

Unlocking India's Export Opportunities in ASEAN: Insights from GTAP Model and Viner's Trade Creation Methodology

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Abstract

ASEAN is an important trading partner for India. In this paper, we use the version 11 of the GTAP database and the GTAP modelling framework to study the impact of India-ASEAN tariff liberalisation on important macroeconomic variables such as output, employment, and welfare of the economies of India and the ASEAN member countries. The impact of trade liberalization on trade structure and bilateral trade between India and ASEAN members is also studied, through simulating a scenario of full liberalization (implying complete elimination of all tariffs between India and the ASEAN region) in order to place an upper limit on the gains that might be achieved through the FTA. The paper reveals that full trade liberalisation is expected to increase India's trade with ASEAN countries particularly Vietnam, Cambodia, Philippines, Thailand, and Indonesia, boosting both exports and imports. India also experiences substantial welfare gain, primarily attributable to the endowment effect. In the ASEAN region, Indonesia, Vietnam and Thailand show positive welfare gains with the largest gain accruing to Indonesia. The smaller countries also enjoy positive welfare gains except the Lao People's Democratic Republic and the rest of ASEAN. The paper further assesses India's export competitiveness in the ASEAN market at the sectoral level, utilizing Viner's trade creation approach, which focuses on price competitiveness at the HS 6-digit level. The analysis identified five most significant trading partners in the region (Singapore, Thailand, Malaysia, Vietnam, Indonesia) which represent substantial trading opportunities in the five broad sectors (Machinery, Chemical products, Base metals, Plastics, Minerals).

Keywords: CGE modeling, ASEAN, India, FTA, trade potential

Introduction

Association of South East Asian Nations (ASEAN) is an emerging and promising trade bloc, with a high growth rate and immense trade potential. In 2022, the ASEAN economy expanded by 5.7%, maintaining an average annual growth rate of 4.4% during 2010-2022. This growth outpaced the global economy, which grew by 3.5% in 2022. ASEAN now ranks as the fifth-largest economy globally, following the U.S., China, Japan, and Germany, with a nominal GDP estimated at US\$3.6 trillion (The ASEAN Secretariat, 2023). Additionally, ASEAN's global

merchandise trade surged by 13%, reaching US\$3.3 trillion¹ in 2022. With India and ASEAN set to review the existing FTA in goods, the possibility of India increasing its market access in the ASEAN regional economies has attracted traction. India is keen on capitalizing on the significant growth potential presented by Southeast Asian nations and reducing its import reliance on other countries, especially China (Singh 2021). Recent studies have also indicated that the integration of South Asia and Southeast Asia could yield substantial economic benefits for both the regions (World Bank 2022, Chandra & Kumar 2010). With the introduction of comprehensive reforms in India in 1991, the then government announced the 'Look East' Policy (upgraded to the 'Act East' Policy in 2014) which was particularly focused on enhancing India's trade and economic partnership with Southeast Asian and East Asian region, especially with the 10 Association of South East Asian Nations (ASEAN). According to trade data obtained from UN ComTrade Database (accessed using World Integrated Trading Solution (WITS) platform), it is evident that the Look East Policy (now the Act East Policy) has had a substantial impact on trade outputs between India and ASEAN. Since the implementation of the LEP, bilateral trade has shown remarkable growth, surging from US\$2.7 billion in 1993 to US\$133.4 billion in 2022.

Over the last three decades, the India-ASEAN relationship has evolved into a strong economic co-dependence, starting with a sectoral partnership in 1992 that culminated into signing of the ASEAN-India Free Trade Agreement (FTA) in goods in 2009. This integration further deepened as the India-ASEAN Comprehensive Economic Cooperation Agreement (CECA) became fully operational in July 2015, after the agreement on trade in services and investment entered into force. Further, India's economic structure, which is predominantly service-oriented, complements ASEAN's light manufacturing sector, which encompasses industries such as electronics, textiles, and automotive. This complementarity presents significant opportunities for mutual gain and collaboration.

India-ASEAN FTA was implemented in 2010 initially with respect to Malaysia, Singapore and Thailand. For the remaining ASEAN members it came into force by 2016 after the countries completed their internal requirements. India has steadily reduced tariffs on manufactured goods since the agreement came into force (Nag 2016). This has opened up a new opportunity for expansion of the ASEAN production network to India. A casual look into the evolving India-ASEAN trade scenario reveals the ASEAN region as one of the India's largest trading partner (accounting for approximately 10 per cent of India's total trade), and its exports have increased so sharply that it is inflicting an unsustainable trade deficit on India which has achieved a moderate bilateral export growth only so far.

Figures 1a and 1b show the destinations and sources of ASEAN exports and imports by its trading partners for the year 2017 constructed from the GTAP 11 database. The figures show that India accounts for around 3.7% of ASEAN exports and 2.6% of ASEAN's global imports. China is the most important import source and export destination for ASEAN, accounting for 22.1 percent and 19.6 percent of ASEAN's imports and exports, respectively. Figures 2a and

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2b show that the ASEAN is much more important as a trading partner for India, accounting for 10 percent of imports and 9 percent of exports, respectively. USA and the 27 member European Union (EU) combined are the largest sources and destinations of India's trade flows (representing 20% of imports and 35% of exports), followed by China (16% of India's imports and 6% of exports).

Fig 1a Destination of ASEAN Exports, 2017

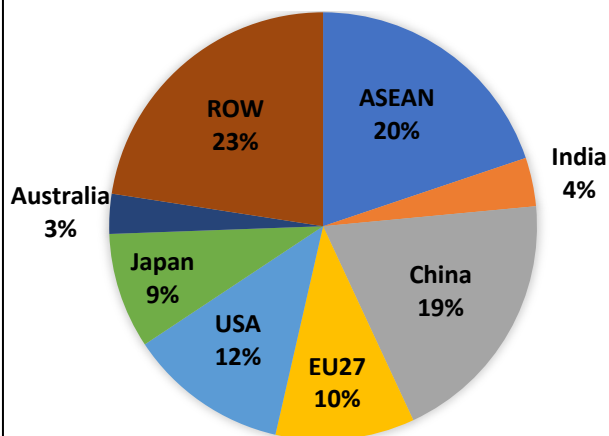
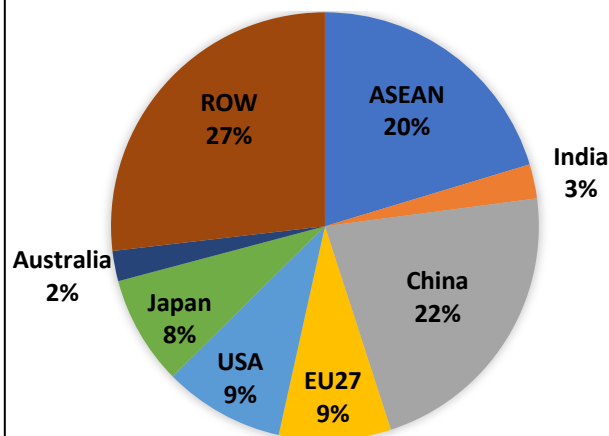


Fig 1b Sources of ASEAN Imports, 2017



Source: GTAP 11 database.

