30% to 40% of Europe's oil, gas, and coal — or roughly 4% to 5% of the world's energy. Oil initially traded over $100/barrel for the first time since 2014, but sanctions imposed thus far do not include energy products, and oil traded off its highs, at least for now. Some energy analysts believe oil will trade towards $120/barrel and the record for gas in the U.S. of $4.11/gallon in 2008 will be surpassed in the coming months. Higher gas prices will translate into higher transportation costs. And remember, freight costs are already roughly 65% above pre-pandemic levels.

Corn prices surged in the days after the attack was initiated, in part due to the belief that demand for corn would rise as we seek alternative fuel sources. But in turn, this will also put upward pressure on feed prices which could push up the price we pay for beef, pork, and other food. Higher commodity prices could put upward pressure on already elevated inflation rates.

Russia and Ukraine are both major exporters of commodities like neon gas that are used to produce semiconductors. IPC estimates roughly 45% of the neon imported into the United States in 2021 came from Russia or Ukraine. Semiconductor companies are reporting, at least for now, that the Russia-Ukraine conflict should not impact production. But as I have been saying for some time, any disruption to an already stressed supply chain can have an outsized impact. Something that might not have been disruptive, becomes very disruptive when supply chains are stressed.

The outlook for the U.S. hasn't changed yet as a result of the Russia-Ukraine conflict. The economy is holding up well in the western hemisphere. Economic activity in the first quarter could be negatively impacted by the lingering impact of the omicron variant, as it was by the delta variant in the third quarter, however, the spread of the virus is slowing rapidly and economic activity like air travel and dining out is coming back quickly. GDP growth excluding the volatile inventory investment component (final sales) should look good over the coming months, advancing in the range of 3%-4%, a notable pickup from 1% in the second half of 2021.

The picture is less clear in Europe where the conflict will have a more direct impact. The economies in Europe will be hurt by higher energy prices, lower confidence, and to some extent weaker trade. The Ukraine conflict likely reduces the euro zone's GDP outlook by 0.3%-0.4% this year. This will be factored into our forecast in the coming weeks.

Manufacturing output was improving at the start of the year and business confidence was improving. In Germany for example, the Ifo Business Climate Index rose sharply in February, despite growing concerns about Ukraine even prior to the Russian invasion. It was a clear sign that the economy was set to benefit from receding COVID concerns. Sentiment improved with a more positive assessment of the current business situation and a much brighter outlook for the coming six months. There was a general feeling in Europe that the economy was set to accelerate and leave COVID in its rearview mirror. The Russia-Ukraine conflict changes this somewhat.

The crisis poses several threats. If Russia cuts natural gas to Germany and the rest of Europe, it could result in not only much higher prices but an energy crisis this fall. Sanctions that have been put in place thus far could slow economic growth in Europe. For example, the EU shut down airspace to Russian planes which could hinder economic growth in popular travel locations like Spain, Greece, Italy, and Germany.

The picture is especially bleak for Russia's economy right now. The MOEX Russia Index was down 33% on the day of the attack, only to bounce back 20% the next day. The selloff on February 24th was the fifth worse sell-off of any market in history. The MOEX Index is off 42% from its high a few months ago. The Russian Ruble also traded lower, hitting an all-time low against the U.S. dollar as sanctions were put in place that will limit the ability to use the Ruble. There are still many unknowns. The duration of the conflict will dictate the severity of the impact on Europe. While it is not likely to be a risk to global growth, it could have a negative impact on the margin. Inflation remains a key concern throughout the world, and the Ukraine crisis likely exacerbates rising prices - especially energy prices. Manufacturers will see this materialize as higher transportation costs and potentially higher prices for energy-intensive parts and materials.

Supply chain disruptions appear to be abating somewhat, though supply chains will remain brittle for much of 2022. Global trade flows have risen in recent months though slower port throughout in China in recent months is concerning. China factory activity likely contracted in February, driven by slower production output after the Lunar New year holiday and the Winter Olympics. China's strict COVID measures could hinder output and supply chains this year. But outside of China, improving supply chain dynamics should aid manufacturing activity.

7%

The U.S. economy grew by 7% in the fourth quarter of 2021.

98.9%

The Ifo Business Climate Index U.S. rose strongly in February, increasing from 96 to 98.9, though the Ukraine crisis is likely to weaken sentiment in the coming weeks.

0.7%

Manufacturing activity rose 0.7% in Europe in December. Output is up 2.2% over the last year and 4.6% over the last two years.

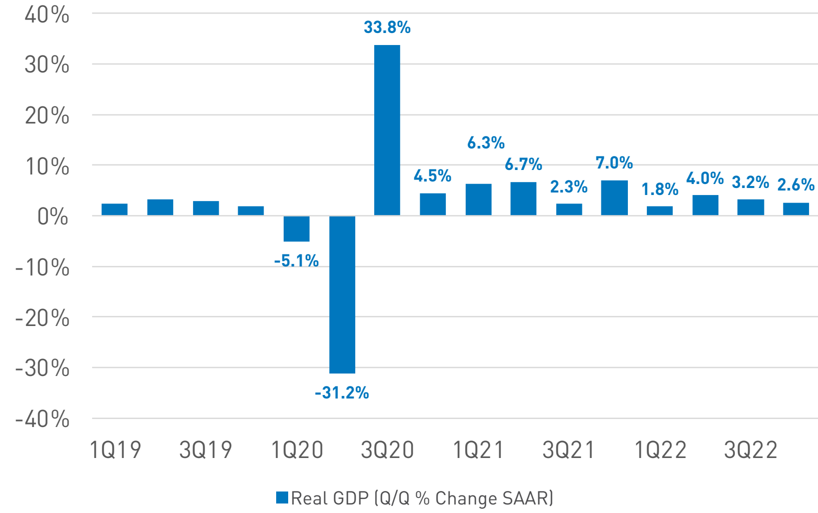
4

The number of ships anchored and waiting for a berth in order to be offloaded at the Port of LA has fallen from a high of more than 40 ships in December to 4 today at the end of February.

