



AEROSPACE ECONOMIC CLIMATE

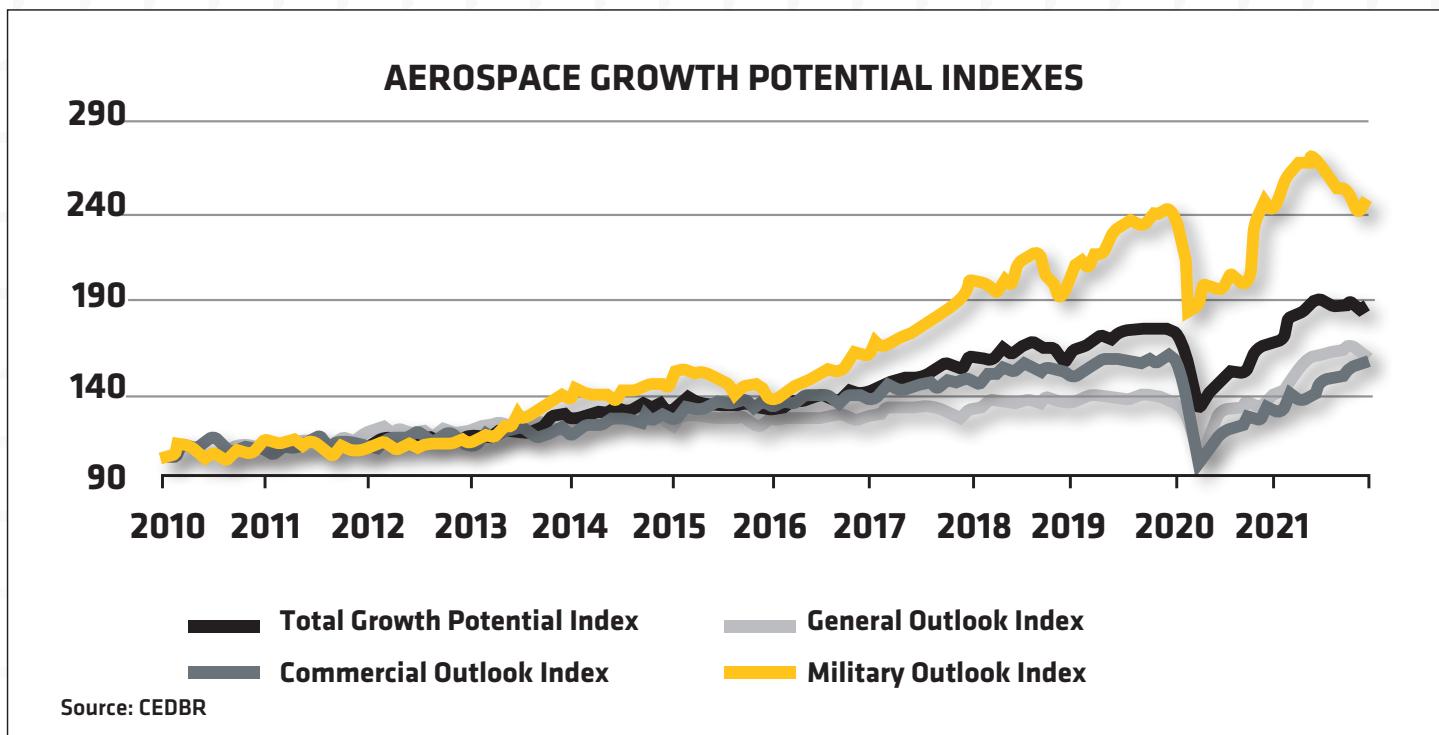
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The aerospace industry's economic health and vitality are essential to understand and watch for all firms and government entities within the region and state, as this sector is an economic driver. Even if a company does not directly provide goods or services to an aerospace business, like a restaurant, the industry can still impact them through household consumption. Further, aerospace supports schools and government entities through tax generation, which benefits all households and firms within the state.

Because of the far-reaching effects of this industry on regional economies, this report creates an economic barometer to provide a distilled view of the broader aerospace marketplace based on current conditions and potential growth. However, readers should be cautious about interpreting the finding, as this is not firm or region-specific.

Aerospace Growth Potential

An analysis of the aerospace sector's growth potential is multifaceted, as it contains a wide array of influences, industries, and subsets that are differently affected by economic forces. To that end, CEDBR has created three distinct outlook indexes measuring the growth potential of aerospace: general, commercial, and military aviation.



The overall growth potential index is pointing to a positive outlook for the aerospace industry.

