

International Seminar on Agribusiness:
Agribusiness and Economic Recovery
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Recovery of agricultural value
chains in Asia after COVID-19
Challenges and opportunities of agribusiness

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Definitions

Agricultural value chains refer to the actors and activities that bring agricultural products from obtaining inputs and production in the field to their end-use by consumers through all the market channels

Effective AVCs generate win-win outcomes for all participants in the chain

Economic profits to producers, processors and distributors

Satisfaction to consumers

Global value chains hinge on open economies and lean production methods

COVID-19 is accelerating a GVC restructuring trend, which began with the Sino-US trade war

Southeast Asia will be main beneficiary of such restructuring

GVC patterns

Gross value of exports can be decomposed into two components (Johnson and Noguera, 2012)

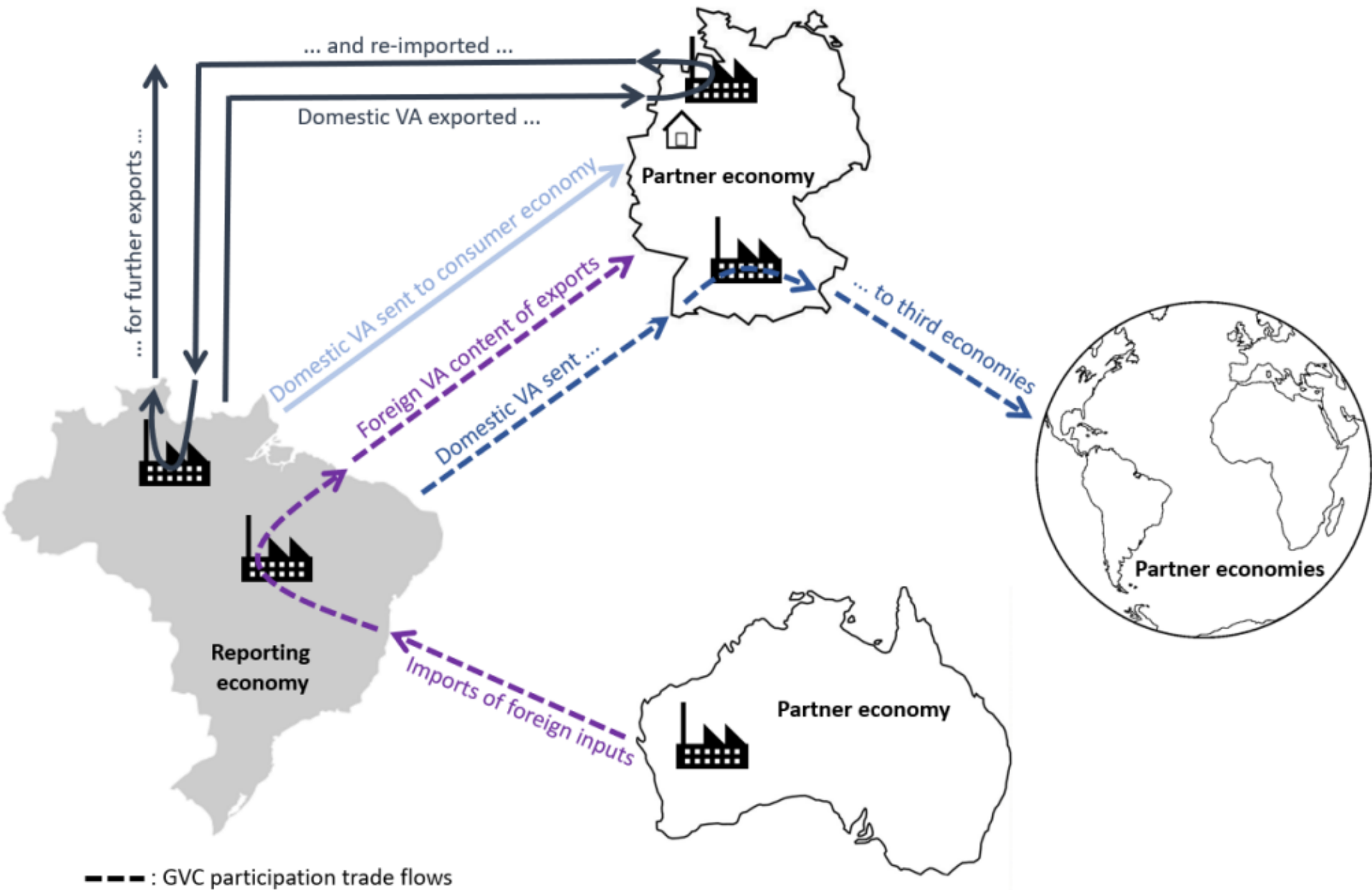
Domestic origin value added (**DVA**) refers to the part of gross exports where value added originates in the exporting country

Foreign origin value added (**FVA**) or **backward linkages** are embodied in exported goods as intermediate goods originating in foreign countries

Forward linkages (**DVX**) refer to domestic value added incorporated in other countries' exports

GVC participation = FVA+DVX

A greater degree of GVC integration indicates a lower ratio of DVA to gross exports (**VAX** ratio)



Source: WTO (2019)

GVC in Indonesia

In 2019, Indonesia's DVA accounts for 88% of gross value of exports (ASEAN–Japan Center, 2021)

