

# **ECONOMICS JOURNALS' ENGAGEMENT IN THE PLANETARY EMERGENCY: A MISALLOCATION OF RESOURCES?**

APRIL 2021



economists for **future**

# Economics journals' engagement in the planetary emergency: a misallocation of resources?

By Sam Butler-Sloss<sup>1\*</sup> & Marc Beckmann<sup>2</sup>

**Abstract.** The planetary emergency is an intellectual and humanitarian challenge that urgently warrants a significant amount of research attention from the economics profession. Is this happening? To answer this question, we assess the number of articles in the top 300 economics journals that are about either (a) *climate change* and/or (b) natural capital, ecosystem services or biodiversity (*NEB*). We find that between 2000 to 2019, 71 per cent of journals have published under 1 per cent on *climate change* and 94 per cent under 1 per cent on *NEB*. This is evidence that, thus far, economists' response to the planetary emergency has been incommensurate with the magnitude and urgency of this crisis.

**About Economists for Future:** Economists for Future is an international initiative which aims to mobilise economists and their influence to help avert the climate and ecological crisis. On the international level, we run targeted campaigns and research. In Germany, Econ4Future German are building up a community of young economists to push this agenda forward in departments and institutions.

**Acknowledgements:** We would like to thank Rethinking Economics for their support, without which this paper would not have materialised, and the financial support of Partners for a New Economy and the KR Foundation. We would like to thank a few anonymous reviewers that provided feedback and the team of Economists for Future: Sonal Raghuvanshi, Kate Mason, Maria João Pimenta and Natalie Gubbay.

---

<sup>1</sup> Sam Butler-Sloss is a recent economics graduate from the University of Edinburgh.  
\*sbutlersloss@econ4future.org

<sup>2</sup> Marc Beckmann is a MSc Socio-Ecological Economics student at Vienna University of Economics and Business.

# 1. Introduction

The scale and speed of the global transformation required to reach an equitable post-carbon world is a challenge with no historical precedents. It calls for deep and rapid change across economic, financial, social and political systems. Achieving this will require inter alia great analytical and intellectual advances. We need to generate a better understanding of how to drive such change at such speed. Equally, we need a much richer understanding of how to enable all humans to prosper in a delicate symbiosis with the natural world. For this, we will have to bring the best of academia to the table – as quickly as possible. Economics, with all its breadth and plurality, has a critical role to play. We have long known that the ideas, theories and stories propagated by economists matter. In the context of the planetary emergency, this is no exception. The planetary crisis is an intellectual and humanitarian emergency that urgently warrants the mobilisation of the economics profession’s research.

Is this happening? The primary output of economists’ research is journal articles. Therefore, we think it is valuable to take stock and assess the extent to which the economics journals are publishing articles on the planetary emergency. That is the question that motivates this paper.

To address this question, we assess the number of articles in the top 300 economics journals that are about either (a) *climate change* and/or (b) natural capital, ecosystem services or biodiversity (*NEB*). We look at the numbers of articles in both categories on aggregate and for each journal, and we compare these figures to other subject areas in economics to gauge a sense of relative attention.

We find that between 2000 to 2019:

- 71% of journals have published under 1% on *climate change* and 94% under 1% on *NEB*
- The median percentage of articles a journal publishes on *climate change* is 0.4%; that is, one article in every 250
- The median percentage of articles for *NEB* is 0.0%
- Comparatively, for example, 58 out of the top 100 journals have published an equal or greater number of articles on *marriage* than *climate change*
- 85 of the top 100 journals have published an equal or greater number of articles on *sport* than *NEB*

The rest of the report is organised as follows. Section 2 reviews the methodology. Section 3 documents the results. Section 4 begins a discussion and outlines some limitations. Section 6 concludes with an action.

## 2. Methodology

We assess the keywords, abstracts and titles of the 300 highest-ranking economics journals, using Web of Science to execute this review. In the rest of this section, we describe the methodology, including the chosen search words, time period and journals.

**The 300 journals used.** The journal ranking used is the meta-ranking developed by Wohlrabe (2016). This was seen as an attractive ranking system as it amalgamated three of the most commonly used journal ranking databases (Google Scholar, RePEc and Web of Knowledge). A full list of the journals we assessed is in the Appendix.