The three Outlook Indexes are aggregated into an overall Growth Potential Index, which indicates that based upon the above factors, the growth potential of the aerospace sector has largely returned to pre-pandemic favorability, though there remains some level of diminished outlook among the military and commercial components of the index.

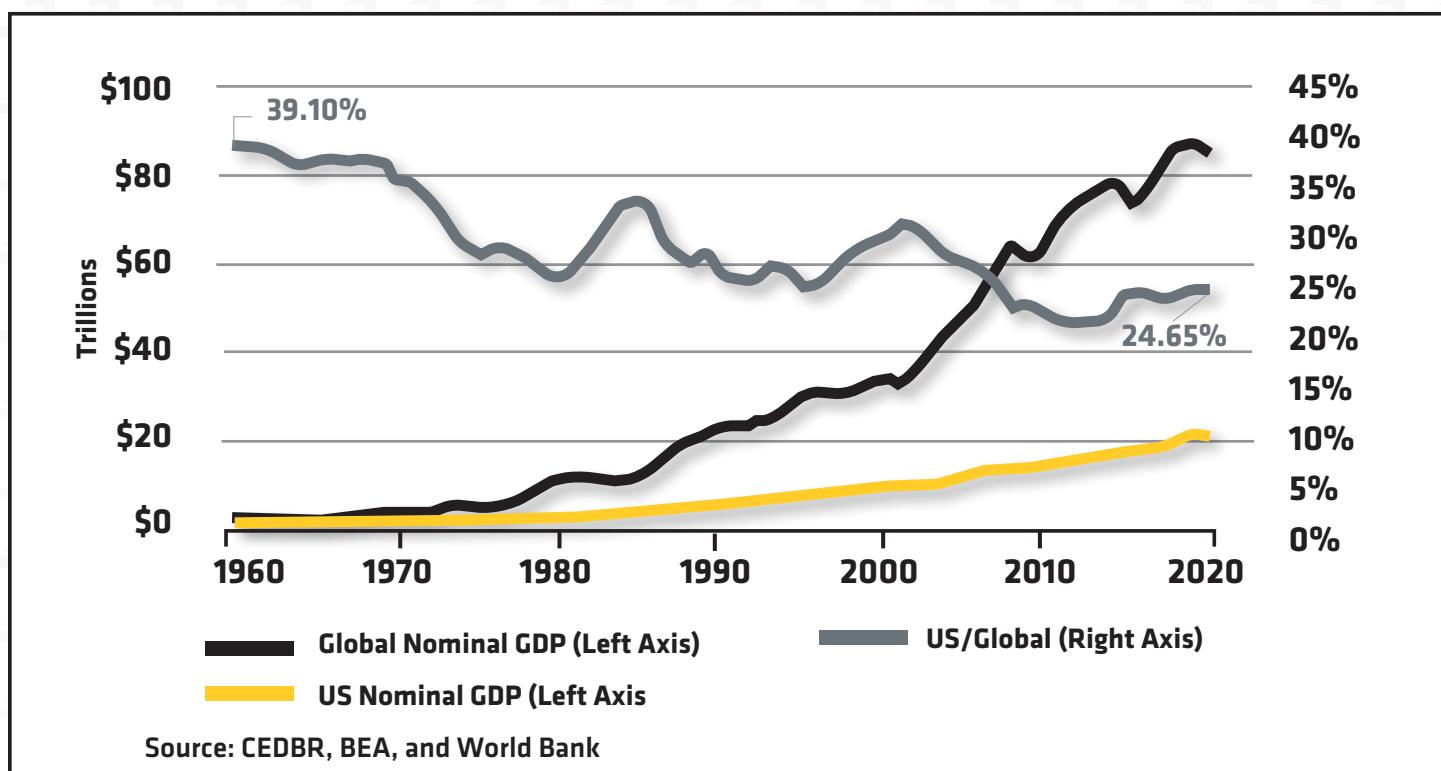
AVERAGE PERCENT CHANGE			
	1- Year	5- Year	10 - Year
Total Growth Potential Index	21.09%	7.33%	6.98%
General Outlook Index	23.51%	4.93%	4.16%
Commercial Outlook Index	15.22%	1.09%	3.06%
Military Outlook Index	23.02%	14.94%	13.65%

Source: CEDBR

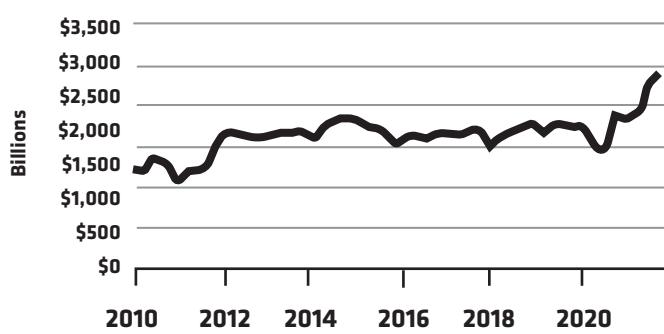
General Outlook Index

The General Outlook Index contains common influential factors that affect aerospace growth potential consisting of causal factors driving aerospace. For the purpose of this measurement, general will refer to a subset of the aviation market that excludes military and commercial. This index has four components: Global Nominal Gross Domestic Product, United States Nominal Gross Domestic Product, Corporate Profits with inventory valuation adjustments, and Total Business Jet Operations.

