

COMMUNITY BANK PERFORMANCE IN MANUFACTURING-CONCENTRATED STATES

INTRODUCTION

The U.S. manufacturing industry has undergone fundamental changes in recent decades as production and employment in traditional manufacturing has shifted. The changes are important for the economies of communities that rely on manufacturing firms and for community banks that offer financial services in areas where manufacturing firms have a presence. Although some manufacturing sectors have declined, others have expanded. Much of the resilience in the manufacturing industry in recent decades is aligned with a transition in some subsectors to more advanced manufacturing. The community banks that lend in manufacturing-concentrated areas maintain a higher share of commercial loans in their portfolios, suggesting they support manufacturing industries in their areas. Community banks headquartered in manufacturing-concentrated states also reported higher net interest margins before the 2008 financial crisis, and a higher pretax return on assets. While the manufacturing industry was weakened by the COVID-19 pandemic, it recovered much more quickly than in previous recessions, brightening the outlook for community banks that support manufacturing businesses.¹

Manufacturing continues to be a broad and important segment of U.S. output, even as the U.S. economy has evolved. The manufacturing industry accounted for roughly 11 percent of gross domestic product (GDP) as of 2021.² Although this share has fallen a few percentage points since the early 2000s, it has stayed around 11 percent since the end of the 2008 recession. Manufacturing spans a broad range of industries (see inset box for firms included in manufacturing) and is an important part of economic output across many states. Despite decades of structural change in some industry subsectors, many of which experienced steady declines in employment, four of the top five subsectors in terms of dollar value of production have been consistent since 2000. Chemicals, petroleum and coal products, transportation equipment, and food manufacturing have all consistently been in the five largest subsectors since 2000, and collectively made up more than half of total manufacturing output nationwide as of 2021 (Chart 1). During the mid to late 2000s, fabricated metal products was pushed out

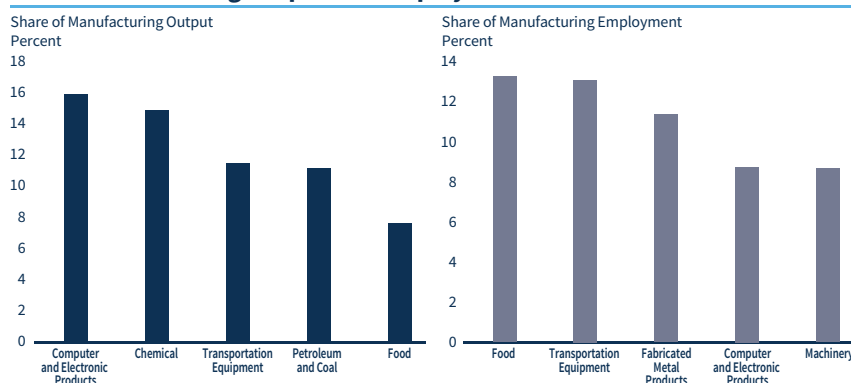
¹Community banks in this study are defined using the FDIC definition for community bank as found on page 26 of the [Quarterly Banking Profile](#). For more information on community banks, see the [2020 FDIC Community Banking Study](#).

²Calculated from Table 14 of the Bureau of Economic Analysis, "[Gross Domestic Product \(Third Estimate\), Corporate Profits, and GDP by Industry, Fourth Quarter and Year 2021](#)," news release BEA 22-13, March 30, 2022. Industry groupings generally follow the North American Industry Classification System (NAICS). A detailed discussion of the manufacturing sector as classified NAICS code 31 is available from the U.S. Census Bureau at: <https://www.census.gov/naics/?input=31&chart=2022&details=31>.

of the five largest subsectors as computer and electronic products rose steadily and became the largest single subsector in December 2020. The subsectors with the largest employment have also been broadly stable since 2000, especially as the manufacturing industry shed jobs in the early 2000s. Food, transportation equipment, fabricated metal products, computer and electronic products, and machinery are consistently the largest employers in the manufacturing industry, and as of 2020 made up more than half of total employment in manufacturing nationwide (Chart 1).³

Chart 1

The Top Five Manufacturing Subsectors Account for More Than Half of Total Manufacturing Output and Employment



Sources: Bureau of Economic Analysis GDP by Industry and Bureau of Labor Statistics Establishment data (Haver Analytics).
Note: Data as of 2020.

INDUSTRIES INCLUDED IN MANUFACTURING

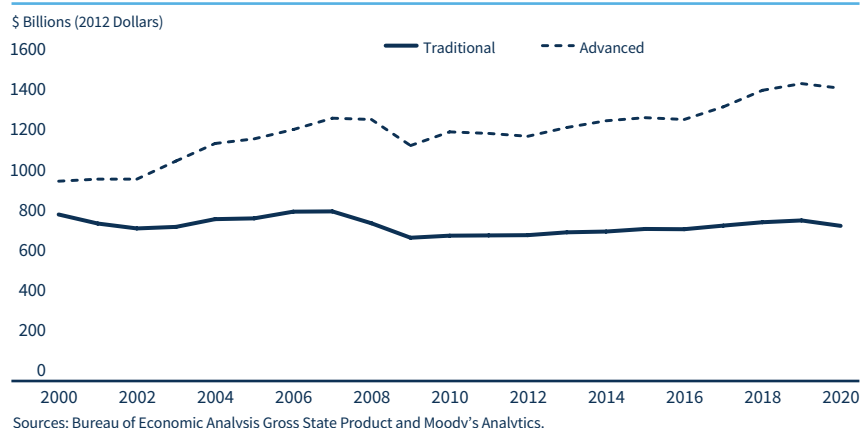
Descriptions of manufacturing activity can evoke images of the production of heavy machinery, like airplanes or automobiles, but what American workers produce is much broader. The U.S. Census Bureau industry classification of the manufacturing sector comprises any firm that transforms raw materials or assembles components into new products. Firms engaged in manufacturing can be plants, factories, mills, or smaller establishments that sell on the same premises they produce, like bakeries. Some forms of production that may seem like manufacturing are in fact their own industry, construction being one example. The U.S. Census Bureau classifies manufacturing firms as those that are engaged in production ranging from food and meat, textiles and apparel, woodworking and furniture, petroleum and chemical manufacturing, pharmaceuticals, metals and machinery, and advanced technology—including semiconductors and cars—a range of activities indicative of the breadth and depth of production in the United States. Manufacturing includes the production of both durable goods that have an average life of at least three years, like washing machines or furniture, and nondurable goods that have an average life of less than three years, like food or textiles.