Industrial activities have been concentrated in lower tiers of production, which incorporates minimum amounts of imported raw materials or foreign technology

GVC expansion may benefit Indonesia

FDI and economic growth are positively associated with GVC participation

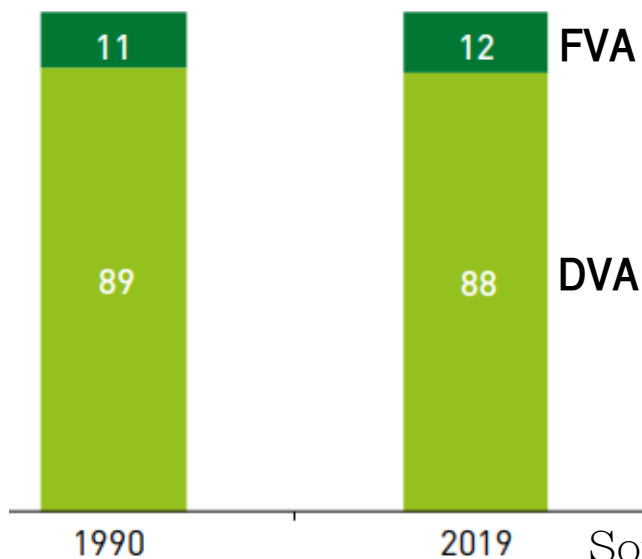
As the 10th largest economy, GVC facilitation would support technological capability of domestic businesses and thus help the economy to escape from the middle–income trap

IDN GVC

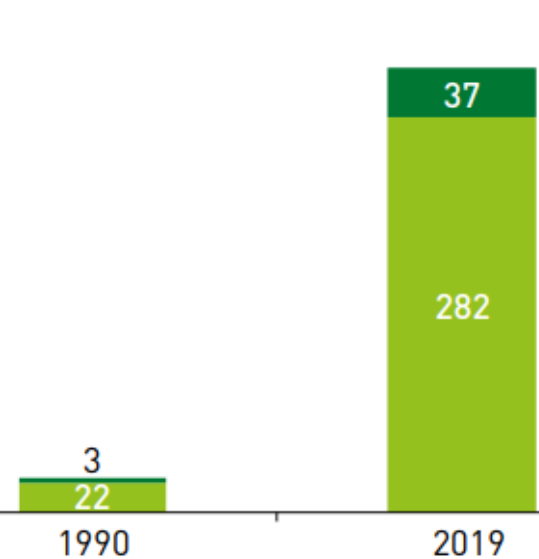
Value-added exports in 2017 (mill US\$, %)

Sector/industry	Gross exports	Domestic value added (DVA)	Foreign value added (FVA)	FVA share in exports (%)
Total	290 041	254 998	35 043	12.1
Primary	59 208	57 717	1 491	2.5
Agriculture, hunting, forestry, and fishing	11 326	10 867	459	4.1
Mining, quarrying, and petroleum	47 882	46 850	1 032	2.2
Secondary	176 019	146 742	29 277	16.6
Tertiary	54 807	50 536	4 271	7.8

Value added content of exports
(Percentage share)

