



Stabilizing the economy

Evaluating the effects of industrial diversity





State and local officials have sought to reduce short-term volatility in their communities' economic growth rates and potentially boost overall long-term growth by diversifying the mix of industries in their regions. Economic theory predicts that industrial diversity can reduce economic volatility; however, views vary on the effects that industrial diversity has on long-term growth.

In her latest research, Alison Felix, an economist and Denver Branch executive for the Kansas City Fed, examined industrial diversity across the nearly 500 counties of the Federal Reserve's Tenth District. Felix concluded that counties with greater diversity saw more economic stability over a three-decade period. The differences in industrial diversity, however, had no significant impact on overall growth across the period, neither increasing nor restraining growth rates for employment or wages.

She reached this conclusion even after controlling for a variety of county population characteristics and for the effects of two key industries: agriculture and energy.

"Given that industrial diversity does

not appear to affect growth, officials seeking to boost growth rates may need to focus on efforts beyond diversification," Felix wrote in her research article titled "Industrial Diversity, Growth, and Volatility in the Seven States of the Tenth District."

Felix measured industrial diversity using the national diversity index. The index ranks a county more diverse when the distribution of its shares of employment across industry categories is similar to that of the entire United States and less diverse when it is less similar.

Her study divided employment among 15 industries and calculated the diversity index by measuring the difference between each industry's employment share in the county and its employment share in the entire United States. The study concluded that some counties have a diverse distribution of industries, especially metropolitan areas; however, many counties in the Tenth District have high concentrations in one or two industries. For example, Oklahoma and Wyoming specialize in the energy sector; Wichita, Kan., specializes in aerospace manufacturing; and parts of Kansas and Nebraska specialize in agriculture.

Industrial mix of employment in the

Tenth District, which encompasses Colorado, Kansas, western Missouri, northern New Mexico, Nebraska, Oklahoma and Wyoming, changed significantly, mirroring the United States, from 1980 to 2010. For instance, during this time, the share of nationwide employment in agriculture, energy and manufacturing declined, while employment shares increased in service industries, such as healthcare, leisure and entertainment, and professional and business services. The Tenth District experienced similar transitions in employment, with some industries expanding and others contracting.

Researchers who have examined the impact of industrial diversity on economic volatility have mostly found that counties with more industrial diversity are less volatile. Felix's research reached the same conclusion.

"The result holds even after controlling for the effects of several other county characteristics and for the impact of the agriculture and energy industries," she wrote.

Two key indicators of economic activity are employment growth and wage growth. The standard deviation over time in these areas provides a measure of their volatility. The data show that more diverse counties, on average, experienced less volatility from 1980 to 2007 in both employment growth and wage growth.

Slight differences, however, emerge from decade to decade. Volatility was highest in the 1980s, as was the difference in volatility between high- and low-diversity counties. The 1990s saw the least difference between high- and low-diversity counties.

In addition to industrial diversity, other factors such as population size, density, per capita income, and education levels can affect economic volatility. The research found that counties with larger populations have less economic volatility. This finding could stem from highly populated counties having more employers in each industry, which helps avoid sharp employment losses when any one company falters. Data also show that population density, residents per square mile and per capita

income were correlated with greater volatility in employment growth, but had no correlation with volatility in wage growth. The exception was counties with higher numbers of college-educated employees, whose performance-based compensation in the form of bonuses and stock options frequently is more volatile than hourly wage earners.

Researchers have offered opposing theories and results on whether industrial diversity increases or decreases long-term economic growth. And a glance at the Tenth District suggests there is a relationship among greater industrial diversity and faster employment and wage growth.

Taking it a step further, analysis of individual decades shows that employment grew slower in the less diverse counties in every decade. Wages also grew slower in two of the three decades: the 1980s and 1990s. In the 2000s, however, wages grew faster in the less diverse counties. This could reflect the impact of the agriculture and energy sectors, which are highly concentrated in the District's less diverse counties. Wages grew faster in the 2000s in these sectors than in many other industries.

While the results from the 1980s and 1990s support the view that industrial diversity boosts employment growth, the data from the 2000s suggest the opposite—more industrial specialized areas have an advantage.

Analysis shows, however, that industrial diversity does not affect counties' employment and wage growth after controlling for the effect of the agriculture and energy industries. "Although diversity appears to have had some effect on employment growth in the 1990s, it did not have such an effect in the 1980s, the 2000s or the 1980-2007 period as a whole," Felix wrote.

Felix's research concluded that diversifying the industrial mix in a region can stabilize economic volatility in a community. Higher levels of industrial diversity, however, do not significantly impact long-term growth in employment or wages.



Branching out

Alison Felix reflects upon her first year as Denver Branch executive

PHOTO BY DAVID TEJADA

Alison Felix's first year as the Kansas City Fed's Denver Branch Executive has helped her learn about the distinct economies of the states the branch serves and how those states fit into the regional structure of the Federal Reserve.

"This new role has given me the opportunity to build relationships with the Denver Branch Board of Directors and with business and community leaders across the zone," said Felix, who was a senior economist at the Kansas City Fed's headquarters in Kansas City, Mo., before moving to Denver. "Talking with these individuals has provided me with greater insight into how individual industries are performing and how they respond to consumer demand and policy changes."

She uses this information to analyze the Denver zone economies, which includes Colorado, New Mexico and Wyoming.

"Each of these states, and even different areas within them, has a different economic makeup," she said.

The Denver zone is heavily reliant on energy, especially in Wyoming and New Mexico, but other industries also contribute to the region's economy. In

particular, Felix said, tourism plays a vital role in the economies of all three states, and New Mexico's economy also relies on the government sector.

Colorado has the most diverse economy in the region, with many businesses and employees moving to the "Colorful" state, which has a large start-up market.

"Having the opportunity to interact with business leaders and bankers from across the region has really helped me to better understand their unique circumstances," Felix said.

Felix's first interest has always been mathematics, but after attending a microeconomics class as an undergraduate at Kansas State University, she knew she had found the right field. She graduated from K-State with a bachelor's degree in mathematics and economics. She then attended graduate school at the University of Michigan, earning a master's and a doctorate degree in economics.

Since coming to the Kansas City Fed almost six years ago, Felix has focused her research on public finance issues, like in her most recent published study, "Industrial Diversity, Growth, and Volatility in the Seven States of the Tenth District" (See related story page

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Felix plans to continue her research efforts in this area, but she also wants to research labor issues and the economics of education.

Her role, however, is more than doing research. She is the Kansas City Fed's lead officer in the states of Colorado, Wyoming and northern New Mexico. She is responsible for briefing Kansas City Fed President Esther George on business activities in those states. Although Denver is the Kansas City Fed's largest branch, it's a smaller environment than what Felix was accustomed to in Kansas City.

"This smaller size allows employees from different functions of the Bank to interact more," Felix said.

This has given her the chance to learn more about bank supervision, cash and law enforcement functions.

"Although each function of the Bank has different goals, I have been impressed by how each has developed processes to maximize the efficiency and performance of that function," she said.