Title:
Industries, Occupations, and Entrepreneurship in Rural Regions

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Extended Abstract:

Economic development strategies aimed at fostering regional growth through entrepreneurship are increasingly important in lagging regions. While previous research suggests that having more entrepreneurs or self-employed can lead to higher levels of economic growth in rural and distressed regions, not all entrepreneurs are created equally. Some people may become self-employed due to a lack of other opportunities, while others may be more innovative, exploiting new opportunities and contributing to growth. Additionally, entrepreneurship in certain industries may be more beneficial to growth than in other industries. At the same time, another strain of research has linked industrial and occupational diversity to entrepreneurship and regional growth, especially in urban areas, due to the cross-fertilization of ideas. However, rural regions may lack agglomeration economies and other factors conducive to growth that make the relationship between industrial and occupational diversity and entrepreneurship in rural areas less clear. Therefore, a clear understanding of the linkages between industries, occupations, and entrepreneurship in rural areas is needed. Unfortunately, the publicly available data on detailed industry-level employment are often suppressed in small and rural counties.

We estimate models for the entire United States, for rural and urban areas separately, and for the Appalachian Regional Commission (ARC) Region, a predominantly rural region with a history of economic distress. Focusing on the ARC region, we then use the propensity score matching method to create a comparison group of counties that are similar to the ARC counties and estimate models comparing ARC counties and their matches. By estimating this model, we can more accurately determine the impacts in a rural region with a history of economic distress.

We assess the economic path of counties using the percent change in total employment (including both self-employment and wage and salary employment) and population from 2011 to 2019 based on data from the U.S. Bureau of Economic Analysis (BEA). We also use unsuppressed employment data through a license from Economic Modeling, LLC (EMSI) to measure the self-employment share and shares of 2-digit North American Industry Classification System (NAICS) industry-level self-employment as we are interested not only in overall economic outcomes, but also in what factors are driving self-employment and entrepreneurship. We also examine industry-level self-employment shares for the industries with the highest levels
of self-employment. Given the negative economic impact of COVID-19, especially on the self-employed, our analysis also tries to account for this.

In the models where changes in employment and population are the dependent variables, we separately look at three groups of potential variables of interest. These include the total self-employment share, the (industry) self-employment share in each 2-digit NAICS industry, and the self-employment share in industries that were most vulnerable and at-risk from the COVID-19 induced economic crisis. For example, mining, transportation, employment services, travel arrangements, and leisure and hospitality were hit harder by the economic shutdowns and layoffs. Overall, these estimates will reveal the average impacts across counties for different measures of entrepreneurship on local economies. Additionally, we will be able to determine which industries are contributing to growth, including those that may have been most affected by the COVID-19 crisis, which will provide some insights into how these conditions might change in the future, how COVID-19 has impacted local economies, and what the path back might be for these communities.

In the models where the self-employment share and (industry) self-employment share in key industries is the dependent variable, our key variables of interest are our measures of industry and employment diversification. We are particularly interested in whether entrepreneurship is affected by the industrial and employment mix of a county, which may explain why some regions have more self-employment (or more self-employment in industries that support growth) than others. Economic diversity is calculated using the Herfindahl-Hirschman Index (HHI). The HHI is a way to measure market concentration and is a widely used metric for determining economic diversity. For our analysis, we use the HHI based on 4-digit NAICS codes to get a more detailed industry and employment mix. We also measure industry diversity by including shares of total employment for each 2-digit industry in 2010 using the EMSI data. While this measure is somewhat different from the HHI, it also controls for county-level employment concentration.

To isolate the effect of our key variables, our models also control for other factors that have been shown to influence regional economic growth. For example, we include the percent of people in creative class occupations using the pooled 2007 - 2011 USDA Economic Research Service (ERS) data. Creative occupations are those that require thinking creatively, including engineers, architects, artists, and others. People in these knowledge and idea based occupations may be drawn to areas that provide a high quality of life. This variable may be especially important to include, since rural areas tend to lose much of their talent when young adults move out.

To control for agglomeration, we include measures of the distance in miles from the population-weighted center of each county to the population center of the nearest metropolitan area (MSA). Additionally, we include three measures of incremental distance to a) an MSA with a population over 250,000, b) an MSA with a population over 500,000, and c) an MSA with a population over 1.5 million. We also include a variable to indicate whether the county is located within an urban area using the 2013 definition of urban from the U.S. Office of Management and Budget (OMB), where urban is a county located in a core-based statistical area (CBSA).
Since natural amenities have been found to be positively related to rural economic growth, we include the natural amenities scale and topography score for each county in 1999 from ERS. The natural amenities scale is a measure of the physical characteristics of a county that make it more desirable to live in. The topography score is a measure of land variation (i.e. plains, hills, mountains). We separately control for topography because it can be a barrier to transportation and infrastructure development.

We also include the social capital index, which is the estimated stock of social capital in 2009 from the Northeast Regional Center for Rural Development. We include this index because it has been shown that social capital can contribute to the economic growth of communities, especially in rural areas.

We also control for other historical factors. Industries such as manufacturing, mining, and agriculture have faced significant labor-saving mechanization which has reduced employment and affected the economic prospects of regions. Persistently high poverty rates in many Appalachian counties were a key driver in the formation of the ARC and the designation of the ARC region. To control for these, we include the 1960 poverty rate from the U.S. Census, as well as the percent of total employment that is in manufacturing, agriculture, and mining in 1970 from the BEA.

The lack of supporting infrastructure (such as high-speed broadband internet access) may make it difficult to attract new employers or start a new business. Additionally, broadband can help facilitate regional entrepreneurship and foster startup activities in desired industries. Therefore, we control for the percent of households with broadband access using data from the US Census American Community Survey (ACS).

We also control for other factors that have been found to affect economic growth, such as education levels, labor force participation rate, percent of the population that is white, median age, and population density in 2010 from the U.S. Census.

To control for state specific factors (i.e. government policies that may impact growth), we include an indicator variable for the state the county is located in. Additionally, we include an indicator variable to account for the counties that are apart of the designated ARC region. This should control for policy and other historical differences between those counties and the rest of the sample.

The results suggest that self-employment in some industries (such as agriculture, manufacturing, and travel and leisure) does matter more for growth. We also find some evidence that more economic diversity (a lower HHI) leads to higher levels of growth. However, economic diversity has a different impact on self-employment. In the ARC region, lower economic diversity plays a key role in entrepreneurship. Our results also indicate that self-employment in “affected” industries had been contributing to growth, suggesting that the region may be in trouble if these businesses fail.