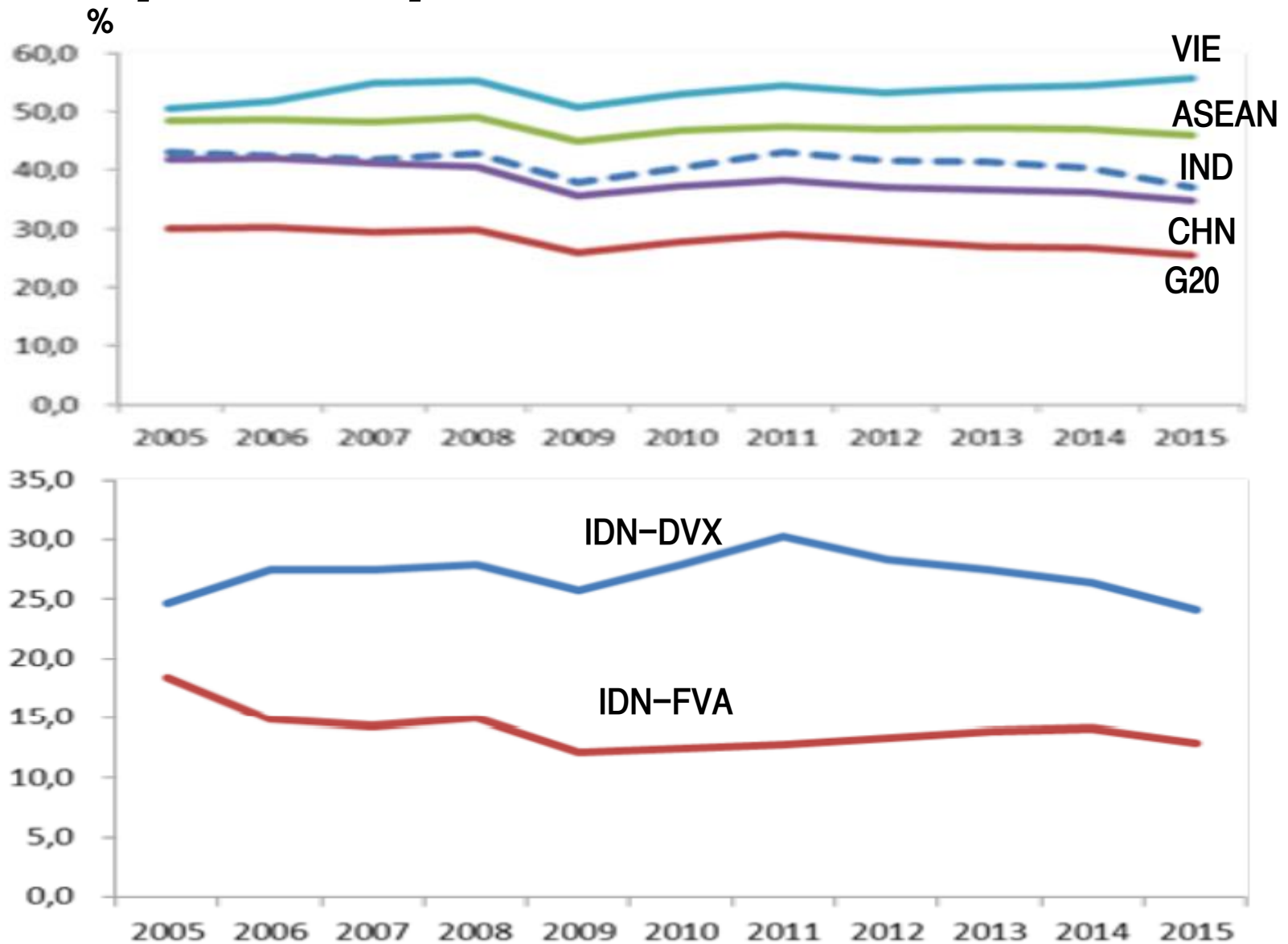


Value added content of exports
(Value in billion USD)



Source: AJC (2021)

GVC participation



Source: Ahmad (2021)

	Indonesia 2017 mill. US\$	All industries	Primary		
			Total	Agriculture, hunting, forestry and fishing	Mining, quarrying and petroleum
World		35 043	1 491	459	1 032
Developed countries		16 107	587	219	368
Europe		6 396	211	78	133
North America		3 786	159	61	98
Other developed countries		5 925	217	81	137
Developing countries		18 491	886	233	653
Africa		583	33	7	26
Latin America and the Caribbean		819	30	12	19
Asia		17 071	822	214	608
West Asia		1 840	119	22	96
South, East and South-east Asia		15 231	703	191	512
East Asia		8 518	289	109	179
South Asia		1 033	35	13	22
ASEAN		5 680	380	69	311
Brunei		24	2	0	2
Cambodia		2	0	0	0
Laos		2	0	0	0
Malaysia		2 295	208	19	188
Myanmar		16	1	0	0
Philippines		221	8	4	4
Singapore		1 732	72	31	41
Thailand		1 026	51	12	39
Viet Nam		362	38	2	36
Oceania		17	1	0	0
Transition economies		445	18	7	11
Southeast Europe		5	0	0	0
Commonwealth of Independent States (CIS)		440	17	7	11
Domestic value added [DVA]		254 998	57 717	10 867	46 850
Gross exports		290 041	59 208	11 326	47 882

Source: AJC-UNCTAD-Eora database on ASEAN GVCs.

AVC in Asia

Asia Development Bank's **Multiregional Input-Output Table 2019**

62 economies and ROW

PRC, CYP, INO, IND, JPN, KOR, TUR, TAP,
BAN, MAL, PHI, THA, VIE, KAZ, MON, SRI,
PAK, LAO, BRU, BHU, KGZ, CAM, MLD, NEP,
SIN, HKG (26 Asian economies)