Fig 2a Destination of India's Exports, 2017

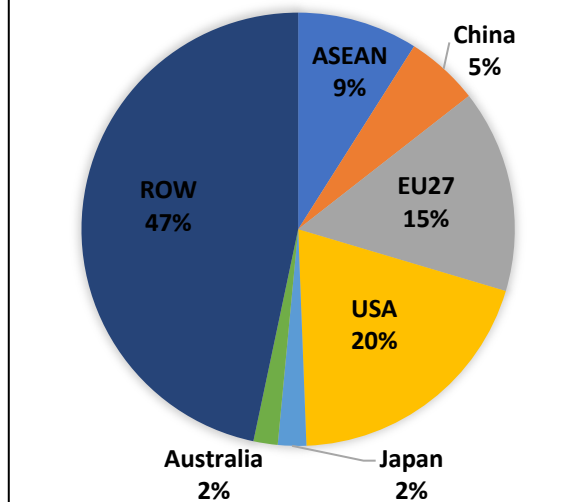
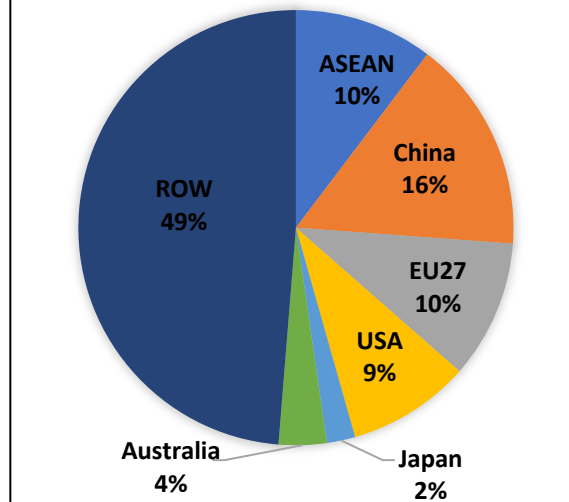


Fig 2b Sources of India's Imports, 2017



Source: GTAP 11 database.

For reversing the problem of trade imbalances without interrupting the present flow of bilateral trade, sharp focus on the growth of India's exports may be emphasised for the balanced growth of the domestic external sector. For addressing trade imbalances, India should substantially improve its presence in the ASEAN market.

Against this backdrop, the objective of the paper is two-fold:

1. To analyse the impact of the India-ASEAN FTA, under full-liberalisation scenario, using CGE modelling framework and GTAP 11 database with the base year of 2017. The results of the simulations are used to assess the impact of this liberalization, both on the external sector and on domestic macroeconomic variables in India and ASEAN. The welfare implications of the FTA for the countries are also studied.
2. To empirically analyse India's untapped trade potential at a disaggregated product level (i.e., 6-digit HS) in the individual ASEAN member countries, utilizing the Viner's trade creation model, for the years 2010 and 2022.

Methodological Framework

Experiment Design: Regional and Sector Aggregation

The analysis conducted in this study builds on the GTAP general equilibrium modelling. We use version 11 of the GTAP database with the base year of 2017. The 160 regions of the world are aggregated into 17 regions for the purpose of this study. They are Cambodia, India, Indonesia, the Lao People's Democratic Republic, the Philippines, Malaysia, Brunei Darussalam, Singapore, Thailand, Viet Nam, the rest of ASEAN (comprising of Myanmar and Timor-Leste) as well as China, the European Union, the United States, Japan, Australia and the rest of the world. In this aggregation, Myanmar and Timor-Leste are taken as part of the rest of South-East Asia as per the regional aggregation in the GTAP 11 database. The other countries of the world have been classified keeping in mind the major trading partners of India.

Table 1: Simulation using the GTAP 11 database

Simulation	Regional Aggregation	Sectoral Aggregation	Model specification
Full Liberalization	Cambodia, India, Indonesia, the Lao People's Democratic Republic, the Philippines, Malaysia, Brunei Darussalam, Singapore, Thailand, Vietnam, the rest of ASEAN (comprising of Myanmar and Timor-Leste), China, EU, USA, Japan, Australia, ROW	25 sectors	Perfect competition in factors and product markets, and production function, subject to constant returns to scale – standard GTAP specification. Unemployment captured in the model — Fixed Real Wages with Endogenous & Flexible Labour Supply.

Similarly, the 65 sectors of the GTAP model have been aggregated into the following 25 sectors: Rice; other cereals grains and crops; bovine meat products; other livestock and meat

products; coal and oil; other mining and extraction; vegetable oils and fats; other processed food; textiles and wearing apparel; paper products; motor vehicle and parts; other light manufacturing; rubber and plastic products; petroleum products; chemical products; computer, electronic and optical products; ferrous metals; electrical equipment; machinery and equipment nec; pharmaceutical products; other heavy manufacturing; utilities and construction; communication; other business services; and other services.

Estimation of Export Potential: Viner's Trade Creation Model

Within economic literature, the Vinerian approach (1950) holds a prominent position as a widely adopted method for assessing the competitiveness of an economy at the disaggregated product level. This framework is regarded as superior to other approaches, particularly in the examination of export competitiveness and the estimation of trade potentials, as noted by researchers such as Mohanty and Arockiasamy (2008), Kumar and Mohanty (2000), and Greenway *et al.* (1989). Under the Vinerian approach, a product is categorized as trade creation when it is naturally competitive, typically due to a comparative cost advantage. Conversely, a product that lacks natural competitiveness but gains it through tariff adjustments within a preferential trade arrangement is classified as trade diversion. The cornerstone for estimating trade potential in this context lies in price competitiveness, whether it is naturally inherent or policy-induced.

