

# Indonesia in the Context of GVCs

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22 October 2019

Yangon, Myanmar



# Outline

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## III. Indonesia's Participation, Position, and Specialization in Global Value Chains

GVC Participation, Position in GVCs: Upstreamness, Specialization in GVCs: Revealed Comparative Advantage

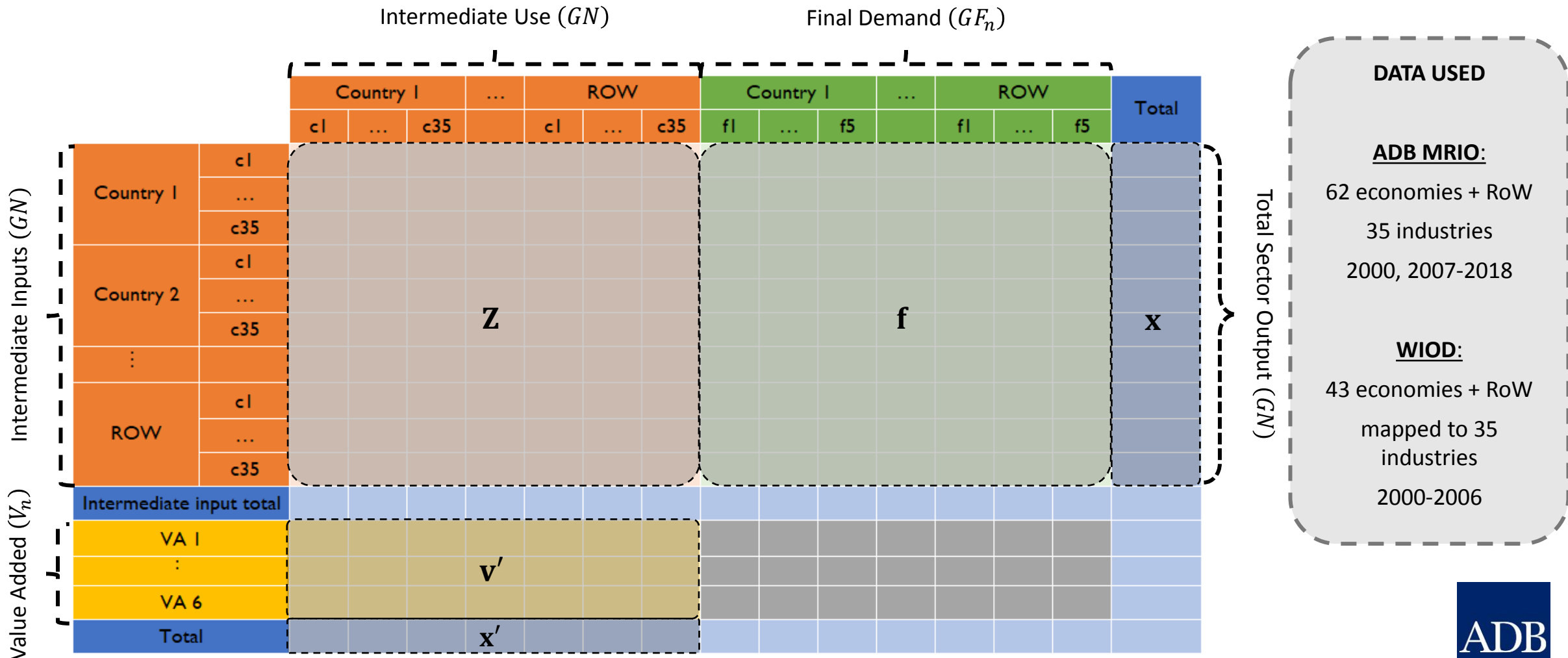
## IV. Summary and Conclusion

# Data and Methodology

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ADB Multi-regional Input-Output Tables and the World Input-Output Database

# A Stylized Representation of a Multi-Regional Input-Output Table



## Some Concepts and Methodologies Used

- GVC Income (Timmer et al., 2013)
- Exports Decomposition into Value-Added Terms (Wang, Wei, and Zhu, 2018)
- GVC Participation (Wang, Wei, Yu, and Zhu, 2014)
- Upstreamness (Antràs and Chor, 2013 and 2018; Fally, 2012)
- Revealed Comparative Advantage (Balassa, 1965; Wang, Wei, and Zhu, 2018)

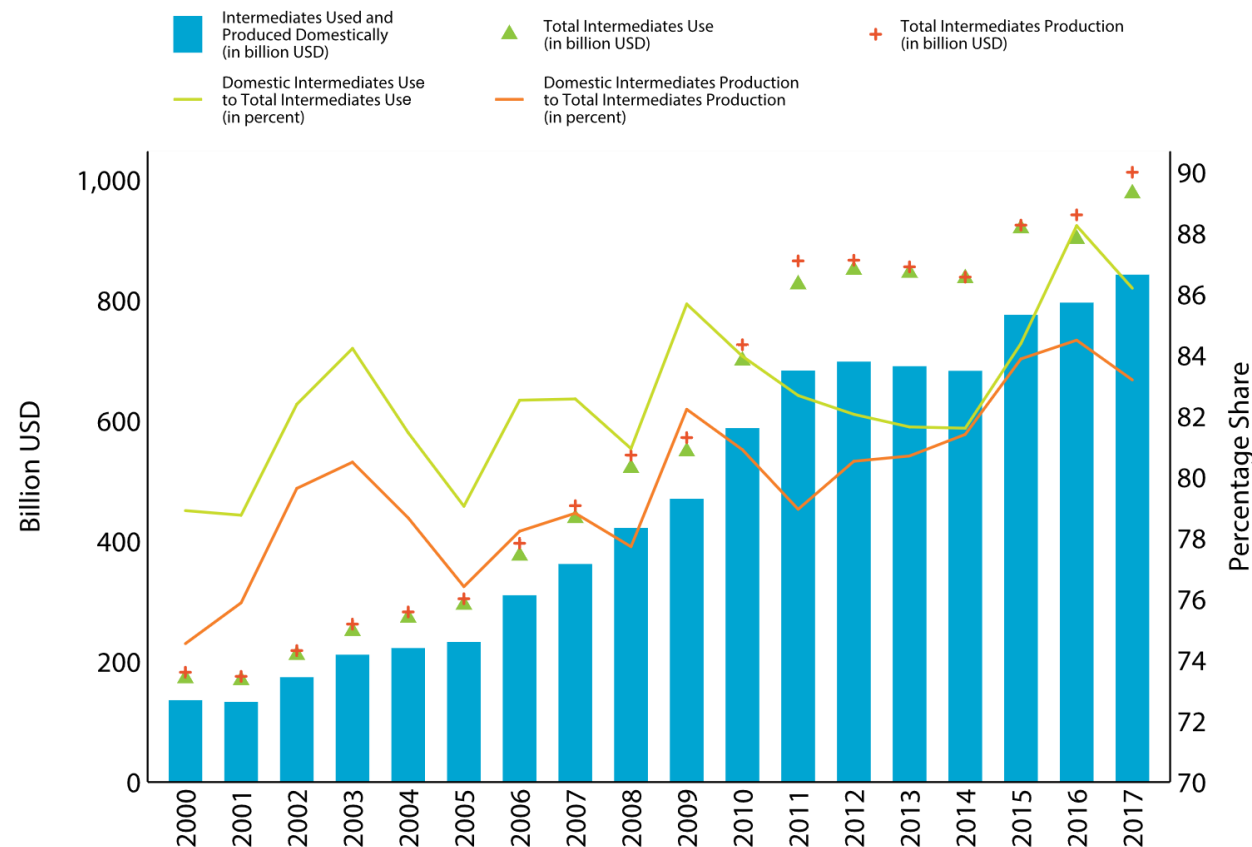
# Indonesia's Production and Value-Added Exports

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Domestic Production and Consumption of Intermediates, Value-Added in Final Production, Exports Decomposition: Trade in Value-Added

# Indonesia is producing more intermediates for the domestic economy and consuming more intermediates from domestic sources.

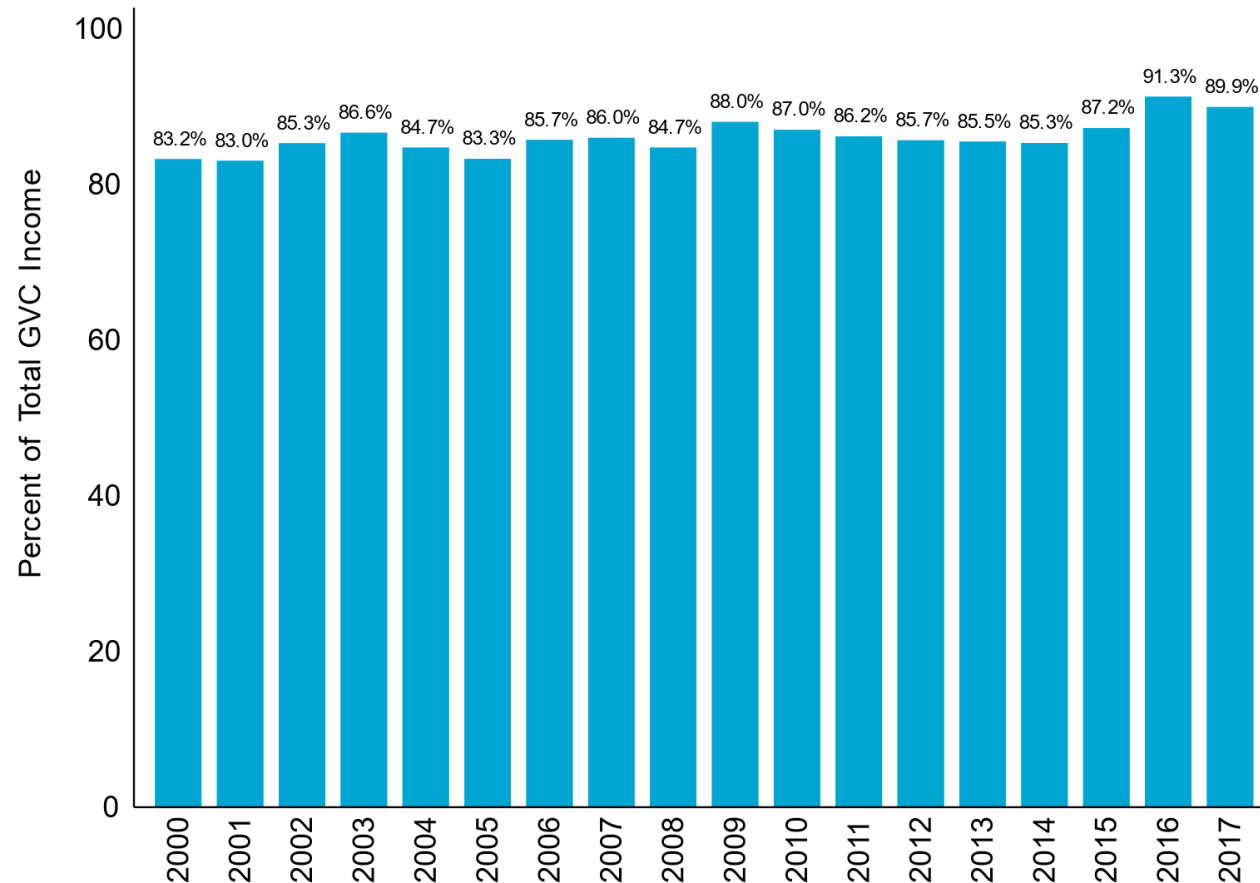
Figure 1. Structure of Production and Use of Intermediates, Indonesia



Source: Multi-Regional Input-Output Tables, 2000, 2007–2017, Asian Development Bank; World Input-Output Database, 2001–2006; Asian Development Bank estimates.