Globally and nationally, nominal GDP has grown substantially over the last 60 years despite major recessions in 2009 and 2020. Systemic shocks like the housing crisis, Eurozone crisis, and Covid-19 pandemic have proven temporary blips that have done little to halt economic growth in the long term. Though the US economy continues to grow, its share of the global economy it represents has generally trended downwards. A factor in the decreasing share is the growth of emerging countries like China and India. However, there were periods of global recession during which the robustness of the US economy has allowed it to avoid proportionate contractions, and thus its share of the total grew. This trend reversal has been observed from 1981-1986, 1996-2001, and 2011 to the present. Although not shown in the graphic, the growth in GDP in 2021 at the national and global levels position the general aviation for growth, as overall demand is increasing.



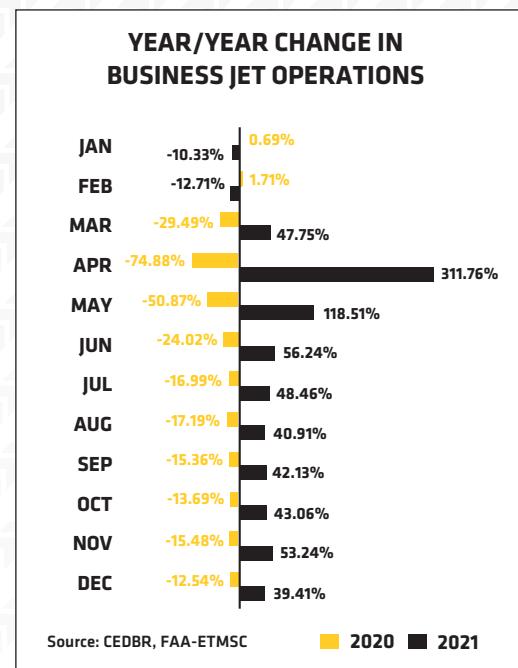
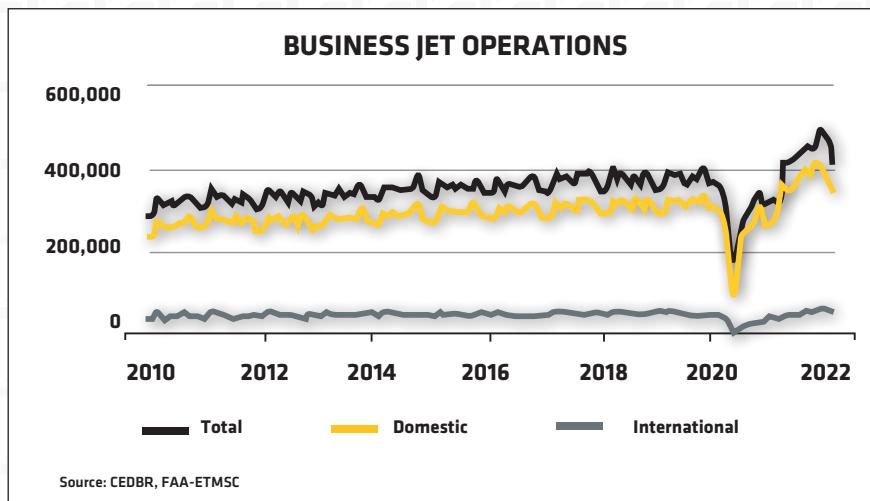
CORPORATE PROFITS WITH INVENTORY VALUATION ADJUSTMENTS



US Corporate profits have similarly trended upwards, driven by rising labor productivity. As a result, between 2010 and 2021, total monthly corporate profits with inventory valuation adjustments have grown from \$1.74 trillion to \$2.87 trillion. The improvement in corporate profits points to a more robust market for general aviation.

