BUILD ELECTRONICS BETTER

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ECONOMIC OUTLOOK

The economic picture continues to dim and the likelihood of a recession next year continues to increase. The U.S. economy is expected to expand just 1.6% in 2022, less than half as fast as the 3.9% growth projected at the start of the year. Next year, the economy is slated to expand just 0.6%, down from an expected 2.6% growth. A recession in the United States next year is not a foregone conclusion, but the probability has increased.

The primary force driving a 2023 recession narrative is that persistently high inflation will require an aggressive response from the Federal Reserve and monetary policy that is sufficient to bring inflation within the Fed's comfort zone will push the economy into a recession. It takes about six months for interest rate hikes to fully flow through the economy, slowing inflation but also slowing economic activity along the way. The Fed has to do enough to curtail prices without slowing the economic activity too much - a very delicate act when using the blunt force of monetary policy. Moreover, an economy that is growing slowly is very susceptible to exogenous shocks. When the prospect for growth is limited, it does not take much to push an economy into recession.

Right now, all eyes are on inflation. We believe that inflation in the U.S. has likely peaked. Annual inflation last month was 8.3%, down from 8.5% in July. Energy prices have been the main driver of inflation, both in the U.S. and elsewhere. Annual energy prices were up 32.9% in July but fell to 23.8% in August. And just as energy prices are declining, prices elsewhere are on the rise. Annual food prices were up 11.4% in August, higher than the 10.9% reported in July.

Stripping away both energy and food prices, both historically volatile, showed that prices for all other goods rose 6.3% in August, higher than the 5.9% increase reported in July. Housing makes up about 30% of the total measure of inflation in the U.S. and housing prices rose steeply over the last year. It will likely take some time for rents to reflect higher housing prices and that means inflation is likely to remain stubbornly high for the year to come. All of this puts more pressure on the Fed to raise rates which increases the probability they will go too far and ultimately push the economy into a recession.

The Fed raised benchmark interest rates another 75 basis points in September to a range of 3%-3.25%, the highest since early 2008 and the third consecutive increase of 75 basis points. The median forecast suggested rates will be 4.4% by the end of the year and will top out at 4.6% in the current cycle sometime in 2023. To achieve 4.4% by the end of the year, the Fed will need to raise rates 1.15%-1.4% over the remaining two meetings in November and December.

There are certainly other factors influencing the current economic climate, but inflation is the primary force market observers are watching.

Right now, the U.S. consumer looks relatively healthy. The labor market has recovered much more quickly than expected to pre-pandemic levels. Demand for jobs has dropped from its peak, but remains well above historical levels. Companies are not hiring at the same rate that they were, but the economy is continuing to add new jobs at a good clip. Households have added $15.4 trillion dollars to their net worth compared to prior to the pandemic, and this is actually down somewhat from a peak of over $21 trillion dollars. Debt obligations remain near all-time lows. Credit card balances are down $40 billion dollars from pre-pandemic levels, though they were down more than $90 billion dollars earlier in the recovery.

The picture in Europe is decidedly dimmer. The Russian invasion of Ukraine continues to put tremendous pressure on the global economy, but the impact is especially pronounced in Europe. The economy did surprisingly well in the early shadow of Russia's invasion, in part because of a strong demand for services that came as economies were reopening after several COVID-related shutdowns. This was especially true in regions with large hospitality and tourism sectors. But the tailwinds of spending on services is waning.

Russia has restricted gas exports to Europe in response to the sanctions placed upon it by Europe and other countries. This has pushed energy prices up significantly during a time when prices were already rising. Europe reported annual inflation of 9.1% in August, another new high for the continent. Moreover, pressures continue to mount and Europe will see a few more months of new inflationary highs. Whereas inflation has likely peaked in the U.S., that is not the case in Europe.

Estonia reported 25.2% annual inflation in August, the highest reported level of inflation in Europe. But other countries were not far behind. Both Latvia and Lithuania reported annual inflation in excess of 21%. In the case of Estonia, energy prices are up over 200% over the last year and account for roughly half of the increase in prices over the past year. High inflation in Europe is dampening consumer spending and manufacturing output.

The likelihood of a recession in Europe next year is high, especially if the winter is especially cold and strong demand for energy drives prices higher.

9.1%

The Euro area reported record annual inflation in August of 9.1%. Energy prices were up 38.3% over the last year, down slightly from 39.6% in July. Food, alcohol and tobacco were up 10.6% compared to 9.8% in July.

4.6%

The Federal Reserve raised the target on its benchmark interest rate another 75 basis points, to a range of 3%-3.25%, and projects it will raise rates to 4.6% in the current cycle.

$15.4T

U.S. households have added over $15 trillion dollars to their net worth compared to pre-pandemic levels.

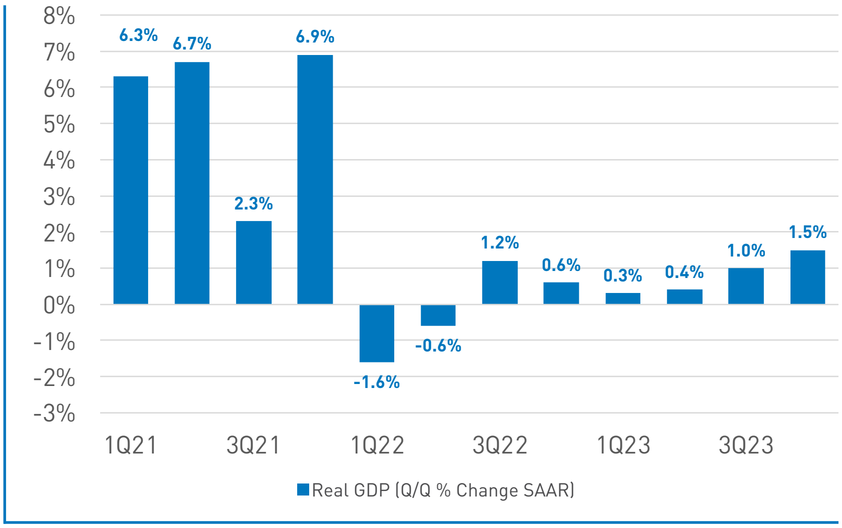
3.2%

China's economy will grow just 3.2% because of COVID-related shutdowns and property market weakness.