# The domestic value-added content of Indonesia's final products rose in the past decade.

Figure 2. Share of Domestic Value-Added in Total GVC Income, 2000–2017



### GVC INCOME:

*What is structure of the value-added source of an economy- industry's final production?*

$$\mathbf{v} = \hat{\mathbf{p}}(\mathbf{I} - \mathbf{A})^{-1}\mathbf{f}$$

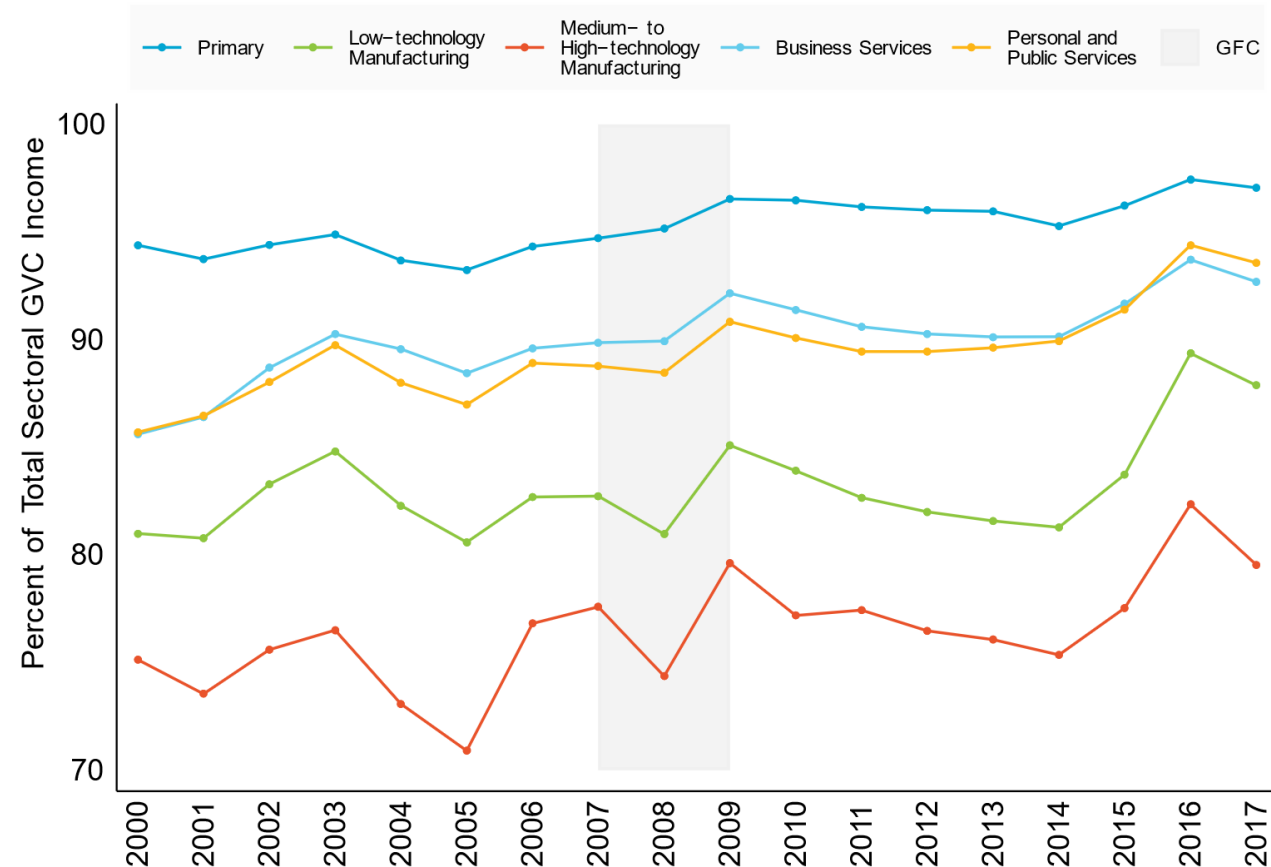
Note: Asian Development Bank estimates are based on the methodology of Timmer et al. (2013).

Source: Multi-Regional Input-Output Tables, 2000, 2007–2017, Asian Development Bank; World Input-Output Database, 2001–2006; Asian Development Bank estimates.



# There are rising contributions of domestic value-added to sectoral GVC incomes across all sectors.

Figure 3. Share of Domestic Value-Added in Total GVC Income, 2000–2017

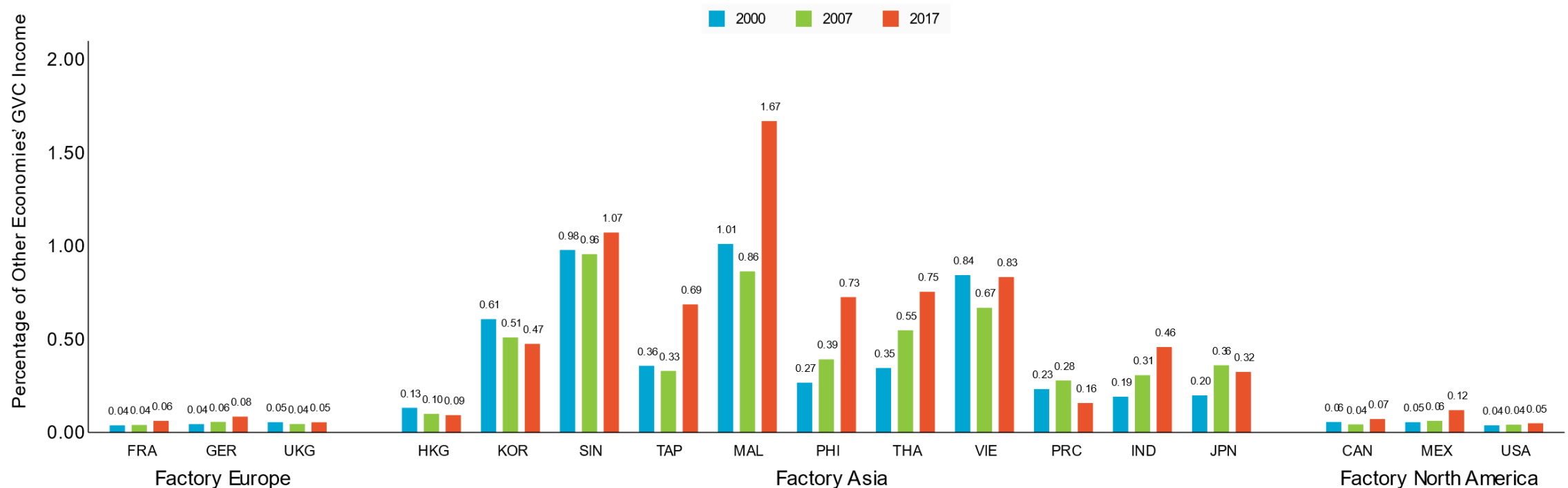


Note: Asian Development Bank estimates are based on the methodology of Timmer et al. (2013).

Source: Multi-Regional Input-Output Tables, 2000, 2007–2017, Asian Development Bank; World Input-Output Database, 2001–2006; Asian Development Bank estimates.

# Value-added generated in Indonesia accounted for an increasing proportion of GVC incomes in some “factories”.

Figure 4. Indonesia's Share in Other Economies' GVC Income, 2000, 2007, and 2017



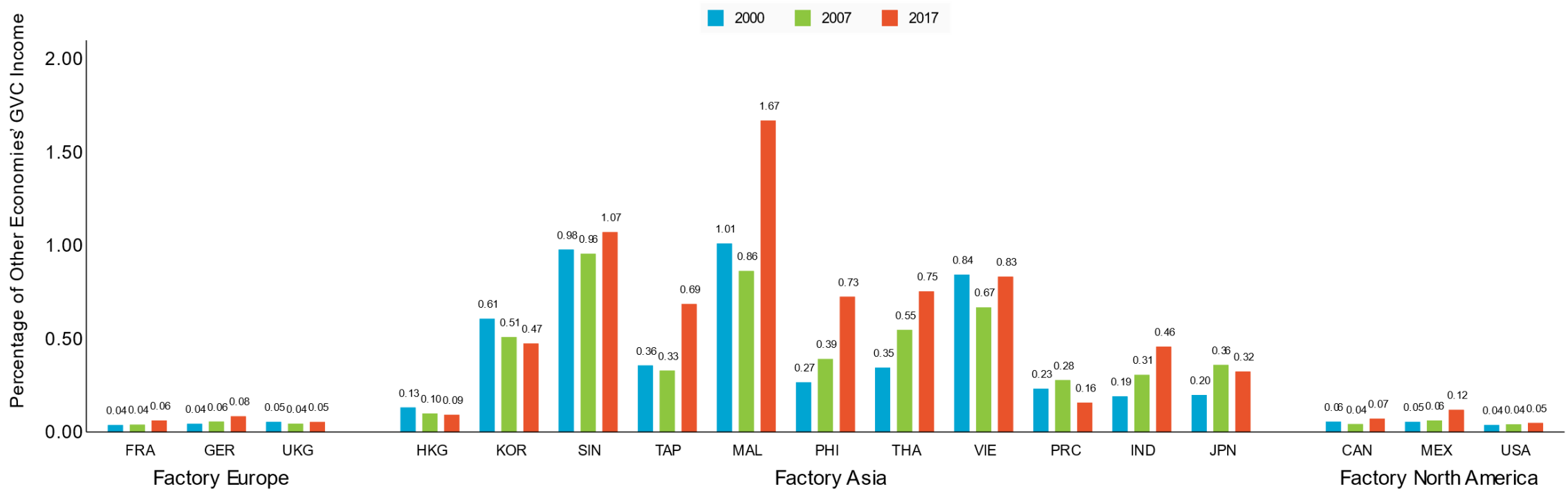
Note: Asian Development Bank estimates are based on the methodology of Timmer et al. (2013).

Source: Multi-Regional Input-Output Tables, 2000, 2007 and 2017, Asian Development Bank; Asian Development Bank estimates.



