

TWO-SPEED OR THREE-SPEED RECOVERY IN POST-COVID ERA: REGIONAL AND SECTORAL DEVELOPMENT

Astra AUZINA-EMSINA ^{*}, Velga OZOLINA 

*Faculty of Engineering Economics and Management, Riga Technical University,
Kalnciema iela 6, Riga, Latvia*

Received 1 March 2022; accepted 4 April 2022

Abstract. Sustainable and balanced recovery is a key factor to ensure the economic performance. Two-speed recovery pattern is already observed. Three-speed recovery represents the most likely pattern of recovery in majority in the EU countries in the post-COVID era due to the common dramatic decline in transport and tourism, relative minor impact on large part of essential manufacturing and services. It is believed that we will face large increase in air transport, minor increase in boomed courier and postal sector, and stability in other transport branches. The findings argue that urban areas are shocked more and modelled recovery scenarios reveal faster recovery compared to rural areas. Policy makers and government are encouraged to relocate and modify the recovery plans to stimulate balanced regional recovery, reducing imbalances, rural-urban migration and rural-urban income inequality.

Keywords: recovery, two-speed economy, three-speed economy, post-COVID era, economic modelling, input-output.

JEL Classification: C67, O10, O18, O19, O40.

Introduction

The current economic and political performance has fuelled a surge in interest in measuring the effects of the recent COVID-19 situation on the national and global economy. Numerous studies have investigated both general impact on economic activity and productivity and specific and targeted impact on selected sector or process.

Recent studies have explored the differences and similarities between the level of impact in economies caused by economic and health policy measures and secondary, including indirect effects, on economic activity.

It is clear that all economies experienced slowdown and many declined, as well as some sectors as travelling, tourism, hospitality services, restaurants and many service sectors faced more strict limitations that resulted in unexpected decline in sales and losses. Many countries issued support instruments and programs. At the same time, several specific sectors as transport and delivery services faced increased demand as customers changed the behaviour and online sales replaced existing buying habits.

In result, any economy contains sectors that had significant reduction in sales, meanwhile, also sectors that

faced minor impact and even sectors that began to flourish. When market agents face such a situation, the question on unified (one-speed for all) recovery can be replaced with grounded assumptions that some sectors will recover and grow fast, but some sectors will stagnate and it will take long time or even years to gain back the lost performance and productivity.

Labour resources have the specific that it is impossible to freeze the productivity and then hire again and expect that performance and productivity is as high as it was used to be. The sectors as hospitality and catering were limited and partially employees fled to other sectors. When it is allowed to offer previously limited and strictly regulated services, it turns out that the companies lack skilled personnel, it is already employed in other sectors.

Concept of two-speed approach in the European Union (EU) has been applied for several decades already. In the 1990s when plans on the next EU enlargements were paved, a notable research attention was paid to whether the competition would be equal, whether economic performance and further development would be alike amid all countries in the economic union. Two-speed approach was applied to the EU competition policy (Sapir et al., 1993). A decade later, the diverse growth idea was once again debated

* Corresponding author. E-mail: astra.auzina-emsina@rtu.lv

regarding the eastern enlargement of the Eurozone that might create a two speed Europe (Dabrowski & Rostowski, 2006).

More recent advance is the concept of three-speed development that deals with the case that one or couple of industries are booming, some part of economy is lagging, while other sectors are in between. Studies on three-speed development are focused on economies that deal with booming mining sector in the economy and available government policy options as Corden (2012) and Tyers and Walker (2016). However, some studies analyse the same economies with booming mining applying two-speed economies perspective (Bjørnland & Thorsrud, 2016).

Definitely, the idea of diverse development within certain process is not novel, in general, it is not novel by core not even in economic development in the EU context, it is a wider applicable and used concept, for sure.

The policy measures and safety requirements have caused conditions that some industries are expected to have extremely high growth rates in order to gain back the previous levels. However, some industries due to high energy prices are forecasted to have stagnation or minor development. At the same time, many industries do not fit in any of the just mentioned groups and hence it leads to three-speed economy.