**The categorisation and word searches undertaken.** Scientists widely consider climate change to be one of the most pressing and consequential planetary overshoots (Steffen et al., 2015; Ripple et al., 2019). Hence, to assess it, we include the following string of words in the search function: climate change, global warming, carbon and greenhouse gases (/GHG). Another of the most pressing and consequential planetary overshoots is natural capital and biodiversity loss (ibid.), integrated into the planetary boundary framework primarily as land-system change and biosphere integrity. The words we include in this search function are natural capital, ecosystem service(/s) and biodiversity. All words were translated into the eight additional languages that are represented in the top 300 journals.

**Defining whether a journal article is “about” *climate change* or *natural capital, ecosystem services and biodiversity (NEB)*.** We assess whether the above words appear in the title, abstract or keywords of the articles in each given journal. We also create a third category for articles that appear in both categories.

**The time period.** The time period under review is from 2000 to 2019. We would have liked to start earlier, particularly given a strong understanding of human-induced climate change predates much earlier than 2000, however the data coverage in Web of Science for such a wide range of journals is weaker in the 1990s.

**Word search execution.** The search function is performed using Web of Science.

## 3. Results

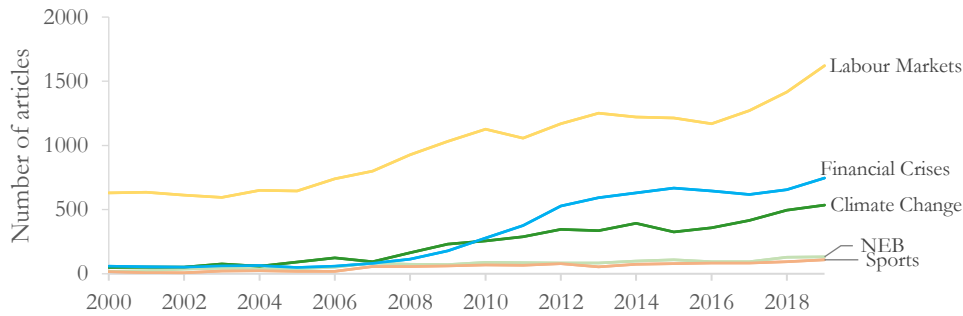
We break the results down into three sections that look at the journals on aggregate, individually and then by the top 20.

### 3.1 Looking at the top 300 journals on aggregate

**Climate change articles have risen, with a noticeable increase from 2007 onwards.** When you look at the sample 300 journals on aggregate and compared this to other areas in economics, the number of articles on *climate change* is not insignificant. Figure 1 documents several comparisons, showing a topic such as *financial crises* gaining marginally more attention. This result is largely explained by the fact that some of the most frequently publishing

journals happen to be environmentally-oriented.<sup>3</sup> Hence, this only provides a limited picture of the discipline’s research on climate change: it does not answer how widely this is being researched across the discipline. We come back to this shortly.

**Figure 1.** Articles for different subjects



Source: Web of Sciences. Notes: specification of sports, financial crises and labour markets provided in the appendix.

**The number of articles on natural capital, ecosystem services and biodiversity (*NEB*) are much smaller than *climate change* and have not shown the same kind of increase over the last decade.** As shown in Figure 1, the amount of research on *NEB* is akin to the amount of research on *sports*. Since 2000, *NEB* articles among the top 300 journals accounted for 0.6% of total articles. This number halves if you do not include the journal *Ecological Economics*.