# Indonesia's contributions to other economies' GVC income were largest in Factory Asia.

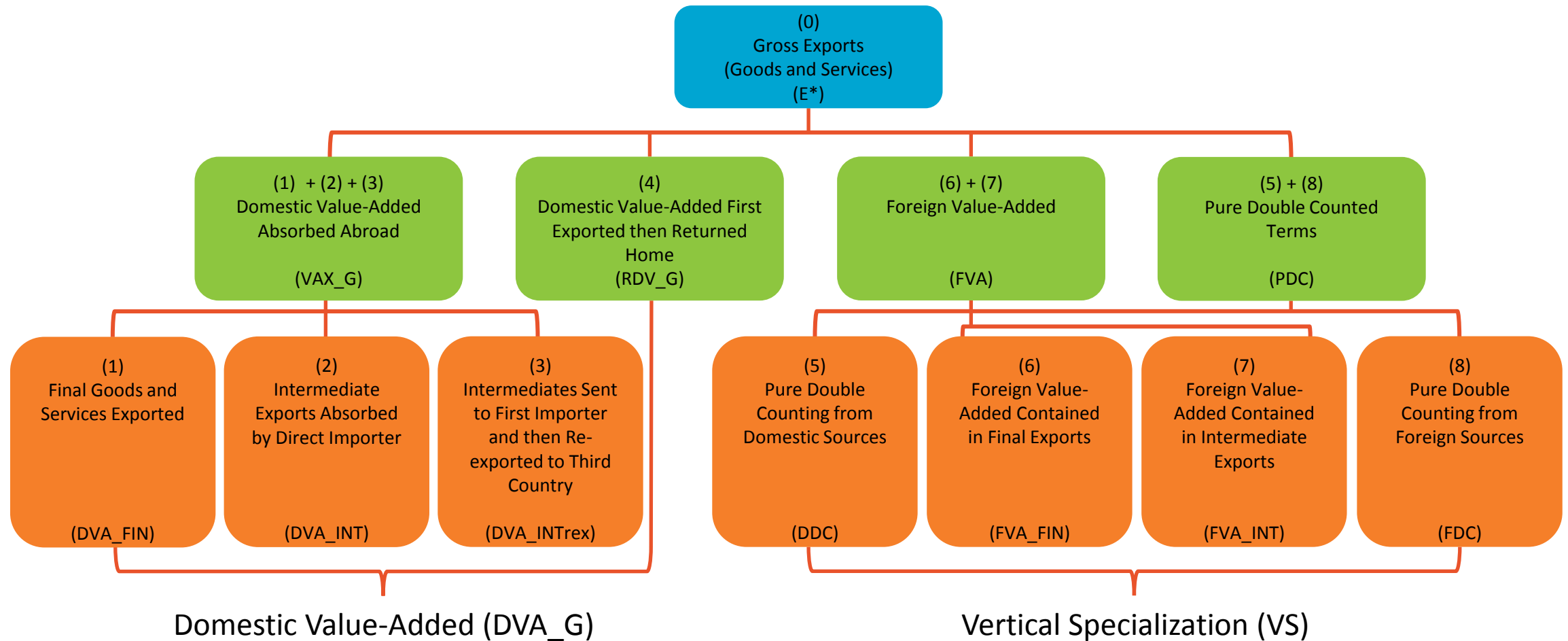
Figure 4. Indonesia's Share in Other Economies' GVC Income, 2000, 2007, and 2017



Note: Asian Development Bank estimates are based on the methodology of Timmer et al. (2013).

Source: Multi-Regional Input-Output Tables, 2000, 2007 and 2017, Asian Development Bank; Asian Development Bank estimates.

# Gross Trade Accounting: Conceptual Framework

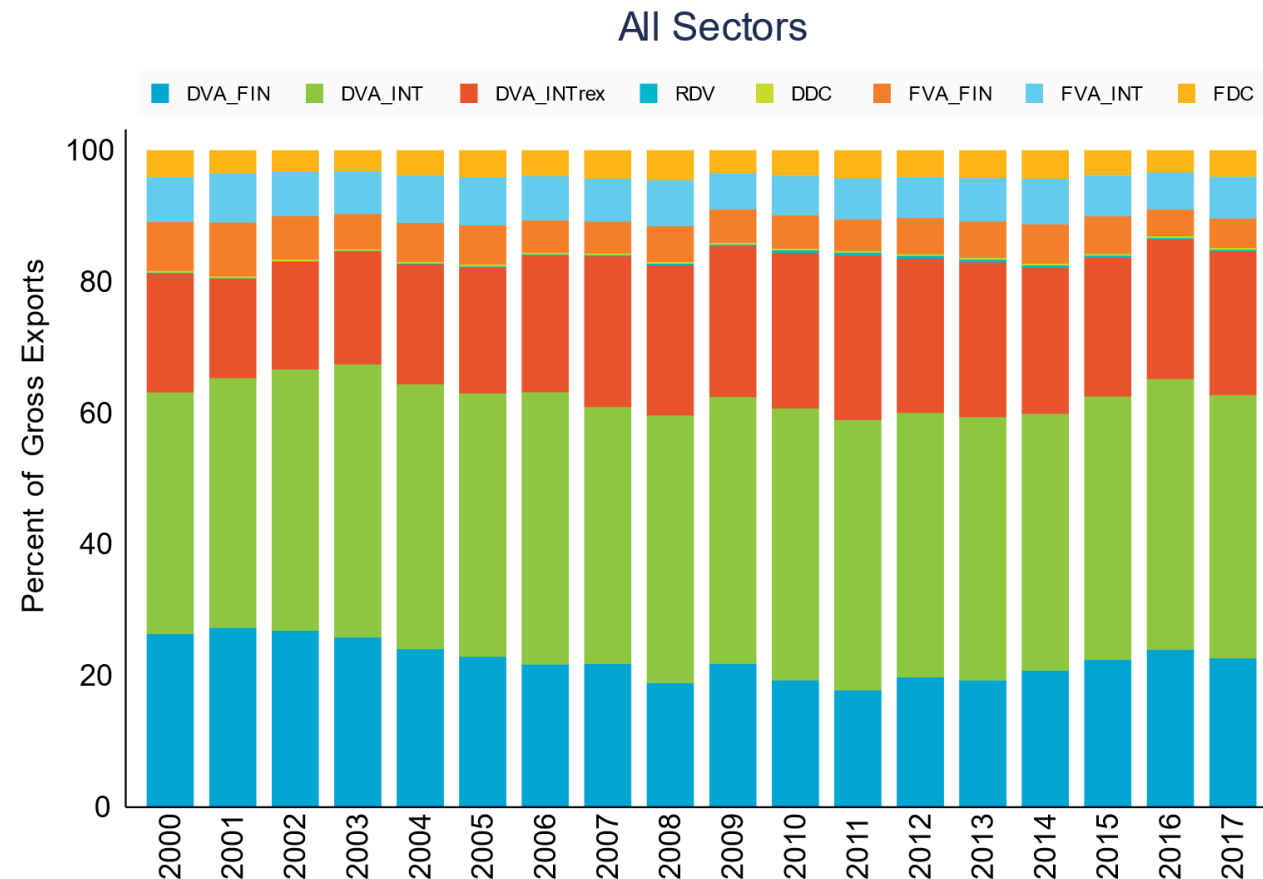


Note: E\* can be at country-sector, country aggregate, bilateral-sector, or bilateral aggregate. Both VAX\_G and RDV\_G are based on backward industrial linkages.

Source: Wang, Wei, and Zhu, 2018.

Indonesia's gross exports had a generally stable and sizeable domestic value-added content. Moreover, export activity was more bilateral than global.

Figure 6. Decomposition of Gross Exports, Indonesia, 2000–2017

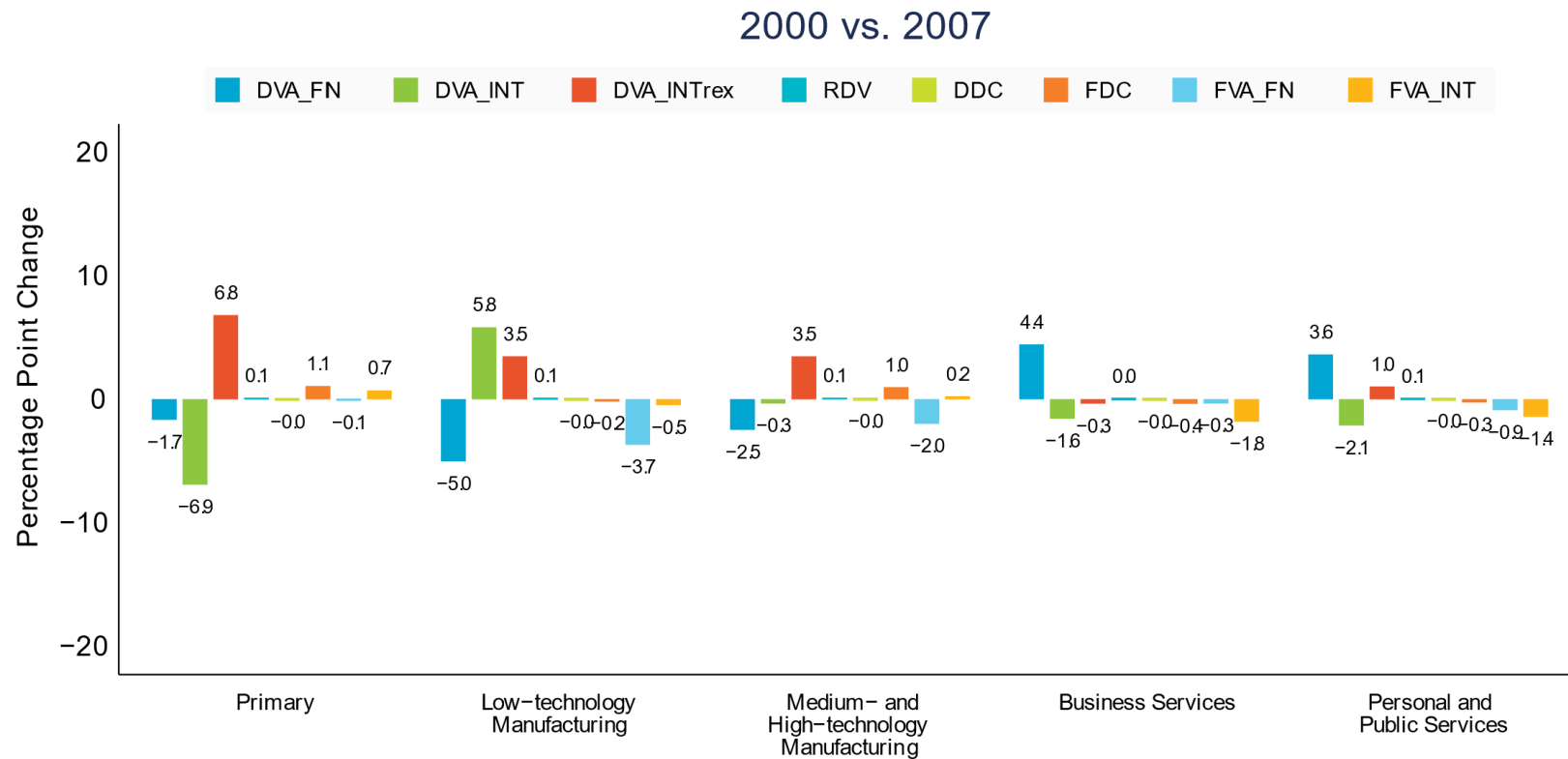


Note: Asian Development Bank estimates are based on the methodology of Wang, Wei, and Zhu (2018).