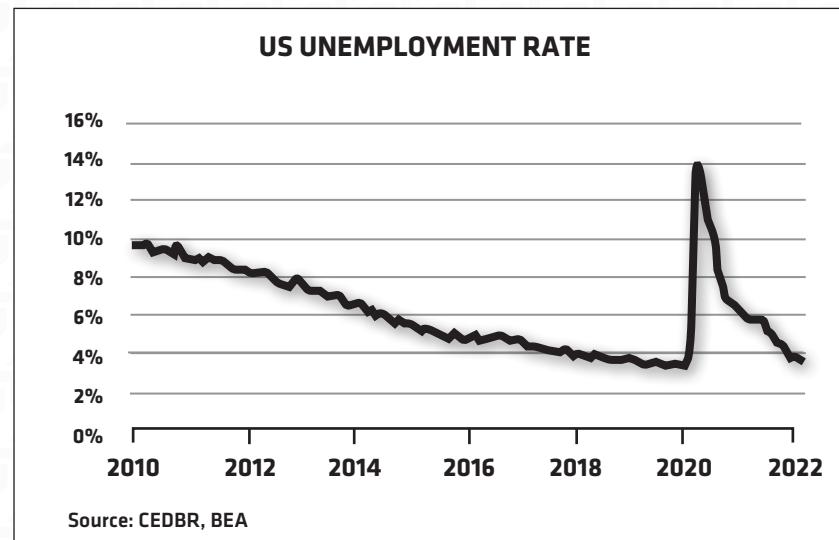
General Outlook Index (*continued*)

Business jet operations have been steadily climbing over the past 12 years. Though there was a substantial decline during the first half of 2020 due to the pandemic, there has been a sharp rebound, exceeding forecasts, that has quickly returned monthly domestic and international business jet operations to-or-above pre-pandemic levels. Operations have seen another sharp decline in the third quarter of 2021 and into early 2022 because of the combined effect of seasonal variation in travel and the emergence of the Omicron variant of Covid-19. As illustrated by the late-2020 and early 2021 rebounds in jet operations, however, this decline is expected to be temporary. It is unlikely to have a long-term disruption in trends because many flight operations were functionally postponed rather than canceled outright. Because of this, another sharp rebound is expected as the disruption of the Omicron variant wanes throughout 2022.



Commercial Outlook Index

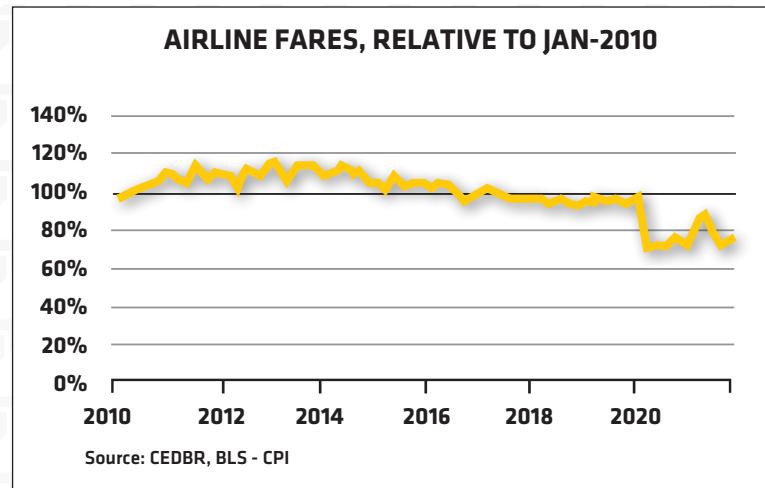
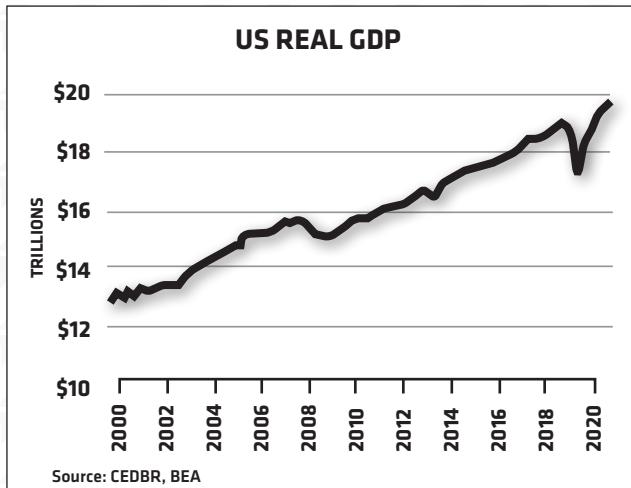
Distinct factors outside overall trends drive the commercial aerospace subsector. Thus, this index consists of six components: US Real (Inflation-Adjusted) Gross Domestic Product, Consumer Spending, the national Unemployment Rate, Real Disposable Personal Income, Passenger Enplanements, and the Consumer Price Index of Airline Fares.