35 sectors

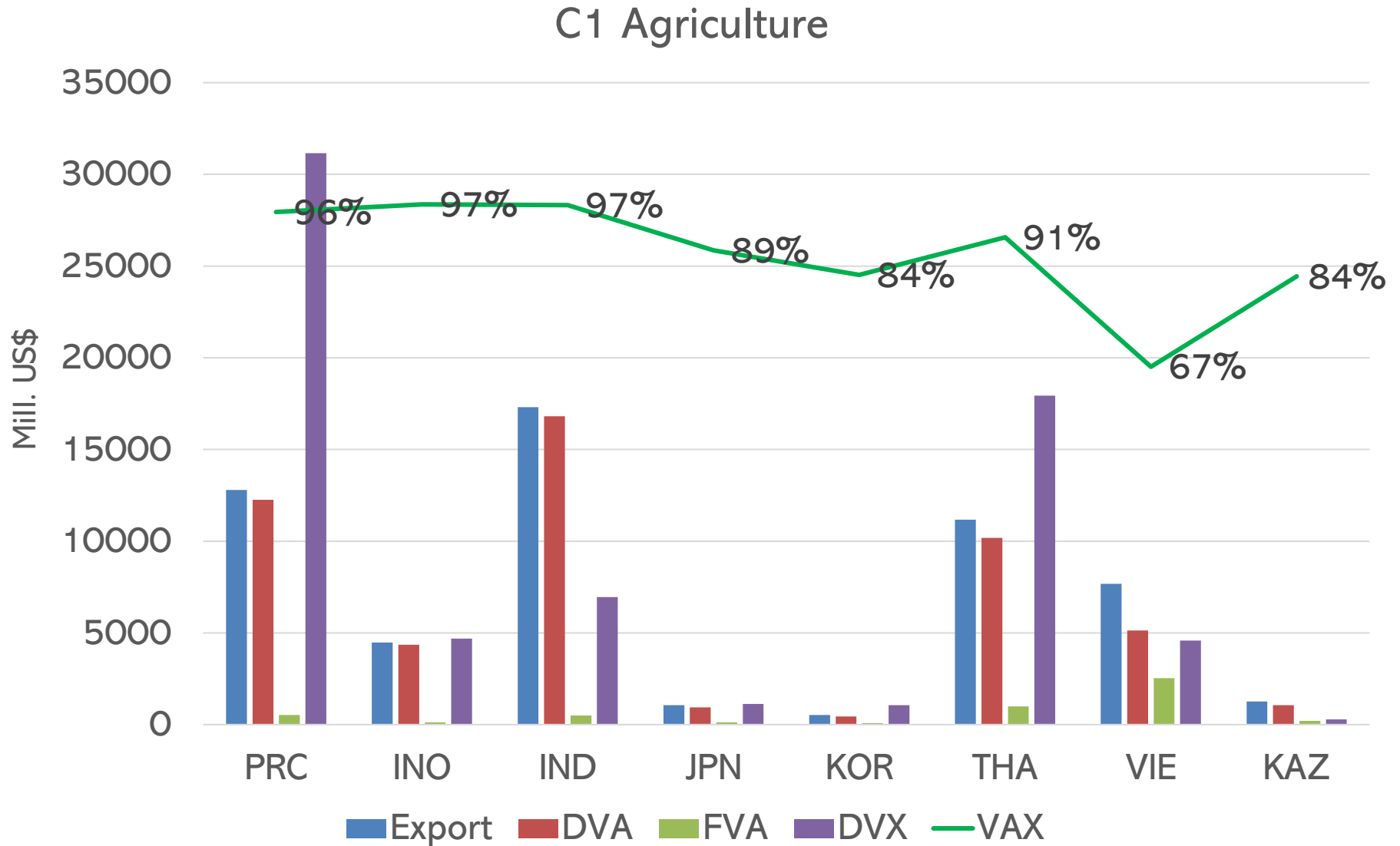
C1: agriculture, hunting, forestry, and fishing