Source: Multi-Regional Input-Output Tables, 2000, 2007–2017, Asian Development Bank; World Input-Output Database, 2001–2006; Asian Development Bank estimates.

# From 2000 to 2007, GVC-related domestic value-added embedded in intermediate exports from Indonesia increased across all major economic sectors except business services.

Figure 7. Changes in Value-Added Components of Exports, 2000 vs. 2007

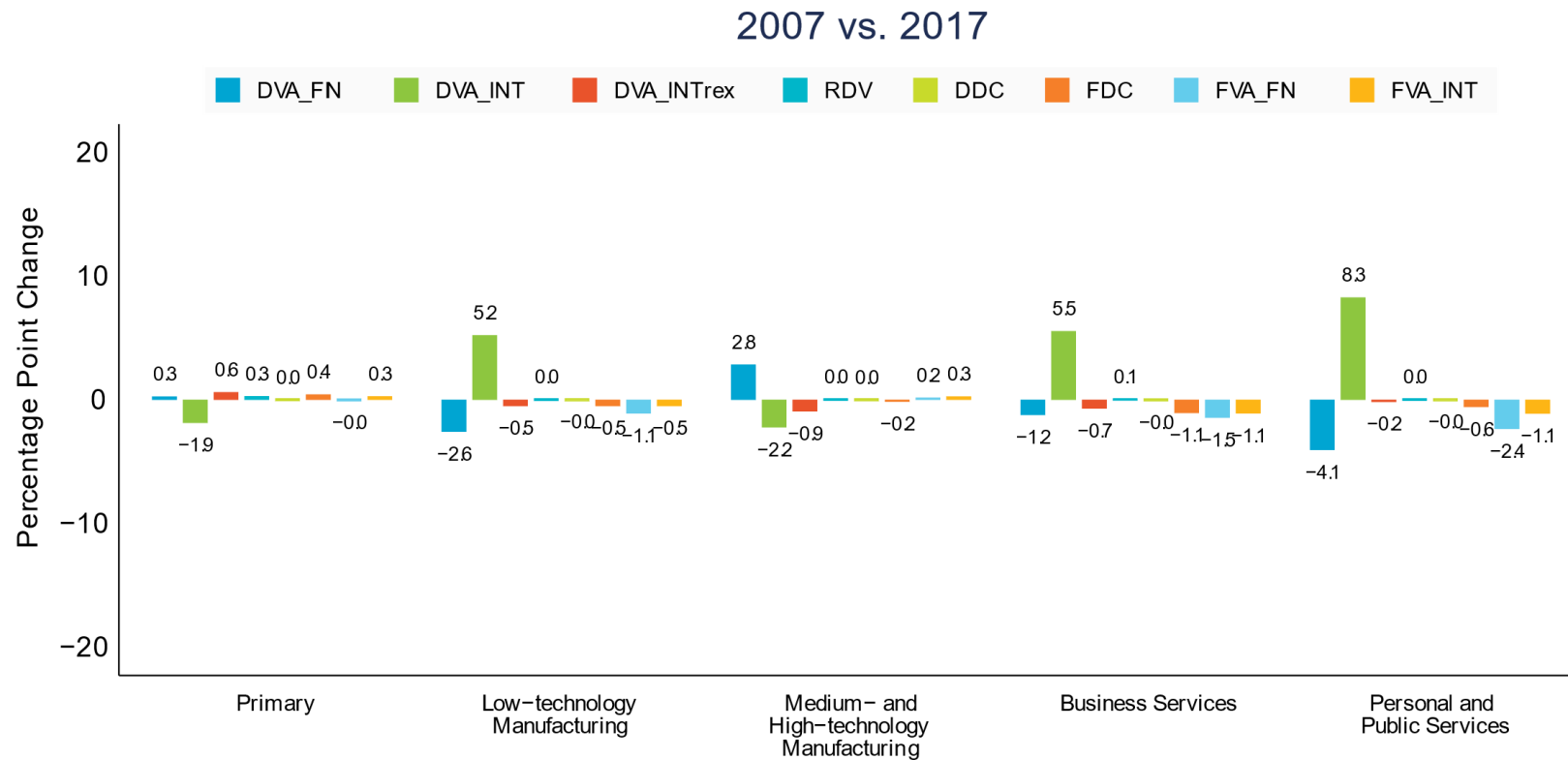


Note: Asian Development Bank estimates are based on the methodology of Wang, Wei, and Zhu (2018).

Source: Multi-Regional Input-Output Tables, 2000 and 2007, Asian Development Bank; Asian Development Bank estimates.

# From 2007 to 2017, Indonesia participated less in complex GVCs except in the primary sector.

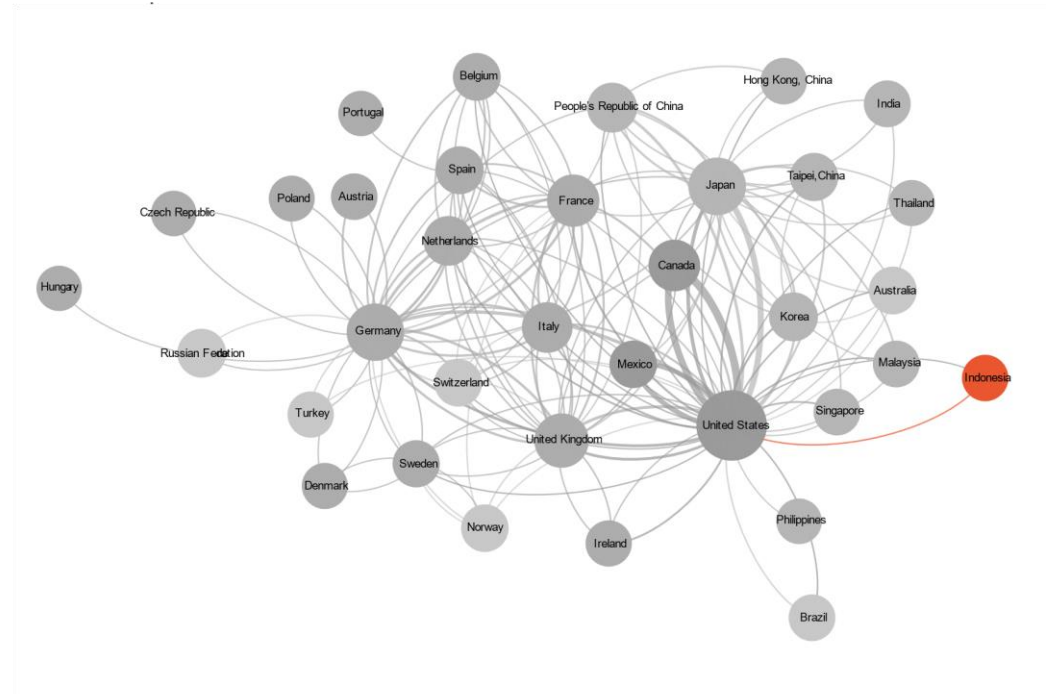
Figure 8. Changes in Value-Added Components of Exports, 2007 vs. 2017



Note: Asian Development Bank estimates are based on the methodology of Wang, Wei, and Zhu (2018).

Source: Multi-Regional Input-Output Tables, 2007 and 2017, Asian Development Bank; Asian Development Bank estimates.

# 2000



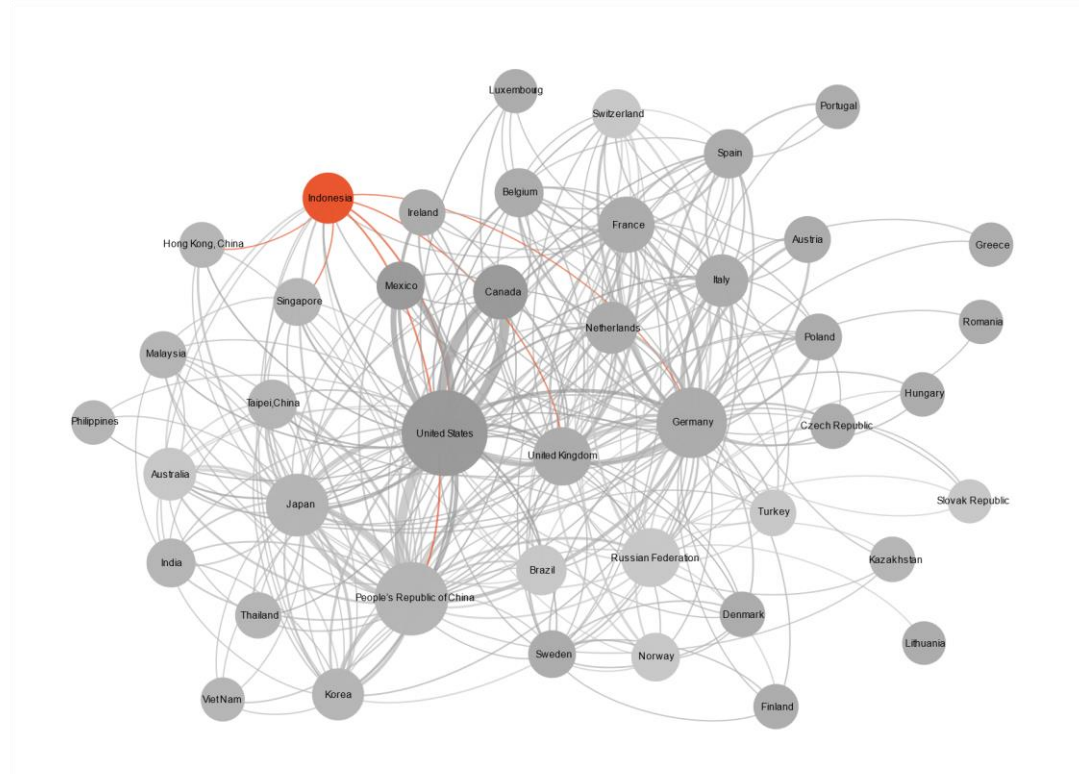
DVA = domestic value-added

Note: Chart shows countries with the highest levels of domestic value-added involved in GVC-related activities. Node size corresponds to the monetary value (in USD) of DVA that is ultimately involved in GVC-related activities (forward GVC participation). DVA embedded in exports of source country to a destination country defines the edges of the network charts. Line thickness indicates the size of domestic value added produced by the economy that is absorbed abroad. Asian Development Bank estimates are based on the methodology of Wang, Wei, and Zhu (2018).

Source: Multi-Regional Input-Output Tables, 2000, 2010, and 2017, Asian Development Bank; Asian Development Bank estimates.