### 3.2 Looking at journals individually

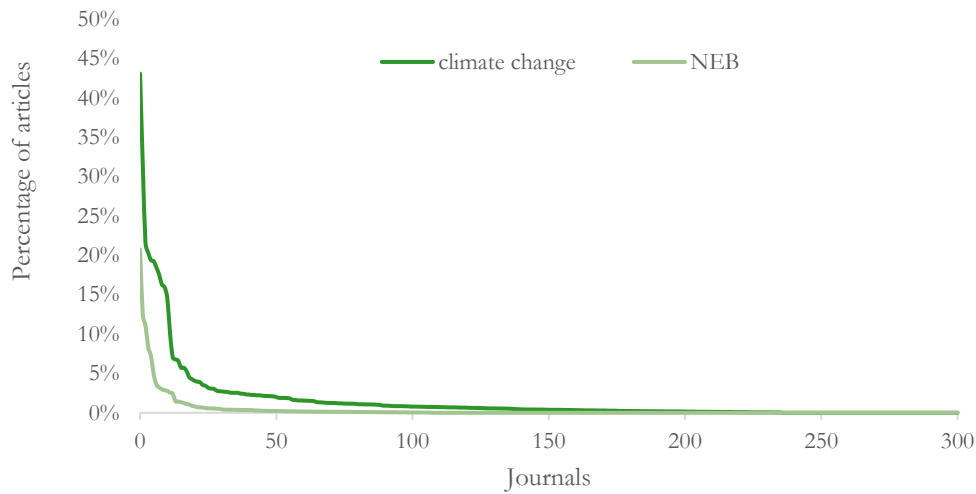
**Looking at individual journals' percentage of articles on *climate change* and *NEB*, rather than aggregate numbers, presents a different picture.** Figure 2 plots the percentage of *climate change* and *NEB* articles for the 300 journals. The median percentage of articles for each journal on *climate change* and *NEB* is 0.4% and 0% respectively. And 71% of journals have published under 1% on *climate change* and 94% under 1% on *NEB*.

Comparatively, for example, 58 out of the top 100 have published an equal or greater number of articles on *marriage* than *climate change*.<sup>4</sup> This is not to imply research on marriage is unimportant but purely to illustrate a comparison. Similarly, 85 of the top 100 have published an equal or greater number of articles on *sport* than *NEB*.

<sup>3</sup> For example, the journal *Ecological Economics* accounts for 1.5% of recorded articles in the sample of journals and the given time period.

<sup>4</sup> Words search provided in the appendix.

**Figure 2.** Percentage of articles on *climate change* and *NEB*, by journal



Source: Web of Sciences; authors calculations. Notes: *NEB* and *climate change* overlap included in *NEB* figures.

### 3.3 Looking at the leading journals: leaders or laggards?

**The 20 highest-ranking journals have published little on *climate change* and even less on *NEB*.** Figure 3 documents the results for the top 20 journals. As a comparison, 17 of the top 20 have published the same or more on *marriage* than *climate change*.

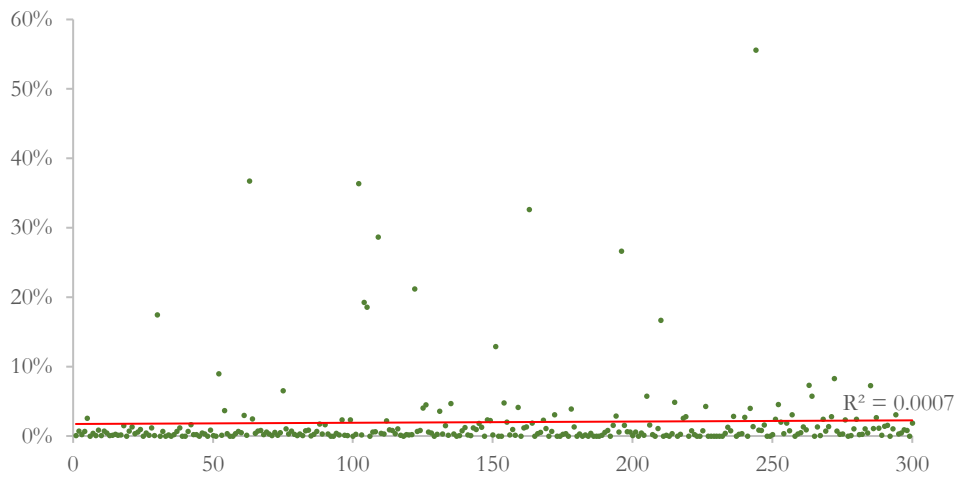
**Figure 3.** Percentage of articles on *climate change* and *NEB*, the 20 highest ranking journals



Source: Web of Sciences; authors calculations. Note: Wohlrade's (2016) journal rankings; graph revised

**The ranking of a journal and its percentage of articles on *climate change* and *NEB* have no significant correlation.** The most prestigious journals in economics are publishing little on both these topics, as seen in Figure 3, but are they performing noticeably worse? Figure 4 shows no significant relationship between the percentage of articles on *climate change* and *NEB* (combined) and the ranking of the journal. We see a low prioritisation of *climate change* and *NEB* throughout the sample of 300 journals.