³Data on output of the manufacturing industry at the national and state level are available from the Bureau of Economic Analysis [GDP by State](#) and [GDP by Industry](#). Data on employment for the manufacturing industry by subsector are available from the [Bureau of Labor Statistics Establishment Data](#).

Over the past 20 years, much of the manufacturing in the United States has transformed from traditional to advanced manufacturing. Other research has studied this transformation to advanced manufacturing, defined as any subsector that has a higher amount of research and development spending per worker than most other industries and requires workers with more degrees in science, technology, engineering, and math (STEM).⁴ The transition to advanced manufacturing has been driven by new technologies such as robotics, 3-D printing, and the digitization of information. From 2000 through 2020, manufacturing output in the United States increased from \$1.8 trillion to \$2.2 trillion per year (Chart 2). The growth in manufacturing output has largely been driven by the advanced manufacturing subsectors listed in Table 1. Output in the advanced manufacturing sectors increased from \$991 billion in 2000 to \$1.5 trillion in 2020 in inflation-adjusted 2012 dollars. In contrast, output from the traditional manufacturing subsectors fell from \$824 billion in 2000 to \$767 billion in 2020 (Chart 2).

Chart 2

Advanced Manufacturing Output Has Risen While Traditional Output Has Declined Since 2000



⁴For this article, advanced industries are as defined in Mark Muro, Jonathan Rothwell, Scott Andes, Kenan Fikri, and Siddharth Kulkarni, "[America's Advanced Industries: What They Are, Where They Are, and Why They Matter](#)," Brookings Institution, February 2015. Brookings identified 35 advanced manufacturing subsectors by four-digit NAICS codes using two criteria: research and development spending per worker and the share of workers with a high degree of STEM knowledge. A subsector qualified as advanced manufacturing if it spent more than \$450 per worker on research and development activities, which put it in the top 20 percent of all industries, and if the share of workers with STEM knowledge exceeded 21 percent, the national average for all industries. Brookings identified 15 additional subsectors spread across energy and services industries not included in FDIC calculations for advanced manufacturing.

Table 1

35 Manufacturing Subsectors Constitute Advanced Manufacturing			
Subsector	Share of Manufacturing Output (Percent)	Subsector	Share of Manufacturing Output (Percent)
Petroleum and Coal Products Manufacturing	11.1	Resin, Synthetic Rubber, and Artificial and Synthetic Fibers and Filaments Manufacturing	0.9
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	6.5	Industrial Machinery Manufacturing	0.8
Pharmaceutical and Medicine Manufacturing	5.5	Foundries	0.8
Semiconductor and Other Electronic Component Manufacturing	4.4	Motor Vehicle Body and Trailer Manufacturing	0.7
Basic Chemical Manufacturing	4.3	Ship and Boat Building	0.7
Aerospace Product and Parts Manufacturing	4.3	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	0.6
Communications Equipment Manufacturing	3.4	Engine, Turbine, and Power Transmission Equipment Manufacturing	0.6
Medical Equipment and Supplies Manufacturing	2.9	Commercial and Service Industry Machinery Manufacturing	0.5
Motor Vehicle Manufacturing	2.9	Alumina and Aluminum Production and Processing	0.5
Motor Vehicle Parts Manufacturing	2.7	Other Nonmetallic Mineral Product Manufacturing	0.4
Iron and Steel Mills and Ferroalloy Manufacturing	1.7	Household Appliance Manufacturing	0.4
Computer and Peripheral Equipment Manufacturing	1.6	Electric Lighting Equipment Manufacturing	0.3
Other General Purpose Machinery Manufacturing	1.4	Clay Product and Refractory Manufacturing	0.2
Agriculture, Construction, and Mining Machinery Manufacturing	1.2	Other Transportation Equipment Manufacturing	0.2
Other Chemical Product and Preparation Manufacturing	1.1	Railroad Rolling Stock Manufacturing	0.1
Other Miscellaneous Manufacturing	1.1	Audio and Video Equipment Manufacturing	0.1
Other Electrical Equipment and Component Manufacturing	1.0	Manufacturing and Reproducing Magnetic and Optical Media	0.1
Electrical Equipment Manufacturing	1.0		

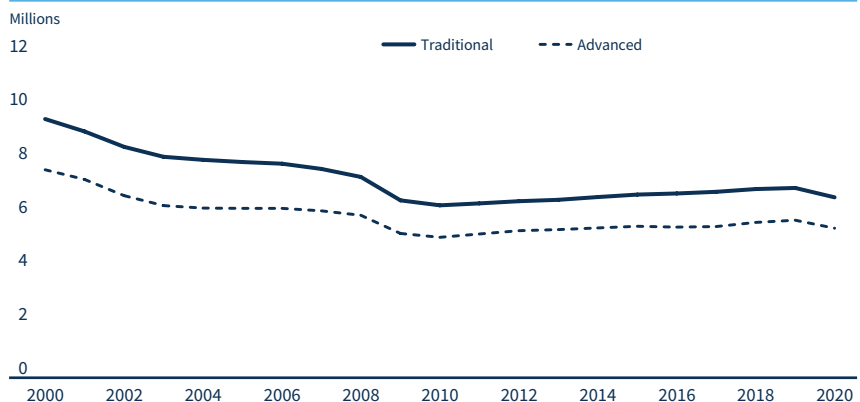
Sources: Brookings Institution, Bureau of Economic Analysis, and Moody's Analytics.

