Regional Trade Modelling: Capacity Building and Analysis

The Australian National University, East Asian Bureau of Economic Research (EABER), Australia

Centre for Strategic and International Studies (CSIS), Indonesia

NITI Aayog, India

Agenda

Project Overview

Assumptions & Approach

Initial findings

Appendix

The importance of building capacity in trade modelling

There are major shifts which are increasing the importance of trade modelling capability and policy advice

Shocks affecting supply chains

- Natural disasters and chokepoints
- COVID-19
- Conflicts e.g. Ukraine-Russia, middle east

A more complex social environment

- Climate transition via non-market mechanisms
- Failures to share the gains from trade

Changes in the demand for policy

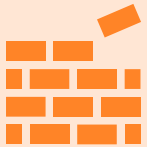
- Fragmentation and inability to navigate political divides
- Rise of industry policy

Heightened view of risk → **Interdependence = weakness** → **Hollowing out of capacity and capability**

We are building capability in the region, while also providing policy-relevant analysis

ANU, CSIS and NITI Aayog are seeking to rebuild policy-relevant trade modelling capability

Building Regional Modelling Capability



Identify, train and develop the next generation of trade modellers; learning by doing.

Build connections for **applied modelling and knowledge transfer** in Australia, India and Indonesia

Sustain capacity for **ongoing, independent trade modelling and analysis** in Australia, India & Indonesia

Modelling Trade Scenarios

Define and maintain a set of **plausible regional trade agreement scenarios** relevant to policymakers

Model and analyse the effects of these scenarios in Australia, India & Indonesia, inc. distributional effects

Engage with policymakers on the outcomes of analysis to **inform and influence actions and policy**

We are taking an iterative approach, adding detail as we build our skills

We will balance learning and capability development with the delivery of increasingly insightful outputs

	1 **Tranche 1** now	**Tranche 2** next	**Tranche 3** late 2025
Aims	• Building familiarity with policy environment • Building initial capacity in modelling • Testing ability to replicate others' outputs • Building our own simple modelling outputs	• Consolidating modelling capability build • Generating useful policy insights	• More ambitious outputs • Extending modelling capability • Generating novel policy insights
Cases	• China joins CPTPP • USA joins CPTPP • Indonesia joins CPTPP • India joins RCEP	• South Asia joins RCEP • Indonesia joins OECD • Others TBC	Additional scenarios TBC
Policy Analysis	• Basic assumptions (e.g. all tariffs within trade agreement moved to zero)	• Add Non-tariff measures • More nuanced assumptions based on others' research (e.g. partial tariff reduction over time)	• Most complex assumptions, taking best known research plus refined own assumptions • Add trade in services, digital etc
Methods	Comparative Statics	Dynamic Models	Dynamic Models
Outputs	Policy brief	Policy engagement activities Policy brief (updated)	Policy brief with Distributional Effects Policy engagement activities Major Report

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Tranche 1 – Eliminating Tariffs

We have posited an order of future CPTPP accession to make our work most policy-relevant

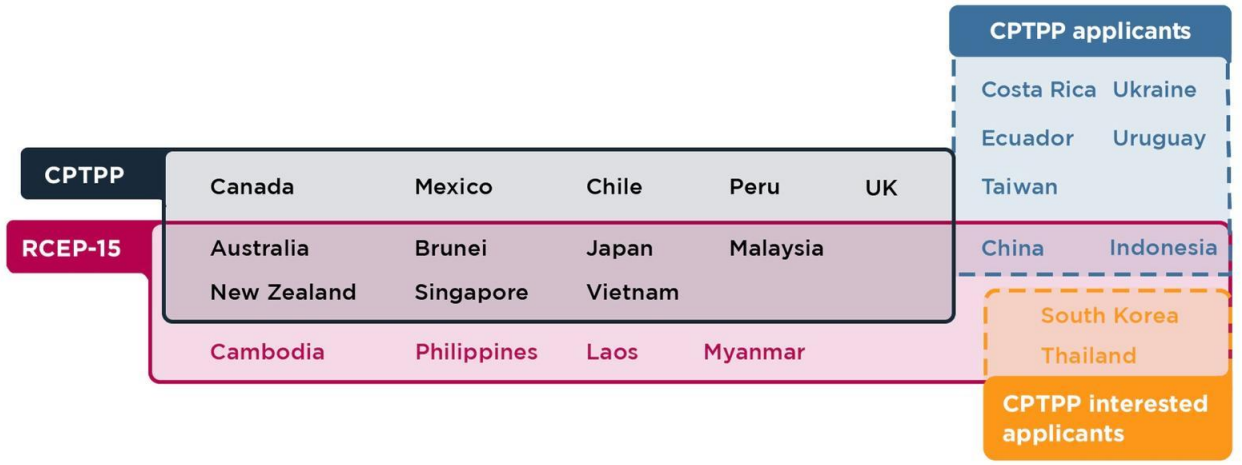
Tranche 1 – Reduce Tariffs to zero (0)