**Figure 4.** Percentage of articles on *climate change* and *NEB*, by journal ranking



Source: Web of Sciences; authors calculations. Notes: *NEB* and *climate change* figures combined; Wohlrade's (2016) journal rankings

## 4. Discussion and limitations

### 4.1 Discussion

**Embracing a discipline-wide response to the climate and ecological crisis.** In the results, we trace the concentration of articles on *climate change* and, to an even larger extent, *NEB* to a small number of (environmental) journals. We believe these results show that economists are not seizing the intellectual opportunity. Having a more impactful analytical contribution to the global response to the planetary emergency will require novel contributions and collaborations from right across the discipline (and, of course, beyond). Perspectives from political economy, behavioural, racial, historical, computational and complexity economic analyses, will all be important – to name only a few.

**Seeing the planetary emergency as more than emissions.** Climate change is not the only very consequential destruction of the natural world: earth scientists regard ecosystem collapse and biodiversity loss as similarly dangerous and urgent (e.g. Ripple et al., 2019). This is not reflected in economists' allocation of their research.

**Becoming more responsive to scientific advances in climate and earth sciences.** By 1992, climate science was clear enough for 154 states to

announce anthropogenic global warming was a significant global threat. Yet it was not until 2007 that the profession witnessed the beginning of significant growth in climate change articles. This represents upwards of a 15-year time lag for widespread scientific consensus to diffuse beyond disciplinary boundaries – a kind of timeframe that the planetary emergency does not grant us. Scientists are loudly sounding the alarms about the devastating effects of ecosystem collapse and biodiversity loss (e.g. Ripple et al., 2019). Are we going to have to wait another decade until economists integrate this existential threat into their research?

**Paying greater attention to long term risks; attention to the preventative, not the palliative.** The trend in articles on financial crises, shown in Figure 1, shows little attention pre-crisis and significant interest post-crisis. This example of the *ex-post* nature of economists' attention is a concern: there is no *ex-post* on a dead planet.

**Leading journals seizing the opportunity.** The economics profession does not have a central planner. But the most prestigious journals in the profession would be as close as it comes. They act – to many – as the profession's North Star: the destination to aim for; the best in class to follow. With career incentives tailored around publishing in these top journals, economists are more likely to focus on issues and methods that conform with these journal editors' preferences. And the editors' preferences are conveniently *revealed* in the form of the previous articles published in that given journal. This results in a highly path-dependent process: intellectual continuity prevails. Yet, intellectual advances and re-evaluations – of the kind we argue are necessary – are, by definition, deviations. In this regard, our view is that an intervention from editorial boards is needed, echoing the conclusion of Stern and Oswald (2019). We revisit this in the conclusion.

## 4.2 Limitations

**The classifications and categories are simple and debatable.** Nonetheless, we hope readers will still view the classifications as being sufficiently broad to pick up relevant articles while specific enough to not lose focus.

**There are small gaps, and likely small errors, in the Web of Science database.** For example, a small percentage of papers on Web of Science do not have keywords or abstracts recorded for them. This might cause a small downward bias in the number of articles across all categories. However, performing the word search across titles, abstracts and keywords will help mitigate this bias. A small percentage of journals are either founded during the studied time period or appear in the database during it. This means that their percentage figures are drawn from a shorter time span. Given that articles on *climate change* and *NEB* are rising with time, this will likely produce a small upward bias.

**How much does quantity matter?** The profession needs both a qualitative (how it engages) and a quantitative (how much it engages) shift in its research on the planetary emergency. This paper, however, only considers the quantitative side: we are not addressing how well economics articles are addressing these issues. We view both as necessary parts of economists'



response and do not make a judgement here on the relative importance of either.

## 5. Conclusion

This research has found that 71 per cent of journals have published under 1 per cent on *climate change* and 94 per cent under 1 per cent on *NEB*. This is evidence that, thus far, economists' response to the planetary emergency has been incommensurate with the magnitude and urgency of this crisis.

If the economics profession is going to fulfil its potential in helping to arrest the planetary emergency, it is going to need, as a minimum, to make novel contributions and form new collaborations right across the discipline (and, of course, beyond). The planetary emergency must be recognised as highly relevant to a much wider range of economic inquiries. It is in this context that the results of this research are most concerning.

