

# Package: gvcAnalyzer (via r-universe)

June 8, 2026

**Type** Package

**Title** Global Value Chain Decomposition for Value-Added Trade

**Version** 0.1.1

**Description** Provides tools for decomposing Global Value Chain (GVC) participation and value-added trade. It implements the frameworks proposed by Borin and Mancini (2023) 10.1080/09535314.2022.2153221> for source-based and sink-based decompositions, and by Borin, Mancini, and Taglioni (2025) 10.1093/wber/lhaf017> for tripartite and output-based GVC measures.

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**Encoding** UTF-8

**LazyData** true

**Depends** R (>= 4.0.0)

**Imports** Matrix, methods, stats

**Suggests** knitr, rmarkdown, testthat (>= 3.0.0)

**VignetteBuilder** knitr

**Roxygen** list(markdown = TRUE)

**RoxygenNote** 7.3.3

**Config/testthat/edition** 3

**Repository** <https://ballavbabu.r-universe.dev>

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bm\_2023\_bilateral\_pure

*BM\_2023 pure bilateral decomposition of exports from s to r*

---

### Description

BM\_2023 pure bilateral decomposition of exports from s to r

### Usage

```
bm_2023_bilateral_pure(io, s, r)
```

### Arguments

io	A bm_io object.
s	Exporter country (name or index).
r	Importer country (name or index).

### Value

A data frame with the pure bilateral value-added decomposition.

---

bm\_2023\_bilateral\_pure\_all

*BM\_2023 pure bilateral (/sr) decomposition for all pairs*

---

**Description**

BM\_2023 pure bilateral (/sr) decomposition for all pairs

**Usage**

bm\_2023\_bilateral\_pure\_all(io)

**Arguments**

io                    A bm\_io object.

**Value**

Data frame of pure bilateral decomposition for all pairs.

---

bm\_2023\_bilateral\_sink

*BM\_2023 sink-based bilateral decomposition of exports from s to r*

---

**Description**

BM\_2023 sink-based bilateral decomposition of exports from s to r

**Usage**

bm\_2023\_bilateral\_sink(io, s, r)

**Arguments**

io                    A bm\_io object.  
s                     Exporter country (name or index).  
r                     Importer country (name or index).

**Value**

A data frame with the sink-based value-added decomposition.

bm\_2023\_bilateral\_sink\_all

*BM\_2023 sink-based bilateral decomposition for all pairs*

---

**Description**

BM\_2023 sink-based bilateral decomposition for all pairs

**Usage**

```
bm_2023_bilateral_sink_all(io)
```

**Arguments**

io                    A bm\_io object.

**Value**

Data frame of sink-based decomposition for all pairs.

---

bm\_2023\_bilateral\_source

*BM\_2023 source-based bilateral decomposition of exports from s to r*

---

**Description**

BM\_2023 source-based bilateral decomposition of exports from s to r

**Usage**

```
bm_2023_bilateral_source(io, s, r)
```

**Arguments**

io                    A bm\_io object.  
s                     Exporter country (name or index).  
r                     Importer country (name or index).

**Value**

A data frame with the source-based value-added decomposition.

---

`bm_2023_bilateral_source_all`*BM\_2023 source-based bilateral decomposition for all pairs*

---

**Description**

BM\_2023 source-based bilateral decomposition for all pairs

**Usage**

```
bm_2023_bilateral_source_all(io)
```

**Arguments**

`io` A `bm_io` object.

**Value**

Data frame of source-based decomposition for all pairs.

---

`bm_2023_exporter_total`*BM\_2023 exporter-perspective decomposition of total exports of s*

---

**Description**

BM\_2023 exporter-perspective decomposition of total exports of s

**Usage**

```
bm_2023_exporter_total(io, s)
```

**Arguments**

`io` A `bm_io` object.  
`s` Exporter country (name or index).

**Value**

A data frame with the exporter-total decomposition.

bm\_2023\_exporter\_total\_all

*BM\_2023 exporter totals for all countries*

---

**Description**

BM\_2023 exporter totals for all countries

**Usage**

bm\_2023\_exporter\_total\_all(io)

**Arguments**

io                    A bm\_io object.

**Value**

Data frame of exporter totals for all countries.

---

bm\_2025\_output\_components

*BM\_2025 output-based GVC components by exporter*

---

**Description**

BM\_2025 output-based GVC components by exporter

**Usage**

bm\_2025\_output\_components(io)

**Arguments**

io                    A bm\_io object.

**Value**

Data frame with output-based GVC components.

---

bm\_2025\_output\_components\_sector

*BM 2025 output components by country and sector*

---

**Description**

BM 2025 output components by country and sector

**Usage**

bm\_2025\_output\_components\_sector(io)

**Arguments**

io                    A bm\_io object.