U.S. OUTLOOK

ECONOMIC GROWTH

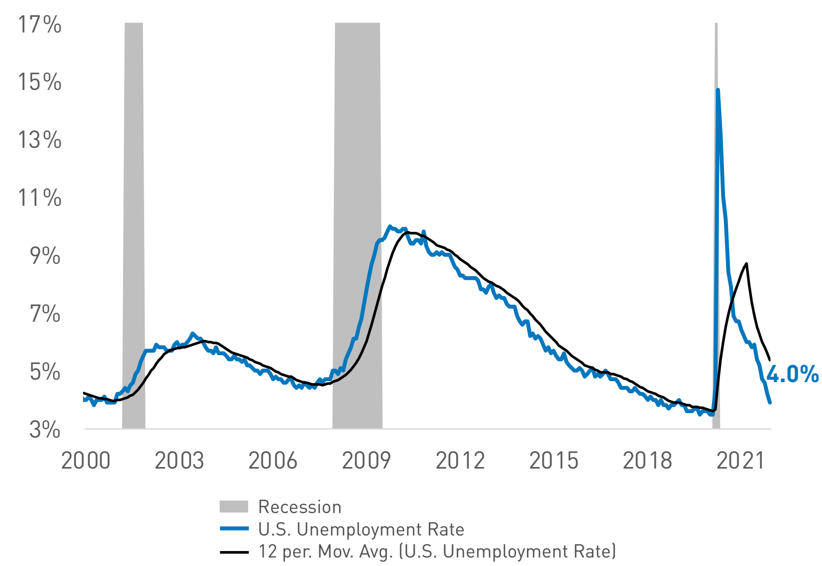
The economy grew 7% in the fourth quarter of 2021, easily beating the consensus expectation of 5.5% percent and our forecast for 5.9% growth published last month. Unfortunately, much of the growth was driven by higher than expected inventory investment, which accounted for 4.9 percentage points of the advance. Inventory investment is not likely to be as strong in future quarters. Growth in the first quarter of 2022 will likely be on the lighter side – we currently expect 1.8% annualized growth in real GDP. The economy grew 5.6% in 2021, fueled in part by monetary and fiscal stimulus. Growth in 2022 will be respectable, we currently expect 3.7% growth, but there are greater headwinds to economic growth this year.



	2022 ECONOMIC GROWTH (GDP % Change)	2023 ECONOMIC GROWTH (GDP % Change)	2022 EXCHANGE RATE (v. USD)	2023 EXCHANGE RATE (v. USD)
UNITED STATES	3.7%	2.6%	N/A	N/A
CANADA	3.9%	3.1%	1.24	1.3
MEXICO	2.4%	2.4%	21.02	21.34
EURO AREA	3.9%	2.5%	1.14	1.17
CHINA	5.0%	5.2%	6.49	6.42

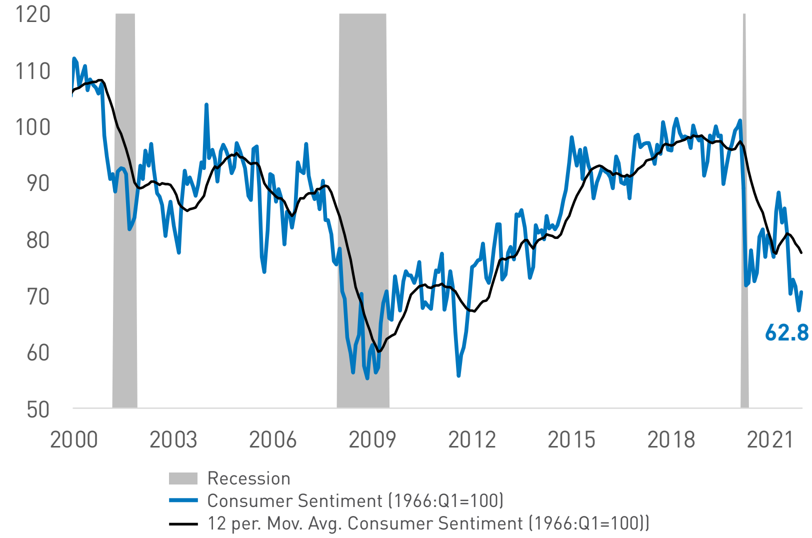
EMPLOYMENT

The U.S. labor market added 457,00 jobs in January, much strong than the 125,000 jobs expected. Fear over the negative economic impact of the omicron variant is waning and businesses appeared willing to hire. The largest increases in jobs in January were for leisure & hospitality (151,000), professional & business services (86,000 including temps), and retail (61,000). Manufacturing added 13,000 jobs. The labor force rose 1.4M in January, driven by seasonal adjustments, and the unemployment rate rose from 3.9% to 4%. Payrolls remain 2.9M below pre-pandemic levels, a gap that should close by the second half of 2022.