Note: Each subsector share of manufacturing output is calculated as a share of total manufacturing output as of 2020. Traditional manufacturing subsectors constitute the remaining 34.6 percent of total manufacturing output. Numbers do not total 100 due to rounding

Despite overall output growth in the manufacturing industry, employment in both the traditional and advanced manufacturing subsectors steadily declined since 2000 (Chart 3). This means productivity and output in the advanced manufacturing subsectors have increased despite falling employment. From 2000 to 2020, output per worker in the advanced manufacturing subsectors more than doubled from \$129,000 to \$264,000 per year. Traditional manufacturing's output per worker rose from \$86,000 to \$115,000 per year, a 34 percent gain.

Chart 3

Traditional Manufacturing Employment Has Consistently Been Higher Than Advanced, but Both Have Fallen Since 2000



Sources: Bureau of Labor Statistics Current Employment Survey, Quarterly Census of Employment and Wages, and Moody's Analytics.

The transition from traditional to advanced manufacturing has been most pronounced in the computer and electronics industry. Three components of computer and electronic product manufacturing reported the highest increase in output and account for half of the total annual output increases in the advanced manufacturing subsectors: Navigational, Measuring, Electromedical, and Control Instruments; Semiconductor and Other Electronic Components; and Communications Equipment Manufacturing.⁵ These subsectors accounted for \$318 billion in output and employed 872,000 U.S. workers in 2020. The computer and electronics industry is home to global market leaders such as Apple, Google, Microsoft, and Dell, companies that have captured significant domestic and international market share. In addition, this segment of the manufacturing industry employs a higher percentage of engineers than any other manufacturing industry and has a continuous need for innovation and product development.⁶

Although automation and offshoring have profoundly changed the manufacturing industry in recent decades, manufacturing has remained an important part of local economies even as the share of manufacturing employment in these economies has declined. As technology has improved, automation with machine labor has replaced many types of tasks that used to be performed by hand, removing workers from production and assembly lines and decreasing employment, but not productivity. Trade liberalization and the increase of offshoring, where a firm relocates part or all of its production to another country where costs are lower, have had an undeniable effect on the location of firms and the number of employees they hire in the

⁵The Navigational, Measuring, Electromedical, and Control Instruments subsector is NAICS code 3345, the Semiconductor and Other Electronic Components subsector is NAICS code 3344, and the Communications Equipment Manufacturing subsector is NAICS code 3342.

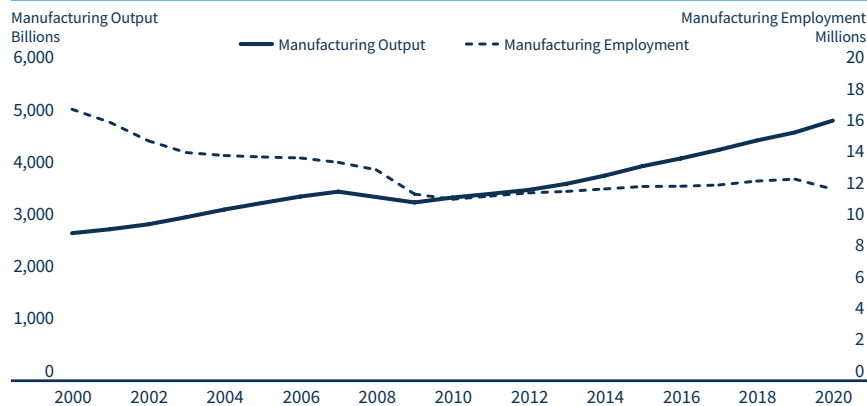
⁶Statista Industry Report, "Manufacturing: Computers & Electronics (NAICS 334)," December 2021.

United States. Although these trends in manufacturing in the United States have been the subject of much study, the complicated nature of multiple changes over decades makes it challenging to cleanly measure the effects on employment and local economies.

The costs of automation and offshoring are often localized in specific geographic areas while the benefits of these changes may tend to accrue to the broader economy. Automating or relocating a factory may lower the cost of production or increase productivity, but can mean large job losses or a severe hit to local economies. Because of this, automation and offshoring have often been viewed as headwinds to the economic growth prospects of manufacturing areas. Chart 4 shows the share of manufacturing to total employment, which has steadily declined from 2000 to 2020. Chart 4 also shows that total production has increased. As manufacturing industry growth transitions between subsectors, some companies and geographic areas lose jobs as they transition away from specific products, while other companies gain new jobs and other areas gain firms.

Chart 4

Manufacturing Employment Has Fallen Since 2000 as Output Has Risen Through Productivity Increases