# 2007

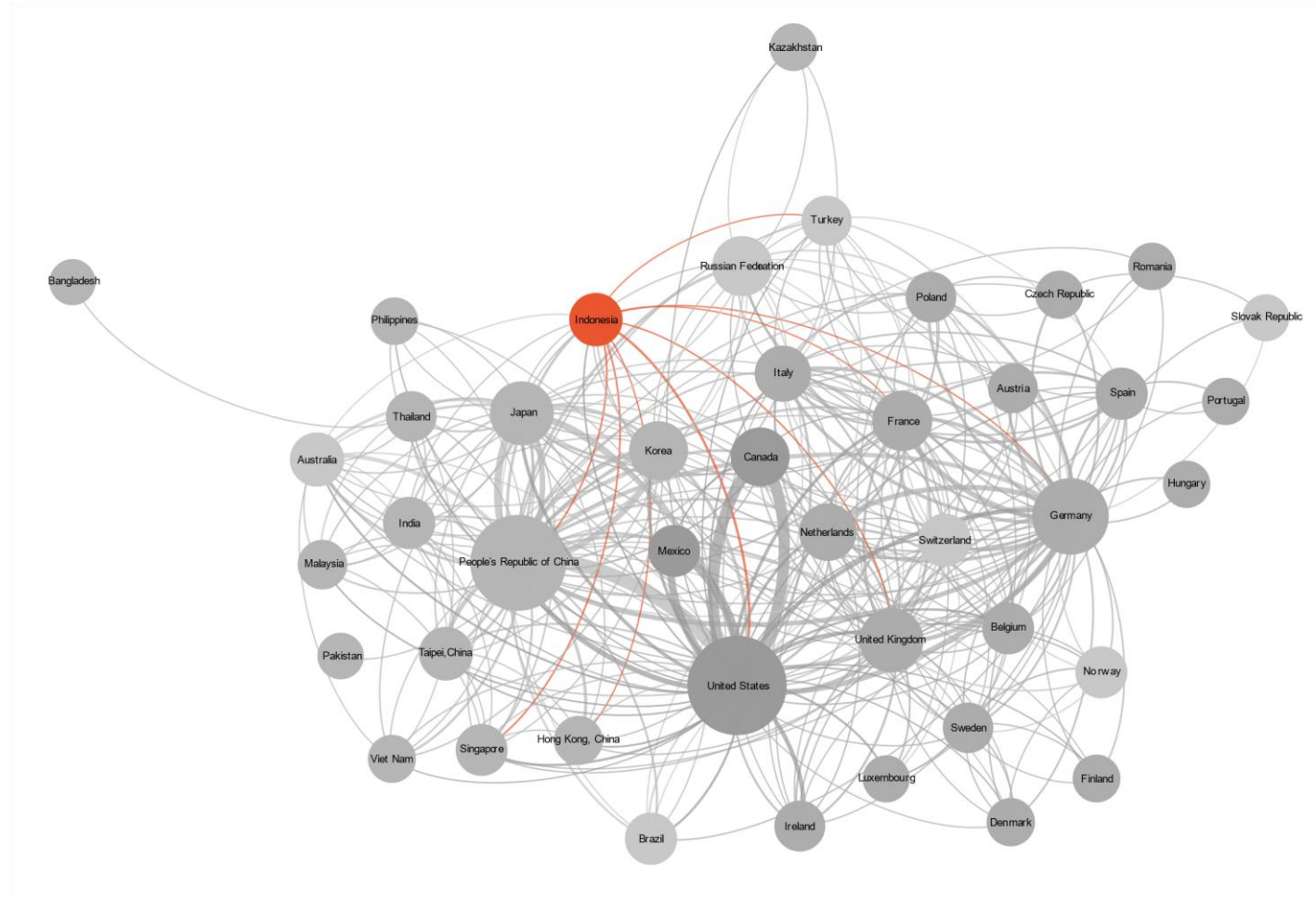


DVA = domestic value-added

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Source: Multi-Regional Input-Output Tables, 2000, 2010, and 2017, Asian Development Bank; Asian Development Bank estimates.

# 2017



DVA = domestic value-added

Note: Chart shows countries with the highest levels of domestic value-added involved in GVC-related activities. Node size corresponds to the monetary value (in USD) of DVA that is ultimately involved in GVC-related activities (forward GVC participation). DVA embedded in exports of source country to a destination country defines the edges of the network charts. Line thickness indicates the size of domestic value added produced by the economy that is absorbed abroad. Asian Development Bank estimates are based on the methodology of Wang, Wei, and Zhu (2018).

Source: Multi-Regional Input-Output Tables, 2000, 2010, and 2017, Asian Development Bank; Asian Development Bank estimates.

# Indonesia's Participation, Position, and Specialization in Global Value Chains

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GVC Participation, Position in GVCs: Upstreamness, Specialization in GVCs: Revealed Comparative Advantage

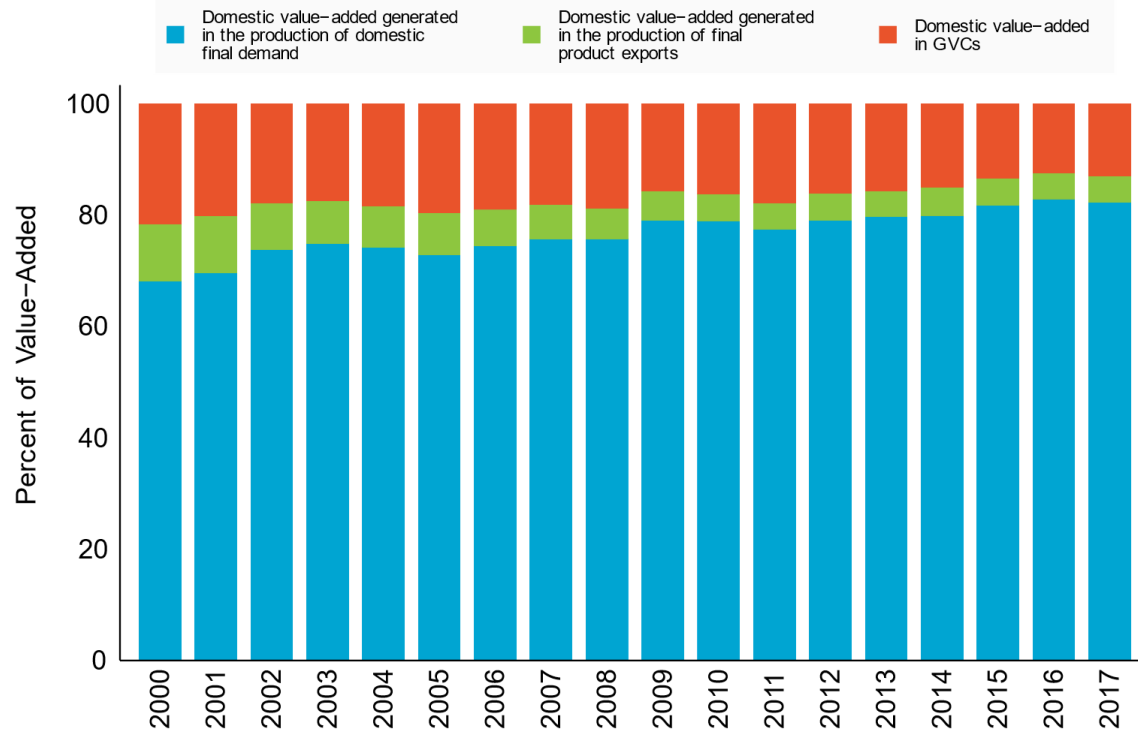
# GVC Participation

- Forward Perspective: Decomposition of GDP by Country-Sector
  - Which types of production and trade are GVC activities?
    - A country-sector's total value-added in production of intermediate exports absorbed by direct importer (Simple GVCs)
    - A country-sector's total value-added in production of intermediate exports re-export/re-import (Complex GVCs)
- Backward Perspective: Decomposition of Final Goods Production by Country-Sector
  - Which part of final goods production and trade belong to GVCs?
    - Partner country's value-added in intermediate imports used in the production of domestic used products
    - Domestic and foreign value-added in intermediate imports used in the production of exported products

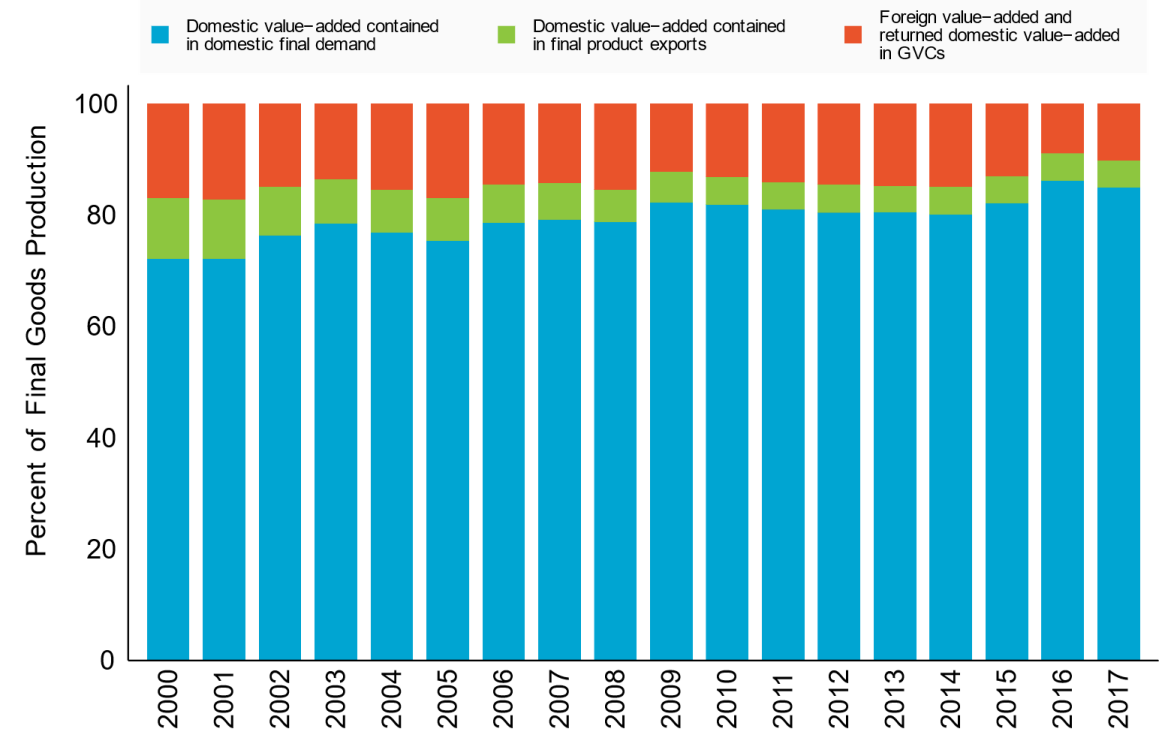
# Trade-related activity as share of value-added and of final goods and services production declined in Indonesia.