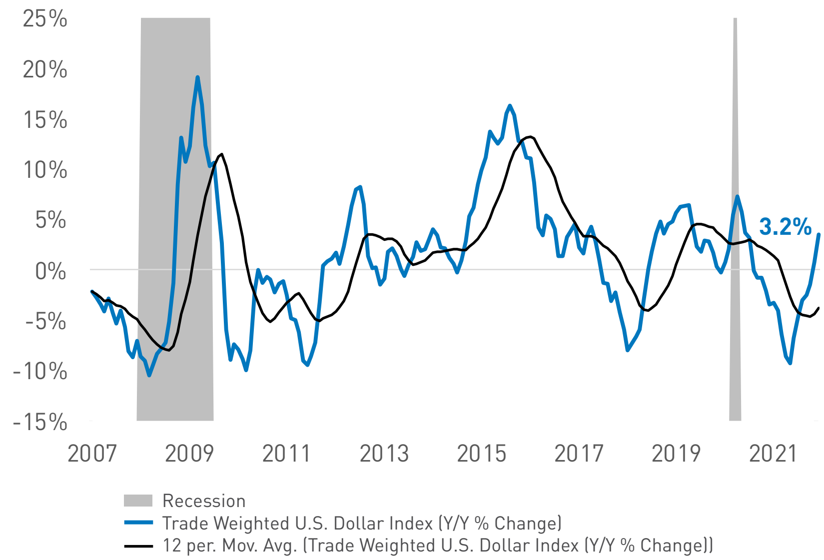
SENTIMENT

Consumer sentiment deteriorated in both January and February. The Consumer Sentiment Index slipped to 67.2 in January, down 4.8% from December 2021. The index fell another 6.5% to 62.8 in February. This is an 18.2% decline from a year ago. The February consumer sentiment reading is the lowest level in the past decade. The decline in sentiment in the early months of the year is being driven by weakening personal financial prospects. Consumers are worried about rising inflation and have less confidence in the government's economic policies. Consumers also hold the least favorable long-term outlook in a decade. Average hourly earnings are up a strong 10.7% from pre-pandemic levels but inflation is up roughly 8.8% over the same period suggesting real earnings have gained only 0.5% in the last two years.



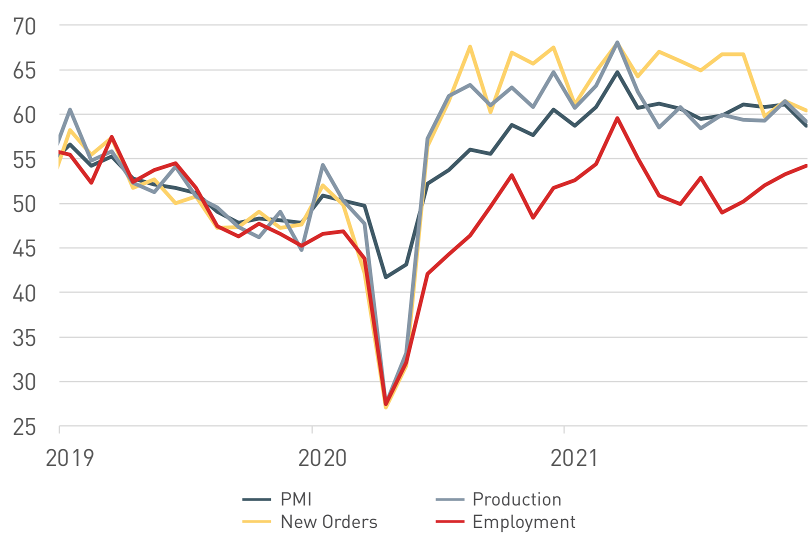
TRADE-WEIGHTED U.S. DOLLAR INDEX

Currencies have been volatile as the world makes sense of the impact of the Russian invasion of Ukraine. Safe haven currencies like the U.S. dollar rallied in the immediate aftermath. The trade-weighted U.S. dollar index fell in January, declining 0.6% during the month. The dollar's value is up 3.2% over the last year. Although the Fed has been promising to taper its security purchases and to raise the range of its policy rate in March, reports on inflation show the Fed is behind the curve. The Fed is left in a precarious position. The market was pricing in a one-in-three probability of a 50 basis point increase in the target Fed Funds rate in March but the attack on Ukraine likely takes a 50 basis point increase off the table for now.



MANUFACTURERS' SENTIMENT (PMI)

The U.S. manufacturing sector expanded in January — the 20th consecutive month of growth — but growth once again slowed from the prior month. New orders and production both decelerated, though both continued to indicate expansion. The Prices Index rose in the month, continuing to suggest prices are rising. Supply chain challenges continue to be acute, but things seem to have improved somewhat over the last month. The Customers' Inventories Index improved but remains at a very low level suggesting inventories remain tight.



U.S. END MARKETS FOR ELECTRONICS

Industrial production increased 1.4% in January and is up 4.1% over the last year. Though the headline number was boosted by cold weather that boosted utility sector output. Manufacturing output rose 0.2% in the month, after falling 0.1% in the prior month. Much of the decline in manufacturing output is related to auto production declines caused by supply chain disruptions. Non-auto manufacturing output is up 3.3% over the last year.

AUTOMOTIVE PRODUCTS

Auto production fell 0.5% in January, after falling 1.8% in the prior month. Output is off 7.5% over the last year and 5.3% from pre-pandemic levels.

TRANSIT EQUIPMENT

Transit equipment production declined 0.6% over the last month. The sector is down 7.4% over the last year and down 11.2% from two years ago.

INFORMATION PROCESSING & RELATED EQUIPMENT

Production in the information processing and related equipment sector decreased 0.7% in the month. The sector is up 5% over the last year and 6.9% from two years ago.