Price Competitiveness

In our research methodology, we focus on estimating price competitiveness, where each product is individually evaluated at a disaggregated level, specifically at the 6-digit HS classification level. This meticulous approach involves a thorough comparison of the export prices for each product group at the 6-digit level originating from India with the corresponding prices offered by its competing counterparts in the destination market, which, in this case, pertains to the ASEAN member states. In this analysis, trade potential of the j^{th} country (i.e., India) is estimated in k^{th} country (i.e., ASEAN member country).

Competitive Products: Trade Creation

Let us assume that j^{th} country exports i^{th} product to the world at a given price (P_{xiw}). Importing country k has several suppliers for the i^{th} product, i.e.,

$$Suppliers_{ik} = 1, 2, 3, \dots, j, \dots, l, \dots, m, \dots, r, \dots, s, \dots, n$$

Consider another competing supplier s also exporting the same product to country k at a different price (P_{xirk}), where P_{xiw} denotes export price of j^{th} country, for the i^{th} product in the global market, P_{xirk} represents export price of the i^{th} product of the s^{th} competitor in k^{th} market. Country j may prefer to maintain its global price in the k^{th} market in order to maintain its competitiveness, and if this is a case, then $P_{xiw} = P_{xij}$.

For the i^{th} product, if j^{th} country has price competitiveness over a few other competitors in the k^{th} market, then the export price of j^{th} country should be lower than those of other competitors in the k^{th} market. In such a case, the condition may be:

$$P_{xij} < P_{mik} \dots \dots \dots (1)$$

This is the case of the i^{th} product where j^{th} country has absolute price competitiveness over some suppliers in the k^{th} country. Like i^{th} commodity, all those products where j^{th} country has competitiveness in the k^{th} country would be j^{th} country's competitive products based on trade creation.

Trade Potential

If j^{th} country has price competitiveness in one product, it does not mean that all the competitors in that product category necessarily have higher prices than that of j^{th} country. For a given product (i), some of the competitors may also offer lower prices than j^{th} country. In that case, j^{th} country must look at the market share of those competitors, whose export prices are higher than that of j^{th} country. The export market share of j^{th} country's inefficient competitors may be considered as India's export potential. Viner (1950) referred such trade potential as the trade creation effect of the j^{th} country in a regional trading arrangement.

Suppose that j^{th} country exports i^{th} product, while another r number of suppliers are also present for the same product segment in the k^{th} market. Each competitor (supplier) holds some portion of the market share (Sh_{irk}) in the import of the i^{th} product by the k^{th} market. Therefore, all the suppliers cover total market share of the k^{th} market for the i^{th} product. It implies the following.

$$\sum Sh_{irk} = 100$$

where, Sh_{irk} stands for the market share of r -number of exporters of the i^{th} product to the k^{th} market.

Suppose that j^{th} country has price competitiveness over a few competitors (but not all of them) in the export of i^{th} product, and in case j^{th} country effectively enters the k^{th} market as a supplier, the combined market share of uncompetitive suppliers, assuming sum of ratio as $\acute{a}$, may be treated as j^{th} country's potential export share.

$$0 < \acute{a} < 1$$

Where, $\acute{a}$ denotes the proportion of the market for the i^{th} product, which is covered by the exports of less competitive competitors of j^{th} country in the market of k^{th} country.

The export potential of India (POT_{ij}) in the exports of i^{th} product in the k^{th} country may be estimated as:

$$POT_{ij} = \psi M_{ij}$$

where, M_{ij} stands for total imports of the i^{th} product by k^{th} country from all sources. If ψ is less than 1, it means that j^{th} country has price edge over a few competitors and a part of the k^{th} import market (i.e. ψ) will constitute j^{th} country's potential export. If ψ is equal to 1, it means that the entire import of the i^{th} product by the k^{th} market would be potential export of the j^{th} country. This trade potential may be considered as modified trade creation effect of a regional trading arrangement (Mohanty, 2003).

Decomposition of Potential Exports: Future and Presently Traded Products

As discussed earlier, j^{th} country's global export prices are considered for the estimation of j^{th} country's export competitiveness. One can find that j^{th} country has export competitiveness for p^{th} number of disaggregated items, and from which many items (i.e., p_a) are currently exported and many items (i.e., p_b) are not introduced by the j^{th} country in k^{th} country, but have the export competitiveness. Export potential of the j^{th} country can be decomposed into trade potential of products which are presently traded, using p_a and trade potential of products which are to be traded in future using p_b .

The estimated potential exports have been kept at a conservative level by assumption in order to achieve the target at the medium term. Otherwise, the actual potential in Viner's sense could be many times higher than what is presented in the study. It is assumed in the present study that in case of detection of an inefficient supplier in a member country's market with respect to a potential member exporter, only 5 per cent of the current supplies of the inefficient supplier would be treated as export potential of the exporting country, whereas Viner assumed that 100 per cent of inefficient supplier's export would be treated as export potential of the member exporter.

It is important to acknowledge a significant drawback of this approach, which lies in the omission of other factors that influence competitiveness, such as product quality and post-delivery services, among various other factors. These elements are not accounted for within the model and represent a constraint. Furthermore, this approach does not address scenarios where an Indian product exhibits global competitiveness but fails to capitalize on export potentials within a specific economy. The identification and exploration of the myriad economic and non-economic factors influencing this phenomenon extend beyond the scope of the current study. It is essential to note that international trade data can be subject to distortions, making it challenging to conduct a more precise analysis using existing databases.

Results and Discussion

CGE Modeling Results

Impact on select macroeconomic and trade variables of India and ASEAN Region

A scenario of a full FTA between India and the 10 ASEAN countries was simulated. Under this scenario all tariffs on imports from all the ASEAN member countries to India were reduced to zero and, similarly, tariffs on all products imported by the ASEAN members from India were brought down to zero.

The implications of full liberalization on select macroeconomic indicators for the countries are presented in Table 2. It can be seen that India would experience a 0.18% increase in GDP and a 0.40% increase in skilled employment and a 0.31% increase in unskilled labour employment. However, the GDP price index increases by 0.15%. Among the ASEAN members, the highest increases in GDP are experienced by Vietnam (0.24%) and Thailand (0.06%). Among the bigger countries, Singapore and Malaysia show increases in GDP of 0.04% and 0.05%, respectively. Lao experience a 0.03% fall in GDP. On the employment front, Vietnam and Thailand shows a phenomenal increase in employment levels. All the other ASEAN members also show high increases in employment except Lao and Indonesia. The GDP price index increases in all countries except Cambodia, Philippines, Vietnam and the rest of ASEAN. The highest increase is recorded by Indonesia (0.43%).