Considerable research attention in the post-COVID era studies has been directed towards the most suffered industries – supply-chains (as stressing the need for greater supply chain resilience (Remko, 2020); supply-chain sustainability (Sarkis, 2021) in post-COVID era), travel and tourism (as how travel behaviour changed (Matiza, 2020), “travel fear” research and revealing several strategies on how to mitigate people’s “travel fear” and encouraging travel in a post-COVID environment, reviewing tourism in general in post-COVID era (Sharma et al., 2021)). These industries had the most severe restrictions and limited options to operate in the COVID era period. Recent systematic literature review on COVID in management science highlights that scholarly interest in tourism and innovation appears to be high (Piccarozzi et al., 2021).

Studies on global value chains (GVC) argue that the core concepts of GVC governance have not altered and GVCs that are efficient and long-lasting are more likely to persist post-COVID (Kano & Oh, 2020).

Global Supply Chains (GSCs) were affected throughout all their stages with major turbulences in sectors and significant shifts in demand; hence the post-COVID-19 GSCs are estimated to tend to be shorter as a result of revamped strategies increasingly emphasising on relocations and back-shoring (Xu et al., 2020).

The impact on urban and rural economic activity in the post-COVID era deserves more research attention. Most post-COVID studies have focused mainly on general impact on economy or certain sector as transport and tourism. Relatively little is understood about the impact of COVID on regional economic activity and regional recovery in the post-COVID era. The study on the effect of COVID-19 on urban transitions and urban-regional dynamics in Australia

reveals that COVID-19 situation had a negative effect on house prices within the largest urban system and capital city and noncapital city urbanization trends and shock adjustments are different (Nygaard & Parkinson, 2021). Studies on rural tourism have attracted a relatively larger interest than on other rural or regional aspects. The findings on the COVID-19 pandemic’s influence on Czech rural tourism stress that affected destinations focused mainly on foreign tourists (Vaishar & Šťastná, 2022). According to a study on rural tourism in Portugal, the inclination for rural tourism risen dramatically between two COVID waves, and those regions had seen a stronger and longer-lasting recovery of domestic demand (Marques et al., 2021).

In Latvia, the estimated sectoral shocks resulting from implemented government policy activities and safety measures argue the rural areas are less badly affected during the crisis, but that following recovery (for instance, in the post-COVID era), this may result in lower economic activity, and rural areas will continue to lag behind metropolitan areas (Auziņa-Emsiņa & Ozoliņa, 2021).

The impact of COVID-19 on numerous aspects has been studied by a variety of methodologies. Several studies have employed an input-output strategy (alone or in combination with other modelling approaches). The study on regional economic impacts (Bonet-Morón et al., 2020) applies input-output model and scenarios analysis, the findings show that accommodation and food services, real estate, administrative services, construction, and trade are the most affected industries, depending on the scenario analyzed. The study applies the lifecycle approach using input-output tables to examine the influence of the COVID-19 epidemic on changes in tourist consumption, carbon footprint, and employment in Japan (Kitamura et al., 2020). The study of Giammetti et al. (2020) employs sophisticated network analysis and traditional input-output approaches to identify critical affected industries. A complex study on worldwide socio-economic losses and environmental gains from the COVID pandemic by Lenzen et al. (2020) employs a global multi-regional macro-economic model capable of capturing direct and indirect spill-over effects – economic, social and environmental consequences. Recent study by Cazcarro et al. (2022) give detailed insight into multidisciplinary models that examine the challenges of energy transformation in the post-COVID-19 green recovery funding and the majority of covered models contain and rely on input-output data and contain scenario analysis. New realities and new conditions motivate to integrate innovative data. The influence of COVID-19 limitations on mobility in Europe is being studied using mobile location data with a high spatial resolution (up to NUTS3) (Couto et al., 2020).

The aim of this study is to simulate the impact of two-speed and three-speed transportation sector’s recovery on the national economy and regional economic activity in the post-COVID era. An input-output model with extra regional modeling blocks and scenarios is used for this purpose, as is a comparative-static technique. The research entails analyzing and detecting current developments in the EU’s transportation industry, modifying the input-output

model, developing scenario assumptions, and modeling the outputs. Based on the findings of the literature review, comprehensive systematic and modeling methods produce accurate and useful results.