- For this tranche of work, we only model the effects of reducing all tariffs to zero between the target country and the relevant members of the trade bloc (CPTPP or RCEP).
- We report our findings in long-run (comparative static) impacts in each scenario

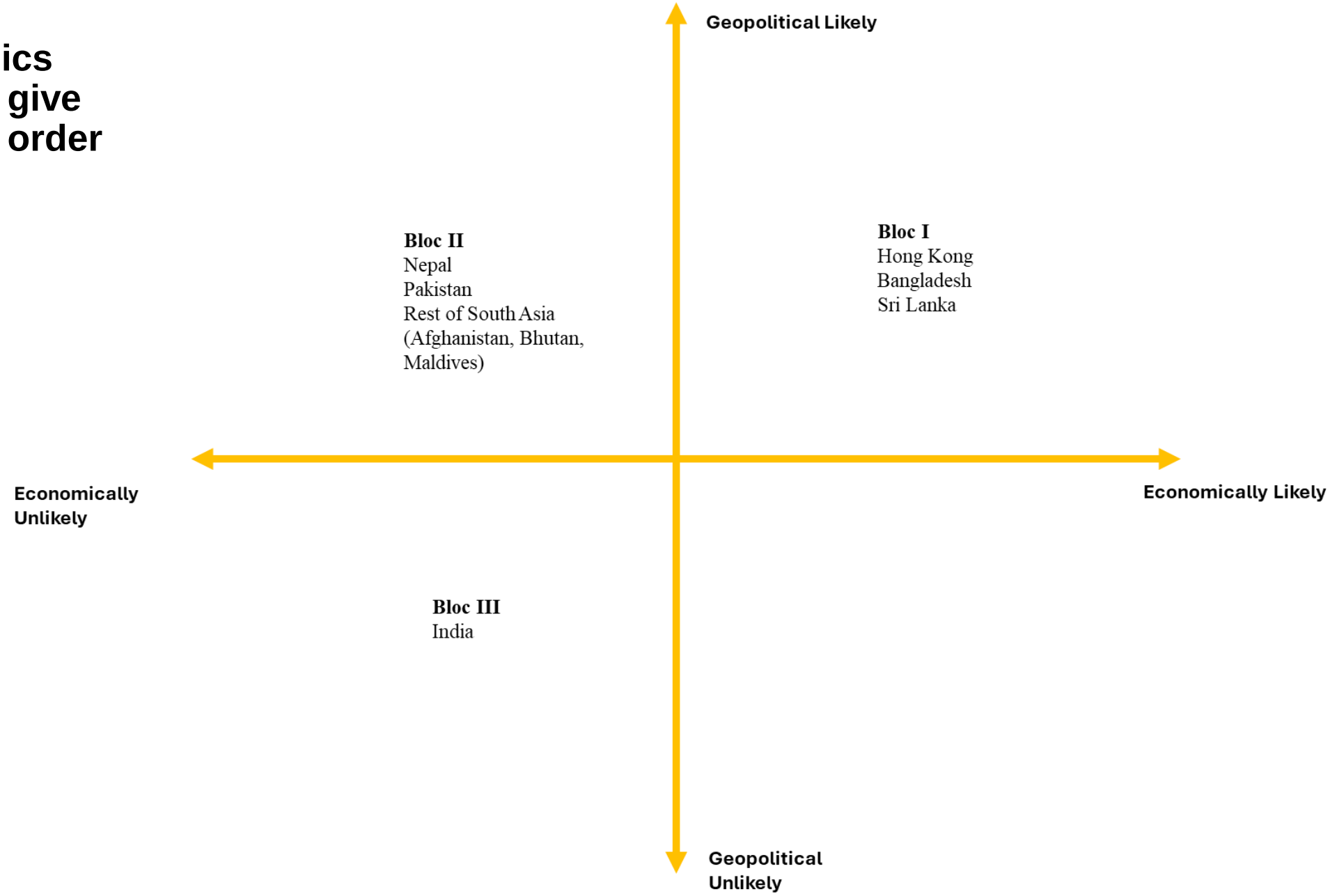
Out of Scope (for now)