Yet the challenge this moment presents runs far deeper still: it requires a qualitative shift in its research (how economics papers engage with the planetary emergency) as well as a quantitative shift (how many economics papers engage with the planetary emergency). It is our view that truly getting to grips with the planetary emergency asks, *inter alia*, for the economics profession to see the economy as "out-of-equilibrium" and embedded in the biosphere. It must place the distribution of resources, costs and opportunities across space and time (and the ethics involved in these processes) at the centre of its economic analyses. It must update its conception and measurement of economic progress and become much more responsive to influences from outside its own disciplinary boundary. One thing is certain: the planetary emergency will be a major driver in modernising and energising economic thought in the twenty-first century. The question is "by when?"

Of course, there is a moral dimension to add to the equation: history, no doubt, will judge indifference from the powerful harshly. And given the influence that economists' ideas have, we would classify them in that powerful bracket. But more rudimentarily, there is simply the responsibility to practice good academia: to constantly question how well one's models, theories and even paradigm explain a world in flux. As the planet burns, frequently omitting nature from economic analyses does not strike us as doing that.

Is our conclusion too critical? We would like to find out. Off the back of this, we will be approaching the five highest-ranking journals that have so far done the least to ask them if and how they see the situation differently. What is preventing them from dedicating more articles to the planetary emergency? Why do they not perceive climate and ecological issues as relevant to a wider range of economic inquiries? That letter can be found [here](#). If you would like to take part in the conversation, send us an [email](#).

## 6. Bibliography

- Bolin, B. (2007). A history of the science and politics of climate change: the role of the Intergovernmental Panel on Climate Change.
- Ripple, W., Wolf, C., Newsome, T., Barnard, P., Moomaw, W., & Grandcolas, P. (2019). World scientists' warning of a climate emergency. *BioScience*.
- Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., ... & Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, *347*(6223).
- Stern, N., & Oswald, A. (2019). Why does the economics of climate change matter so much, and why has the engagement of economists been so weak?.
- Wohlrabe, K. (2016). Taking the temperature: A meta-ranking of economics journals.

## 7. Appendix

### A1. Journal sample and ranking

1. Quarterly Journal of Economics
2. Journal of Political Economy
3. Econometrica
4. American Economic Review
5. Journal of Economic Literature
6. Journal of Finance
7. Review of Economic Studies
8. Journal of Financial Economics
9. Journal of Economic Perspectives
10. Journal of Monetary Economics
11. Review of Economics and Statistics
12. Economic Journal
13. Journal of Econometrics
14. Journal of Economic Theory
15. Brookings Papers on Economic Activity
16. Journal of Labor Economics
17. RAND Journal of Economics
18. Journal of Public Economics
19. Review of Financial Studies
20. Journal of Economic Growth
21. European Economic Review
22. Journal of International Economics
23. International Economic Review
24. Journal of the European Economic Association
25. Journal of Business & Economic Statistics
26. Journal of Development Economics
27. Journal of Law & Economics
28. Economic Policy
29. Journal of Money, Credit and Banking
30. Journal of Environmental Economics and Management
31. Journal of Human Resources
32. Journal of Urban Economics
33. Journal of Accounting & Economics
34. Journal of Health Economics
35. Games and Economic Behavior
36. Economics Letters
37. Journal of Economic Behavior & Organization
38. Oxford Economic Papers-New Series
39. Journal of Industrial Economics
40. Journal of Law, Economics & Organization
41. Journal of Economic Dynamics & Control
42. Scandinavian Journal of Economics
43. Journal of Applied Econometrics
44. Journal of Banking & Finance
45. Oxford Bulletin of Economics and Statistics
46. Economic Theory
47. Economica
48. Journal of Financial and Quantitative Analysis
49. World Bank Economic Review
50. International Journal of Industrial Organization
51. Econometric Theory
52. Oxford Review of Economic Policy
53. Public Choice
54. World Development
55. Economic Inquiry
56. Labour Economics
57. Canadian Journal of Economics
58. Review of Economic Dynamics
59. American Economic Journal Applied Economics
60. Regional Science and Urban Economics
61. American Journal of Agricultural Economics
62. Journal of Economics and Management Strategy
63. Ecological Economics
64. Journal of Economic Surveys
65. Journal of Population Economics
66. Journal of Risk and Uncertainty
67. Applied Economics
68. Journal of Economic History
69. Experimental Economics
70. Econometrics Journal
71. Journal of Comparative Economics
72. International Journal of Forecasting
73. Kyklos
74. Journal of Economic Geography
75. Land Economics
76. International Tax and Public Finance
77. American Economic Journal - Macroeconomics
78. Cambridge Journal of Economics
79. Scottish Journal of Political Economy
80. Journal of Mathematical Economics
81. Southern Economic Journal
82. Review of Industrial Organization
83. Empirical Economics
84. Journal of Regional Science
85. Health Economics
86. Journal of Macroeconomics
87. Journal of Evolutionary Economics
88. Economic Geography
89. Explorations in Economic History
90. Journal of Regulatory Economics
91. Review of Income and Wealth
92. Economic Development and Cultural Change
93. Journal of Institutional and Theoretical Economics – Zeitschrift für die Gesamte Staatswissenschaft
94. Review of World Economics
95. Mathematical Finance
96. World Bank Research Observer
97. Journal of Risk and Insurance
98. Pharmacoeconomics
99. Cesifo Economic Studies
100. Small Business Economics
101. Industrial and Corporate Change
102. Review of Environmental Economics and Policy
103. Econometric Reviews
104. Energy Economics
105. Energy Journal
106. International Review of Law and Economics
107. Applied Economics Letters
108. Economic Record