1. Materials and methods

The economy is disaggregated at a high level in this study (into 64 industries) based on the NACE Rev.2 classification of economic activity. Land transport and pipeline transport (NACE code H49), water transport (H50), air transport (51), warehousing and transportation support operations (H52), and postal and courier activities (H53) are all classed as part of the transportation (H) industry. Results are obtained using the modified input-output model, elaborated by Auzina-Emsina and Pocs (2019) and updated by Auzina-Emsina and Ozoliņa (2021).

Two approaches are used to analyze and model regional recovery – firstly, using NUTS3 level data on regions and, secondly, the urban-rural typology of Eurostat. Regional development analysis according to NUTS3 level relies on subdivision of Latvia into six regions: Riga, Pieriga, Vidzeme, Kurzeme, Latgale, and Zemgale. The urban-rural typology of Eurostat (2022b) classifies regions into: predominantly urban (metropolitan) regions, intermediate regions, predominantly rural regions.

The study is based on Eurostat data from 2015 through 2020 (or till latest statistics available). The study employs the 2015 symmetric input-output (product-to-product) table, which is the most recent available table (or set of tables), which includes domestic and import input-output tables. National statistical agencies are options to elaborate symmetric input-output tables in a product-by-product or industry-by-industry technique, according to Eurostat. For symmetric input-output tables, the majority of EU countries use the product-to-product technique. That is also the case of Latvia.

The impact of a sectoral recovery is estimated using a scenario analysis and an input-output model. Because the influence is measured in the short and medium term, the technological coefficients remain constant. The scenarios approach allows to model the quantitative impact of a certain (or given) economic change or shock. The basic identities that assure economic equilibrium are included in the applied input-output model. There is also a regional development modeling block that incorporates two different regional perspectives.

The modelling process includes several stages (Auzina-Emsina & Ozoliņa, 2021): the first phase, the direct and indirect impact modeling was performed by the primary input-output model, with research findings for 64 economic activities. The second phase, the computed values are grouped into ten major NACE categories (NACE codes: A, B-E, F, G-I, J, K, L, M-N, O-Q, R-U) and used to simulate regional development. First, it uses a bottom-up approach to calculate sectoral economic activity in six regions, sums the results, and obtain the totals for each region. Second, using a bottom-up approach, it computes sectoral economic

activity in mostly urban (metropolitan), intermediate, and predominantly rural regions, aggregates the results, and obtains the totals for each area.

Economic modeling using an input-output technique is a data-intensive activity because the modelled economy is disaggregated to a great degree. The input data for the model contain: input-output coefficients, value added elements and coefficients, all final demand vectors (household consumption, government expenditure, capita; formation, export and import etc.) for all 64 industries, as well as urban and rural economic activity allocation data (two dimensions: NUTS3 and Eurostat typology) for 10-sector level of disaggregation. Output of the model contain: computed sectoral output, value added, intermediate demand, final demand by 64 industries, and regional allocation of economic activity by 10 activities and two dimensions above-mentioned.

Although the research analysis spans the entire EU, the modelling is limited to one EU country: Latvia. The scenarios are elaborated to cover the economic activity with the most diverse performance in the COVID era and it is believed that its recovery is inhomogeneous in the post-COVID era – transport (H industry according to NACE) which forms the basis of the scenarios. The methodology and scenarios can be used in other EU memberstates that are dealing with equivalent research questions.

2. Results and discussion

In the EU, as well as in Latvia, the transportation sector had a consistent and industry-wide growth from 2015 to 2019, resulting in transportation and storage services growing faster than the overall EU economy (Auzina-Emsina & Ozoliņa, 2021). The COVID-19 prerequisites and policy actions were implemented in early 2020 significantly affected and even shocked many sectors, however, the transport sector faced severe limitations, especially, air transport. According to the Eurostat data (Eurostat, 2022a), the number of passengers carried by air decreased by more than 73.3% in the EU in 2020 compared with 2019: Slovenia had the greatest decreases in passenger numbers (–83.3%), Slovakia (–82.4%), Croatia (–81.9%). In Latvia, the number of carried air passengers declined by 74.4%. The number of passengers handled at all EU airports has dropped dramatically.