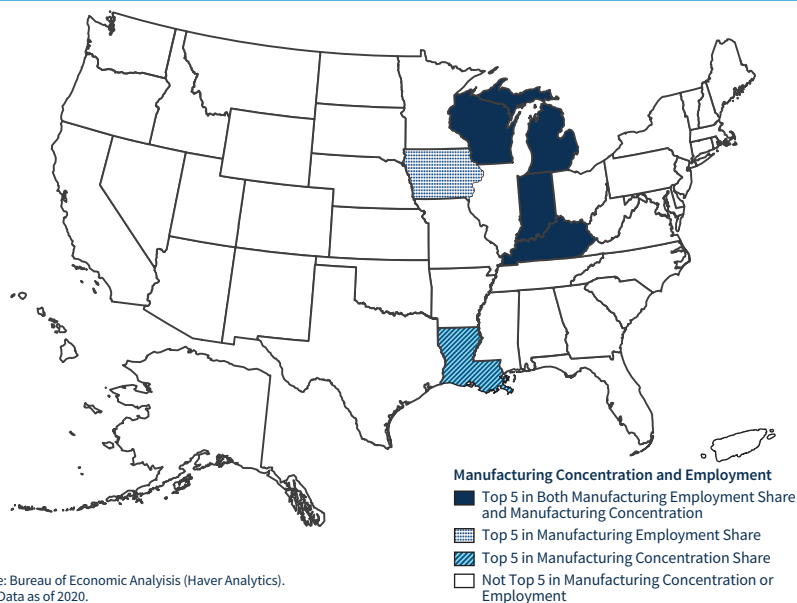


Sources: Bureau of Labor Statistics Current Employment Survey and Bureau of Economic Analysis GDP by Industry.

The states in which manufacturing accounts for the largest share of total state product host diverse manufacturing activities, but all states rely on the manufacturing industry's contributions to state GDP and employment. Manufacturing is an important part of the economic production of many states, but some states with the highest total dollar volume of manufacturing output—like California and Texas—have such large and diversified economies that manufacturing does not play a pivotal role in many local communities. Focusing on the share of manufacturing output relative to total state product to highlight areas where manufacturing has the greatest impact on

local economies is therefore a useful way to identify states where manufacturing activity is of relatively greater importance to local economies and community banks. The map below shows five states in which manufacturing accounts for the highest share of state GDP: Indiana, Kentucky, Louisiana, Michigan, and Wisconsin. Another way to measure the importance of manufacturing to local communities is the employment associated with the industry. The map also shows five states with the highest share of manufacturing jobs relative to total employment: Indiana, Iowa, Kentucky, Michigan, and Wisconsin. Four states—Indiana, Kentucky, Michigan, and Wisconsin—are in the top five for both the manufacturing share of state GDP and the share of manufacturing employment to total state employment.

Manufacturing Has Highest Share of GDP in Indiana, Kentucky, Louisiana, Michigan, and Wisconsin



The states highlighted in the map host a diverse range of manufacturing activities, with a few subsectors being particularly important. For example, the manufacturing subsector with the second-largest number of workers nationwide is transportation equipment, a broad subsector that includes autos but also larger equipment, such as airplanes, ships, and trains. In three of the top five states (Indiana, Kentucky, and Michigan) transportation equipment ranks as the top manufacturing employer. Fabricated metal products, machinery, and food manufacturing contribute greatly to manufacturing employment. Chemical manufacturing is the top employer in Louisiana's manufacturing industry but is not important for the other four high-concentration states.

Some states other than those with the highest concentration of manufacturing overall have grown significantly in manufacturing in recent years. The five states that reported the largest shifts from traditional to advanced manufacturing between 2000 and 2020 are Nevada, Oregon, Mississippi, North Carolina, and Maine. In 2020, these five states generated \$84.2 billion in output, an increase of 84 percent from the annual amount produced in 2000. During the same period, advanced manufacturing employment in these five states fell by more than 22 percent to a little more than 353,000 in 2020, largely due to automation replacing workers. However, advanced manufacturing productivity in these states more than doubled from \$100,000 to \$238,000 per worker. These states are home to many large manufacturing firms, including industry leaders in technology (Tesla Gigafactory, Intel, and IBM), automotive (Nissan and Toyota), and shipbuilding (Ingalls Shipbuilding and Bath Iron Works). Although certain parts of the country are thought of as traditional manufacturing areas, new areas are emerging with the shift to advanced manufacturing. Other states reported output growth in traditional manufacturing subsectors. The five states reporting the largest increases in output from traditional manufacturing subsectors were New Mexico, Idaho, Kansas, Delaware, and Vermont. The increases were predominantly influenced by manufacturing of dairy products, beverages, and the slaughter of animals for meat products. Growth in the manufacturing industry, whether in advanced or traditional subsectors, can increase demand for financial services from community banks in those areas.

Despite structural changes in the manufacturing industry, community banks have continued to support manufacturing activities through lending in their local economies. Community banks headquartered in the five states with the highest manufacturing output concentrations as highlighted in the map (Indiana, Kentucky, Louisiana, Michigan, and Wisconsin) stand out from community banks headquartered in other states with their substantially higher concentration of various types of commercial loans. The next section describes some of the general characteristics of community banks headquartered in manufacturing-concentrated states and the performance of their commercial loans relative to other community banks in recent years. These comparisons do not necessarily indicate that commercial lending is the sole factor that explains the differences between these types of community banks, nor do they speak to the degree of their support to the manufacturing industry specifically, but they illustrate general patterns that may be used as a basis for further research.

Community banks in manufacturing-concentrated areas represent a small but stable share of community banks. As of fourth quarter 2021, there were 552 community banks headquartered in the top-five manufacturing-concentrated states. These banks account for about

12 percent of all community banks, a share that has been fairly stable since 2000. These community banks are also spread throughout metropolitan, micropolitan, and rural areas. Of the 552 community banks headquartered in manufacturing-concentrated states, roughly 47 percent are in metropolitan areas, about 25 percent are in micropolitan areas, and nearly 29 percent are in rural areas.⁷ This dispersion across geographies means a community bank is likely to be accessible to a manufacturing firm regardless of whether the firm is in an urban or rural part of the state. Community banks headquartered in manufacturing-concentrated states are slightly smaller than community banks in other areas, with mean assets per institution of \$579 million, compared with \$635 million at other community banks, as of fourth quarter 2021.