109. Environmental & Resource Economics
110. Manchester School
111. Finanzarchiv
112. Economic Modelling
113. Journal of Policy Analysis and Management
114. Journal of Economics
115. Journal of Economic Psychology
116. World Economy
117. Open Economies Review
118. International Journal of Game Theory
119. Information Economics and Policy
120. Real Estate Economics
121. Journal of Post Keynesian Economics
122. Resource and Energy Economics
123. Journal of the Japanese and International Economies
124. Journal of Productivity Analysis
125. Agricultural Economics
126. Food Policy
127. Journal of Development Studies
128. Developing Economies
129. Economics of Education Review
130. Macroeconomic Dynamics
131. European Review of Agricultural Economics
132. Journal of Economic Education
133. Journal of Transport Economics and Policy
134. Social Choice and Welfare
135. Journal of Agricultural Economics
136. Economics of Transition
137. JCMS-Journal of Common Market Studies
138. Journal of Real Estate Finance and Economics
139. Fiscal Studies
140. China Economic Review
141. Journal of Housing Economics
142. Insurance Mathematics & Economics
143. Annual Review of Economics
144. Contemporary Economic Policy
145. Journal of African Economies
146. Economics and Philosophy
147. Federal Reserve Bank of St. Louis Review
148. Journal of Policy Modeling
149. Review of Development Economics
150. Feminist Economics
151. Australian Journal of Agricultural and Resource Economics
152. Theory and Decision
153. Quantitative Finance
154. Canadian Journal of Agricultural Economics
155. Journal of Agricultural and Resource Economics
156. Japanese Economic Review
157. Economic Development Quarterly
158. Economic History Review
159. American Economic Journal: Economic policy
160. Japan and the World Economy
161. Journal of Applied Economics
162. Portuguese Economic Journal
163. Journal of Forest Economics
164. Bulletin of Indonesian Economic Studies
165. QME-Quantitative Marketing and Economics
166. Jahrbücher für Nationalökonomie und Statistik (Journal of Economics and Statistics)
167. American Journal of Economics and Sociology
168. Australian Economic Review
169. Economics & Human Biology
170. Annual Review of Financial Economics
171. Journal of Economic Issues
172. Geneva Risk and Insurance Review
173. Defence and Peace Economics
174. Journal of Media Economics
175. Economist-Netherlands
176. Journal of Economic Policy Reform
177. Eastern European Economics
178. Revue d Economie Politique
179. Revista de Economia Aplicada
180. Post-Communist Economies
181. South African Journal of Economics
182. Hitotsubashi Journal of Economics
183. Pacific Economic Review
184. American Economic Journal - Microeconomics
185. Studies in Nonlinear Dynamics and Econometrics
186. European Journal of the History of Economic Thought
187. Journal of Real Estate Research
188. History of Political Economy
189. Review of International Economics
190. European Journal of Political Economy
191. Trimestre Economico
192. Work Employment and Society
193. Emerging Markets Finance and Trade
194. China & World Economy
195. German Economic Review
196. Annual Review of Resource Economics
197. Journal of Public Economic Theory
198. Tijdschrift voor Economische en Sociale Geografie
199. Australian Economic History Review
200. Politicka Ekonomie
201. Cliometrica
202. Journal of Financial Econometrics
203. Journal of Cultural Economics
204. Journal of Empirical Finance
205. Asian Economic Policy Review
206. European Journal of Law and Economics
207. Review of Finance
208. International Finance
209. American Law and Economics Review
210. Economic Systems Research
211. B. E. Journal of Macroeconomics
212. European Journal of Health Economics
213. European Review of Economic History
214. Journal of Economic Inequality
215. Marine Resource Economics
216. Review of Network Economics
217. Metroeconomica
218. B. E. Journal of Economic Analysis & Policy
219. Computational Economics
220. B. E. Journal of Theoretical Economics
221. Australian Economic Papers
222. Industry and Innovation