Commercial Outlook Index

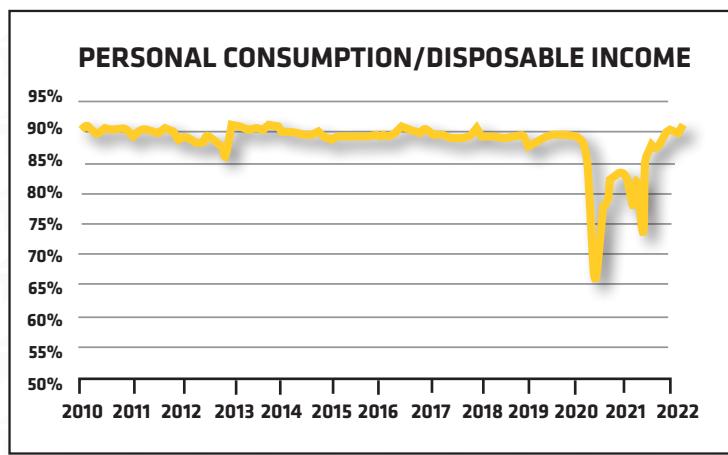
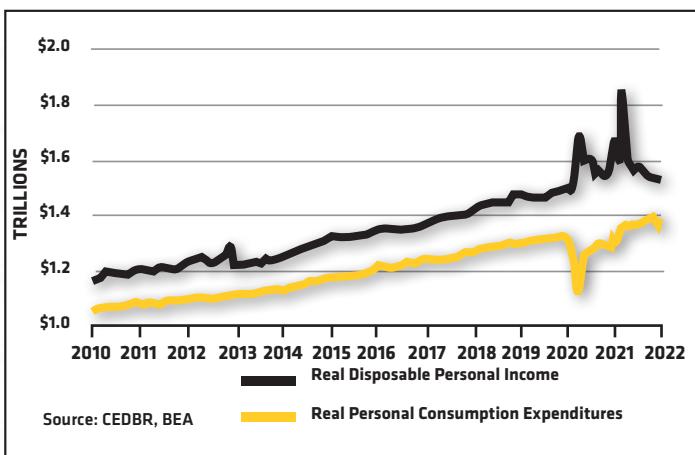
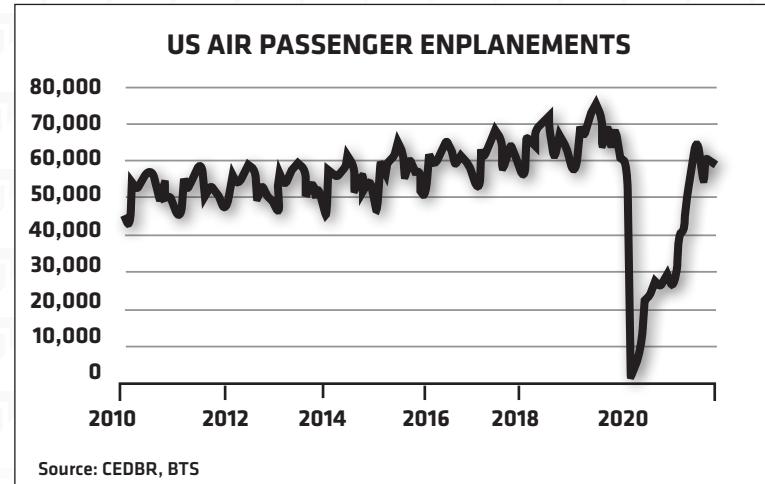


Since its previous peak during the height of the Great Recession, the national unemployment rate declined steadily throughout the past decade until the beginning of the pandemic, though it returned below 4% in late 2021.



As inflation is one of the commercial sector drivers, we must recognize the importance of inflation-adjusted economic performance. This is particularly topical in the wake of the record year-over-year consumer price index levels seen in February 2022. Even gross domestic product, adjusted for inflation, has returned to levels expected based on pre-pandemic trends. Inflation has also been observed in the consumer price index for airline ticket and travel prices, which increased in 2021 and 2022, though for airline fares, the relative trend remained downwards since 2010.

Despite the increased cost of airline travel, the number of passenger enplanements has mostly recovered from the shock seen during the early pandemic. It remains below pre-pandemic levels but well within the range seen over the last decade.