Figure 12. Decomposition of Gross Exports, Indonesia, 2000–2017

## A. Value-Added Decomposition



## B. Final Goods Production Decomposition



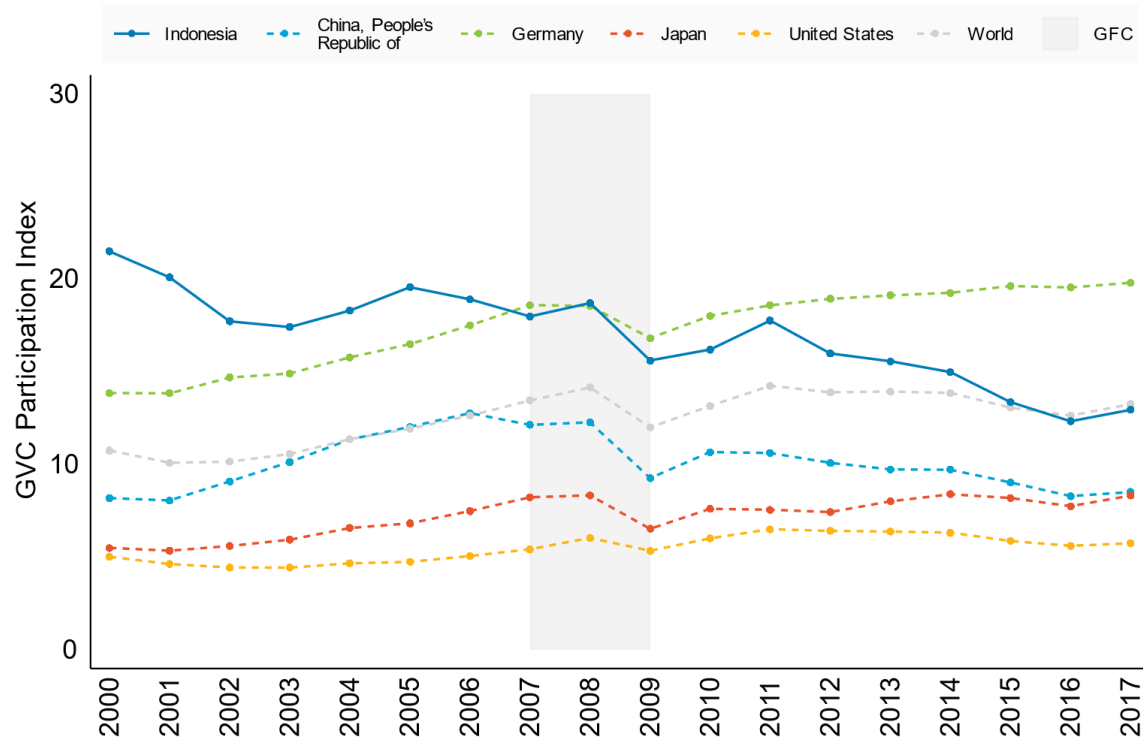
Note: Asian Development Bank estimates are based on the methodology of Wang, Wei, Yu, and Zhu (2017).

Source: Multi-Regional Input-Output Tables, 2000, 2007–2017, Asian Development Bank; World Input-Output Database, 2001–2006; Asian Development Bank estimates.

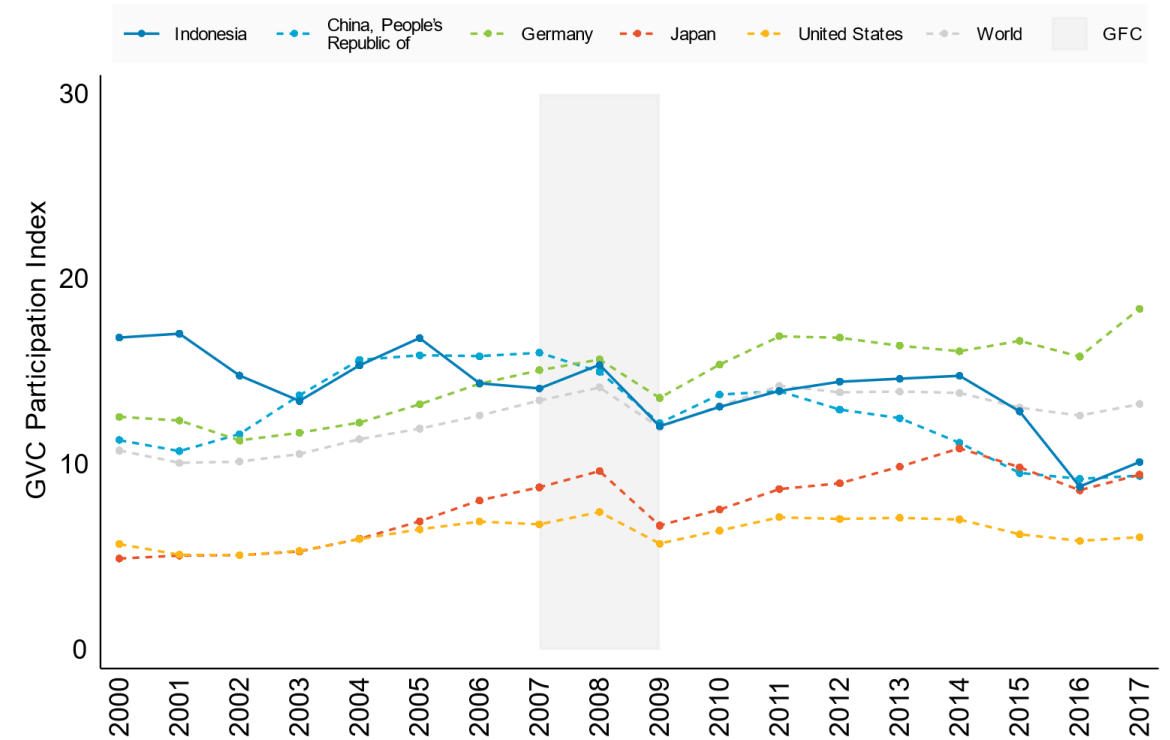
# Indonesia's participation in GVCs declined between 2000 and 2017.

Figure 13. Decomposition of Gross Exports, Indonesia, 2000–2017

A. Forward GVC Participation



B. Backward GVC Participation



Note: Asian Development Bank estimates are based on the methodology of Wang, Wei, Yu, and Zhu (2017).

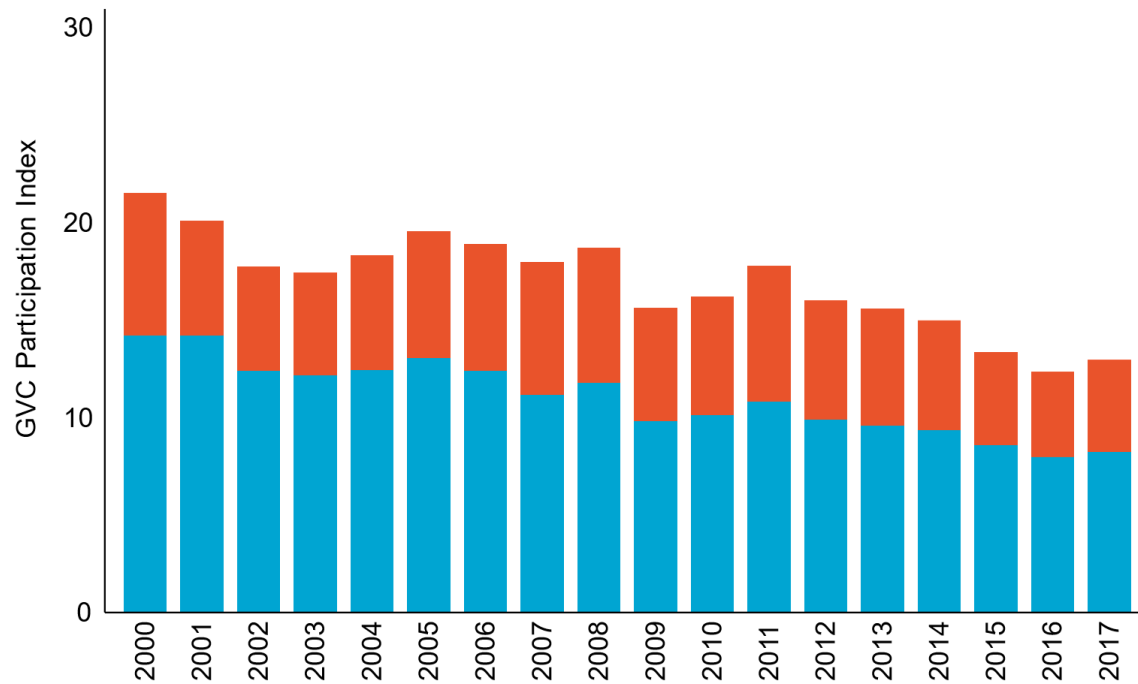
Source: Multi-Regional Input-Output Tables, 2000, 2007–2017, Asian Development Bank; World Input-Output Database, 2001–2006; Asian Development Bank estimates.