Community banks in manufacturing-concentrated states support their local economies through a higher share of commercial loans relative to community banks in other states. Community banks headquartered in manufacturing-concentrated states have less in terms of average assets per institution. As a group these community banks have a larger percentage of their assets in commercial loans supporting the local economy. Although loan-level detail is not available in bank Consolidated Reports of Condition and Income (Call Reports) and other FDIC data to examine loans taken out directly by manufacturing firms, several trends support the view that community banks headquartered in manufacturing-concentrated states are supporting manufacturing through access to credit and other financial services to businesses more broadly. Much of this support to manufacturing firms and local business conditions more generally comes through several categories of commercial loans reported on the Call Report. One important category is commercial and industrial (C&I) loans. These include loans for commercial, industrial, or professional purposes that are not secured by real estate. C&I loans capture direct lending to companies both for working capital and for longer-term upgrades and major equipment purchases, and include both manufacturing firms and other local businesses. A broader category of commercial loans is commercial real estate (CRE) loans, which include several categories secured by real estate. While not all of the loans within CRE are directly related to local manufacturing conditions, for example loans for multifamily housing, other categories such as loans for industrial or warehouse properties are likely to be more directly related to manufacturing. A third category of related commercial loans is construction and development (C&D) loans, which are loans secured by real estate to construct, add to, or alter structures for industrial, commercial, residential, or farm buildings. Like CRE loans, many of these commercial loans are not specifically focused on manufacturing firms but are an important part of credit for daily operation and expansion of the manufacturing

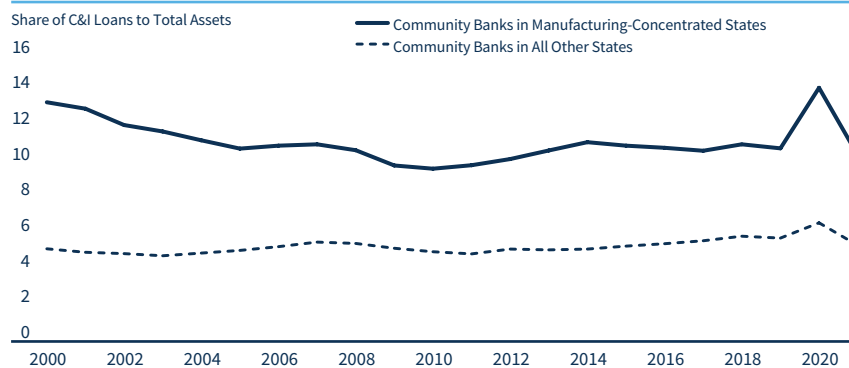
⁷Metropolitan and micropolitan are defined by the U.S. Census Bureau; rural areas are all other counties. Due to rounding, percentages may not sum to 100.

industry in the local area. All of these commercial loans are evidence of community banks supporting local economic conditions where they are headquartered.

One portion of these commercial loans community banks headquartered in manufacturing-concentrated areas lend to firms is through their C&I loans. Chart 5 shows the share of total assets that are C&I loans for community banks headquartered in manufacturing-concentrated states compared with all other community banks. The share of C&I loans at banks headquartered in manufacturing-concentrated states has fallen since 2000, but it has consistently been much higher than for other community banks, frequently twice the share. Chart 5 also shows the spike in C&I lending in 2020 due to Paycheck Protection Program (PPP) loans administered at community banks headquartered in manufacturing-concentrated states.⁸

Chart 5

Community Banks in Manufacturing-Concentrated States Consistently Have a Higher Share of Commercial and Industrial Loans



Source: FDIC Reports of Condition and Income.
 Note: Manufacturing-concentrated states are Indiana, Kentucky, Louisiana, Michigan, and Wisconsin. Commercial & Industrial loans inclusive of Paycheck Protection Program loans.

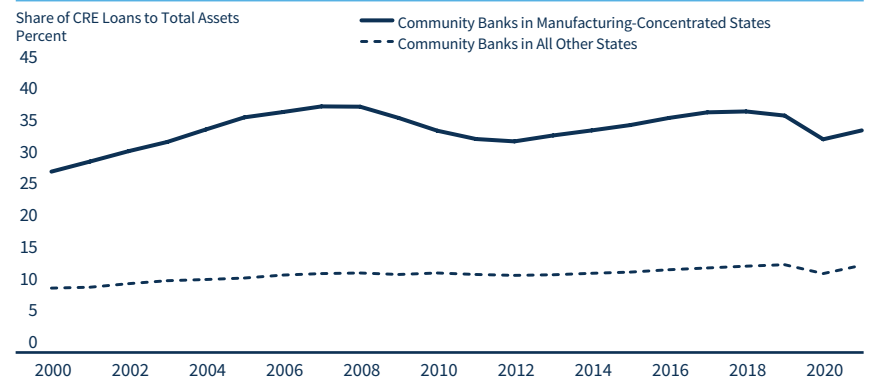
This trend of community banks headquartered in manufacturing-concentrated states having a higher share of commercial loans than other community banks can be seen more broadly in CRE loans. Chart 6 shows the share of CRE loans to total assets for both community banks headquartered in manufacturing-concentrated states and all other community banks. Similar to C&I loans, the share of CRE loans at banks headquartered in manufacturing-concentrated states is much higher when compared with other community banks (Chart 6).

⁸For more on the effect of the Paycheck Protection Program on bank balance sheets, see Margaret Hanrahan and Angela Hinton, "The Importance of Community Banks in Paycheck Protection Program Lending," *FDIC Quarterly* 14, no. 4 (2020): 31–36, <https://www.fdic.gov/analysis/quarterly-banking-profile/fdic-quarterly/2020-vol14-4/fdic-v14n4-3q2020.pdf>.