C3: food, beverages, and tobacco

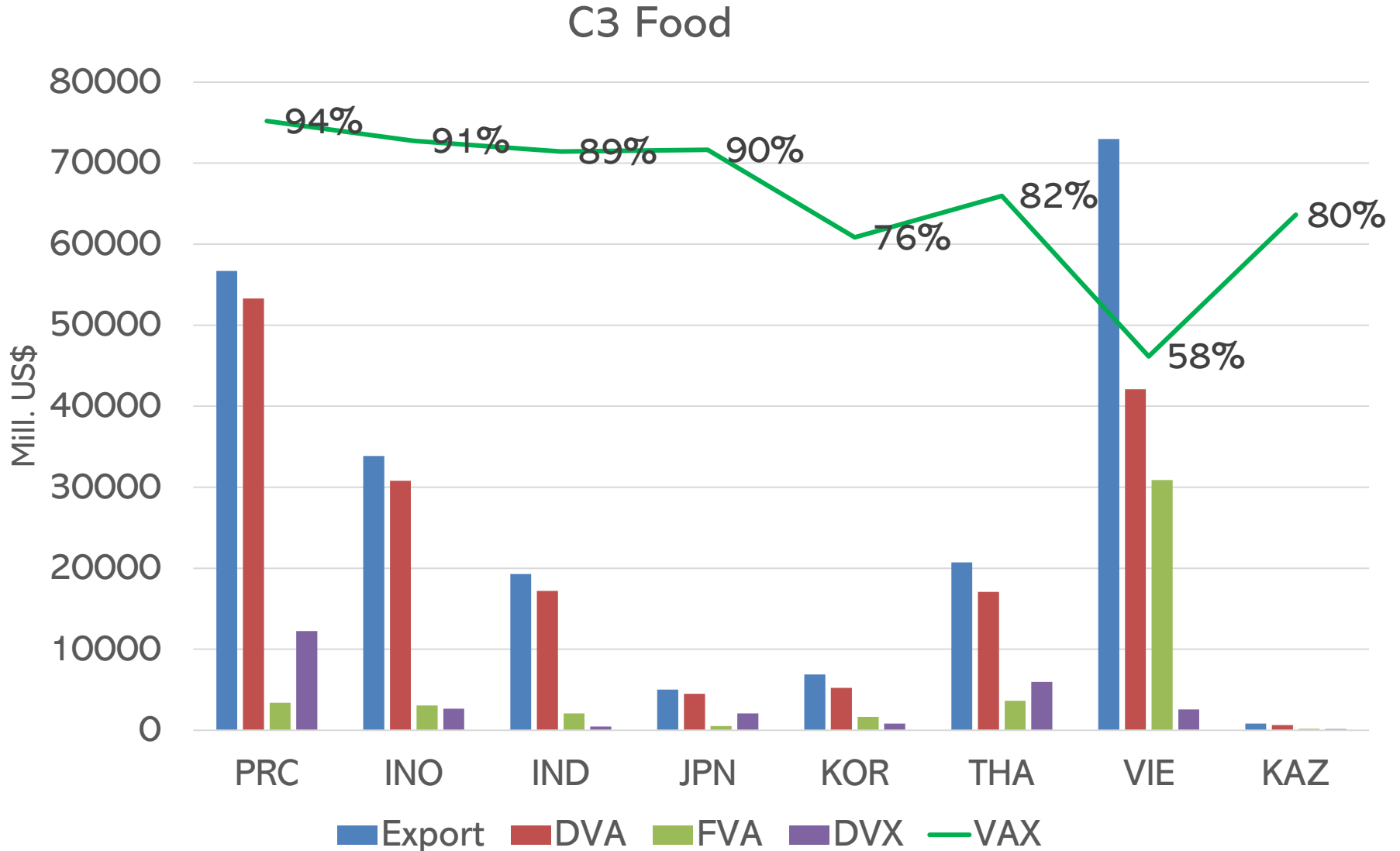
C16: manufacturing

Current prices in millions of US\$

Agriculture, forestry, fishing



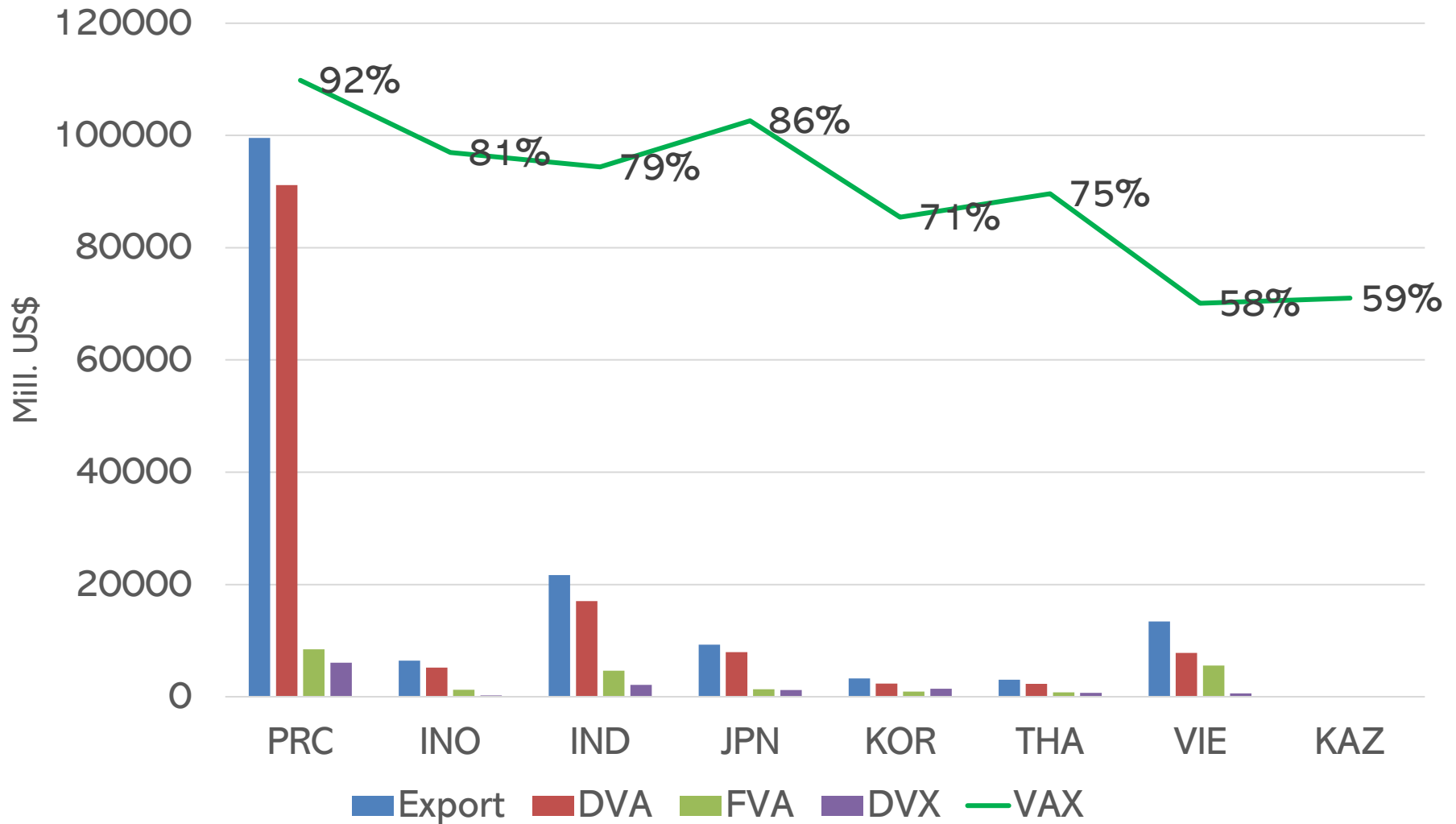
Food, beverage, tobacco



Source: Author

Manufacturing

C16 Manufacturing



Source: Author

Assessment

DVA is the main element in agri-food exports in most countries

The same goes for manufacturing goods but in a less degree

Agricultural exports are widely used in the production of other countries' exports