Thus, in terms of the selected macroeconomic indicators (table 2), Lao appears to be most adversely affected by full liberalization of bilateral trade between India and the ASEAN region. Indonesia suffers in terms of fall in skilled labour employment levels and increase in its GDP price index. Cambodia, Philippines, Vietnam and the rest of ASEAN are better off in terms of all indicators. India also appears to experience a positive impact except for a rise in its GDP price index. Therefore, under the full liberalization scenario, Cambodia, Philippines, Vietnam and the rest of ASEAN stand to gain the most in terms of macroeconomic indicators.

Table 2. Percent Change in select macroeconomic variables

Country	Change in GDP Quantity Index	Change in Employment		Change in GDP Price Index
		Skilled Labour	Unskilled Labour	
India	0.18	0.40	0.31	0.15
Malaysia	0.05	0.08	0.13	0.03
Singapore	0.04	0.08	0.08	0.06
Thailand	0.06	0.16	0.14	0.06
Cambodia	0.03	0.10	0.05	-0.02
Indonesia	0.01	-0.06	0.08	0.43
Lao PDR	-0.03	-0.11	-0.02	0.12
Brunei	0.01	0.04	0.04	0.04
Philippines	0.03	0.06	0.05	-0.04
Viet Nam	0.24	0.39	0.45	-0.05
Rest of ASEAN	0.01	0.04	0.02	-0.05

Source: CGE Simulation Results

Table 3 provide a summary of the output changes that result from the full tariff liberalization between India and ASEAN. It shows the adversely and favourably affected sectors in terms of changes in output due to the implementation of tariff reforms. For India, 60 percent of the commodity groups indicate a change in domestic output in a positive direction with a relatively higher increase in Bovine Meat Products, Motor Vehicle and Parts, Ferrous Metals, Machinery and equipment. Output of vegetable fats and oils falls substantially followed by Rubber and plastic products; Chemical products; and Pharmaceutical products. However, all the ASEAN members except Lao experience the maximum increase in output in vegetable fats and oils with maximum output increase registered in Indonesia (3.81%) followed by Malaysia (1.31%). Output of Grains and Crops except Rice also rises in all the ASEAN countries except Myanmar which shows a 0.06% fall in sectoral output. On the other hand, output of bovine meat products falls in all the ASEAN countries except Malaysia which shows a 0.23% increase in sectoral output.

Table 3: Percent Change in Sectoral Output

Commodity Group	India	BRN	KHM	IDN	LAO	MYS	PHL	SGP	THA	VNM	MY M_T
Rice	0.17	0.17	-0.04	-0.13	-0.1	-2.01	-0.3	0.56	-0.04	-0.52	0.03
Other Grains and Crops	-0.09	0.02	0	1.04	0.12	0.69	0.02	0.38	0.01	0.95	-0.06
Bovine Meat Products	4.59	-0.08	-0.17	-0.59	-0.44	0.23	-1.96	-0.03	-0.03	-0.71	0
Other Livestock and Meat Products	0.34	0.07	-0.02	-0.25	-0.12	-0.2	0	0.05	-0.08	0.28	0.02
Coal & Oil	-0.04	-0.01	0.04	-0.14	0.01	0	0.01	0.01	-0.02	0.01	0.04
Other Mining and Extraction	-0.03	-0.02	-0.02	-0.26	-0.12	0	0.01	-0.02	-0.03	0.17	0.03
Veg Fats & Oils	-6.15	0.84	0.59	3.81	-0.52	1.39	0.61	0.99	0.58	0.29	0.98
Other Processed Food	0.55	-0.08	-0.03	-0.27	-0.69	-0.11	0.04	2.55	-0.02	-0.25	-0.07
Textiles & Wearing apparel	-0.12	-0.11	0.04	-1.2	-0.37	-0.01	-0.02	0.39	-0.12	0.23	0.14
Paper Products	0.10	0	-0.01	-0.42	-0.23	0.06	0.06	0.01	-0.04	0.1	0.11
Motor Vehicle and parts	1.13	-0.08	-0.24	-1.36	-0.39	0.11	-0.62	1.79	0.61	-1.53	-0.04
Other Light Mnfc	0.16	-0.17	-0.04	-0.94	-0.5	0.14	-0.2	-0.18	0.12	0.11	0.02
Rubber & plastic Prod	-0.72	-0.09	3.07	2.81	-0.27	0.17	0.06	0.84	0.45	1.24	0.35
Petroleum, coal products	0.09	0	0.05	0.01	-0.14	0.14	0	0.25	0.17	0.16	-0.03
Chemical products	-0.34	-0.14	0.03	-0.57	-0.28	0.2	0.05	0.08	0.41	0.36	-0.01
Computer, electronic, optical products	-0.10	-0.20	-0.10	-1.78	-0.34	-0.23	0.06	-0.24	-0.33	-0.19	-0.01
Ferrous metals	0.64	-0.18	-0.01	-0.84	-0.23	-0.66	-0.01	-0.48	-0.09	-0.11	0
Electrical equipment	0.26	-0.44	0	-1.81	-0.62	-0.09	0.06	0.04	-0.11	0	-0.11
Machinery and equipment nec	0.29	-0.36	-0.05	-1.09	-0.36	0.02	0.14	-0.17	0.20	0.22	0
Pharma Products	-0.19	0.04	0.06	-0.6	-0.58	-0.02	-0.12	-0.26	-0.27	0.07	-0.13
Other Heavy Mnfc	0.08	-0.02	0.06	-0.8	-0.18	0.14	-0.01	-0.11	-0.08	0.13	0.04
Utilities & Cons	0.47	0.08	0.10	0.23	0.03	0.08	0.13	0.11	0.30	0.43	0.03
Communication	-0.10	0.08	0.01	-0.03	-0.05	0.05	0.03	0.03	0.01	0.24	0.01
Other Business Services	0.09	0.07	0.02	-0.12	-0.09	0.04	0.03	-0.02	0	0.24	0.03
Other Services	0.22	0.01	0	-0.01	-0.06	0.04	0.01	0.03	0.03	0.24	0.01

Source: CGE Simulation Results

India's export and import volumes increase under the full liberalization scenario, as shown in Table 4. Notably, the increase in imports (1.38%) surpasses the increase in exports (0.47%). This results in a significantly high trade deficit for India compared to ASEAN member countries. However, India experiences a slight improvement in its terms of trade.