# Indonesia was more actively engaged in upstream production, and intermediates trade was more bilateral in nature.

Figure 14. Decomposition of Gross Exports, Indonesia, 2000–2017

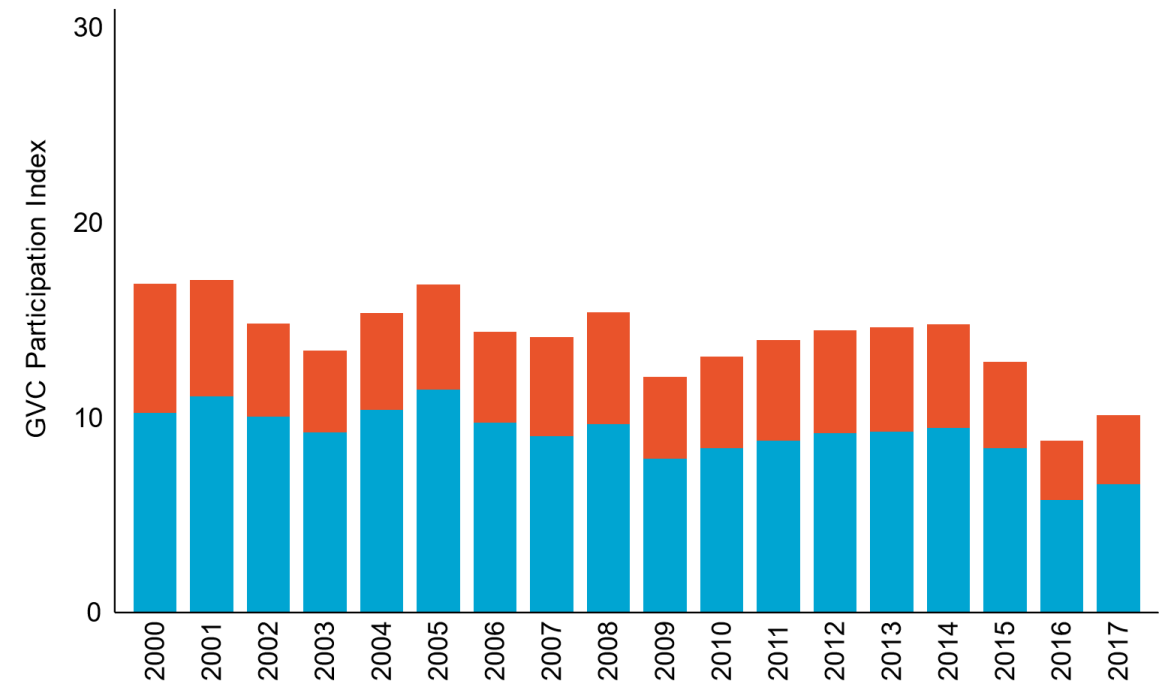
A. Forward GVC Participation

Simple GVCs    Complex GVCs



B. Backward GVC Participation

Simple GVCs    Complex GVCs

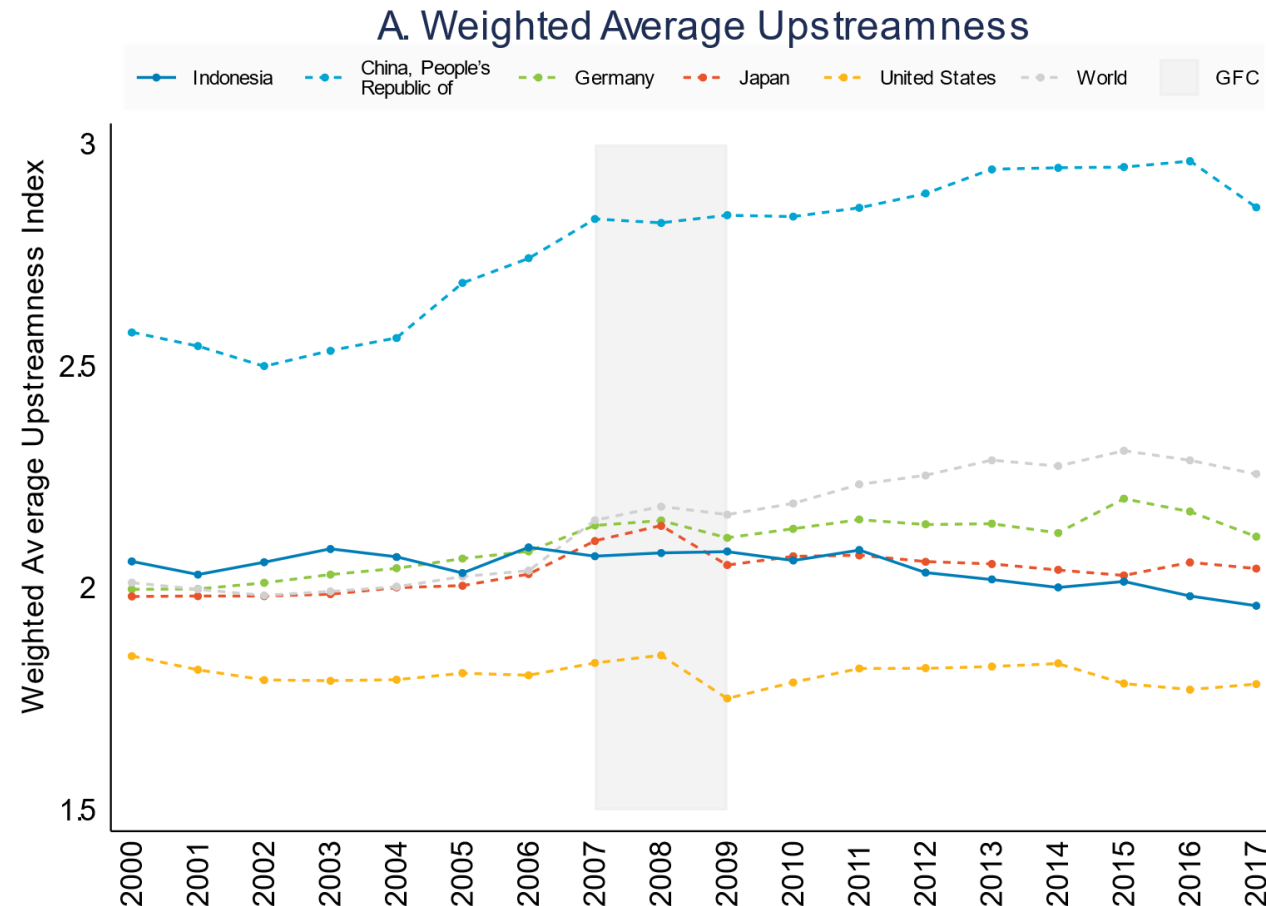


Note: Asian Development Bank estimates are based on the methodology of Wang, Wei, Yu, and Zhu (2017).

Source: Multi-Regional Input-Output Tables, 2000, 2007–2017, Asian Development Bank; World Input-Output Database, 2001–2006; Asian Development Bank estimates.

# Indonesia is moving relatively downstream. That is, output is moving closer to final consumers.

Figure 15. Weighted Average Upstreamness Across Economies, 2000–2017



**UPSTREAMNESS:**

*Average distance from final use.*

*An economy-sector is said to be relatively upstream if its output goes through several stages before reaching final use.*

Note: Asian Development Bank estimates are based on the methodology of Antràs and Chor (2018) and Miller and Temurshoev (2017).

Source: Multi-Regional Input-Output Tables, 2000, 2007–2017, Asian Development Bank; World Input-Output Database, 2001–2006; Asian Development Bank estimates.



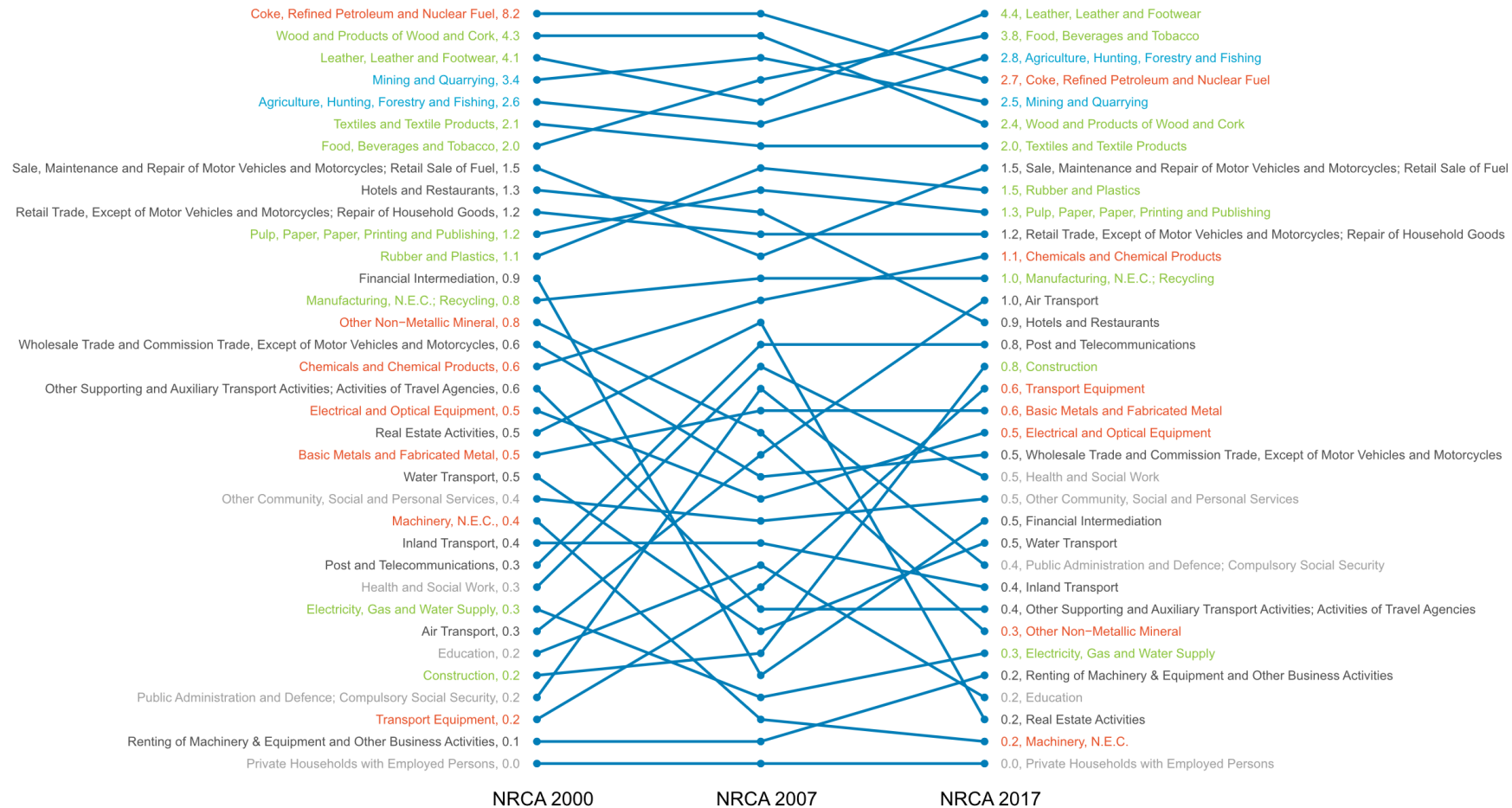
## Revealed Comparative Advantage using Value-Added

- Revealed comparative advantage using domestic value-added through the forward linkage:

$$NRCA_i^r = \left( \frac{DVA_{F_i^r}}{\sum_{i=1}^N DVA_{F_i^r}} \right) / \left( \frac{\sum_{k=1}^G DVA_{F_i^k}}{\sum_i^N \sum_{k=1}^G DVA_{F_i^k}} \right)$$

- NRCA accounts for the fact that a country-sector's value-added may be exported indirectly via the country's exports in other sectors.
- It also accounts for the fact that a country-sector's gross exports may at least partly carry foreign value-added.