Meanwhile, due to the COVID-19 related dramatic trade restrictions and limits, introduction of notable safety measures and policy activities, even temporary lockdown of commercial services as cafes, restaurants, entertainment activities etc. in many EU memberstates, that favored online shopping and e-commerce boom, there was an increase of postal and courier delivery services in all EU countries in order to meet the new consumer behaviour and distant (including online) shopping habit shift.

Two comparative-static scenarios are estimated in Latvia's economy, considering the above-detected trends and assumptions (based on statistics analysed) to simulate the impact of sectoral development caused

by potential recovery patterns in the post-COVID era, evaluating the macroeconomic, sectoral, and regional perspectives:

two-speed transport recovery – air transport services (NACE code H51) experience a fast recovery; households are returning gradually to previous travelling habits and private consumption for air transport services doubles; at the same time, all other transport industries (H49, H50, H52, H53) maintain overall pattern of recovery in the economy of 4% growth as previously had minor decline or even boom (as postal and courier services (H53)).

three-speed transport recovery – air transport services (H51) experience a fast recovery; households are returning gradually to previous travelling habits and private consumption for air transport services doubles; meanwhile, postal and courier services (H53) grow slower by 1.5% due to the fact that the consumers gradually increase non-distant shopping (visit stores and shops in person, travel aboard and buy commodities abroad), but the rest of transport grows slightly faster than the overall economy expected – 6%.

In both scenarios, it is assumed that the basic transportation consumption pattern and routine are consistent, and that the COVID was an unexpected short-term shock. In general, the society expects it will be over shortly. The other parameters (such as regional economic activity allocation by NUTS 3 level and economic activity by urbanisation of area, etc.) remain unaltered – *ceteris paribus*. The scenario includes simulating the effect on recovering industries, computing direct and indirect impact on other industries (64 industries), computing the impact on six regions (NUTS 3 level) based on computed sectoral development results, and determining how it has influenced the economic activity in urban, rural and intermediate areas. The scenarios indicate the effect of a projected recovery route on the rest of the economy in diverse viewpoints without government assistance plans and initiatives.

The elaborated and modelled two-speed recovery and three-speed recovery scenarios demonstrate that in any economic crisis influence industries differently and some industries can even flourish, some can collapse almost completely, the rest of the economy is in between the extremes. The same inhomogeneous pattern is observable and predictable in post-crisis, including the post-COVID era.

According to the results of the input-output model's two-speed recovery scenario, the influence on the economy is obvious and evident. Households' total final consumption spending rises by 1.8%, while overall national economic growth is predicted to be 1.6%.

Air transport services' activities are interconnected directly and indirectly with numerous local industries. Households gradually returning to the previous travelling pattern consume both domestic air transport services and import air transported services. At the same time, air transport services are exported to foreign travellers that select services of the national (domestic) airline

company. The overall (direct and indirect) impact findings of product output changes from the model demonstrate that the service sector is more influenced than manufacturing – for instance, rental and leasing services (13.9%), employment services (10.8%), travel agencies (6.0%), as compared to manufacturing of other transport equipment (8.3%), rubber and plastic products (6.9%), chemicals and chemical products (4.5%).

The results of the three-speed recovery scenario estimated by the input-output model argue that the effect on the economy is alike the two-speed recovery, with slightly higher impact level. As domestically produced and imported goods can be delivered, the impact on local industries are various. The modelled full impact results of product output changes show that the service sector again is more influenced than manufacturing activities – for instance, rental and leasing services (14.3%), employment services (10.9%), travel agencies (6.0%), as compared to manufacturing of other transport equipment (8.6%), rubber and plastic products (7.3%), chemicals and chemical products (4.9%).

Transport industries are diverse, some have relatively high share of labour costs in over-all costs structure; at the same time, air transport is more capital-intensive and demands equipment and fuel. Air transport is relatively complicated to model also due to import-export specific of this industry, mentioned above, hence assumptions are introduced.