- The effects of non-tariff measures
- Partial or phased compliance with tariff reductions
- Understanding the pathways to effects, through dynamic modelling

Assumed starting point for scenarios

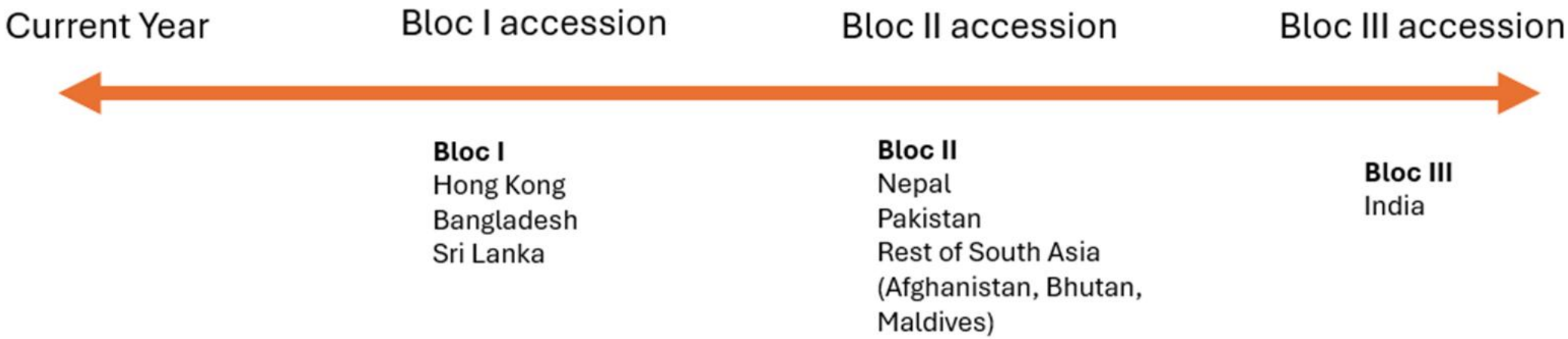


Analysis of economics and geopolitics can give an assumed joining order for RCEP



Order of RCEP Accession

We have posited an order of future RCEP accession to make our work most policy-relevant



34/36-region model

Each country scenario will use this approach to modelling countries and regions to enable cross-comparison

Both CPTPP and RCEP	CPTPP	RCEP	South Asia	Important economies	Rest of World	Only RCEP Scenario
• Australia • Brunei • Japan • Malaysia • New Zealand • Singapore • Vietnam	• Canada • Chile • Mexico • Peru • United Kingdom	• China • Cambodia • Indonesia • Laos • Myanmar • Philippines • Thailand • South Korea	• India • Bangladesh • Sri Lanka • Rest of South Asia	• United States • EU • Taiwan • Hong Kong • Russia	• Africa • South America • Rest of Asia-Pacific • Rest of Americas • Rest of Europe	• Nepal • Pakistan

We need to consider strategic and sensitive sectors

We have modelled the impacts over 20 sectors, including many strategic and sensitive sectors for the key countries under investigation

Primary Crops	Processed Food Products	Chemical & Pharmaceutical Industries	Motor Vehicles and Parts	Livestock & Derived Products
Beverages & Tobacco Products	Mineral Products	Utilities & Construction	Forestry & Fishing	Textiles & Wearing Apparel
Metals and Metal Products	Transport & Communication Services	Coal and Other Extraction	Processed Materials	Computer, Electronic, and Optical Products
Services Sector	Oil & Gas	Petroleum & Coal Products	Machinery and Electrical Equipment	Transport Equipment and Manufactures

Modelling Assumptions

Our model assumes that the following variables are Exogenous/Endogenous

Exogenous Variables	Endogenous Variables
Aggregate Employment	Employment at the Industry Level
Rate of Return to Capital	Aggregate Stock of Capital Owned by each Region
Population	Capital Employed

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Indian trade policy context

India’s trade policy could be construed as protectionist

- India withdrew from RCEP in November 2019.
- India shifted towards a protectionism policy while encouraging 'Make in India' vision, not limited to national companies.
- India has envisioned itself to be a developed economy through its 'Viksit Bharat @ 2047' pathway.
- 'Vocal for Local and take local to global' encourage domestic production operating at efficient level to generate excess supply for strengthening merchandise exports.