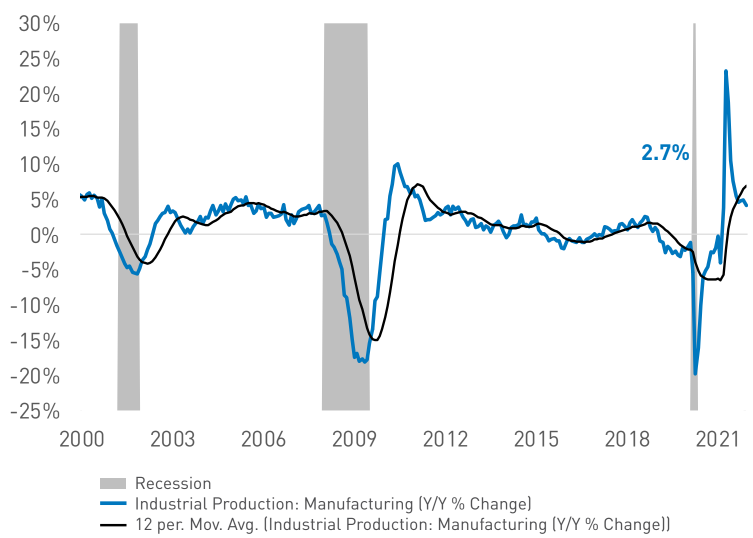
INDUSTRIAL & OTHER EQUIPMENT

The industrial sector moved 0.8% higher during the last month. The sector is up 5.6% over the last year and up 2.6% from the start of the pandemic.

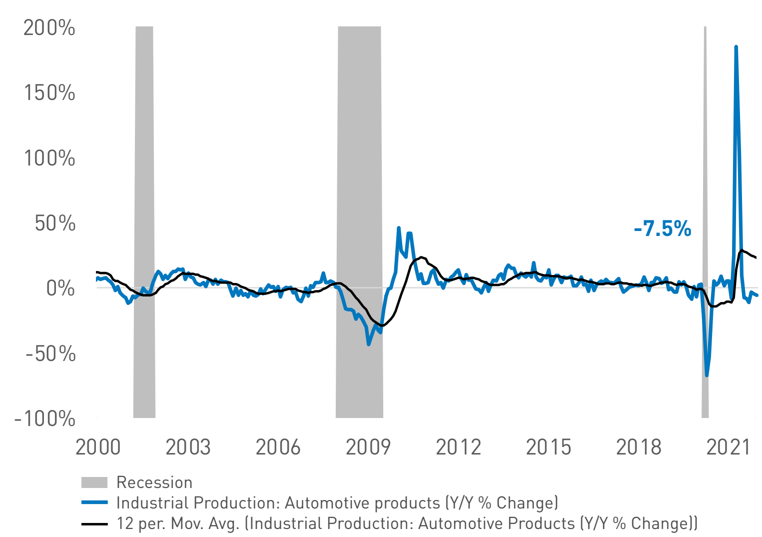
DEFENSE & SPACE EQUIPMENT

The defense and space equipment segment rose 0.7% last month. The sector is up 12.5% over the last year and 21% over the last two years.