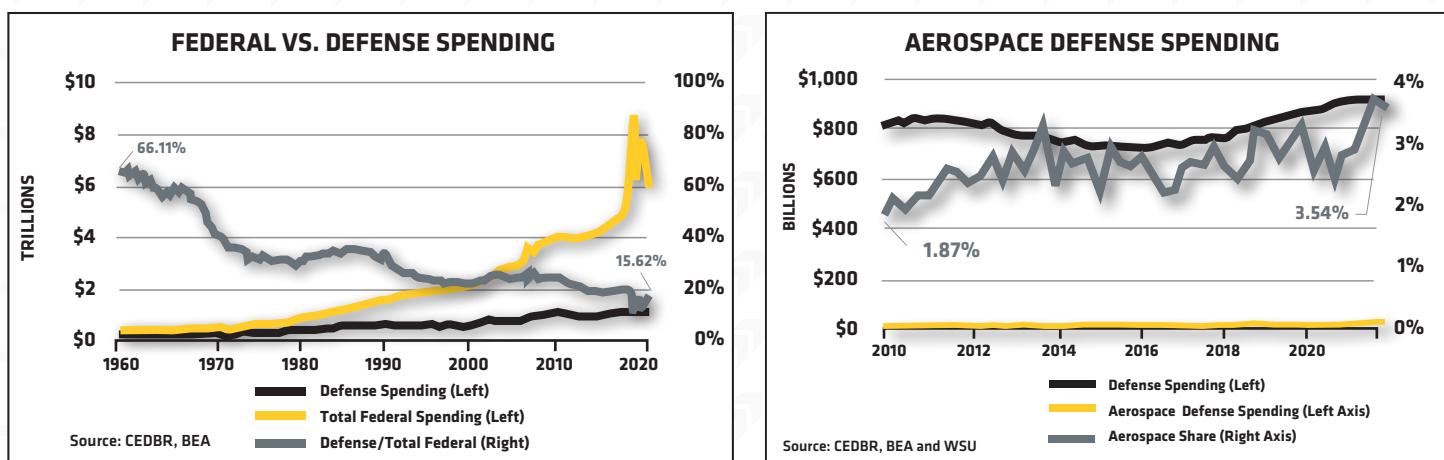


Commercial Outlook Index (*continued*)

Inflation is also tied to consumer spending, which impacts commercial aerospace through the patterns of consumption and saving. Federal Reserve Bank monetary policy interventions in 2020 and 2021 caused a dramatic spike in real disposable personal income. Despite the aid, consumption expenditures declined in 2020 as people transitioned to a savings mentality to weather economic hardship. Both effects are seen in a sharp fall in the share of disposable income that became consumption expenditures. This share currently exceeds pre-pandemic levels, indicating a return to a normal propensity to consume, which will drive future commerce.

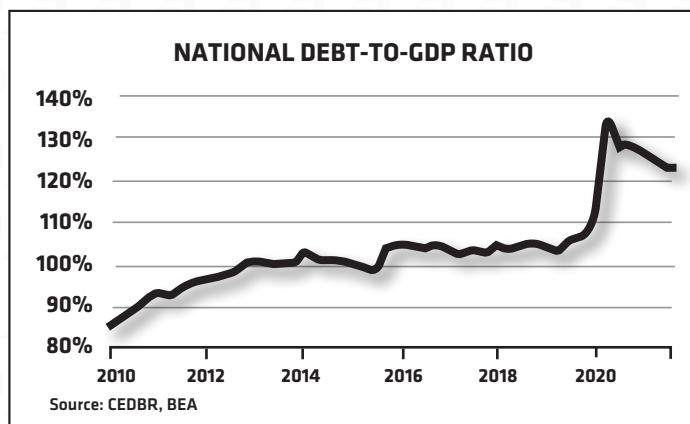
Military Outlook Index

Although it is often overlooked, military spending in aerospace is an essential component of the economic health and vitality of the industry within Kansas. This segment is smaller than the other components; however, federal funding creates an injection into the economy and helps stabilize the overall sector's larger business cycles. Military aerospace outlook is measured by three variables: overall National Defense Consumption Expenditures, the Debt-to-GDP Ratio, and the S&P Aerospace/Defense Index.