The volume of commercial lending by community banks headquartered in manufacturing-concentrated states can also be seen in trends in C&D lending. Chart 7 shows the share of C&D lending to total assets at community banks headquartered in manufacturing-concentrated states and compared with other community banks. There was a large increase in C&D loans in the years preceding the 2008 financial crisis that were reduced in its aftermath at community banks headquartered in manufacturing-concentrated states. Since 2012 the share of C&D loans has been fairly steady for both groups but higher in manufacturing-concentrated states.

Chart 6

Community Banks in Manufacturing-Concentrated States Consistently Have a Higher Share of CRE Loans to Total Assets

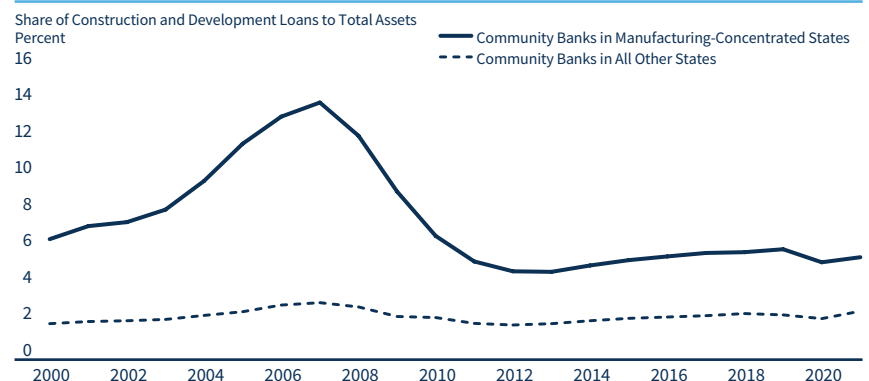


Source: FDIC Reports of Condition and Income.

Note: Manufacturing-concentrated states are Indiana, Kentucky, Louisiana, Michigan, and Wisconsin. CRE is commercial real estate.

Chart 7

Community Banks in Manufacturing-Concentrated States Have a Higher Share of Construction and Development Loans to Total Assets



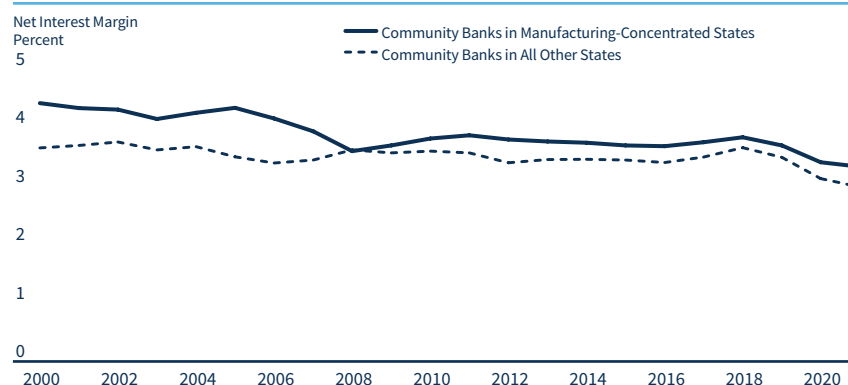
Source: FDIC Reports of Condition and Income.

Note: Manufacturing-concentrated states are Indiana, Kentucky, Louisiana, Michigan, and Wisconsin.

The net interest margin (NIM) of community banks in manufacturing-concentrated states has on average exceeded that of other community banks. Chart 8 shows NIM for community banks headquartered in manufacturing-concentrated states and for all other community banks. NIM was higher for community banks headquartered in manufacturing-concentrated states for every year from 2000 to 2020 except 2008. Another noteworthy trend reflected in Chart 8 is the secular decline in NIM affecting both groups of community banks, with NIM falling roughly a percentage point in the two decades since 2000.⁹ Higher NIM at community banks in manufacturing-concentrated states is likely related to the higher share of commercial loans to assets among those institutions, shown in Charts 5, 6, and 7. As discussed below, greater concentrations of lending can magnify the negative effects of economic downturns on bank profitability.

Chart 8

Community Banks in Manufacturing-Concentrated States Have Consistently Higher Net Interest Margins Than Those in Other States



Source: FDIC Reports of Condition and Income.

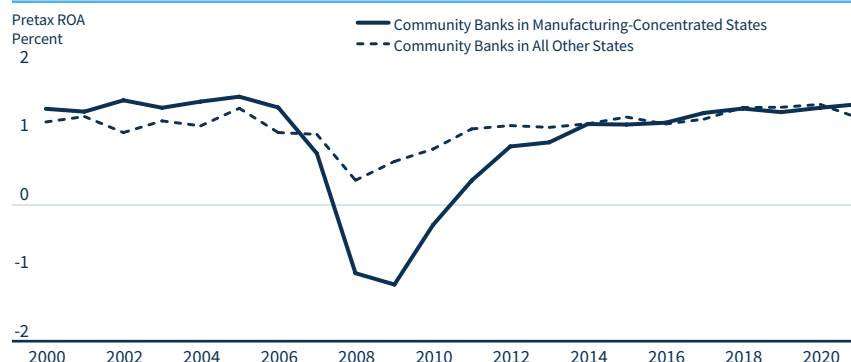
Note: Manufacturing-concentrated states are Indiana, Kentucky, Louisiana, Michigan, and Wisconsin.

Trends in return on assets (ROA) illustrate opportunities and risks to banks in manufacturing-concentrated states. Chart 9 shows the pretax ROA for both community banks in manufacturing-concentrated states and all other community banks since 2000. Before the 2007–2009 recession, the pretax ROA of community banks headquartered in manufacturing-concentrated areas was consistently higher than for other community banks. The higher ROA of these banks before the crisis was consistent with their higher concentrations of commercial loans shown in Charts 5, 6, and 7, and with the pre-crisis growth of their CRE and C&D portfolios shown in Charts 6 and 7.