U.S. OUTLOOK

ECONOMIC GROWTH

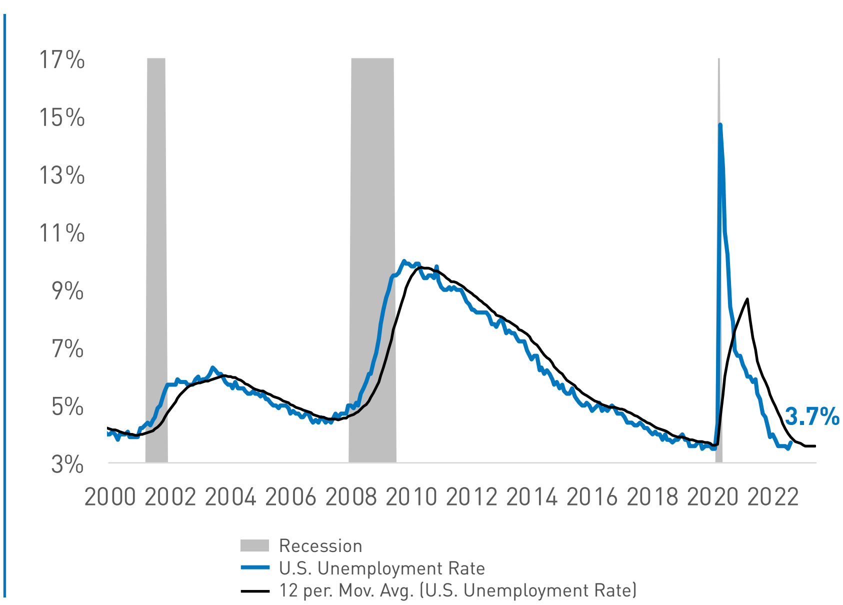
Real GDP growth in Q2 was revised slightly higher, declining at a -0.6% annual rate compared to the earlier estimate of -0.9%. The upward revision was driven by upward revisions in consumer spending and inventories that more than offset a downward revision to home building and federal government spending. Consumer spending was revised 0.5 percentage points higher to 1.5%. Notably, spending on goods improved. Outlays for goods still contracted, but at just 0.1% instead of the previously reported 2.6%. Spending on services was adjusted slightly lower while spending on nondurable goods was revised up from a decline of 5.5% to a decline of 3.7%. The "third" revision to GDP will be published at the end of the month, but is likely to remain inline with the current estimate. This comes on the heels of a 1.6% annualized decline in the first quarter. Gross Domestic Income (GDI), an alternative measure to GDP which focuses on incomes earned from production rather than the value of final goods and services produced in the economy, suggests the economy expanded in the first two quarters of the year, presenting a more positive view of the current economic environment.



	2022 ECONOMIC GROWTH (GDP % Change)	2023 ECONOMIC GROWTH (GDP % Change)	2022 EXCHANGE RATE (v. USD)	2023 EXCHANGE RATE (v. USD)
UNITED STATES	1.6%	0.6%	N/A	N/A
CANADA	3.2%	1.2%	1.29	1.27
MEXICO	1.9%	1.3%	20.44	20.82
EURO AREA	2.7%	0.4%	1.01	1.09
CHINA	3.2%	5.1%	6.89	6.72

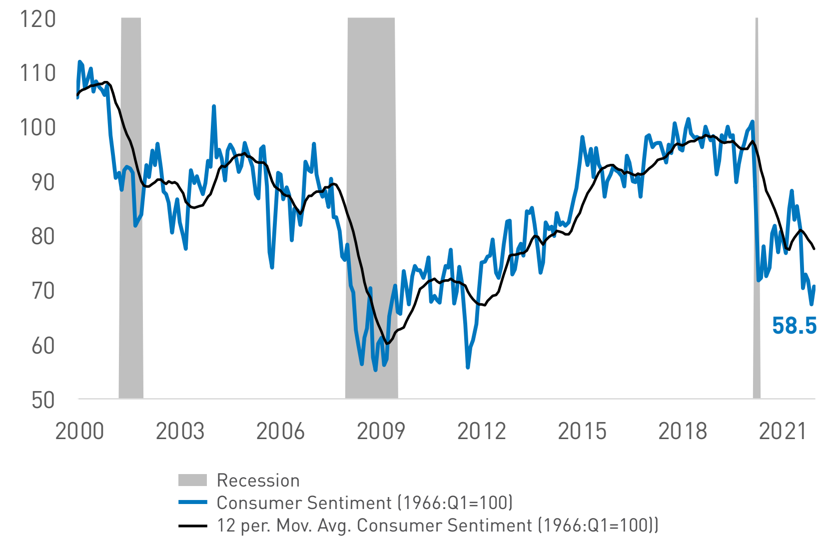
EMPLOYMENT

The U.S. economy added 315,000 jobs in August. Payroll gains for June and July were revised down by a total of 107,000 jobs, bringing the net gain to 208,000. Job growth remains firm, but is showing signs of slowing and the August report is certainly less impressive than in recent months. Private sector payrolls rose 308,000 during the month. The largest increases were in professional & business services (+68,000), health care & social assistance (+62,000), retail (+44,000), and leisure and hospitality (+31,000). Manufacturing added 22,000 new jobs. The unemployment rate rose to 3.7% in August from 3.5% in July, but this was largely driven by a surge in the labor force (786,000) that exceeded the increase in employment as measured by the household survey (442,000).