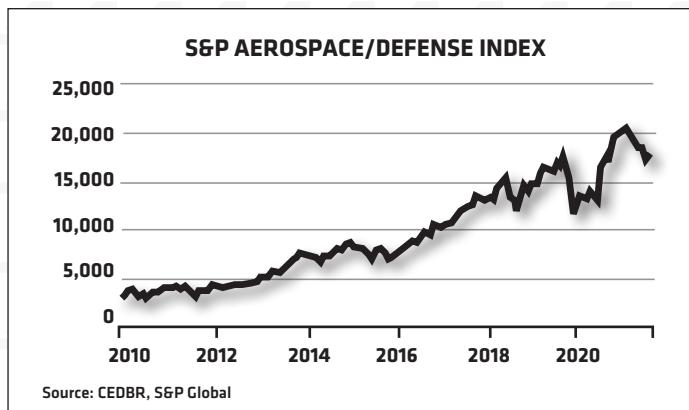


Over time, the share of the total federal budget comprised of defense spending has decreased. Conversely, the share of aerospace spending as a share of overall defense spending has further accelerated over the eleven years and within the last year. In early April 2022, the FY2023 Federal Budget proposal allocated a record \$813.4 billion of defense spending, a \$31.6 billion increase from FY 2022, and with the recent resurgence of global tensions stoked by the ongoing Russian Federation's invasion of Ukraine, the upward trend in defense and aerospace defense spending is not expected to diminish.

National debt as a fraction of GDP, which had generally increased over the past decade, increased by almost 30% during the pandemic due to both federal monetary policy interventions as well as the substantial reduction in GDP at the same time. As the economy has recovered throughout 2021, this ratio has trended back downwards but remains significantly elevated compared to pre-pandemic levels.



Military Outlook Index (*continued*)



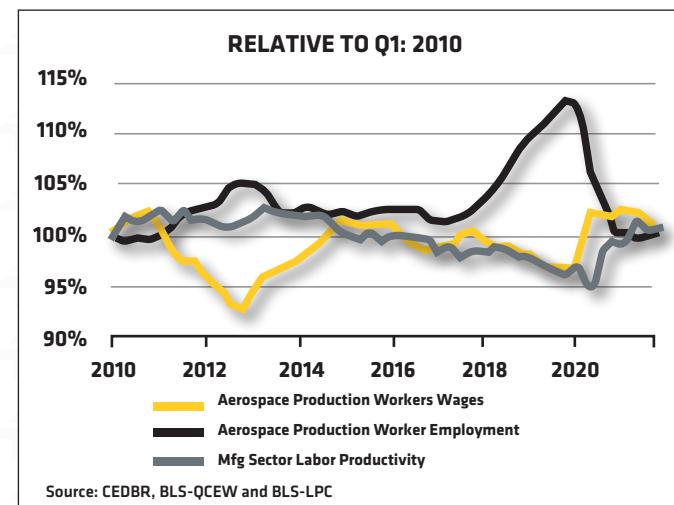
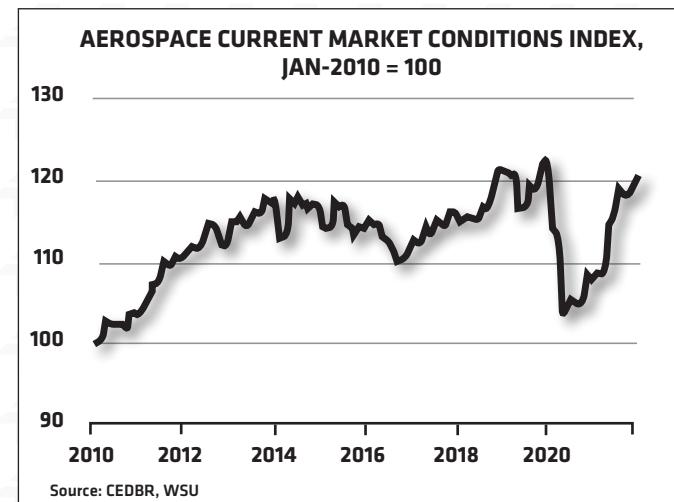
The S&P Aerospace/Defense Index measures the overall performance of stocks classified within the aerospace and defense subsector within the S&P Total Market Index. While not measuring any single variable among these firms, stock price inherently captures both historical performances as well as the expectation of future value. As a result, this index has climbed steadily since its launch in 1999 and has rebounded to above pre-pandemic values.