DEVELOPED INDIA MISSION 1947 TO 2047

विकसित भारत अभियान 1947 TO 2047

Highlights of simulation

India joins RCEP

- This CGE Modelling scenario of India joining Regional Comprehensive Economic Partnership (RCEP) assumes that Hong Kong, Bangladesh, Sri Lanka, who have already submitted their application for joining RCEP, are already a member of RCEP. Along with countries like Pakistan, Nepal, and Rest of South Asia are, also, assumed to have joined RCEP before India.

- Myanmar is also assumed to be part of RCEP in this CGE modelling scenario. Signatory on November 15, 2020. Ratified on August 4, 2021. Accession: *delayed*.

- The scenario also considered Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) into simulation. United Kingdom (UK) was assumed to have joined CPTPP and was made part of the bloc in the modelling simulation.

Winners
- Australia
- New Zealand
- China
- Indonesia
- Sri Lanka
- Nepal
- Bangladesh

Losers
- Japan
- Singapore
- Taiwan
- South Korea
- Myanmar
- Pakistan
- Cambodia

INDIA
- Decent results
- Rate of return of capital is exogenous
- Future work is critical for analyzing the gravity of the scenario allowing us to bring finesse in our conclusions.

Rest of South Asia includes Afghanistan, Bhutan, and Maldives

Key impacts on India

The impact to India when it joins RCEP

- India’s annual GDP growth rate is expected to increase by 0.41%.
- The export and import volumes of India is intended to grow at 6.16% and 5.11% annually respectively.
- India’s investment is expected to be increased by 0.91% annually.
- The terms of trade (ToT) being negative indicates that India needs to import more. Needs strategic exportation policy.
- The real wages for both unskilled and skilled labour are at par, 0.72% and 0.69%, respectively. This leads to a decrease in demand for skilled labour which creates a pressure situation affecting increase in unemployment.

Domain	Measure	IND
Macroeconomy	Real GDP	**0.412**
	Domestic Consumption	0.281
	Private Investment	**0.913**
	Government Expenditure	0.153
Trade and Capital Flows	Export volumes	**6.156**
	Import volumes	**5.106**
	Terms of Trade	**-0.295**
	Capital Used	0.920
	Rate of Return of Capital	0.000
Price and Economic Welfare	Real Wages (unskilled)	**0.719**
	Real Wages (Skilled)	**0.686**
	Equivalent Variation ($US Mn)	7247.352
	GDP Price Deflator	-0.365