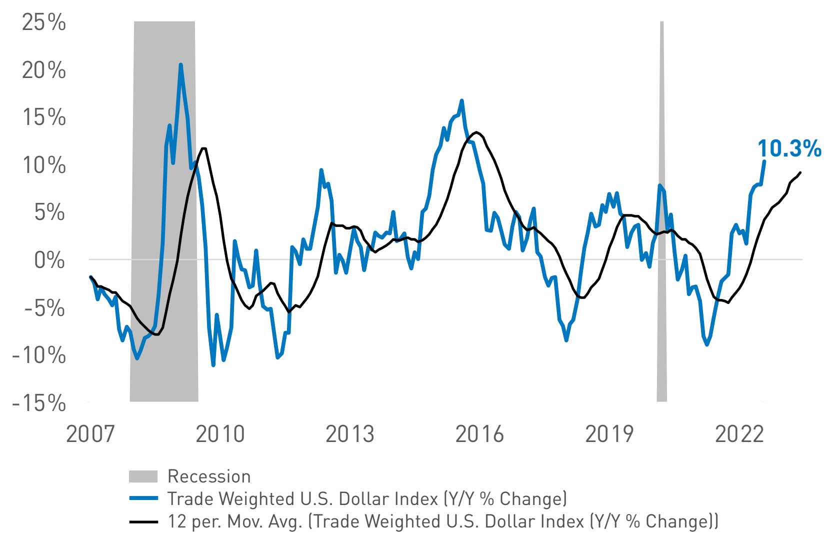
SENTIMENT

The Index of Consumer Sentiment rose 13% in August, increasing from 51.5 in July to 58.2. July had been an all-time low reading for the index and the index remains off 17% from last year. The increase in sentiment was driven by a 59% jump in the year-ahead outlook for the economy while the index of current conditions remains relatively unchanged. The gains in sentiment are likely a result of some deceleration in inflation. Gains in sentiment were broad, but the strongest improvements in sentiment were exhibited by low-income consumers, who are more acutely impacted by inflation. More than half of consumers expect their incomes to grow over the next year, with wage gains increasing from 1.1% in July to 2.3% in August, but only 18% of consumers expect income growth to exceed inflation. The median expected year-ahead inflation rate declined to 4.6%, the lowest reading in a year, but consumers remain very uncertain about the future trajectory of inflation.



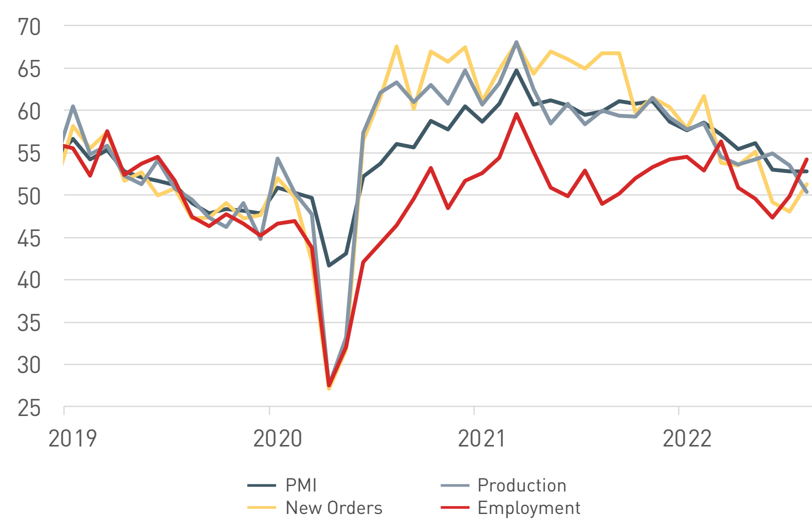
TRADE-WEIGHTED U.S. DOLLAR INDEX

The Trade-Weighted U.S. Dollar Index gained about 2.5% in August, and is up 10.3% over the last year. The dollar continues to strengthen against others, hitting a 20-year high in late September as incoming economic data suggested a resilient U.S. economy would allow the Fed to continue to aggressively raise interest rates. The yield on benchmark 10-year U.S. Treasuries hit a 12 year high. The U.S. dollar to U.K. pound sterling exchange rate has fallen to a level last seen in 1985. The Japanese yen has declined to its softest levels since 1998. The main drivers of a strengthening dollar remain that rate differentials and a U.S. economy that is holding up better than its trading partners.



MANUFACTURERS' SENTIMENT (PMI)

The Manufacturing PMI was unchanged in August, registering 52.8 and suggesting the U.S. manufacturing sector continues to expand. The July and August PMI is the lowest reported since June 2020, so while the manufacturing sector has now expanded for a 27th consecutive month, there do appear to be some headwinds. The New Export Orders Index contracted during the month, likely reflecting a very strong dollar and weakening global economic environment. In positive news, the New Orders Index reversed last month's decline and once again shows expansion. The Prices Index fell 7.5 percentage points, to 52.5, the lowest reading since June 2020. And the Employment Index rose to 54.2%, the first expansionary reading in four months.



U.S. END MARKETS FOR ELECTRONICS

U.S. industrial production declined 0.2% in August, after hitting a new record high in July. Overall production remains up 3.7% over the last year. Much of the decline was driven by the volatile utilities sector which fell 2.4% during the month. Manufacturing increased 0.1% and is up 3.3% over the last year. Auto production fell 1.4%, while non-auto production increased 0.2%.

AUTOMOTIVE PRODUCTS

Auto production fell 1.4% in the month. Production is up 10.2% over the last year and down just 0.2% from pre-pandemic levels.

TRANSIT EQUIPMENT

Transit equipment production increased 0.7% over the last month. The sector is up 10.3% over the last year and 12.6% from pre-pandemic levels.

INFORMATION PROCESSING & RELATED EQUIPMENT

Production in the information processing and related equipment sector rose 2% during the month. The sector is down 0.7% over the last year against strong comps. The sector is still 1.5% higher than pre-pandemic levels.