Within the modeling scenarios, one industry in Latvia (coke and refined petroleum products (C19)) is worth highlighting since it is nearly entirely import-based, and any, even tiny, adjustments result in unrealistically significant relative output change, despite the fact that the change is minor in absolute terms.

Regional recovery relies on regional economic activity that in turn depends on various factors (as historical structure of economic activity and investments, specialisation of regions, availability of resources and technologies, infrastructure, government support programs and funding, skilled labour force, educational institutions etc.), that quite vary amid different regional areas. And hence economic activity modelled at detailed sectoral level affects the regions differently. The regional modelling block of the scenarios modeling uses sectoral data and NUTS

Table 1. Estimated changes in regional output by both modelled scenarios (%)

Scenarios/NUTS3	Two-speed recovery scenario	Three-speed recovery scenario
TOTAL	1.6%	1.8%
Riga	1.4%	1.6%
Pieriga	1.2%	1.4%
Vidzeme	1.8%	1.9%
Kurzeme	1.6%	1.8%
Latgale	1.2%	1.3%
Zemgale	1.2%	1.4%

3 regional structure for six regions, and computes the results using a bottom-up approach. According to the modeling findings, the two-speed recovery has a greater impact on economic performance in the capital city (Riga) and nearby municipalities. Table 1 summarizes the regional economic impact of both scenarios. The results show that two simulated recovery scenarios had a greater influence on the Riga and Pieriga regions, while having a smaller impact on Kurzeme, Vidzeme, Zemgale, and Latgale.

The previous results of modelled COVID-19 shocks' impact on transport (Auziņa-Emsiņa & Ozoliņa, 2021) suggest that urban areas would be the most affected, if the anticipated extreme shocks occur. The modelling results on two-speed and three-speed recovery of transport sector in the post-COVID era have alike pattern (see Table 2). In the two-speed recovery scenario, economic activity in largely urban regions grows at 1.8% (when national growth is 1.6%), whereas economic activity in predominantly rural regions grows at 1.2%. The results of the three-speed scenario are consistent with prior findings, indicating that economic activities in largely urban areas can recover sooner and increase at higher rates.

Table 2. Estimated changes in regional output by both modelled scenarios regarding level of urbanisation (%)

Scenarios/NUTS3	Two-speed recovery scenario	Three-speed recovery scenario
TOTAL	1.6%	1.8%
Predominantly urban regions	1.8%	1.9%
Intermediate regions	1.5%	1.6%
Predominantly rural regions	1.2%	1.3%

Taking altogether, the data presented here provide evidence that because of their increased economic activity and larger service sector, metropolitan (urban) areas are better positioned to recover. The rural areas were relatively less negatively affected during the crisis, but at the same time, during economic recovery or some short-term economic boom (for instance, in the post-COVID era) might lead to weaker and slower economic activity and the lagging behind urban areas would remain (Auziņa-Emsiņa & Ozoliņa, 2021). Policy measures and programs targeted on the recovering the economic activity in the post-COVID era should take into account the urban and rural recovery pattern detected.

At the same time, other researches claim that policies' aim should not be limited to short-term maintenance of jobs and growth (Cazcarro et al., 2022). Employment decline and pandemic unemployment leads to discussions on stimulating employment recovery (McGann et al., 2020). The study on labour market and employment in the post-COVID era by (Hite & McDonald, 2020) stresses that careers and work have always changed throughout history, with some professions becoming

obsolete and new ones arising to fulfill the needs of each modern era. Therefore, our findings are not generalizable to long-time period policy activities, as the model assumes certain society's behaviour pattern and limited options for industries to alter existing technologies or switch to other technologies. The obtained results are valuable for short-term policy initiatives, activities and support plans.

Conclusions

Governments have interest in fast and balanced recovery of the economy in the post-COVID era. Many sectors experienced direct restrictions and shocks (including, transport sector), and indirect impact, hence a fast recovery is significant. Economic modeling is a useful tool for estimating the impact of various potential developments and assessing their implications for other industries and regional growth. The study uses a bottom-up strategy to apply an input-output model with a regional modeling block. Two-speed and three-speed recovery scenarios of transport sector are modelled.

