CTEI Working Papers

*decompr*: Global Value Chain decomposition in R[[1]](#footnote-1)

By Bastiaan Quast[[2]](#footnote-2) and Victor Kummritz[[3]](#footnote-3)

Abstract

Global Value Chains have become a central unit of analysis in research on international trade. However, the complex matrix transformations at the basis of most Value Chain indicators still constitute a significant entry barrier to the field. The R package decompr solves this problem by implementing the algorithms for the analysis of Global Value Chains as R procedures, thereby simplifying the decomposition process. Two methods for gross export flow decomposition using Inter-Country Input-Output tables are provided. The first method concerns a decomposition based on the classical Leontief (1936) insight. It derives the value added origins of an industry's exports by source country and source industry, using easily available gross trade data. The second method is the Wang-Wei-Zhu algorithm, which splits bilateral gross exports into 16 value added components. These components can broadly be divided into domestic and foreign value added in exports. Using the results of the two decompositions, decompr provides a set of Global Value Chain indicators, such as the now standard Vertical Specialisation ratio. This article summarises the methodology of the algorithms, describes the format of the input and output data, and exemplifies the usefulness of the two methods on the basis of a simple example data set.

|  |
| --- |
|  |

|  |
| --- |
|  |

|  |
| --- |
| Centre for Trade and Economic Integration (CTEI)  The Centre for Trade and Economic Integration fosters world-class multidisciplinary scholarship aimed at developing solutions to problems facing the international trade system and economic integration more generally. It works in association with public sector and private sector actors, giving special prominence to Geneva-based International Organisations such as the WTO and UNCTAD. The Centre also bridges gaps between the scholarly and policymaking communities through outreach and training activities in Geneva.  [www.graduateinstitute.ch/ctei](http://www.graduateinstitute.ch/ctei) |

1. We would like to thank Jean-Louis Arcand, Richard Baldwin, and Nicolas Berman for their support and advice. This paper and the decompr package are produced as part of projects supported by the Swiss National Science Foundation. [↑](#footnote-ref-1)
2. [bastiaan.quast@graduateinstitute.ch](mailto:bastiaan.quast@graduateinstitute.ch). Graduate Institute of International and Development Studies, Geneva. [↑](#footnote-ref-2)
3. [victor.kummritz@graduateinstitute.ch](mailto:victor.kummritz@graduateinstitute.ch). Graduate Institute of International and Development Studies, Geneva. [↑](#footnote-ref-3)