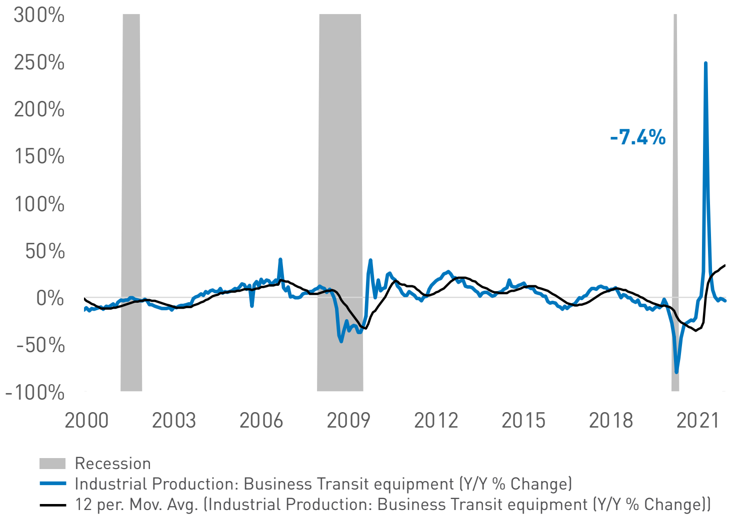
Manufacturing



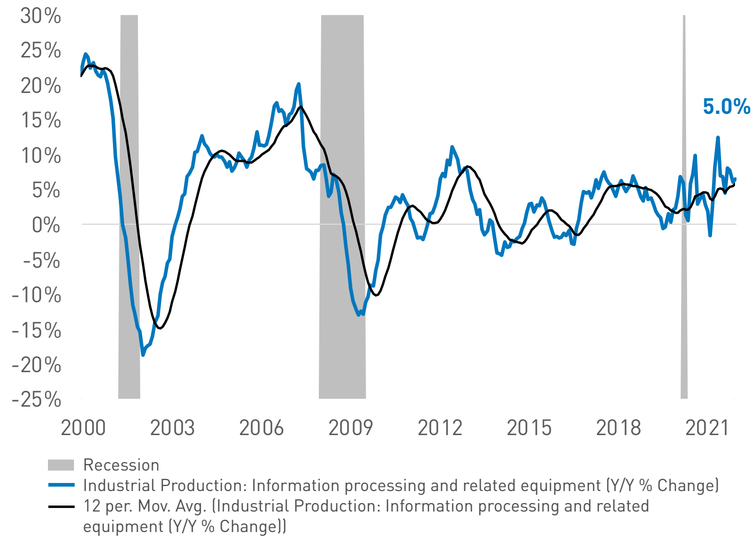
Automotive Products



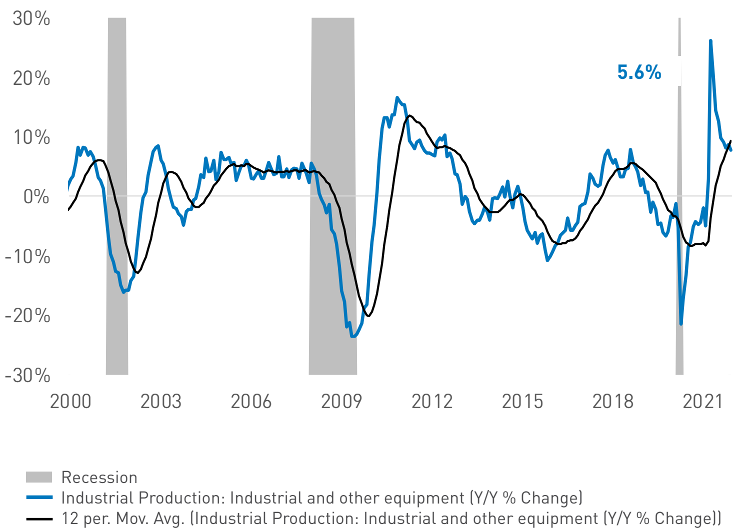
Business Transit Equipment (Y/Y % Change)



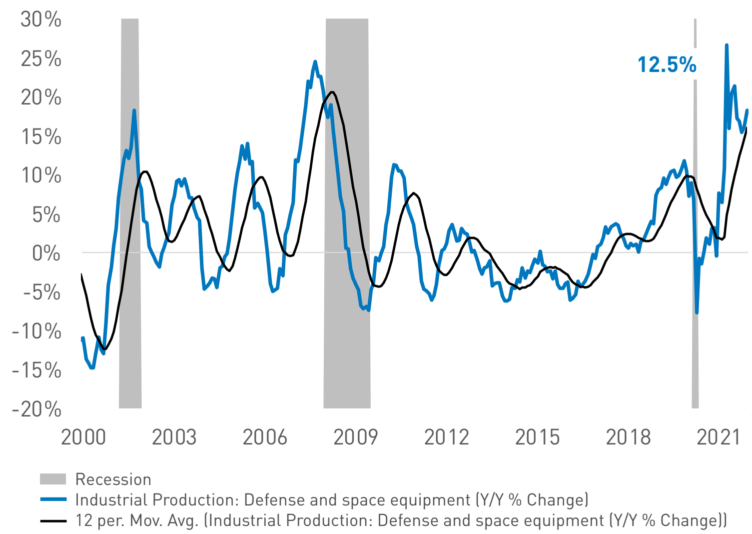
Information Processing & Related Equipment (Y/Y % Change)



Industrial & Other Equipment (Y/Y % Change)



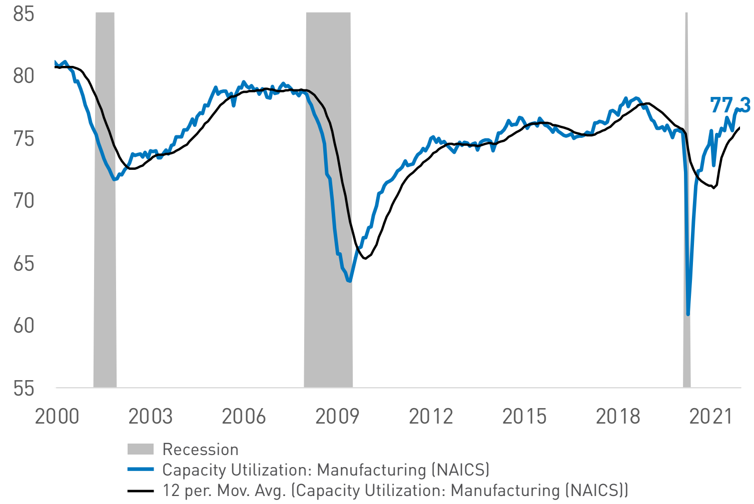
Defense & Space Equipment (Y/Y % Change)



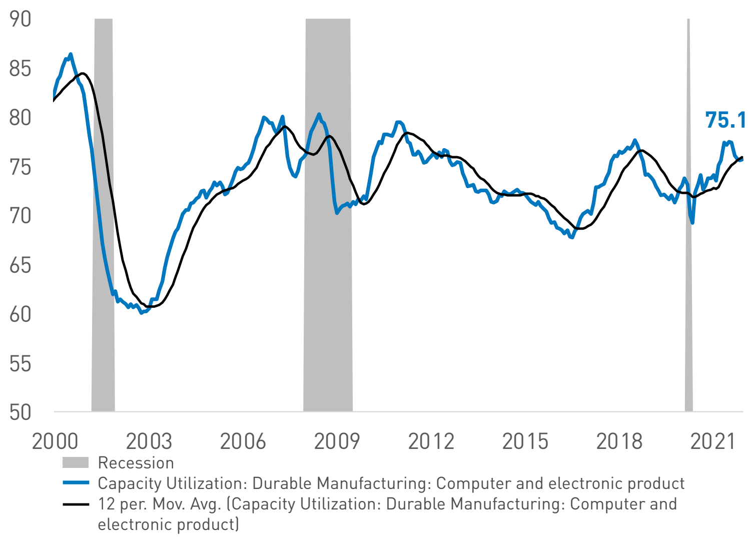
MANUFACTURING CAPACITY UTILIZATION

Overall capacity utilization increased during January, rising to 77.6%, up from 76.6% in December. Manufacturing capacity utilization rose slightly to 77.3% and remains roughly 2.4% above pre-pandemic levels. Computer and electronic production capacity utilization declined 0.8% to 75.1% but remains 1.8% above pre-pandemic levels. Electrical equipment, appliances and components utilization rose 0.5% to 80.1%. Utilization for the motor vehicles and parts sector fell 1% to 70%. This is 6.9% below pre-pandemic levels. Finally, utilization in the aerospace and miscellaneous transportation equipment sector rose 0.8% to 73.1%.