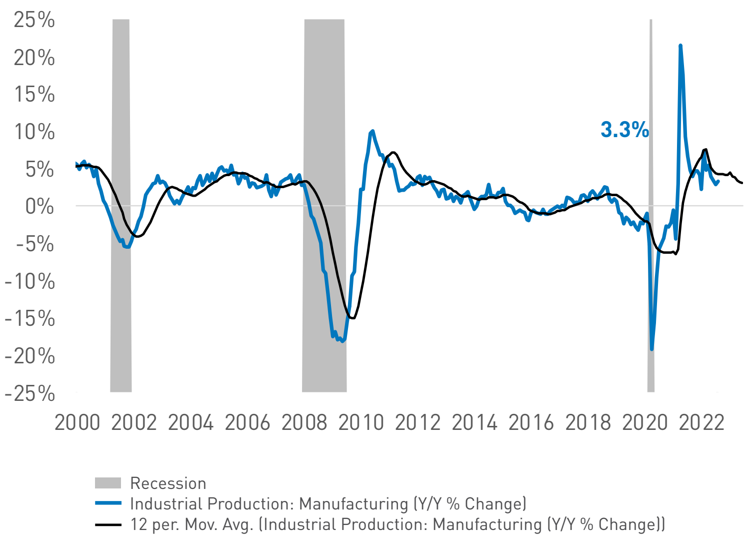
INDUSTRIAL & OTHER EQUIPMENT

The industrial sector rose 0.3% during the last month. The sector is up 6.7% over the last year and up 6.4% from the start of the pandemic.

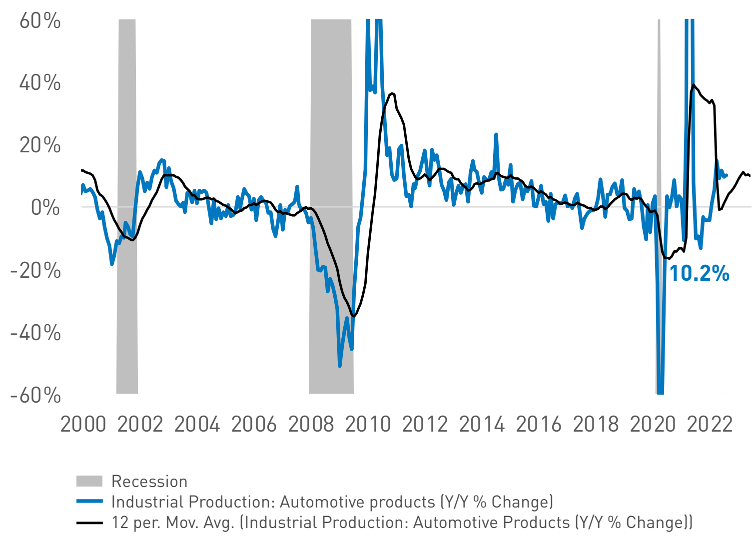
DEFENSE & SPACE EQUIPMENT

The defense and space equipment segment rose 1.8% to a new all-time high. The sector is up 5% over the last year and 13% since the pandemic began.