Current Market Conditions

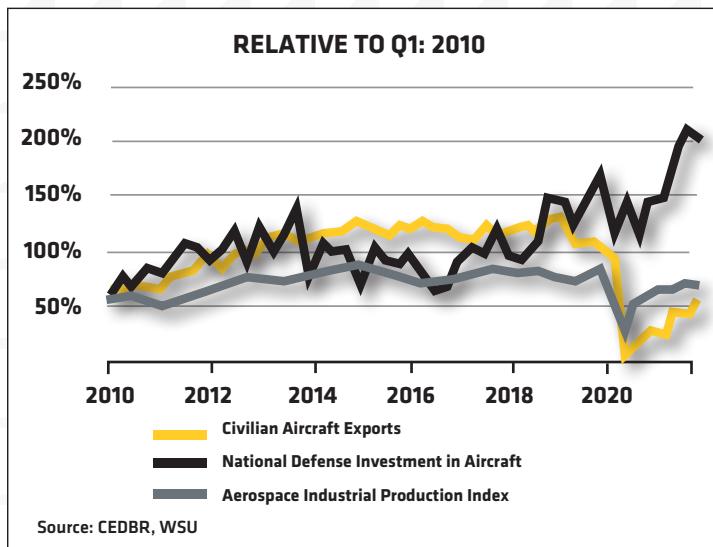
While the previous section measures variables that influence the future prospects of the aerospace sector, they fail to capture the many facets of the industry's current state. Thus, CEDBR similarly created an index measuring different aspects of the "now" within the industry, with nine components: aerospace production workers' real hourly wages, employee counts of aerospace production workers, real aerospace production, national defense investment in aircraft, the value of civilian aircraft and aircraft part exports, manufacturing sector labor productivity, and the producer price indexes for aircraft manufacturing.

The current conditions in aerospace markets have largely recovered from pre-pandemic highs. As of the end of 2021, the index is higher than nearly any time in the past decade. While some aspects of the aerospace sector may see lingering effects from the pandemic, it appears that the majority of disruption and difficulty has passed.

Wages and employment among aerospace production workers have generally followed opposite trends; when employment has dropped sharply, there has been a concurrent rise in wage rates. The recent trends are somewhat complex to unpack. The decline in wages between 2011 to 2013 was from an industry-wide restructuring to reduce costs, which hit higher-paid professional and production workers. The ramp-up in employment between 2018 to 2020 soaked up the excess labor slack within the market, which didn't require increasing wages. The subsequent increase in wages and decline in employment reflects worker composition, retaining skilled workers during COVID. Although jobs are not back to their previous peak, the recent rise in wages signals that the industry is poised to grow. The increase in productivity is also a positive signal that the sector repositioned itself for growth by adding technology and equipment. Further, increased productivity will allow the industry to increase wages and attract higher-skilled workers.

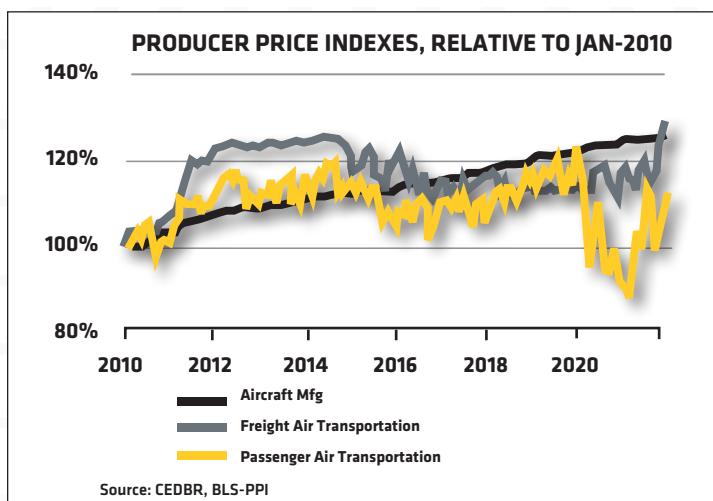


Current Market Conditions (*continued*)



National defense investment in aircraft has grown steadily, concurrent with the overall aerospace defense budget. However, as seen earlier in the decline in aerospace products and parts trade, the export of civilian aircraft has seen a similar decline since the beginning of the pandemic. It has yet to return to previous levels. Despite this, overall performance among aerospace industries has returned near pre-pandemic levels.

One of the confounding elements of the aerospace sector is the general upward trend in producer price indexes, which have been particularly impacted by supply chain disruptions from the pandemic. In both the manufacturing and transportation sides of the sector, costs remain above pre-pandemic levels; however, manufacturing prices have been much less volatile than in the transportation sector.



Passenger air transportation costs, which remain well above pre-pandemic levels, are expected to fall as the Omicron variant wanes and the public returns to normal patterns of travel and air commuting. There will likely be remnant cost increases in the intermediate term as disrupted supply chains restructure and the cost of labor remains marginally higher. However, long-run PPI increases are more likely in freight air transportation as the disruption to international commerce recovers slowly. The general upward trend in aircraft manufacturing costs shows no sign of change.





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About the Center

This report was produced by The Center for Economic Development and Business Research (CEDBR), part of the W. Frank Barton School of Business at Wichita State University. We are a reliable resource for local, state and national demographic and economic data. We strive to enhance economic growth and development through our applied and objective research, which makes us an active and well-respected partner with economic development leaders.