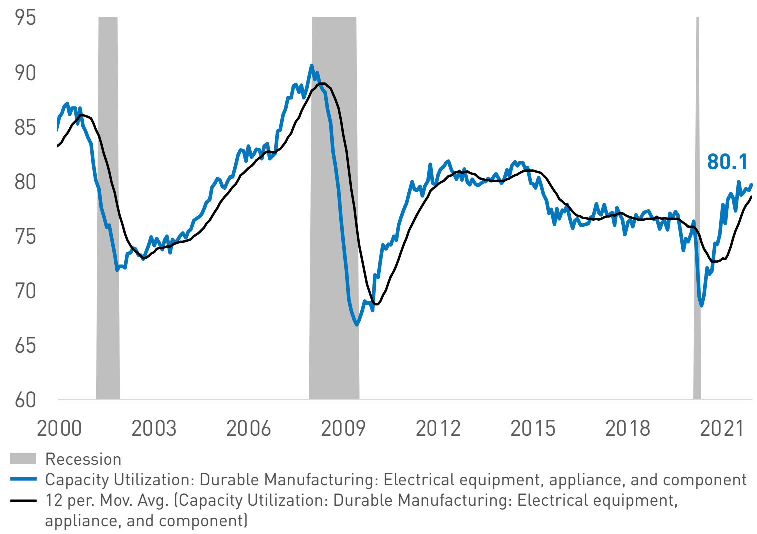
Manufacturing (NAICS)



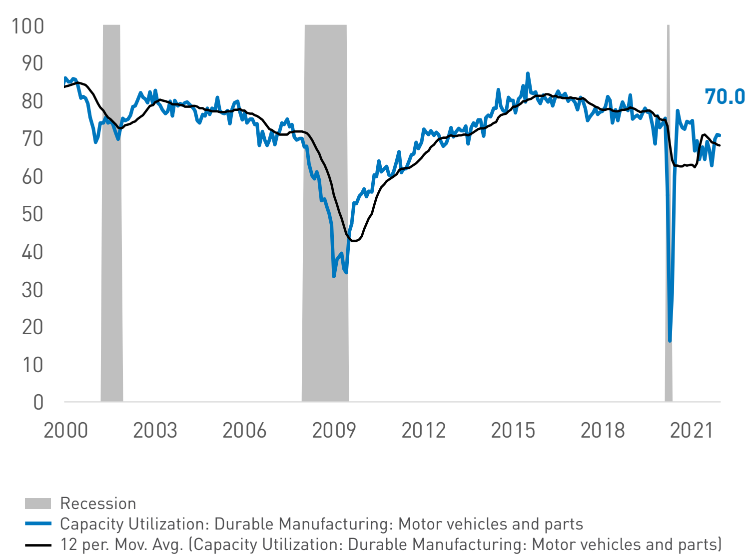
Computer & Electronic Product



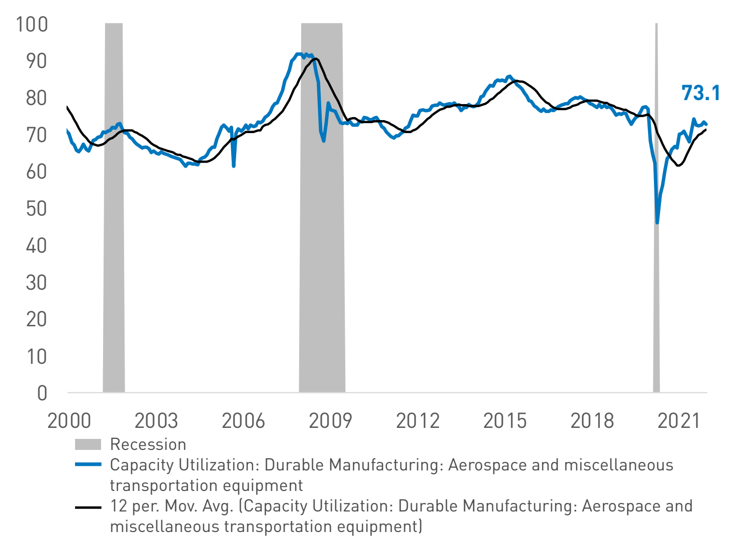
Electrical Equipment, Appliance, & Component



Motor Vehicles & Parts



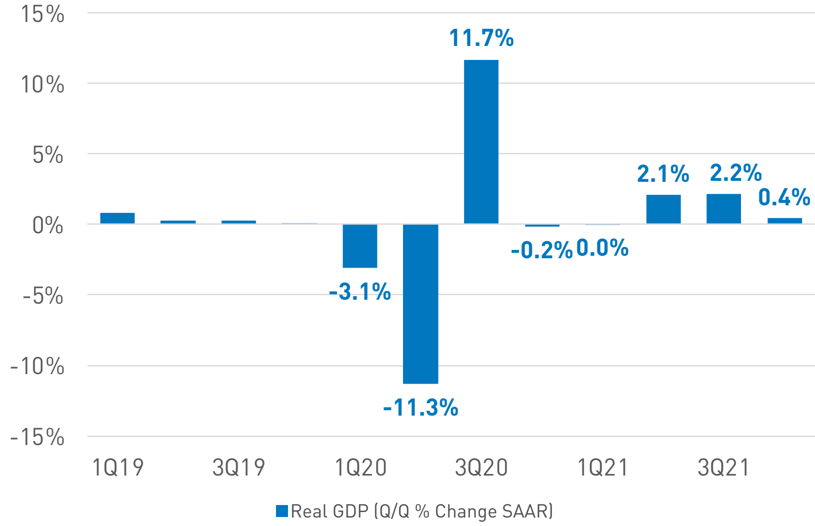
Aerospace & Miscellaneous Transportation Equipment



EUROPEAN OUTLOOK

ECONOMIC GROWTH

Fourth-quarter GDP rose 0.3% in the euro area and 0.4% in the EU. On a year-over-year basis, GDP rose 4.6% in the euro area and 4.8% in the EU, a bit better than we had expected last month. Growth for the third quarter was revised higher by one-tenth of a percentage point for both the euro area and the EU. For the year, GDP increased 5.2% in both the euro area and the EU, a shade slower than in the U.S. Economic growth in the fourth quarter was 3.7% higher than a year ago. Growth in the fourth quarter was highest in Hungary (2.1%), Spain (2%), and Poland (1.7%). These figures compare to 1.7% growth in the U.S.