In the full liberalization scenario, exports increase in Malaysia, Thailand, Cambodia, the Philippines, Vietnam, and the rest of ASEAN. Vietnam sees the highest increase at 0.34% in the region. Imports increase in all countries, leading to an overall increase in trade in the

ASEAN region. However, the trade deficit is expected to worsen slightly in all these countries. The terms of trade improve in most countries, except for Cambodia, the Philippines, and the rest of ASEAN. Indonesia experiences a significant improvement in terms of trade at 0.34%. Therefore, full liberalization with the elimination of all tariffs in bilateral trade between India and ASEAN members is likely to result in substantial increases in trade volume for both India and the ASEAN region.

Table 4: Percent Change in trade variables

Country	Change in volume of exports	Change in volume of imports	Change in trade balance (US\$ Mn)	Change in terms of trade
India	0.47	1.38	-4666.72	0.15
Malaysia	0.09	0.17	-45.48	0.03
Singapore	0.00	0.08	-160.99	0.03
Thailand	0.10	0.36	-445.5	0.04
Cambodia	0.06	0.06	-5.31	-0.02
Indonesia	-0.11	0.66	-730.76	0.34
Lao PDR	-0.08	0.01	-2.08	0.06
Brunei	-0.04	0.05	-4.54	0.01
Philippines	0.11	0.16	-120.04	-0.02
Viet Nam	0.34	0.46	-299.00	0.03
Rest of ASEAN	0.07	0.04	-6.88	-0.04

Source: CGE Simulation Results

Now, turning to the impact of this FTA on total trade of India and the ASEAN members as predicted by the GTAP model. Table 5 provides percentage change in total exports of India and the ASEAN members under full liberalization of India-ASEAN FTA. GTAP results indicate an increase in India's total exports by 0.47% with an increase in exports of bovine meat products by 11.3%, vegetable fats and oils by 8.6%, motor vehicle and parts by 8%, and other processed food by 6.3%. On the other hand, the major contribution of the rise in exports of large economies of ASEAN members such as Singapore, Malaysia and Thailand come from veg fats and oils, motor vehicle and parts, Rubber and Plastic products, petroleum products, and chemical products. Singapore registers the maximum increase in rice exports (6.5%) followed by other processed food (3.7%). Vietnam registers the maximum increase in exports of bovine meat products (13.9%) followed by other grains and crops (6.7%) and other mining and extraction (4.2%). Indonesia experiences the largest increase in exports of other grains and crops (9.4%) followed by rubber and plastic products (6.4%) and vegetable fats and oils (5.1%).

Table 5: Percent Change in Sectoral Exports

Commodity Group	India	BRN	KHM	IDN	LAO	MYS	PHL	SGP	THA	VNM	MYM T
Rice	0.78	-4.01	-0.25	-6.70	-0.67	0.50	1.24	6.47	-0.09	-2.31	0.41
Other Grains and Crops	5.82	-0.33	-0.80	9.43	2.40	-2.18	0.34	0.55	0.15	6.65	-0.74
Bovine Meat Products	11.28	-0.43	-0.59	-3.42	-0.38	-1.17	0.32	-1.11	-1.70	13.91	0.08
Other Livestock and Meat Products	-1.36	-0.18	0.03	-4.55	-0.49	-1.49	0.42	-0.23	-0.50	0.65	0.38
Coal & Oil	-1.28	-0.01	-0.56	-0.19	-0.56	-0.18	-0.15	-0.43	-0.49	-0.31	0.05
Other Mining and Extraction	-1.6	-0.04	-0.38	-1.29	-0.14	-0.08	-0.04	-0.23	-0.87	4.21	0.06
Veg Fats & Oils	8.56	0.84	2.57	5.05	0.79	2.04	2.14	1.04	8.93	0.47	0.20
Other Processed Food	6.26	-0.42	-1.10	-1.75	-1.66	0.44	0.50	3.71	-0.02	1.30	0.02
Textiles & Wearing apparel	-0.46	-0.32	0.05	-1.64	-0.40	0.15	0.22	0.75	-0.02	0.30	0.26
Paper Products	0.55	-0.15	0.02	-1.57	-0.22	0.21	0.13	-0.19	-0.30	0.06	0.12
Motor Vehicle and parts	7.99	-0.33	-0.48	-2.59	-1.46	0.30	-0.44	2.24	0.99	0.32	-0.47
Other Light Mnfc	-0.08	-0.40	0	-2.24	-0.65	0.39	0.16	-0.32	0.29	0.12	0.13
Rubber & plastic Prod	1.8	-0.17	3.63	6.39	-0.27	0.46	0.77	1.72	0.71	3.15	0.55
Petroleum, coal products	-0.26	-0.01	0.13	0.82	-0.03	0.38	-0.02	0.32	0.21	-0.04	0.71
Chemical products	-0.03	-0.15	-0.12	-0.39	-0.33	0.34	0.11	0.09	0.69	0.57	0.22
Computer, electronic, optical products	-0.97	-0.48	-0.20	-2.43	-0.34	-0.25	0.06	-0.25	-0.49	-0.18	0.10
Ferrous metals	1.68	-0.33	-0.11	-1.26	-0.32	0.39	-0.12	-1.01	-0.53	-0.34	0.01
Electrical equipment	0.89	-0.48	0.04	-2.17	-0.62	-0.09	0.12	0.07	-0.13	0.07	0.26
Machinery and equipment nec	0.27	-0.44	0.09	-1.15	-0.42	0.04	0.14	-0.23	0.27	0.19	0.07
Pharma Products	-0.67	-0.17	-0.05	-2.16	-0.21	-0.06	-0.10	-0.28	-0.55	0.23	0.25
Other Heavy Mnfc	-0.65	-0.24	-0.03	-1.62	-0.23	0.28	-0.06	-0.27	-0.35	0.14	0.07
Utilities & Cons	-0.70	-0.11	-0.07	-1.30	0.08	0.22	0.02	-0.09	-0.29	-0.2	0
Communication	-0.85	-0.09	-0.06	-1.30	-0.21	0	0.07	-0.07	-0.39	-0.05	0.06
Other Business Services	-0.67	-0.12	-0.01	-1.31	-0.29	-0.04	0.05	-0.13	-0.34	0.01	0.08
Other Services	-0.62	-0.04	-0.05	-1.25	-0.24	-0.03	0.01	-0.07	-0.26	-0.03	0.10

Source: CGE Simulation Results

Table 6 provides percentage change in total imports of India and the ASEAN members found by the GTAP model under India-ASEAN FTA. GTAP results indicate an increase in total imports of all commodity groups in both India and ASEAN. India's total import increases by 1.38%, with substantial increase in imports of rice by 148%, rubber and plastic products by 13%, vegetable fats and oils by 10% and other processed food by 6.3%. Among the ASEAN members, Indonesia experiences increase in imports across all the commodity groups with largest increase observed in Bovine meat products (7.1%) followed by Rice (5.3%). The same is true for Thailand with largest import increases in Rice (26.4%). Malaysia experiences a rise in imports in all the sectors except computer products.