China and Thailand demonstrate relatively strong forward linkages (DVX)

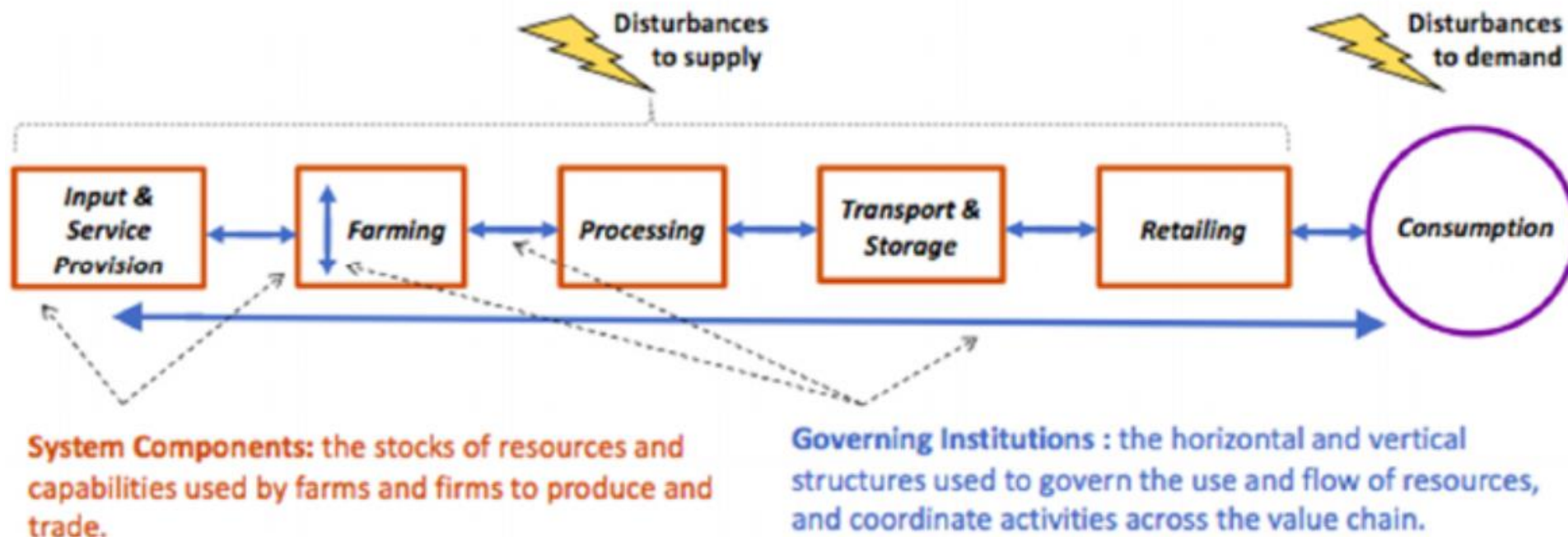
Overall, relatively high VAX ratios indicate a lower degree of GVC participation for agri-food products

Viet Nam shows the lowest ratios indicating its active GVC participation, followed by Korea and Japan

Greater GVC participation can be of Asian agribusiness benefits

Economic Impacts of COVID-19

National lockdown and containment measures have created disruptions in supply and demand for agri-food products and services



Cases

Unskilled foreign labors with work visa reduced from 276,553 in 2019 to 219,750 in July, 2021, causing labor shortages in Korea

Negative impacts on exporters relying on backward linkages or the “supply chain effect” were larger than the output effect (Hayakawa and Mukunoki, 2021)

Negative effects were smaller in intra-Asian trade

International firms were more resilient than domestic firms (Borino et al., 2021)

GVC participation increased vulnerability to foreign shocks while it reduced vulnerability to domestic shocks (Espitia et al., 2021)

Resilience of agribusiness

Resilience of the smallholder farming and food system in Asia

Lower population densities and slower coronavirus transmission in rural areas than in cities

The inherent plasticity and diversified systems, minimizing productivity reductions

Good transport networks and short market chains to major markets in cities

Policy responses for food distribution, procurement and storage, cash transfers and employment programs

Resilience of ag-trade

	All Products	Vehicles and Parts Thereof	Aircraft and Parts Thereof	Electronics	Agriculture
Global Imports (January-December) 2020 % Change in Imports Relative to 2019	-8%	-16%	-33%	-1.6%	3.5%
Value Change (\$billions)	-\$1,121	-\$160	-\$61	-\$39	\$35
% Change in U.S. Imports	-6.6%	-17.7%	-19.3%	-3.4%	2.3%
% Change in E.U. Imports	-9.9%	-14.5%	-31.2%	0.65%	3.4%
% Change in China Imports	-1.1%	-1.5%	-50.7%	10.3%	18.2%

Source: Arita et al. (2021)

IDN impact-background

Characteristics of the food supply chain (Ikhsan and Virananda, 2021)