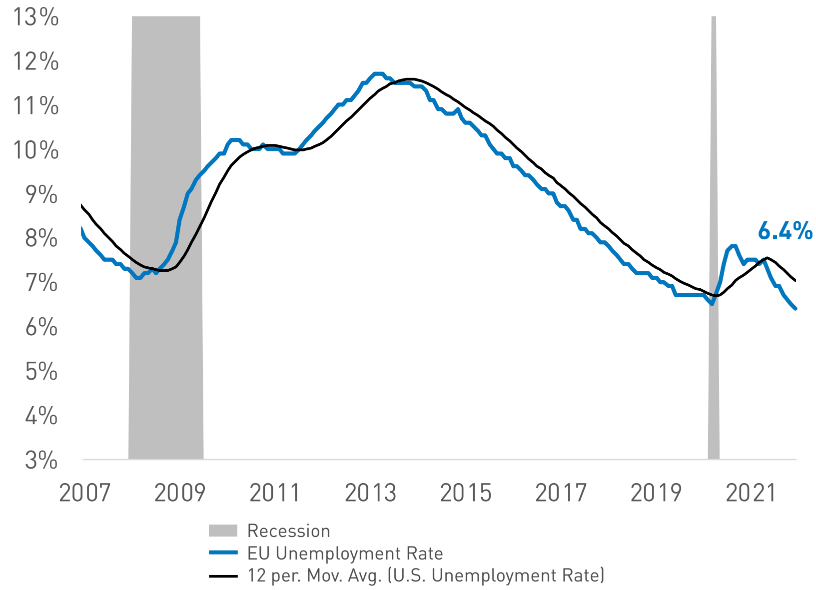


	Q/Q PERCENTAGE CHANGE				Y/Y PERCENTAGE CHANGE			
	2021Q1	2021Q2	2021Q3	2020Q4	2021Q1	2021Q2	2021Q3	2021Q4
EURO AREA	-0.2%	2.2%	2.3%	0.3%	-1.1%	14.4%	3.9%	4.6%
EU (27)	-0.0%	2.1%	2.2%	0.4%	-1.1%	13.8%	4.1%	4.8%
GERMANY	-1.7%	2.2%	1.7%	-0.7%	-2.8%	10.4%	2.9%	1.4%
FRANCE	0.1%	1.3%	3.1%	0.7%	1.5%	19.0%	3.5%	5.4%
ITALY	0.3%	2.7%	2.6%	0.6%	-0.3%	17.3%	4.0%	6.4%
SPAIN	-0.7%	1.2%	2.6%	2.0%	-4.3%	17.7%	3.4%	5.2%

	2022 ECONOMIC GROWTH (GDP % CHANGE)	2023 ECONOMIC GROWTH (GDP % CHANGE)
EURO AREA	3.9%	2.5%
GERMANY	3.7%	2.9%
FRANCE	3.8%	2.3%
NETHERLANDS	3.2%	2.1%

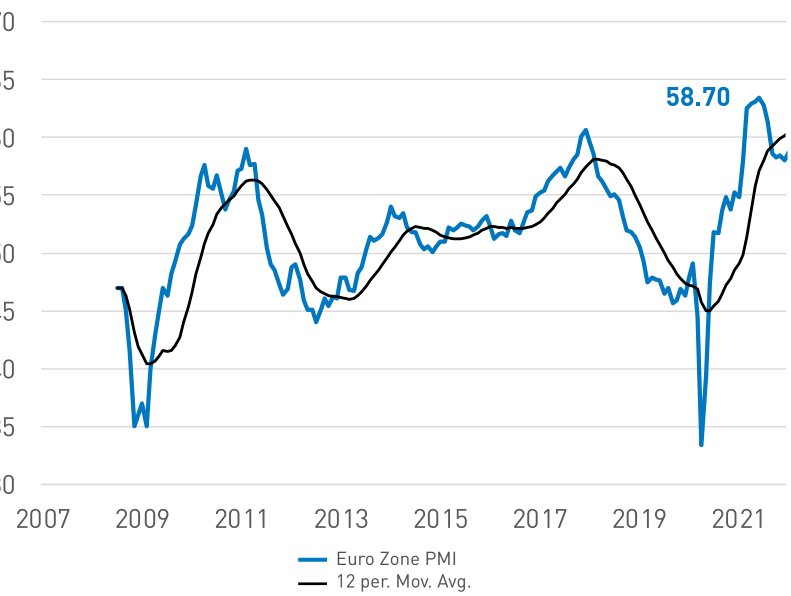
EMPLOYMENT

The unemployment rate in the euro area declined one-tenth of a percentage point in December, falling from 7.1% to 7%. It was 8.2% in December 2020. In the EU, the unemployment rate fell from 6.5% in November to 6.4% in December. It was 7.5% a year ago. The lowest unemployment rates are in Czechia (2.1%), Poland (2.9%), and Germany (3.2%). As refugees pour out of Ukraine, many might be looking for jobs and more permanent settlement in Central and Western Europe in the coming months. Some countries with low employment rates can likely absorb the inflow of new workers.