# Indonesia's comparative advantage is concentrated in primary and low-technology manufacturing industries.



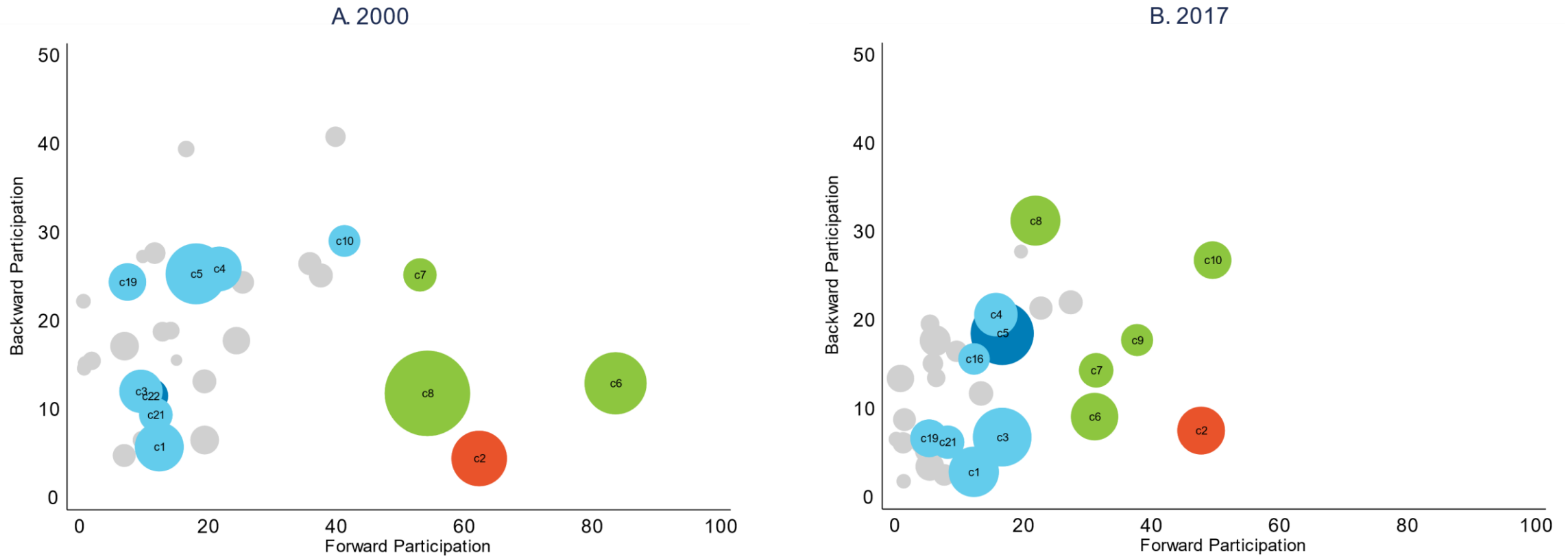
Note: Asian Development Bank estimates are based on the methodology of Wang, Wei, and Zhu (2018).

Source: Multi-Regional Input-Output Tables, 2000, 2007 and 2017, Asian Development Bank; Asian Development Bank estimates.



# Indonesia specialized in industries of varying positions and degrees of participation.

Figure 17. Participation, Position, and Specialization, Indonesia, 2000 vs. 2017

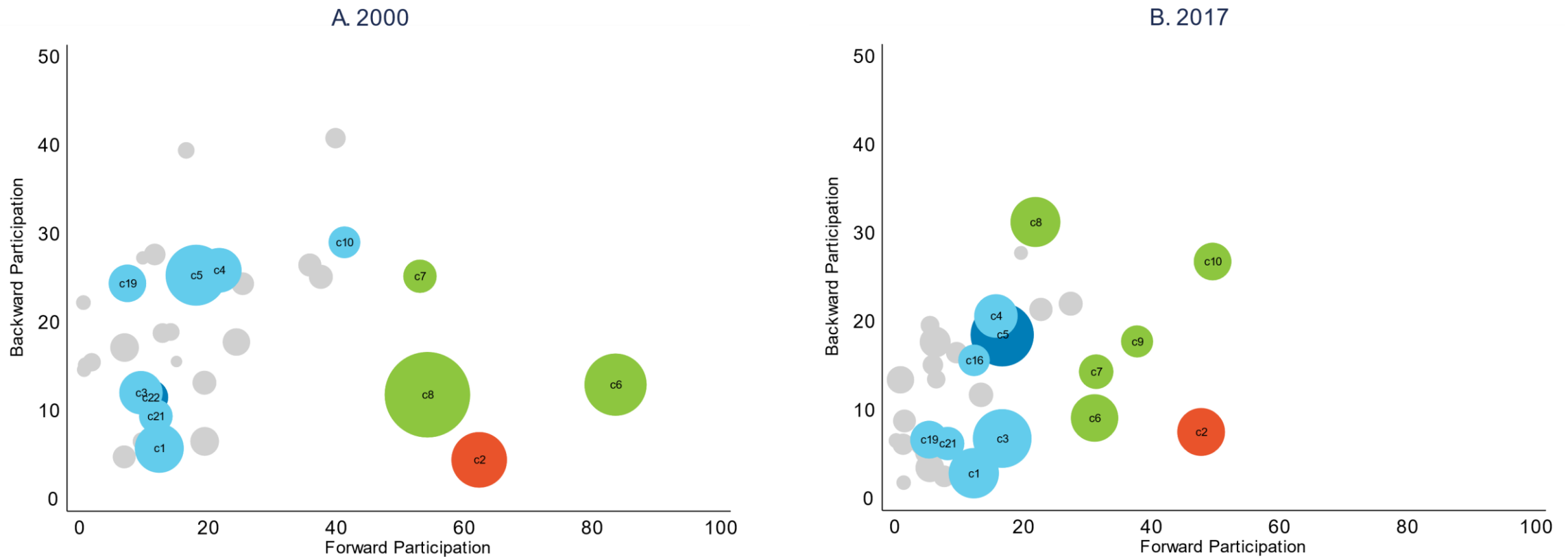


Note: The nodes refer to sectors and the size of each node corresponds to the sector's revealed comparative advantage based on value-added terms. Only sectors with comparative advantage are labeled with their sector codes (Appendix 2) and colored according to their respective upstreamness values. Comparative advantage sectors with upstreamness values less than 1.5 are colored dark blue. Those with upstreamness values greater than or equal to 1.5 but less than 2.5 are colored light blue. Those with upstreamness values greater than or equal to 2.5 but less than 3.5 are colored green. Finally, those with upstreamness values greater than or equal to 3.5 are colored orange. Asian Development Bank estimates are based on the methodologies of Antràs and Chor (2018), Wang, Wei, Yu, and Zhu (2017), and Wang, Wei, and Zhu (2018).

Source: Multi-Regional Input-Output Tables, 2000 and 2017, Asian Development Bank; Asian Development Bank estimates.

# Backward GVC participation was generally low for all Indonesian industries.

Figure 17. Participation, Position, and Specialization, Indonesia, 2000 vs. 2017

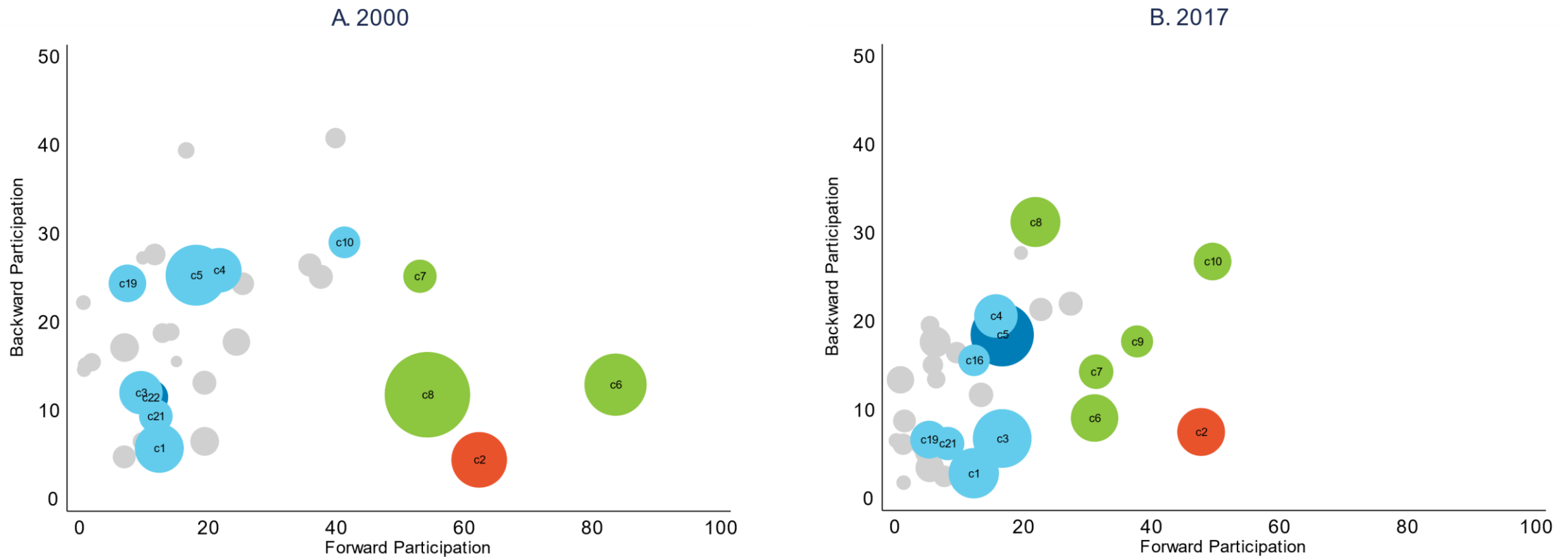


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Source: Multi-Regional Input-Output Tables, 2000 and 2017, Asian Development Bank; Asian Development Bank estimates.

In general, increases in upstreamness (decreases) were accompanied by increases (decreases) in forward participation.

Figure 17. Participation, Position, and Specialization, Indonesia, 2000 vs. 2017



Note: The nodes refer to sectors and the size of each node corresponds to the sector's revealed comparative advantage based on value-added terms. Only sectors with comparative advantage are labeled with their sector codes (Appendix 2) and colored according to their respective upstreamness values. Comparative advantage sectors with upstreamness values less than 1.5 are colored dark blue. Those with upstreamness values greater than or equal to 1.5 but less than 2.5 are colored light blue. Those with upstreamness values greater than or equal to 2.5 but less than 3.5 are colored green. Finally, those with upstreamness values greater than or equal to 3.5 are colored orange. Asian Development Bank estimates are based on the methodologies of Antràs and Chor (2018), Wang, Wei, Yu, and Zhu (2017), and Wang, Wei, and Zhu (2018).

Source: Multi-Regional Input-Output Tables, 2000 and 2017, Asian Development Bank; Asian Development Bank estimates.

# Summary and Conclusions

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## Summary

1. Indonesia's production and supply of inputs is mostly domestically-oriented.
  - Indonesia is producing more intermediates for the domestic economy and consuming more intermediates from domestic sources.
  - DVA in total GVC income and in total sectoral GVC income is rising.
2. However, Indonesia's links to other economies, especially Asian economies, are rising.
  - Increasing contribution of value-added in GVC incomes of other economies.
  - More forward links to other Asian economies as captured by DVA\_F.

## Summary

3. Exports activity is more bilateral than global in nature.
  - Sizeable proportion of DVA\_FIN and DVA\_INT in exports.
  - Declines in the shares of DVA\_INTrex across sectors from 2007-2017.
  - Higher share of simple GVCs vs. complex GVCs.
  
4. Indonesia is moving downstream.
  - Declining upstreamness index, contrary to world trend.
  - Declining forward participation ratio.



## Summary

5. Indonesia is specializing in industries of different positions and degrees of participation, but specialization is concentrated in primary and low-technology manufacturing industries.

Thank you!

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