The findings demonstrate that service industries recover faster and hence urban areas where larger share of service sector is located, can recover faster. At the same time, rural areas are less specialised in service and hence these regions have notably lower recovery rates in both modelled scenarios. Overall, the results provide support for validity of highly targeted recovery programs for balanced regional development issued by the government rather than general instruments, in order to facilitate economic activity and reduce income inequality in rural areas.

In both recovery scenarios, the results of regional modeling at the NUTS 3 level suggest that the capital city region (Riga area) and its suburbs (Pieriga region) are capable of recovering faster than other regions. Two-speed and three-speed recovery scenarios employ the same general trend. The findings are consistent with previous results (Auziņa-Emsiņa & Ozoliņa, 2021) showing that metropolitan (urban) regions are more influenced by both negative and positive shocks that the transportation sector confronts due to higher economic activity and a larger service sector. This is a topic that the regional and economic policymakers at the national and EU levels should consider in order to achieve a more balanced and sustainable regional economic development in future.

References

- Auziņa-Emsiņa, A., & Ozoliņa, V. (2021). Transportation, logistics and regional development in Covid-19 era: Modelling sectoral shocks caused by policy and safety measures. *Research for Rural Development*, 36, 144–151. <https://doi.org/10.22616/rrd.27.2021.021>
- Auzina-Emsina, A., & Pocs, R. (2019). Impact of transport and storage sector on sustainable development: Evaluation using input-output model. In *IMCIC 2019 – 10th International*