MANUFACTURERS' SENTIMENT (PMI)

The European manufacturing sector started the new year off strongly, with production, new orders, and employment all registering faster increases than last month. In Europe, like in other parts of the world, supply chain constraints are slowly lifting. The rate of input price increases also eased somewhat, recording the weakest reading in nine months. The Eurozone Manufacturing PMI rose seven-tenths of a percentage point to 58.7 in January. This is the highest level since August 2021. Austria had the strongest-growing manufacturing sector in January. The Netherlands, Germany, and Ireland all reported faster expansions.



E.U. END MARKETS FOR ELECTRONICS

Manufacturing output rose 0.7% in December. Manufacturing output is up 2.2% over the last year and up 4.6% over the last two years.

COMPUTER, ELECTRONIC & OPTICAL PRODUCTS

The electronics industry, which includes categories such as components, loaded boards, computers, communications equipment and consumer electronics, saw output increase a robust 5.9% during the month. The sector is up 31% over the last two years.

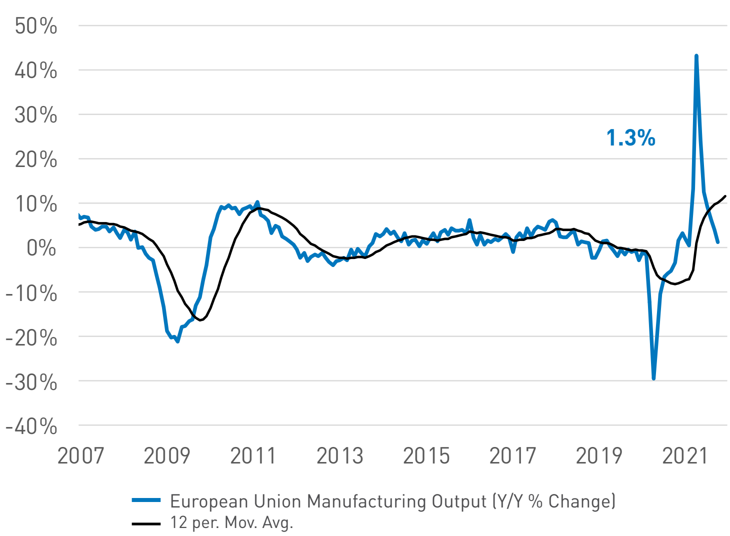
MOTOR VEHICLES

The motor vehicle manufacturing production index shot up again in December, rising 15.4%. Auto production continues to be hampered by supply shortages, but the market in Europe is showing solid signs of recovery. Auto production in the European Union remains off 14.8% from a year ago and 18% from two years ago.

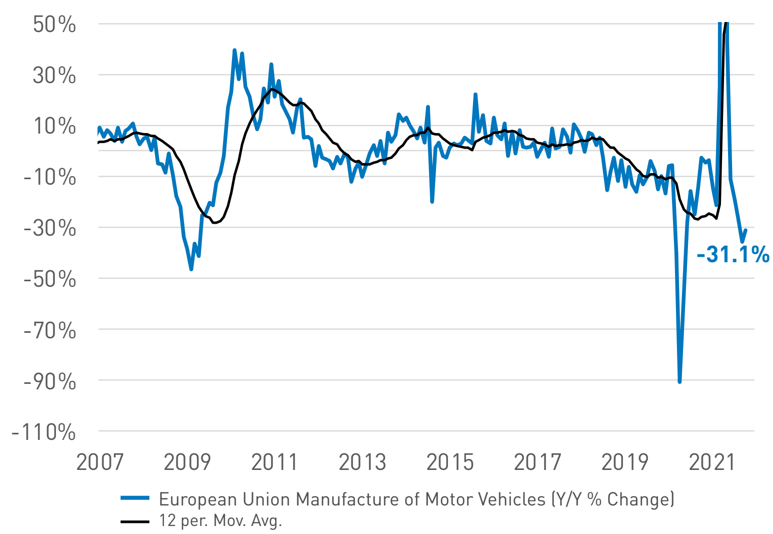
AIR & SPACECRAFT & RELATED MACHINERY

The air and spacecraft manufacturing sector rose a strong 5.6% in December. The segment is off 1.9% over the last year and 22.8% over the last two years.

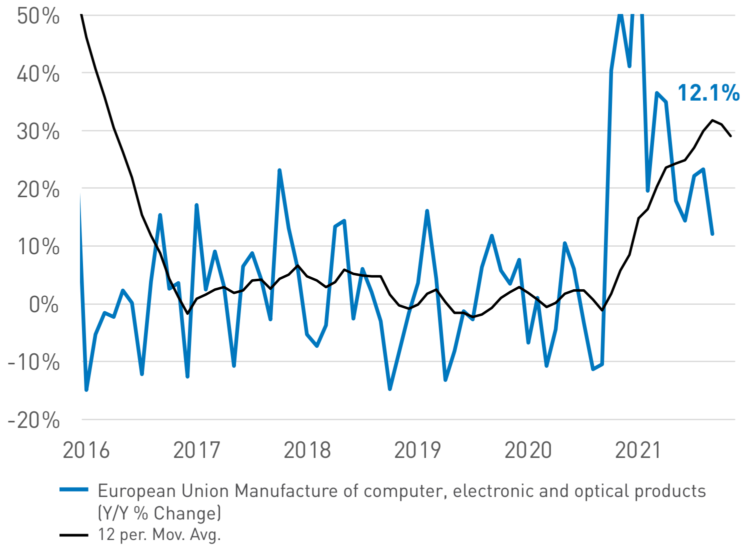
E.U. Manufacturing Output



E.U. Manufacture of Motor Vehicles



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



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