Key impacts on other nations

The impact of India joining RCEP varies across countries

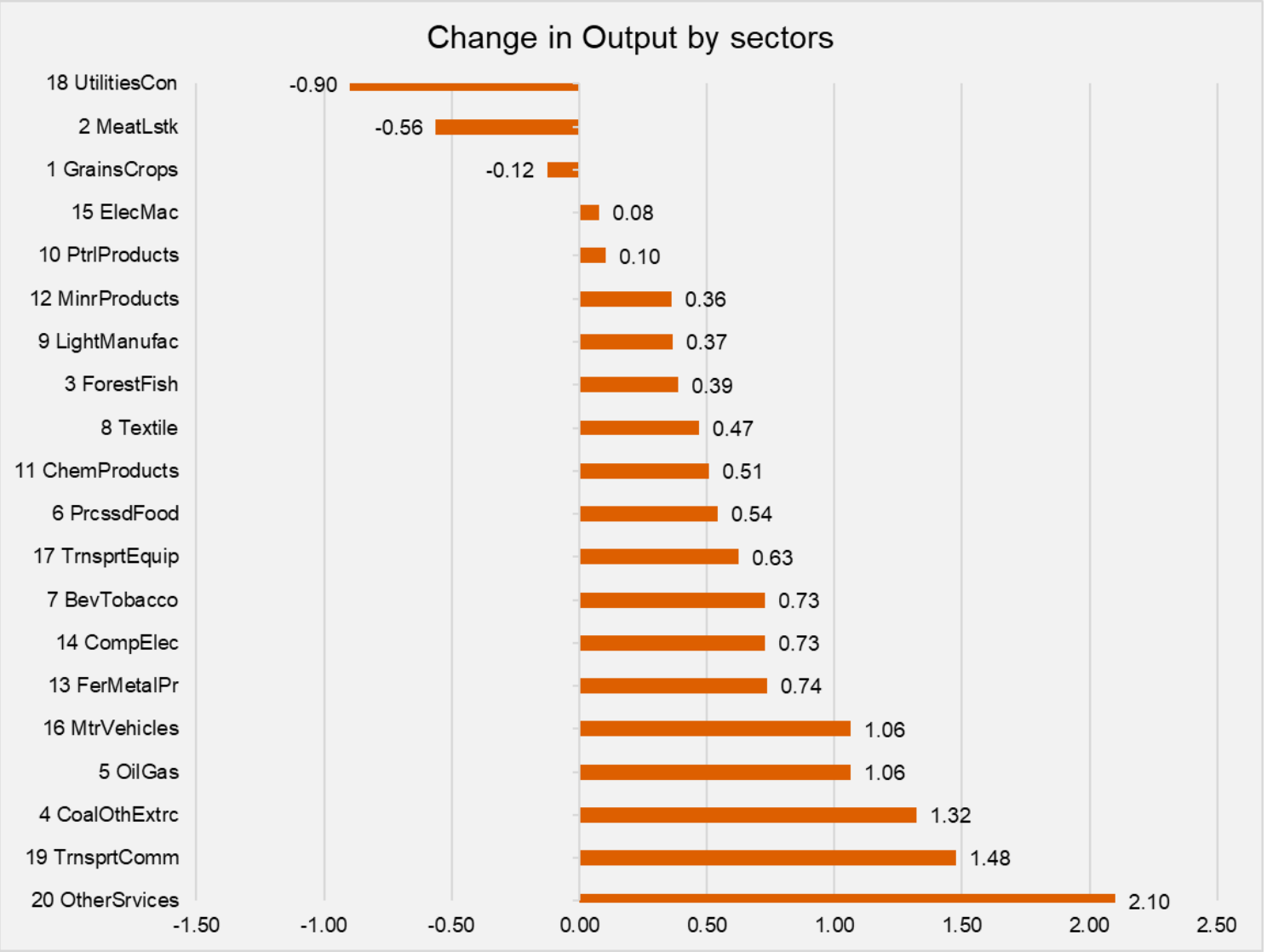
- **Australia, China** and **Indonesia** face positive impacts on **imports**, **exports** and **overall GDP.**
- The marginal increase in the **private investment** leads to the marginal increase in **real wages** for both **skilled and unskilled labours**.
- The **consumer welfare (EV)** increases in these economies, increases as an impact of India joining RCEP.

Domain	Measure	Australia	China	India	Indonesia
Macro	Real GDP	**0.07**	**0.06**	**0.41**	**0.01**
	Domestic Consumption	0.15	0.07	0.28	0.04
	Private Investment	**0.15**	**0.08**	**0.91**	**0.02**
	Government Expenditure	0.12	0.07	0.15	0.06
Trade and Capital Flows	Export volumes	**0.12**	**0.28**	**6.16**	**0.27**
	Import volumes	**0.46**	**0.41**	**5.11**	**0.42**
	Terms of Trade	**0.35**	**0.12**	**-0.30**	**0.23**
	Capital Used	0.16	0.09	0.92	0.03
	Rate of Return of Capital	0.00	0.00	0.00	0.00
Price and Economic Welfare	Real Wages (unskilled)	**0.10**	**0.07**	**0.72**	**0.03**
	Real Wages (Skilled)	**0.10**	**0.07**	**0.69**	**-0.10**
	Equivalent Variation ($US Mn)	**1787.63**	**8510.68**	**7247.35**	**542.00**
	GDP Price Deflator	**0.29**	**0.15**	**-0.37**	**0.29**

Emerging policy insights

Change in output varies across sectors

- The biggest increases in production occur in transportation and communication, and other services.
- Notable decreases in production occur in utilities and construction.
- Agriculture sees a decrease in production across grains and crops, and meat and livestock.