⁹For more discussion of NIM trends, see Angela Hinton and Chester Polson, “The Historic Relationship Between Bank Net Interest Margins and Short-Term Interest Rates,” *FDIC Quarterly* 15 no. 2 (2021): 31–41, <https://www.fdic.gov/analysis/quarterly-banking-profile/fdic-quarterly/2021-vol15-2/fdic-v15n2-1q2021.pdf>.

Chart 9

Pretax ROA Took Longer to Recover After the Financial Crisis at Community Banks in Manufacturing-Concentrated States



Source: FDIC Reports of Condition and Income.

Note: Manufacturing-concentrated states are Indiana, Kentucky, Louisiana, Michigan, and Wisconsin. Pretax ROA is the pretax net income as a percentage of assets.

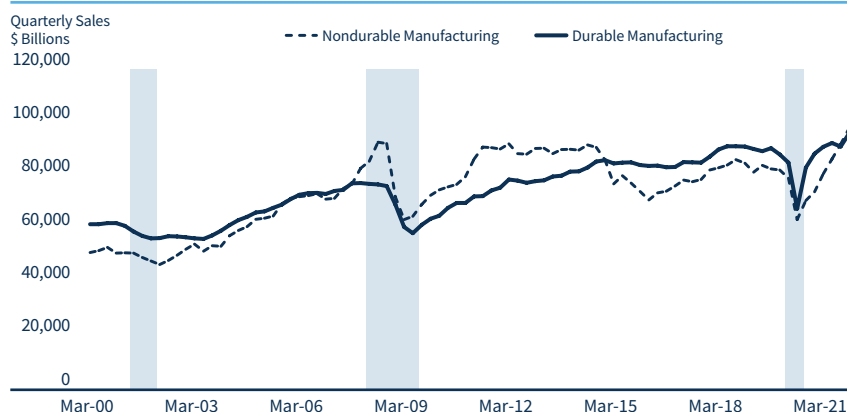
The manufacturing industry is sensitive to business cycles and recessions, which has direct implications on community banks and has weighed on their profitability through both direct credit exposure to manufacturing firms and indirectly through the manufacturing industry's impact on the local economy. In the 2008 recession, pretax ROA at community banks headquartered in manufacturing-concentrated areas fell further and took longer to recover, staying negative until 2010, than ROA at community banks elsewhere in the country. The manufacturing industry declined severely during that period, with 2 million jobs lost nationwide. Community banks in the five manufacturing-concentrated states had higher commercial loan concentrations than other community banks, and the effects of the recession on their profitability were worse. More generally, annual economic growth rates in many of the manufacturing-concentrated states lagged the United States. From 2000 to 2020, the five manufacturing-concentrated states identified above often had annual economic growth rates lower than U.S. GDP growth. In both the 2001 and 2008 recessions, the top five manufacturing-concentrated states experienced much steeper economic contractions than the United States overall.

In more recent years, there has been little difference between the pretax ROA at community banks headquartered in manufacturing-concentrated areas and other community banks. As described in the next section, the adverse effects on manufacturing of the pandemic and accompanying recession have not been as long-lasting as those of previous recessions.

In contrast with previous recessions, the manufacturing sector has recovered losses from the recession in 2020 relatively quickly and continued to grow as the U.S. economy reopened and producers responded to pent-up demand. The onset of the COVID-19 pandemic in March 2020 and the shuttering of the economy were swift, severe, and broad-based. Manufacturing entered 2020 already facing headwinds from rising trade tensions, low energy prices, and Boeing stopping production of the 787 Max 8 jet. Industrial production began to weaken in 2018 due to these headwinds and contracted sharply at the onset of the pandemic. Unlike recent recessions in which industrial production has been slower to recover, manufacturing rebounded quickly despite ongoing pandemic conditions. In a typical recession, spending on goods, especially durable goods, declines as consumers forego expensive purchases but continue using routine services. However, the widespread closures of businesses, stay-at-home orders, and the immediate transition to telework for many industries decreased or eliminated demand for services while increasing demand for goods as people upgraded living quarters and home offices. Several rounds of emergency government assistance to households and enhanced unemployment insurance benefits also supported demand for goods, keeping personal income much higher and preserving balance sheets more than in typical recessions. Because of these factors, sales of both durable and nondurable goods recovered much faster than in previous recessions (Chart 10). Strong demand and relatively healthy consumer balance sheets for a recession resulted in a quick and broad-based rebound in sales of both durable and nondurable manufactured goods.¹⁰

Chart 10

Sales Rebounded Quickly for Durable and Nondurable Manufacturing



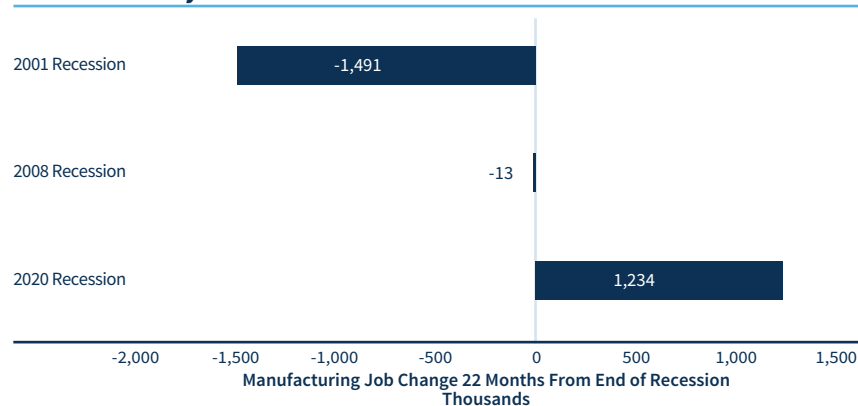
Source: Census Bureau Quarterly Financial Report for Manufacturing, Mining, and Trade Corporations (Haver Analytics).
Note: Sales are seasonally adjusted. Shaded areas indicate recession.