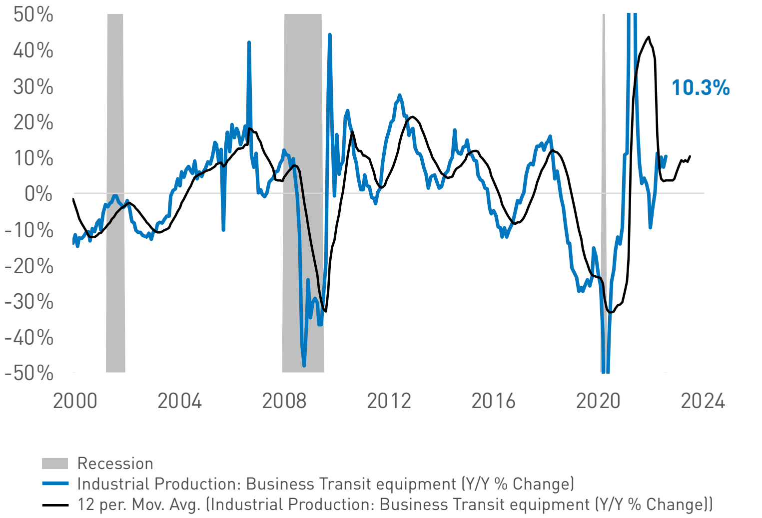
Manufacturing



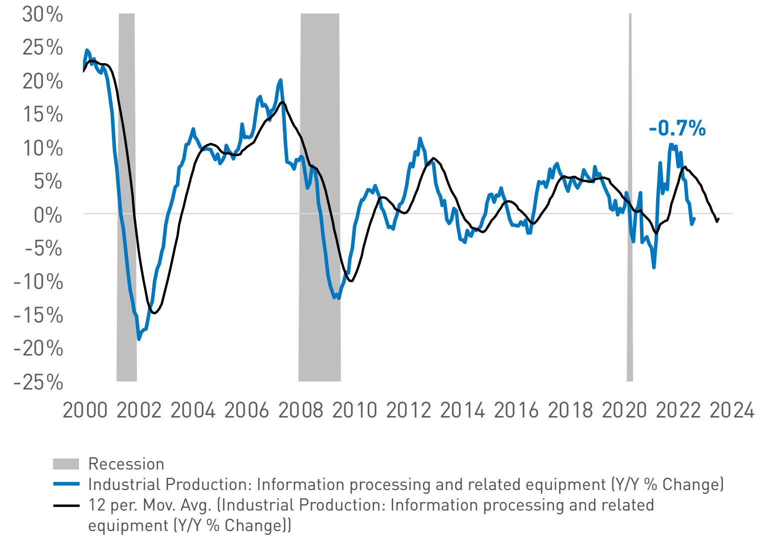
Automotive Products



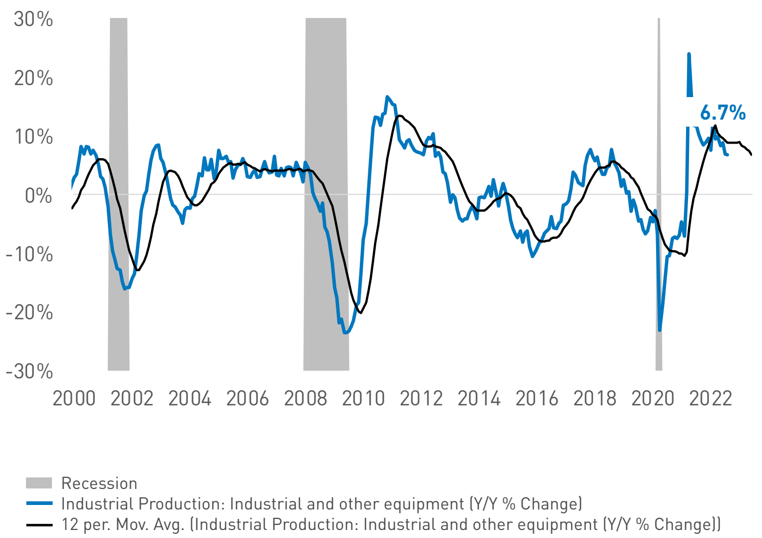
Business Transit Equipment (Y/Y % Change)



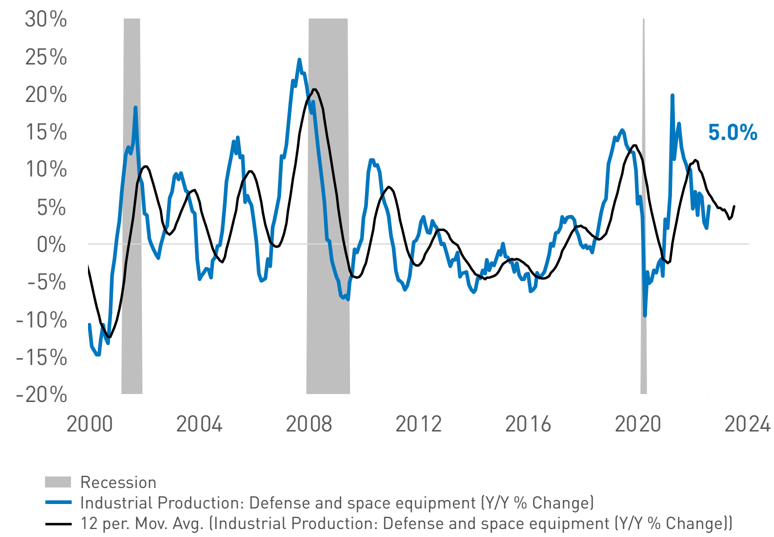
Information Processing & Related Equipment (Y/Y % Change)



Industrial & Other Equipment (Y/Y % Change)



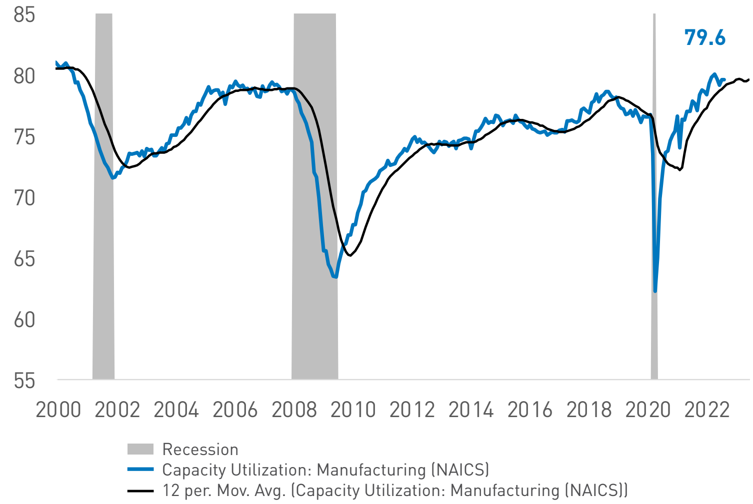
Defense & Space Equipment (Y/Y % Change)



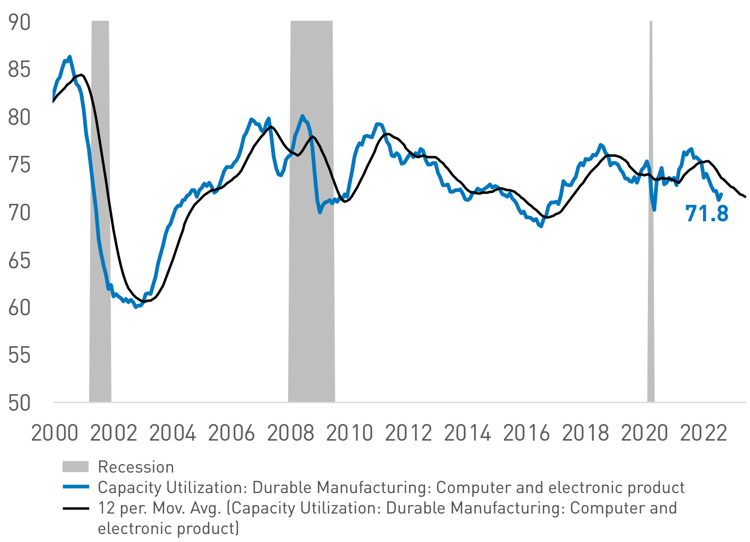
MANUFACTURING CAPACITY UTILIZATION

Overall capacity utilization fell slightly during the month of August, declining from 80.2% to 80%. Manufacturing capacity utilization remained unchanged at 79.6%. Computer and electronic production capacity utilization rose 0.7% (0.52 percentage points) to 71.8%. Electrical equipment, appliances and components utilization fell 1.1% to 81.8%. Utilization in the auto sector fell 1.5% to 74.6%. Capacity utilization in the aerospace and miscellaneous transportation equipment sector inched up again this month to 74.2%.