**Value**

Data frame with sectoral output components.

---

bm\_2025\_output\_measures

*BM\_2025 output-based GVC participation indicators*

---

**Description**

BM\_2025 output-based GVC participation indicators

**Usage**

bm\_2025\_output\_measures(io)

**Arguments**

io                    A bm\_io object.

**Value**

Data frame with output-based GVC participation measures.

---

bm\_2025\_output\_measures\_sector

*BM 2025 output participation measures by country and sector*

---

**Description**

BM 2025 output participation measures by country and sector

**Usage**

bm\_2025\_output\_measures\_sector(io)

**Arguments**

io                    A bm\_io object.

**Value**

Data frame with sectoral GVC measures.

---

bm\_2025\_trade\_exporter

*BM\_2025 exporter-level GVC trade totals*

---

**Description**

BM\_2025 exporter-level GVC trade totals

**Usage**

bm\_2025\_trade\_exporter(io)

**Arguments**

io                    A bm\_io object.

**Value**

Data frame of exporter totals.

---

`bm_2025_trade_measures`*BM\_2025 trade-based GVC participation indicators*

---

**Description**

BM\_2025 trade-based GVC participation indicators

**Usage**

```
bm_2025_trade_measures(io)
```

**Arguments**

`io`                    A `bm_io` object.

**Value**

Data frame of trade-based indicators.

---

`bm_2025_tripartite_trade`*BM\_2025 tripartite GVC trade decomposition for one pair (s,r)*

---

**Description**

BM\_2025 tripartite GVC trade decomposition for one pair (s,r)

**Usage**

```
bm_2025_tripartite_trade(io, s, r)
```

**Arguments**

`io`                    A `bm_io` object.  
`s`                     Exporter country (name or index).  
`r`                     Importer country (name or index).

**Value**

Data frame for the pair (s,r).

---

 bm\_2025\_tripartite\_trade\_all

*BM\_2025 tripartite GVC trade decomposition for all pairs*


---

**Description**

BM\_2025 tripartite GVC trade decomposition for all pairs

**Usage**

bm\_2025\_tripartite\_trade\_all(io)

**Arguments**

io                    A bm\_io object.

**Value**

Data frame for all pairs.

---

 bm\_build\_io

*Build a bm\_io object from IO table blocks*


---

**Description**

Build a bm\_io object from IO table blocks

**Usage**

bm\_build\_io(Z, Y, VA, X, countries, sectors)

**Arguments**

Z                    Intermediate demand matrix (GN x GN).  
 Y                    Final demand matrix. Can be (GN x G) OR (GN x (G \* FD\_categories)).  
 VA                   Value added. Can be a vector (length GN) or matrix (Rows x GN).  
 X                    Output vector (length GN).  
 countries           Character vector of country names/codes (length G).  
 sectors             Character vector of sector names/codes (length N).

**Value**

An object of class "bm\_io".

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bm_get_e_sr	<i>Exports from s to r (sectoral)</i>
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**Description**

Exports from s to r (sectoral)

**Usage**

```
bm_get_e_sr(io, exporter, importer)
```

**Arguments**

io	bm_io object.
exporter	Exporter country (name or index).
importer	Importer country (name or index).

**Value**

Numeric vector of exports.

---

bm_get_e_star	<i>Total exports of s to all foreign destinations</i>
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---

**Description**

Total exports of s to all foreign destinations

**Usage**

```
bm_get_e_star(io, exporter)
```

**Arguments**

io	bm_io object.
exporter	Exporter country (name or index).

**Value**

Numeric vector of total exports.

---

**bm\_toy\_data***Toy 4-country, 3-sector IO table for bmGVC*

---

**Description**

A small multi-country input–output data set used in bmGVC examples and vignettes. It contains four countries (China, India, Japan, ROW) and three sectors (Primary, Manufacturing, Service).

**Format**

**bm\_toy\_Z** numeric matrix 12 x 12

**bm\_toy\_Y** numeric matrix 12 x 4

**bm\_toy\_VA** numeric vector of length 12

**bm\_toy\_X** numeric vector of length 12

**bm\_toy\_countries** character vector of length 4

**bm\_toy\_sectors** character vector of length 3

**Details**

The data are stored in six objects:

- **bm\_toy\_Z**: 12 x 12 intermediate demand matrix
- **bm\_toy\_Y**: 12 x 4 final demand matrix
- **bm\_toy\_VA**: length-12 value-added vector
- **bm\_toy\_X**: length-12 gross output vector
- **bm\_toy\_countries**: character vector of length 4
- **bm\_toy\_sectors**: character vector of length 3

The ordering of industries is (China P,M,S; India P,M,S; Japan P,M,S; ROW P,M,S).

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