¹⁰ A related rebound in consumer lending occurred during the pandemic. For more information see Kathryn Fritzdixon, "Consumer Lending Through the Pandemic and the Recovery," *FDIC Quarterly* 16 no. 1 (2022), 31–40, <https://www.fdic.gov/analysis/quarterly-banking-profile/fdic-quarterly/2022-vol16-1/article1.pdf>.

Employment in manufacturing also recovered more quickly than in previous recessions, though not as fast as other pandemic-affected industries. In the 22 months between May 2020 and March 2022, the manufacturing industry added just more than a million jobs, roughly 91 percent of the 1.4 million jobs lost in March and April 2020. In contrast, manufacturing continued to lose jobs in the 22 months after the end of the 2001 recession and the 22 months after the end of the 2008 recession.¹¹ Chart 11 shows the strong employment gains in manufacturing from 2020 to 2022 relative to the two previous recessions. The rebound in employment was partly due to firms responding to the immediate demand for goods and bringing production workers back quickly. Although the pace of the jobs recovery in manufacturing is encouraging, it is slower than in many other industries. Chart 12 shows the percentage of jobs recovered for the economy as a whole and for key industries, with manufacturing showing a slower recovery than the economy in general. Like many other sectors of the economy, manufacturing has had worker shortages. Job openings in manufacturing are much more abundant now than before the pandemic. This labor shortage weighs on firms' ability to increase production and power the recovery.

Chart 11

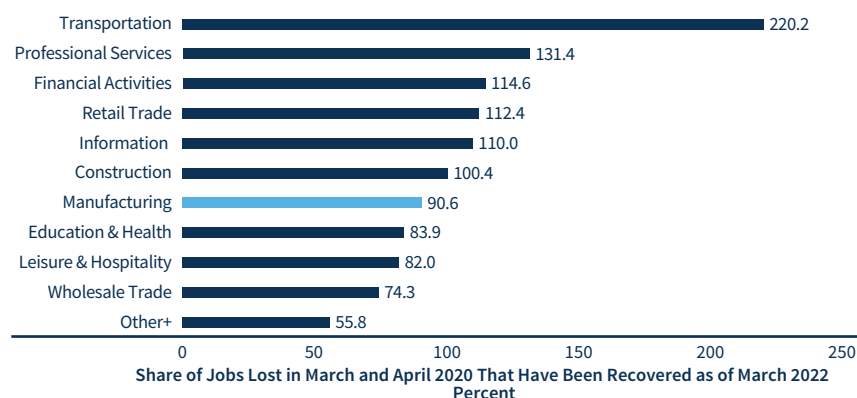
Manufacturing Has Regained Lost Jobs Much Faster After This Recession Than Previously



Source: Bureau of Labor Statistics Monthly Establishment Survey (Haver Analytics).

¹¹The manufacturing industry underwent structural change independent of the 2001 recession due to automation and offshoring and lost more than 2.6 million jobs from early 2000 to early 2004.

Chart 12

Manufacturing Job Gains Lag the Recovery in Other Industries

Source: Bureau of Labor Statistics Monthly Establishment Survey (Haver Analytics).
 Note: Other+ category captures Government, Mining, Utilities, and Other Services.

The transition of the manufacturing industry from the pandemic recession poses several risks for banks. The interconnected nature of global supply chains has created problems in the production and distribution of goods, which weighed on production in 2021 and will take time to normalize. Lockdown orders and social distancing measures slowed the pace of production as factories had to close or idle production. Lingering supply chain issues and order backlogs may continue for the near term and could create a liquidity risk for firms, especially those that purchase expensive intermediate goods on credit or have complicated production processes that take time to create a finished product. Unexpected delays in the production process could increase the risk of nonpayment or default for bank loans. Producing at reduced capacity for extended periods due to a shortage of workers or inputs may reduce income and could affect the ability to meet financial obligations. Labor shortages and supply constraints could weigh on further gains and increase the underlying risk to banks. The remaining shortage in manufacturing workers might be harder to resolve than for other industries, as manufacturing is less accommodating for working from home, making it more difficult to recruit new workers.

Even as the recovery in manufacturing is well under way, pandemic-related credit risks to banks from the manufacturing industry could take time to surface fully or to resolve. The manufacturing industry remains susceptible to the risks of plant closure due to the evolving nature of the pandemic, or relocation of firms due to global market pressures as production and demand normalize. Even as these short-term challenges resolve, banks face longer-term risks stemming from continued structural changes in the manufacturing industry as it transitions to advanced manufacturing, potentially affecting the concentration of firms among states.

Manufacturing firms received substantial support from the PPP and defaults may increase as program support runs out. While the vast majority of PPP loans have been forgiven, program wind-down could reveal weakened firms that have other outstanding loans that could expose banks to losses if the firms remain unprofitable. Finally, the demand boom for manufacturers presents risks to banks if banks without experience expand lending to manufacturing late in the business cycle. As demand normalizes from recent high levels, sales could decline and expose lenders to credit risk if borrowers are overextended.

CONCLUSION

Manufacturing is a key economic driver and employer in many states, and a rapid transition from traditional to advanced manufacturing is occurring in a number of states. The banking industry continues to support lending in manufacturing-concentrated states even as the manufacturing industry has experienced significant structural changes in recent decades, and the community banks are active commercial lenders in these areas. Manufacturing can be highly cyclical and continues to evolve, and these developments will remain important to community banks. The manufacturing industry demonstrated its resilience during the pandemic-induced recession in 2020, with output and employment initially recovering more quickly than many other sectors. Overall, the rapid rebound in manufacturing compared with past recessions and the ongoing transition to higher-value-added advanced manufacturing subsectors generally support a positive outlook in growth for those community banks that serve them.

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