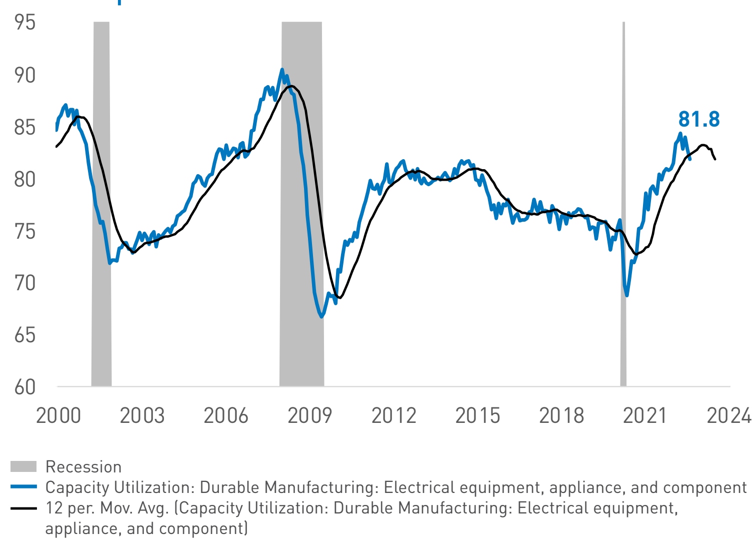
Manufacturing (NAICS)



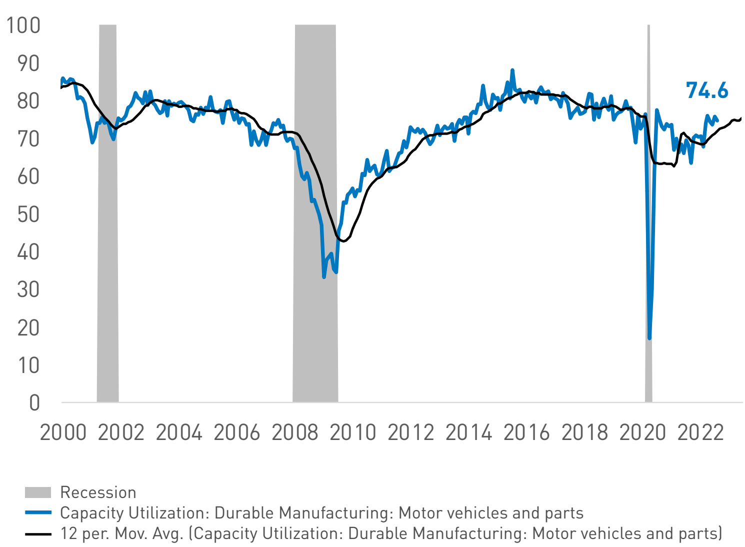
Computer & Electronic Product



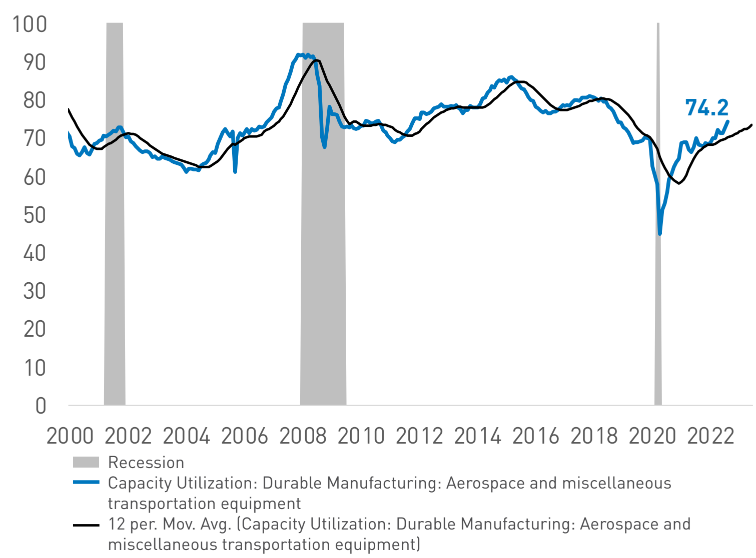
Electrical Equipment, Appliance, & Component



Motor Vehicles & Parts



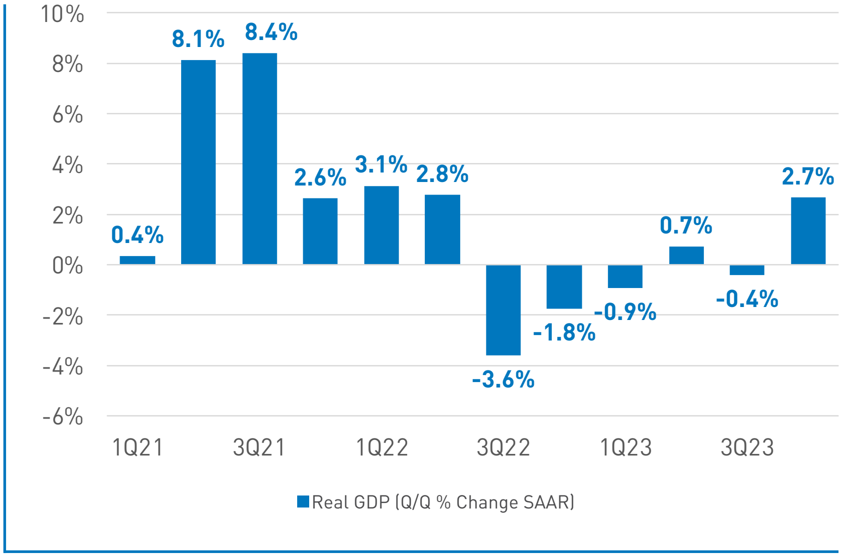
Aerospace & Miscellaneous Transportation Equipment