- Multi-Conference on Complexity, Informatics and Cybernetics, Proceedings, 1*, 1–6.
- Bjornland, H. C., & Thorsrud, L. A. (2016). Boom or gloom? Examining the Dutch disease in two-speed economies. *Economic Journal*, 126(598), 2219–2256.
<https://doi.org/10.1111/ecoj.12302>
- Bonet-Morón, J., Ricciulli-Marín, D., Pérez-Valbuena, G. J., Galvis-Aponte, L. A., Haddad, E. A., Araújo, I. F., & Perobelli, F. S. (2020). Regional economic impact of COVID-19 in Colombia: An input–output approach. *Regional Science Policy and Practice*, 12(6), 1123–1150.
<https://doi.org/10.1111/rsp3.12320>
- Cazcarro, I., García-Gusano, D., Iribarren, D., Linares, P., Romero, J. C., Arocena, P., Arto, I., Banacloche, S., Lechón, Y., Miguel, L. J., Langarita, R., & Cadarso, M.-Á. (2022). Energy-socio-economic-environmental modelling for the EU energy and post-COVID-19 transitions. *Science of the Total Environment*, 805, 150329.
<https://doi.org/10.1016/j.scitotenv.2021.150329>
- Corden, W. M. (2012). Dutch disease in Australia: Policy options for a three-speed economy. *Australian Economic Review*, 45(3), 290–304.
<https://doi.org/10.1111/j.1467-8462.2012.00685.x>
- Couto, G., Castanho, R. A., Pimentel, P., Carvalho, C., Sousa, Á., & Santos, C. (2020). The impacts of COVID-19 crisis over the tourism expectations of the Azores Archipelago residents. *Sustainability (Switzerland)*, 12(18), 7612.
<https://doi.org/10.3390/su12187612>
- Dabrowski, M., & Rostowski, J. (2006). The Eastern enlargement of the Eurozone. In *The Eastern Enlargement of the Eurozone*. Springer. <https://doi.org/10.1007/b136026>
- Eurostat. (2022a, February 28). *Eurostat Database*. <https://ec.europa.eu/eurostat/data/database>
- Eurostat. (2022b, November 10). *Territorial typologies manual – urban-rural typology*. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Territorial_typologies_manual_-_urban-rural_typology
- Giammetti, R., Papi, L., Teobaldelli, D., & Ticchi, D. (2020). The Italian value chain in the pandemic: the input–output impact of Covid-19 lockdown. *Journal of Industrial and Business Economics*, 47(3), 483–497.
<https://doi.org/10.1007/s40812-020-00164-9>
- Hite, L. M., & McDonald, K. S. (2020). Careers after COVID-19: Challenges and changes. *Human Resource Development International*, 427–437.
<https://doi.org/10.1080/13678868.2020.1779576>
- Kano, L., & Oh, C. H. (2020). Global value chains in the Post-COVID world: Governance for reliability. *Journal of Management Studies*, 57(8), 1773–1777.
<https://doi.org/10.1111/joms.12626>
- Kitamura, Y., Karkour, S., Ichisugi, Y., & Itsubo, N. (2020). Evaluation of the economic, environmental, and social impacts of the COVID-19 pandemic on the Japanese tourism industry. *Sustainability (Switzerland)*, 12(24), 1–21.
<https://doi.org/10.3390/su122410302>
- Lenzen, M., Li, M., Malik, A., Pomponi, F., Sun, Y.-Y., Wiedmann, T., Faturay, F., Fry, J., Gallego, B., Geschke, A., Wang, Y., & Yousefzadeh, M. (2020). Global socio-economic losses and environmental gains from the coronavirus pandemic. *PLoS ONE*, 15(7 July).
<https://doi.org/10.1371/journal.pone.0235654>
- Marques, C. P., Guedes, A., & Bento, R. (2021). Rural tourism recovery between two COVID-19 waves: The case of Portugal. *Current Issues in Tourism*, 25(6), 857–863.
<https://doi.org/10.1080/13683500.2021.1910216>
- Matiza, T. (2020). Post-COVID-19 crisis travel behaviour: Towards mitigating the effects of perceived risk. *Journal of Tourism Futures*, 8(1).
<https://doi.org/10.1108/JTF-04-2020-0063>
- McGann, M., Murphy, M. P., & Whelan, N. (2020). Workfare redux? Pandemic unemployment, labour activation and the lessons of post-crisis welfare reform in Ireland. *International Journal of Sociology and Social Policy*, 40(9–10), 963–978.
<https://doi.org/10.1108/IJSSP-07-2020-0343>
- Nygaard, C. A., & Parkinson, S. (2021). Analysing the impact of COVID-19 on urban transitions and urban-regional dynamics in Australia*. *Australian Journal of Agricultural and Resource Economics*, 65(4), 878–899.
<https://doi.org/10.1111/1467-8489.12449>
- Piccarozzi, M., Silvestri, C., & Morganti, P. (2021). Covid-19 in management studies: A systematic literature review. *Sustainability (Switzerland)*, 13(7).
<https://doi.org/10.3390/su13073791>
- Remko, V. H. (2020). Research opportunities for a more resilient post-COVID-19 supply chain – closing the gap between research findings and industry practice. *International Journal of Operations and Production Management*, 40(4), 341–355. <https://doi.org/10.1108/IJOPM-03-2020-0165>
- Sapir, A., Buigues, P., & Jacquemin, A. (1993). European competition policy in manufacturing and services: A two-speed approach? *Oxford Review of Economic Policy*, 9(2), 113–132.
<https://doi.org/10.1093/oxrep/9.2.113>
- Sarkis, J. (2021). Supply chain sustainability: learning from the COVID-19 pandemic. *International Journal of Operations and Production Management*, 41(1), 63–73.
<https://doi.org/10.1108/IJOPM-08-2020-0568>
- Sharma, G. D., Thomas, A., & Paul, J. (2021). Reviving tourism industry post-COVID-19: A resilience-based framework. *Tourism Management Perspectives*, 37, 100786.
<https://doi.org/10.1016/j.tmp.2020.100786>
- Tyers, R., & Walker, A. (2016). Quantifying Australia’s “Three-Speed” boom. *Australian Economic Review*, 49(1), 20–43.
<https://doi.org/10.1111/1467-8462.12130>
- Vaishar, A., & Štátná, M. (2022). Impact of the COVID-19 pandemic on rural tourism in Czechia preliminary considerations. *Current Issues in Tourism*, 25(2), 187–191.
<https://doi.org/10.1080/13683500.2020.1839027>
- Xu, Z., Elomri, A., Kerbache, L., & el Omri, A. (2020). Impacts of COVID-19 on global supply chains: Facts and perspectives. *IEEE Engineering Management Review*, 48(3), 153–166. <https://doi.org/10.1109/EMR.2020.3018420>