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India joins RCEP – aggregate impacts vs non-participation (%)

We assume India joins after Bloc 1 and Bloc 2

Domain	Measure	AUS	BRU	JPN	MYS	NZL	SIN	VNM
Macroeconomy	Real GDP	0.07	-0.01	-0.01	0.00	0.02	-0.04	0.09
	Domestic Consumption	0.15	-0.01	-0.01	0.02	0.03	-0.05	0.04
	Private Investment	0.15	-0.02	-0.03	-0.04	0.03	-0.08	0.14
	Government Expenditure	0.12	-0.01	-0.01	-0.01	0.02	-0.05	-0.02
Trade and Capital Flows	Export volumes	0.12	0.00	0.00	0.02	0.03	-0.07	0.20
	Import volumes	0.46	-0.01	-0.04	0.02	0.06	-0.09	0.17
	Terms of Trade	0.35	-0.01	-0.02	0.01	0.03	-0.02	-0.03
	Capital Used	0.16	-0.01	-0.02	-0.03	0.03	-0.07	0.15
	Rate of Return of Capital	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Price and Economic Welfare	Real Wages (unskilled)	0.10	-0.02	-0.01	0.06	0.02	-0.03	0.20
	Real Wages (Skilled)	0.10	-0.14	-0.01	0.01	0.02	-0.04	0.13
	Equivalent Variation ($US Mn)	1787.63	-0.87	-471.43	45.94	55.10	-147.59	77.07
	GDP Price Deflator	0.29	-0.01	-0.01	-0.01	0.06	-0.04	-0.16

India joins RCEP – aggregate impacts vs non-participation (%)

We assume India joins after Bloc 1 and Bloc 2

Domain	Measure	CHN	KOR	TWN	IDN	PHI	IND	THA	HKG
Macroeconomy	Real GDP	0.06	-0.01	-0.03	0.01	0.07	0.05	0.41	-0.01
	Domestic Consumption	0.07	-0.02	-0.04	0.04	0.03	0.02	0.28	0.01
	Private Investment	0.08	-0.03	-0.07	0.02	0.09	0.06	0.91	-0.03
	Government Expenditure	0.07	-0.02	-0.03	0.06	0.03	0.01	0.15	0.00
Trade and Capital Flows	Export volumes	0.28	-0.01	-0.05	0.27	0.17	0.12	6.16	0.01
	Import volumes	0.41	-0.05	-0.08	0.42	0.09	0.10	5.11	0.02
	Terms of Trade	0.12	-0.03	-0.03	0.23	-0.06	-0.04	-0.30	0.02
	Capital Used	0.09	-0.02	-0.06	0.03	0.09	0.07	0.92	-0.02
	Rate of Return of Capital	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Price and Economic Welfare	Real Wages (unskilled)	0.07	-0.02	-0.04	0.03	0.05	0.05	0.72	0.00
	Real Wages (Skilled)	0.07	-0.02	-0.04	-0.10	0.05	0.05	0.69	0.00
	Equivalent Variation ($US Mn)	8510.68	-258.85	-216.78	542.00	112.00	93.63	7247.35	13.76
	GDP Price Deflator	0.15	-0.03	-0.05	0.29	-0.06	-0.06	-0.37	0.04

India joins RCEP – aggregate impacts vs non-participation (%)

We assume India joins after Bloc 1 and Bloc 2

Domain	Measure	CAM	LAO	MYN	BAN	NPL	PAK	SLA	RoSA
Macroeconomy	Real GDP	-0.03	-0.03	-0.02	0.20	3.37	-0.06	0.71	0.34
	Domestic Consumption	-0.07	-0.03	-0.06	0.11	1.70	-0.08	0.53	-0.08
	Private Investment	-0.09	-0.08	-0.06	0.32	6.44	-0.10	0.84	0.53
	Government Expenditure	-0.08	-0.01	-0.10	0.02	0.13	-0.09	0.37	-0.17
Trade and Capital Flows	Export volumes	-0.03	-0.03	-0.07	1.40	17.25	0.32	2.35	0.96
	Import volumes	-0.08	-0.06	-0.17	1.00	5.16	-0.01	1.53	-0.11
	Terms of Trade	-0.05	0.00	-0.16	-0.32	-3.98	-0.13	-0.54	-0.48
	Capital Used	-0.08	-0.07	-0.05	0.32	6.44	-0.09	0.85	0.54
	Rate of Return of Capital	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Price and Economic Welfare	Real Wages (unskilled)	-0.03	-0.03	-0.02	0.26	4.52	-0.03	0.78	0.14
	Real Wages (Skilled)	-0.02	-0.07	0.08	0.25	5.72	-0.05	0.96	0.38
	Equivalent Variation ($US Mn)	-15.57	3.83	-50.95	318.31	386.84	-249.95	432.41	-30.80
	GDP Price Deflator	-0.10	0.01	-0.20	-0.31	-4.87	-0.11	-0.93	-0.99