EUROPEAN OUTLOOK

ECONOMIC GROWTH

The European economy grew 0.8% in the second quarter of 2022 and the EU economy was up 0.7%. Growth was driven by strong consumer spending on services as the economy reopened. Countries with strong tourism sectors benefited as travelers returned in the summer months following several COVID-related lockdowns. The labor market has been strong and that also aided economic activity. But the tide is shifting in Europe and economic activity is likely to slow substantially in the coming quarters. There are four main reasons for a slowdown. First, high inflation is dampening both consumer spending and production. Gas supply disruptions are also contributing to slower spending and output. The European Central Bank will need to continue to tighten monetary policy in the face of historically high inflation rates which will further dampen production and investment. Secondly, demand for services, while initially strong, will ease in the coming months. Third, the broader global economy is also slowing rapidly and that will be a further headwind for economic growth in Europe. Finally, confidence is waning for both businesses and consumers and that is likely to slow economic activity.

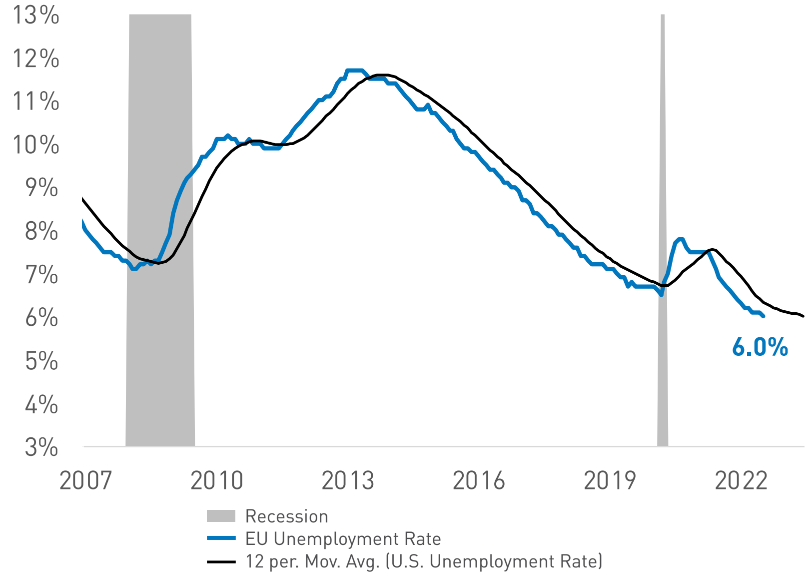


	Q/Q PERCENTAGE CHANGE				Y/Y PERCENTAGE CHANGE			
	2021Q3	2021Q4	2022Q1	2022Q2	2021Q3	2021Q4	2022Q1	2022Q2
EURO AREA	2.2%	0.5%	0.7%	0.8%	3.7%	4.6%	5.4%	4.1%
EU (27)	2.0%	0.7%	0.8%	0.7%	4.0%	4.8%	5.5%	4.2%
GERMANY	0.8%	0.0%	0.8%	0.1%	1.8%	1.2%	3.5%	1.7%
FRANCE	3.4%	0.5%	-0.2%	0.5%	3.6%	5.0%	4.7%	4.2%
ITALY	2.7%	0.7%	0.1%	1.1%	4.0%	6.4%	6.3%	4.7%
SPAIN	2.6%	2.2%	0.2%	1.1%	3.5%	5.5%	6.3%	6.3%

	2022 ECONOMIC GROWTH (GDP % CHANGE)	2023 ECONOMIC GROWTH (GDP % CHANGE)
EURO AREA	2.7%	0.4%
GERMANY	1.5%	0.1%
FRANCE	2.5%	0.5%
NETHERLANDS	3.4%	0.7%

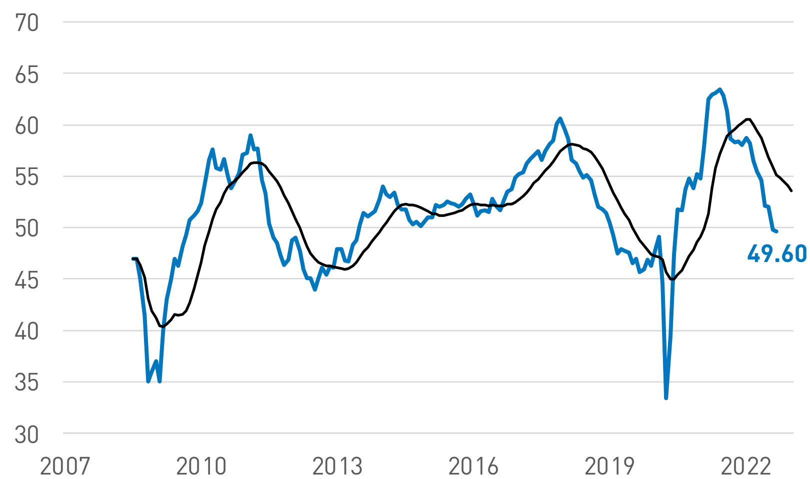
EMPLOYMENT

In July 2022, the euro area seasonally-adjusted unemployment rate was 6.6%, down from 6.7% in June 2022 and from 7.7% in July 2021. The EU unemployment rate was 6.0%, down from 6.1% in June 2022 and from 6.9% in July 2021. These are record low unemployment levels for Europe. Czechia reported the lowest unemployment rate in the euro area at 2.3%, followed by Poland (2.6%), Germany (2.9%), Hungry (3%), Malta (2.9%), and Norway (3.1%). The low level of unemployment will likely embolden the European Central Bank to move more aggressively to curtail historically high inflation. Unemployment rates will likely tick higher as the economy cools in the final months of the year.