Table 6: Percent Change in Sectoral Imports

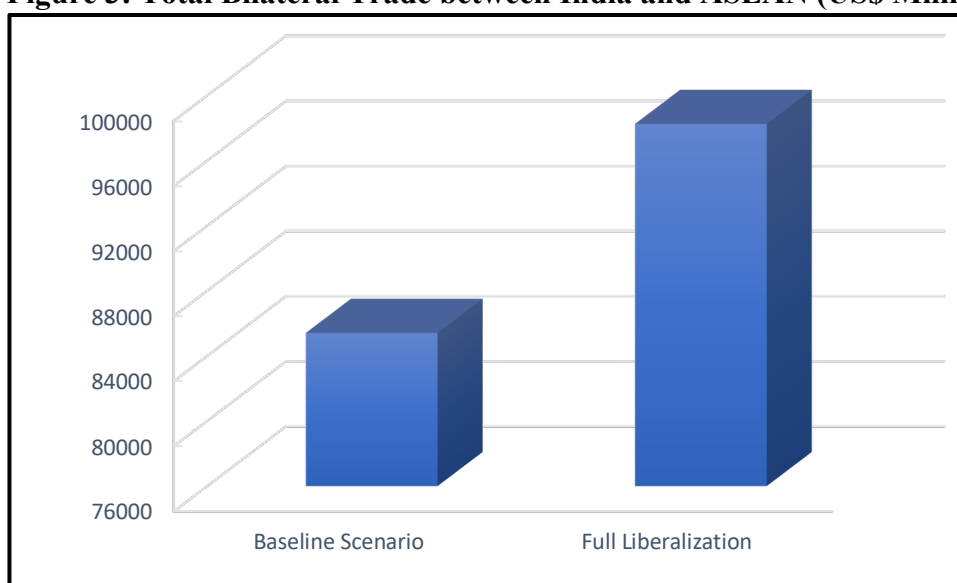
Commodity Group	India	BRN	KHM	IDN	LAO	MYS	PHL	SGP	THA	VNM	MYM_ T
Rice	148.32	-0.02	-0.13	5.31	0.37	5.24	7.27	1.31	26.42	3.44	-1.02
Other Grains and Crops	6.52	0.02	0.03	2.75	-0.19	0.65	0.76	0.49	0.75	1.83	-0.23
Bovine Meat Products	1.14	0.01	0.47	7.13	2.23	0.01	3.28	0.28	0.67	0.59	-0.15
Other Livestock and Meat Products	0.89	-0.05	0.01	1.63	0.05	0.67	-0.1	0.24	0.23	0.04	-0.17
Coal & Oil	0.32	0.05	0.1	0.1	0.09	0.13	0.03	0.25	0.20	0.35	0.05
Other Mining and Extraction	0.64	-0.05	0	0.37	-0.18	0.02	-0.09	0.11	0.38	0.9	0.38
Veg Fats & Oils	10.4	0	0	3.09	0.11	1.01	-0.45	0.97	1.23	0.04	-0.29
Other Processed Food	6.26	0.03	-0.08	1.00	0.04	0.68	0.03	0.40	0.19	2.01	0.21
Textiles & Wearing apparel	1.82	0.02	0.09	0.44	-0.31	0.18	0.08	0.14	0.43	0.3	0.17
Paper Products	0.55	0.05	0.04	0.82	-0.08	0.07	-0.01	0.06	0.09	0.35	-0.1
Motor Vehicle and parts	3.55	0.09	0.22	0.88	0.05	0.16	0.39	0.17	1.09	2.06	0.09
Other Light Mnfc	1.13	0.12	0.11	0.97	0.12	0.16	0.46	0.13	0.52	0.32	0.06
Rubber & plastic Prod	12.96	0.03	0.09	1.31	-0.05	0.18	0.29	0.17	0.53	0.67	0.02
Petroleum, coal products	0.76	0.02	0.01	0.15	-0.05	0.09	0.04	0.16	0.23	0.29	0.01
Chemical products	0.77	0.03	0.05	0.34	-0.05	0.20	0.02	0.12	0.32	0.41	0.03
Computer, electronic, optical products	0.69	0.1	0.07	0.29	0.04	-0.08	0.05	-0.06	0.08	-0.1	0.05
Ferrous metals	0.72	0	0.01	0.19	-0.01	1.10	0.18	-0.01	0.36	0.18	0.02
Electrical equipment	1.47	0.1	0.06	0.26	0.07	0.12	0.16	0.12	0.29	0.4	0.05
Machinery and equipment nec	1.32	0.08	0.13	0.09	0.06	0.18	0.13	0.12	0.47	0.39	0.04
Pharma Products	0.76	0.01	0	1.00	0.06	0.11	0.13	0.08	0.37	0.37	0.02
Other Heavy Mnfc	0.69	0.14	0.01	0.67	-0.01	0.02	0.13	-0.03	0.10	0.37	-0.01
Utilities & Cons	0.83	0.13	0.06	0.93	0.13	0.12	0.13	0.18	0.29	0.54	-0.02
Communication	0.62	0.02	-0.01	0.62	0.05	0.05	-0.03	0.01	0.16	0.22	-0.06
Other Business Services	0.55	0.04	0.01	0.65	0.11	0.07	0.02	0.02	0.18	0.24	-0.07
Other Services	0.64	0.04	0.01	0.72	-0.11	0.09	-0.01	0.08	0.21	0.3	-0.03

Source: CGE Simulation Results

Impact on bilateral trade between India and ASEAN

This section shows the total trade increase between India and the ASEAN region following FTA implementation with full trade liberalization taking into account. It is evident from figure 3 that bilateral trade between India and ASEAN increases by almost US\$ 13,000 million as the scope of the FTA widens with regard to the number of products involved. Both India and the ASEAN members gain substantial access to each other's markets following the full liberalisation of the AIFTA (table 7). However, the market access gained by the ASEAN region in India is slightly higher compared to India's access in their region.