223. Bulletin of Economic Research  
224. Journal of Financial Stability  
225. Journal of International Trade & Economic Development  
226. World Trade Review  
227. Review of Economic Design  
228. International Journal of Health Care Finance & Economics  
229. Review of Economics of the Household  
230. Journal of Sports Economics  
231. Econ Journal Watch  
232. Journal of Economic Interaction and Coordination  
233. Asian Economic Journal  
234. Asian Economic Papers  
235. Review of Derivatives Research  
236. Recherches Economiques de Louvain-Louvain Economic Review  
237. Journal of Pension Economics & Finance  
238. Prague Economic Papers  
239. Global Economic Review  
240. Asian-Pacific Economic Literature  
241. Revista de Historia Economica  
242. Singapore Economic Review  
243. Economic and Social Review  
244. International Environmental Agreements-Politics Law and Economics  
245. Baltic Journal of Economics  
246. Panoeconomicus  
247. Spatial Economic Analysis  
248. Economia Chilena  
249. International Journal of Economic Theory  
250. International Review of Economics & Finance  
251. Amfiteatru Economic  
252. Review of International Organizations  
253. National Tax Journal  
254. Annals of Economics and Finance  
255. Economy and Society  
256. Regional Studies  
257. Economia Politica  
258. IMF Economic Review  
259. International Labour Review  
260. Papers in Regional Science  
261. Review of International Political Economy  
262. Cambridge Journal of Regions Economy and Society  
263. Applied Economic Perspectives and Policy  
264. New Political Economy  
265. Post-Soviet Affairs  
266. E & M Ekonomika a Management  
267. Value in Health  
268. International Journal of Transport Economics  
269. Independent Review  
270. Transformations in Business & Economics  
271. South African Journal of Economic and Management Sciences  
272. Futures  
273. Estudios de Economia  
274. Astin Bulletin  
275. Ekonomicky Casopis  
276. Journal of World Trade  
277. Theoretical Economics  
278. Europe-Asia Studies  
279. Revista de Economia Mundial  
280. Journal of Agrarian Change  
281. Emerging Markets Review  
282. North American Journal of Economics and Finance  
283. Investigación Económica (Mexico)  
284. Agribusiness  
285. Economics-The Open Access Open-Assessment E-Journal  
286. Series-Journal of the Spanish Economic Association  
287. Review of Radical Political Economics  
288. Journal of Institutional Economics  
289. Revue d Etudes Comparatives Est-Quest  
290. Technological and Economic Development of Economy  
291. Journal of the Asia Pacific Economy  
292. Economics & Politics  
293. Cepal Review  
294. Journal of Australian Political Economy  
295. Journal of Behavioral Finance  
296. Zbornik Radova Ekonomskog Fakulteta u Rijeci- Proceedings of  
297. Journal of Business Economics and Management  
298. Ekonomska Istrazivanja-Economic Research  
299. Economia Mexicana-Nueva Epoca  
300. Zeitschrift für Wirtschaftsgeographie

**A2.** Additional word search details.

Financial crises: Financial cris\*s, financial crash, stock market crash, financial bubble\*, financial panic, banking cris\*s, Great recession.

Sport: football, soccer, NFL, basketball, icehockey, tennis, golf, boxing, gymnastics, sport.

Labour markets: employment/unemployment, labo\*r market\*

*Where \* represents any or no character.*

**Revisions.** 23/04/21: error to Figure 3 revised.

Supported by:

