

Pandemic Risk and Recovery Indices: Understanding Persistent Impacts of a Global Endemic

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This analysis represents the third stage of our efforts to develop decision support tools to guide regional economic assistance and interventions for communities disproportionately impacted by a pandemic event. In previous reports and presentations, we have presented a Pandemic Risk index designed to provide policymakers with insights for identifying regional (sub-national) economies that would experience relatively worse economic disruptions due to a pandemic event. Originally developed for Australia, this index was later adapted for the United States and other nations.

The economic risk index was designed with key features to encourage adoption by a wide variety of regional leaders without a requirement for advanced skills in data analysis. The indices we develop are built from publicly accessible data, with nominal or no access fees. In the risk index we focused on regional economic vulnerability to industrial structure – namely a high reliance of industries that are particularly challenged when face-to-face interpersonal interactions or close proximity to individuals or groups is an operating characteristic of operational activities, as well as those sectors who experience knock-on effects of disruptions to these industries. The risk index also includes assessments of other structural elements of a regional economy such as the degree to which the subject industries are key contributors to the regional export base, the degree of economic (industrial) diversity in the region, and where data are available, the proportion of the resident workforce employed in part-time jobs. The part-time worker characteristic captures two important, but separate elements of risk. Part-time jobs are usually casual in nature and have few, if any, requirements for advanced notice of redundancy/lay-off actions. Secondly, part-time workers, on average, are lower paid and are more economically vulnerable to income disruptions, some driven by resource availability and some by public policy decisions regarding unemployment assistance qualifications.

The risk index was created in the late spring (Northern Hemisphere) of 2020 as nations were still experiencing the worst economic downturn since the Great Depression. The United States alone saw economic activity decline by more than \$7 Trillion on an annualized basis. However, the drop in economic activity was short lived and recovery started within a few weeks, though it took over a year to return to pre-pandemic levels of GDP in most developed nations. Some industries adapted quickly to government imposed restrictions on business and personal activities. Residential real estate ownership transactions saw a rapid move to “touchless” and “remote” facilitation services and 2020 became a banner year for many regional markets. The rapid shift to home delivery has perhaps changed retail trade permanently and food delivery (groceries and prepared foods) are finding new competitive balances to support customers who are homebound by choice or mandate. In our first formal write up of a performance review of the risk index, we see here a need to craft some weights to our risk variables that account for varying levels of adaptability shown across industry sectors -even when those sectors are broadly defined.

In the second stage of our work, with support from the Regional Studies Association, we developed a Recovery Index to identify regional economies that will likely take longer to recover as infection rates and related morbidity and mortality rates associated with a pandemic decline – effectively meaning when there are fewer restrictions on business and personal activities. This research was designed to be

cross-national, so there was some variance in the specific elements of the index for each nation depending on data availability. However, the general recovery index design has three components and specifically looks at eleven industry sectors that are judged to be most resilient or most vulnerable to pandemic induced disruptions. The resilient industries include food manufacturing; non-metallic mineral product manufacturing; infrastructure construction; warehousing; professional and technical services; information services; financial services; insurance carriers; and, public administration. Economic vulnerability is assumed for air transportation and travel lodging, which continues to be borne out through early 2022 as leisure travel has rebounded, but non-essential business travel remains depressed. Our latest observations suggest the need to find an indicator variable that is useful for discriminating travel activity between leisure and business travel exposure for a given region. We test using a location quotient based on interacting finance and government with travel related sectors to modest success. Otherwise, the recovery index proves to perform well for identifying regions, even subregions, that are particularly resilient or remain particularly vulnerable. In the UK this is easily envisioned by comparing subregions of London along this resilient-vulnerable scale. Central London, with its highly resilient financial sector has been relatively impervious to negative performance related to the COVID-19 pandemic, in terms of ability to operate and maintain jobs. Hounslow, which is the area around Heathrow airport, occupies the other end of the recovery index.

The Pandemic Recovery Index was applied to economic regions in six nations: Australia, New Zealand, United Kingdom, Norway, Ireland, and the United States. The target geographical area applied for all countries was the OECD defined Territorial Level 3. In the case of the UK, the chosen geography was smaller to better reflect the local administrative divisions. Additionally, labour force data across all counties is achieved minimally at the International Standard Industrial Classification (ISIC) 2-digit level, which is reasonably comparable to the U.S. NAICS 3-digit level. The exercise, however, did illustrate a key challenge facing regional economic researchers where cross-national studies are increasingly important for understanding complex connections across global supply chains that are increasingly drawing nations into shared-opportunity and shared-risk pools of economic activity. Our original intent was to apply the recovery index to all OECD member nations. However, data availability and compatibility effectively limited our research scope to the listed six nations. This is a clarion call for the regional economic research community to work with national and multi-national leaders on a new standardized approach for defining industries and administrative regions for data collection and gathering. Lest this seems a goal-to-far, we observe that after decades of negotiations, there is general acceptance of a common commodities classification scheme for trade purposes.

In addition to formally reviewing the performance of our risk and recovery indices, this paper examines the need to modify these tools to address more persistent economic challenges if the current pandemic becomes endemic in nature – recurring at differing time intervals across a shifting set of regions. Risk of infection and policies continue to have disparate effects across the labour force. For example, care providers (for both children and adults) have shown reluctance to return to their work even as government restrictions on activities and safety measures are lifted. This means these services are not available to households creating an observable negative impact on labour force participation rates. This creates direct effects on the economic performance of care services, but also creates knock-on effects for industries with higher exposure to workers who may have their professional lives disrupted by in-family care duties. This suggests a more nuanced consideration of how we define vulnerable industries based on the demographic profiles of their workers.

This analysis also explores assessing dynamic resilience that may be emerging in some regions where resilience is beyond what we can readily explain through industry structure. However, we will keep to

our limits for using explanatory or predictive variables/data that are readily available from public sources.

Finally, our assessment of these previous indices considers the degree to which they remain useful under conditions of a pandemic that does not truly end but rather become endemic in nature with variants having differential characteristics of contagion, morbidity, and mortality that will appear in unpredictable patterns in differing regions across the globe. We are also concerned about our ability to effectively partial out broader economic shocks that may accompany monetary and fiscal policy decisions of nation states and the regional effects of political conflict from vectors of disease impacts on regional economies.