MANUFACTURERS' SENTIMENT (PMI)

The S&P Global Eurozone Manufacturing PMI fell again this month, declining from 49.8 last month to 48.5 this month. This was the lowest reading since June 2020 and signaled a second consecutive month of contraction. Weak order growth led manufacturers to reduce purchasing activity, and in turn, resulted in some easing in pricing. The rates of input cost and output charge inflation slowed to 19- and 16-month lows, respectively. Pressure on suppliers is also easing as a result of weaker demand. The seasonally adjusted Suppliers' Delivery Times Index rose for a fifth month in a row to its highest since October 2020. Only France, Ireland, and the Netherlands reported manufacturing output expanded in August 2022. Manufacturing declined for the third consecutive month, mostly as a result of weaker demand but also influenced by continued supply chain disequilibrium in some cases.



E.U. END MARKETS FOR ELECTRONICS

Manufacturing output rose 0.4% in July, to a new all-time high. Output is up 3.6% over the year and up 6.3% since the start of the pandemic.

COMPUTER, ELECTRONIC & OPTICAL PRODUCTS

The electronics industry, which includes categories such as components, loaded boards, computers, communications equipment and consumer electronics, saw output decrease 9.6% in July. The sector is down 11.8% over the last year but up 1.4% from pre-pandemic levels.

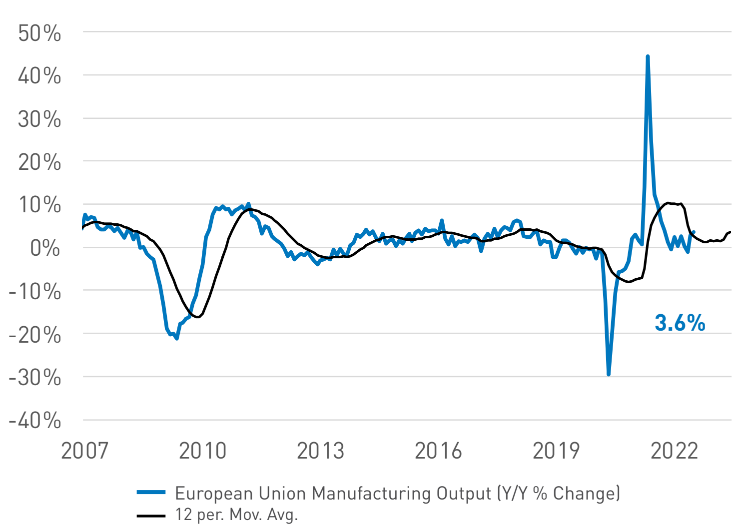
MOTOR VEHICLES

Motor vehicle manufacturing production fell 6.3% in July, likely a sign of both slower production in the face of weaker demand and supply chain challenges. Auto production in the European Union is now up 2.9% over the last year but remains off 26.5% from pre-pandemic levels.

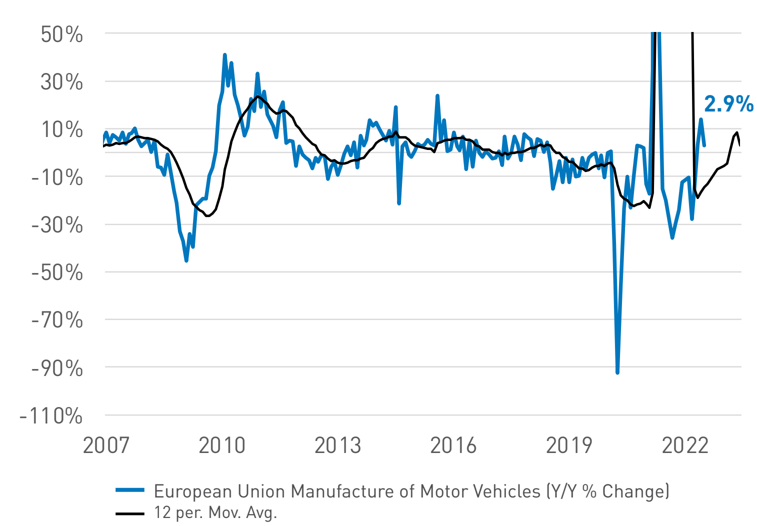
AIR & SPACECRAFT & RELATED MACHINERY

The air and spacecraft manufacturing sector rose 0.5% in July. The segment is up 5.3% over the last year but off 16.4% since the start of the pandemic.

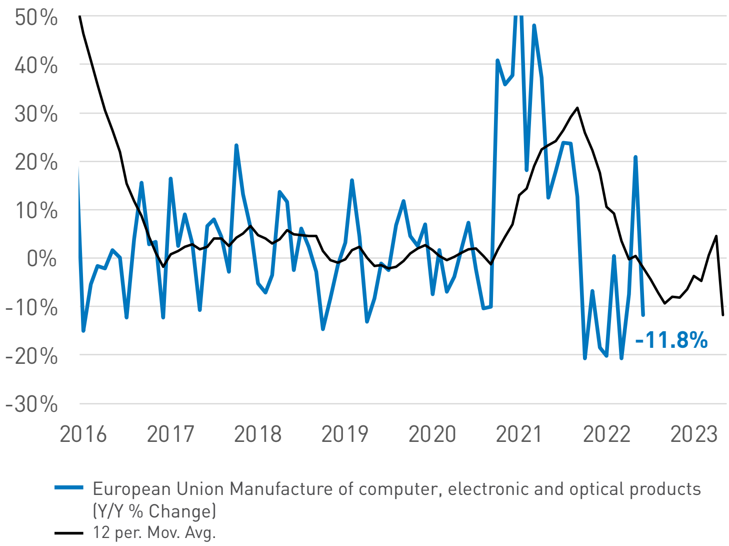
E.U. Manufacturing Output



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)