Food security relies on food supply chains

More than 90% of food is tradable

Only 38% of rural houses are net rice producers

Long chains of SMEs and middlemen dominate food supply chains

Almost 60% of farms own less than 0.5ha, relying on mostly informal and low-skilled non-farm employment, which contributes to 49% of household income

IDN impacts

Food security

Disruptions in food distribution, increasing transaction costs and lower purchasing power of rural and urban households

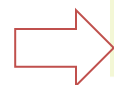
Food supply is robust while food demand especially by poorer households is vulnerable to income loss

Disruptions in post-farm food supply chains

Downstream SMEs suffer from lower purchasing power and shifted preferences to formal and online channels

Farms' terms of trade has been improved

Higher domestic migration has increases labor supply in agriculture, lowering farm wages



Sector	Lockdown restrictions of exemptions	Impact simulated
Agriculture	Farming activities are considered essential, so are exempted from most restrictions. External trade shocks on export crops.	Minimal
Mining & crude oil	Mining activities are considered essential, so are exempted from most restrictions.	Minimal
Manufacturing	Food processing & medicines exempted (essential sector). Non-essential producing companies closed. Limited access to production inputs from China.	High
Utilities	Electricity & water distribution exempted (essential sector).	Minimal
Construction	Many public works programs reduced in affected areas.	Some
Wholesale & retail trade services	Retailers of essential goods exempted. Wholesale not exempted.	Some
Transportation, storage & cargo	Air travel closed for all of May. Bus, train, and ship service hours limited and allowed to operate only at half maximum capacity. Ban on Eid al-Fitr related travel (<i>mudik</i>) from May 7. Port cargo handling & storage exempted	High
Hotels & food services	Thousands of hotels closed. Restaurant dining is strictly limited.	High
Banking, finance & insurance	Money transfer services exempted (essential). Banks operating with essential staff only.	Minimal
Professional services	Almost all closed or teleworking, e.g., legal and accounting services. Activities involving in-person field visits sharply curtailed, e.g., engineers.	Minimal
Public administration, law enforcement	Public services and agencies remain open, but most staff teleworking. Police & security services exempted, as essential.	Minimal
Education services	All schools closed, replaced by online learning.	Minimal
Health services	Health services exempted (essential sector).	Minimal
Sports & entertainment	Most sports & outdoor entertainment banned. Some activities operating, e.g., newspapers, radio and television stations.	High
Other services	In-person religious gatherings banned. Major disruptions to informal repair firms due to market closures.	Some

IDN
impact



External factor	Lockdown restrictions of exemptions	Impact simulated
Export demand	Decline in demand for exported goods. Reduced international tourism & business travel to Indonesia. Lower export demand for agricultural and other primary products.	Some
Remittances	Decline in value of remittances sent by Indonesian nationals working abroad.	Some
Foreign investments	Fall in foreign investments due to uncertainty in global economic environment.	Some

Recovery and Path to the Future

A Premise

The world may not return to status quo

Agribusiness is facing ***the new normal***

Importance of food quality and safety

Digital innovation and transformation

Local supply networks

Challenges and opportunities are
unprecedented for the world economy

Worker safety and product quality

Product and work safety as operational objectives

Planning and preparations for higher operation costs and lower capacity utilization due to safety measures

Automation by machines in production and logistics process due to limitation of workforces

Product traceability improving consumer confidence

Digitalization

Digital innovation and Industry 4.0 (Dilyard et al., 2021)

Demand side AI

- Use data in the cloud platforms of the regions

- Identify connections and patterns across real-time situations and demand for its products