Figure 3: Total Bilateral Trade between India and ASEAN (US\$ Million)



Source: Based on calculations from simulation results.

Table 7: Increase in bilateral exports by India and ASEAN under the FTA (%)

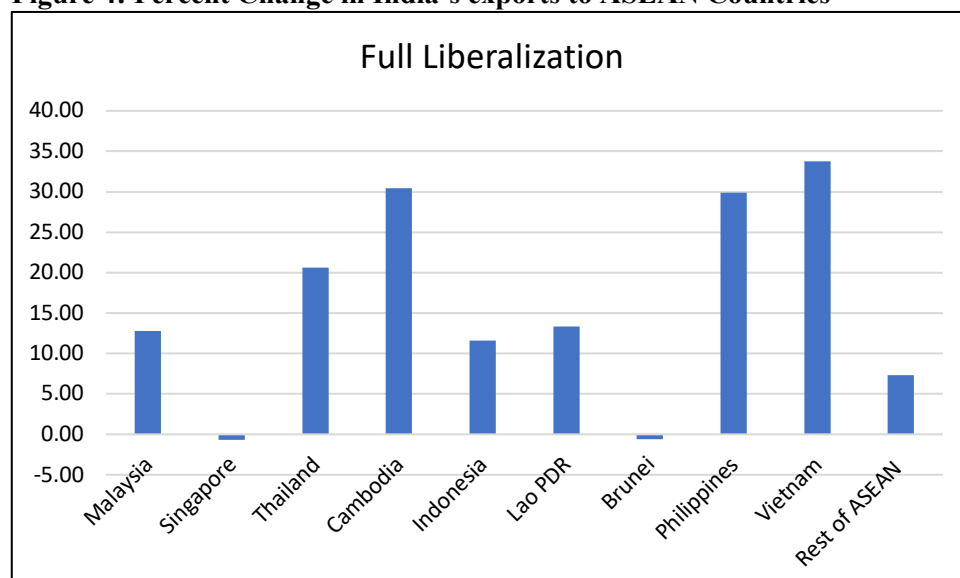
Simulation Scenario	Increase in India's exports to ASEAN	Increase in ASEAN's exports to India
Full Liberalization	15.03	15.05

Source: Based on calculations from simulation results.

(a) Impact on exports from India

Figure 4 identifies the countries in the ASEAN region that are the main destinations for exports from India. In the event of full liberalization when trade is liberalized with all the ASEAN countries, India's largest market access is in Vietnam (33.8%), followed by Cambodia (30.4%), Philippines (29.9%), and Thailand (20.6%). Singapore and Brunei remain the least important destination (in terms of export volume) for Indian exports.

Figure 4: Percent Change in India's exports to ASEAN Countries



Source: Based on calculations from simulation results.

Majority of the sectors in India register increases in export demand. The sectors that register notable increases in exports to the ASEAN region are rice, bovine meat products, other mining and extraction, other processed food, textile and wearing apparel, motor vehicle and parts, computer products, electrical equipment, and machinery and equipment nec. The main destinations for these exports are listed in table 8. Rice is on the exclusion list of Indonesia, Malaysia, Myanmar, the Philippines and Thailand. It is also on the sensitive list of the Lao People's Democratic Republic. With complete tariff elimination under full liberalization, large quantities of rice are exported to Thailand, Philippines and Malaysia. Exports of motor vehicle and parts are largely to Vietnam, Philippines and Cambodia. As noted in table 8, those sectors in India that register notable increases in the demand for their exports to ASEAN are mostly concentrated in Thailand, Cambodia and Vietnam.

Table 8: Sectors in India showing highest export growth and their destinations

Sectors	Main destinations
Rice	Thailand, Philippines, Malaysia
Bovine Meat Products	Thailand, Cambodia
Other Mining and Extraction	Vietnam, Cambodia, Thailand
Other Processed Food	Malaysia, Vietnam, Philippines
Textiles and Wearing Apparel	Philippines, Vietnam, Cambodia
Motor Vehicle and parts	Vietnam, Philippines, Cambodia
Computer, electronic and optical products	Lao and Cambodia

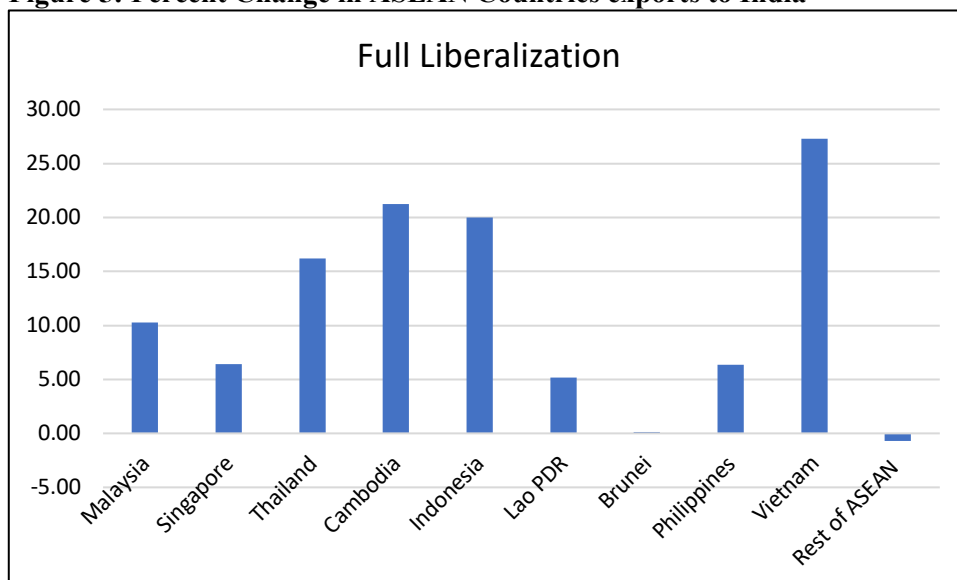
Electrical equipment	Vietnam, Philippines, Cambodia
Machinery and equipment nec	Cambodia, Lao, Vietnam

Source: Based on simulation results.