- Predict consumption given virus spread and lockdown policies

Supply side AI

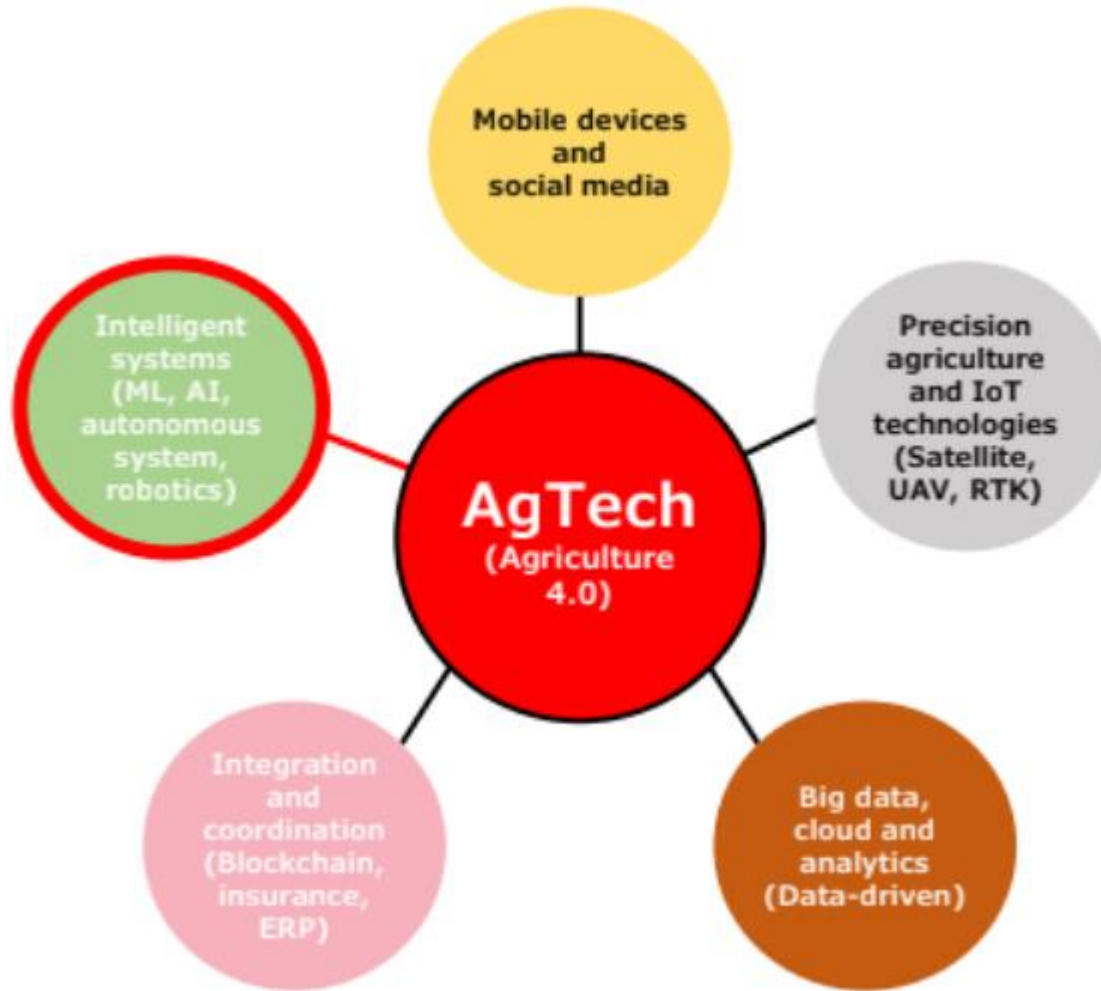
- Connect the demand prediction to the upstream VC

- Execute automatic purchase orders and production

Enhancing capabilities of agribusiness

Smart farms for resilience and sustainability

AgTech



FAO(2019)

EMA-i app for animal health system support

Dino weeding robot

MyCrop complete farm and farmer management system

Alibaba's ET Agricultural Brain (pig's health)

Walmart's blockchain for lettuce and spinach

METRO Farm 메트로팜

상도점



Localization

Shifts in supply management (van Hoek, 2020)

From diversified and backup suppliers to multiple, flexible and alternative suppliers

From risk sharing contract and dual sourcing to local substitutes and near sourcing

Challenges

Shorter supply chain reducing global flows

Higher costs arising from decentralized production bases and diseconomies of scales

Flexibility or resilience at the expense of efficiency

Conclusions

The organization of AVCs under the COVID-19 is subject to reassessment between securing efficiency and controlling risk

Diversification of sources of supply vs. costs of diversification, relationship-specificity and intellectual property rights

Digital transformations and domestic policy can offset the rising costs

The digital economy is reshaping AVCs toward Omni-directional management

Support for capacity building is essential

International cooperation and institutional reform under a rules-based and open trading system continue to be vital in sustainable AVCs development

References

- Ahmad, T. (2021). Indonesian global value chain policy: Learning from China's experience. UNCTAD/BRI PROJECT/RP9.
- Arita, S., et al. (2021). "Has COVID-19 Caused a Great Trade Collapse? An Initial Ex Post Assessment." Choices **36(316-2021-1061)**.
- ASEAN-Japan Center. (2021). Global value chains in ASEAN: Indonesia. Paper 4, June 2021.
- Borino, F., E. Carlson, V. Rollo and O. Solleder (2021). "International Firms: More Exposed but More Resilient during Covid-19." VOX EU
- Dilyard, J., et al. (2021). "Digital innovation and Industry 4.0 for global value chain resilience: Lessons learned and ways forward." Thunderbird International Business Review **63(5): 577-584**.
- Espitia, A., et al. (2021). "Pandemic trade: COVID-19, remote work and global value chains." The World Economy.
- FAO. (2019). Digital technologies in agriculture and rural areas. Briefing Paper.
- Hayakawa, K. and H. Mukunoki (2021). "Impacts of COVID-19 on Global Value Chains." The Developing Economies **59(2): 154-177**.
- IFPRI. (2020). The cost of COVID-19 on the Indonesian economy. Policy Note, June 2020.
- Ikhsan, M. and I. Virananda. (2021). How COVID-19 affects food security in Indonesia. LPEM-FEB UI Working Paper 061.
- Johnson, R. C. and G. Noguera (2012). "Accounting for intermediates: Production sharing and trade in value added." Journal of International Economics **86(2): 224-236**.
- Van Hoek, R. (2020). "Research opportunities for a more resilient post-COVID-19 supply chain: Closing the gap between research findings and industry practice." Int. J. Operations & Production Management **40(4): 341-355**
- Vroegindewey, R. and J. Hodbod (2018). "Resilience of Agricultural Value Chains in Developing Country Contexts: A Framework and Assessment Approach." Sustainability **10: 916**.
- WTO. (2019). Trade in value-added and global value chains: Explanatory notes. Geneva.