(b) Impact on imports of India

The countries in the ASEAN region that register notable increases in their exports to India are Vietnam (27.3%) and Cambodia (21.2%) as depicted in Figure 5. However, Brunei and the rest of ASEAN gain virtually no additional market access in India. With full liberalization, sectors such as veg fats and oils, other processed food, other grains and crops, textiles and wearing apparel, motor vehicle and parts, rubber and plastic products, electrical equipment, machinery and equipment nec, and pharmaceutical products register manifold increases in their exports to India. The ASEAN members where these sectors register export growth are listed in table 9.

Figure 5: Percent Change in ASEAN Countries exports to India



Source: Based on calculations from simulation results.

Table 9: Sectors in ASEAN region showing highest export growth and their originating countries

Sectors	Main source countries
Other Grains and Crops	Indonesia, Vietnam, Lao
Vegetable Fats and Oils	Philippines, Singapore, Indonesia
Other Processed Food	Singapore, Vietnam, Philippines
Textiles and Wearing Apparel	Indonesia, Lao, Singapore
Motor Vehicle and parts	Malaysia, Thailand, Singapore
Rubber and plastic products	Indonesia, Cambodia, Lao

Electrical equipment	Cambodia, Thailand, Philippines
Machinery and equipment nec	Indonesia, Thailand, Malaysia
Pharmaceutical products	Philippines, Singapore, Malaysia

Source: Based on simulation results.

In summary, following the full liberalisation of AIFTA, bilateral trade between India and ASEAN increases phenomenally. While Vietnam, Cambodia, the Philippines and Thailand provide additional markets for almost all Indian exports, the increase in India's imports from ASEAN is due to increased exports by Indonesia, Vietnam, Thailand and the Philippines.

Welfare implications of the FTA for India and the ASEAN region

A summary of the regional welfare changes is reported in table 10. The total welfare, which is measured as a regional equivalent variation as per GTAP modelling framework, is positive for India under full liberalization. India's total welfare gain is substantially higher (US\$5495 million) compared to all the ASEAN members. Indonesia, Vietnam and Thailand also show substantial welfare gains. The smaller countries also show reasonable gains except Lao People's Democratic Republic and the rest of ASEAN, which show welfare losses.

Table 10: Total welfare and its decomposition

(US \$Million)

Country	Allocative efficiency effect	Endowment effect	ToT effect	Inv-Sav effect	Total welfare
India	381	4383	593	138	5495
Malaysia	33.1	137	86.9	-1.63	255
Singapore	32.2	101	83.1	5.47	222
Thailand	59.2	215	111	-5	380
Cambodia	0.144	5.42	-4.09	-0.379	1.09
Indonesia	-24.9	151	710	-72.9	763
Lao PDR	-1.27	-3.1	3.81	0.044	-0.52
Brunei	0.454	0.919	0.781	-0.141	2.01
Philippines	32.3	57.9	-25.2	-13.9	51.1
Vietnam	94.3	450	68.2	-18.8	594
Rest of ASEAN	0.088	6.19	-9.25	-1.55	-4.51

Source: CGE Simulation Results

The decomposition of the welfare effects presented in table 10 suggests that India's welfare gain from the full trade liberalization is majorly due to positive endowment effect. It is expected that more opportunities would arise with liberalising the trade between India and ASEAN and therefore more labour would be required, hence we see the high and positive endowment effect for India. The ASEAN members also show positive welfare gains that are due to larger terms

of trade gains and endowment effect. Lao show welfare losses due to both negative allocative efficiency effect and negative endowment effect while the rest of ASEAN show welfare loss due to negative terms of trade and negative investment-saving effect.

India's Export Potential in ASEAN Market: Viner's Trade Creation

Table 11 presents estimates of export potential for India in 10 ASEAN economies individually for the year 2010 and 2022. The ASEAN region offers significant trade potential for the Indian economy, reaching USD 35 billion in 2022, a substantial increase from USD 16.1 billion in 2010. It may be noted that total potential is composed of two components. The first element pertains to the trade potential of products which are already being traded with the partner country (in this case, an ASEAN nation) amounting to approximately USD 28.5 billion. This constitutes 81 percent of the total potential in 2022, a significant increase from 67 percent in 2010. The second element refers to trade potential of those which are to be traded in future, totalling USD 6.6 billion, equivalent to 19 percent of the total in 2022. This represents a decline from 33 percent in 2010. This suggests that India has diversified its trade basket with the region over the years, now engaging in trade with the ASEAN region in products that were not traded before.

Table 11: India's Export Potential in ASEAN: A Comparative Analysis (2010 vs 2022)
(USD Million)

Country	2022			2010		
	Currently Traded Products	Potentially Traded Products	Total	Currently Traded Products	Potentially Traded Products	Total
Brunei	66.9	42.0	108.9	26.7	38.5	65.2
Cambodia	322.8	514.9	837.6	10.7	37.8	48.5
Lao*	58.3	67.0	125.3	2.5	52.0	54.4
Myanmar	103.1	67.2	170.2	19.0	17.7	36.7
Malaysia	4687.2	1023.3	5710.5	1586.8	842.8	2429.6
Singapore	7378.3	357.9	7736.2	3024.9	281.5	3306.4
Vietnam	4896.2	1544.9	6441.2	1486.7	997.4	2484.1
Thailand	4997.4	1122.2	6119.6	2821.6	1844.1	4665.8
Indonesia	3852.0	1004.1	4856.1	1857.7	1177.1	3034.9
Philippines	2112.0	823.7	2935.7	NA	NA	NA
Total	28474.2	6567.2	35041.4	10836.6	5289.0	16125.6

Source: Authors' calculations based on UN ComTrade, WITS.

Note: Estimation based on aggregation of products at HS 6-digit with bilateral time series data.

*2021, Lao trade data is not available for 2022.

NA: Philippines trade data not available for 2010.

The 10 ASEAN countries can be broadly categorized into three groups based on the levels of trade potential India can generate in these markets, as follows: a) those with a high level of trade potential, b) those with a medium level, and c) those with a low level of trade potential.

Among the group with high trade potential, four countries (Singapore, Thailand, Vietnam, Malaysia) account for 74.2 percent of the total export potential, a slight decrease from 80 percent in 2010. The middle-level group, represented by Indonesia and the Philippines, holds a share of 22.2 percent, while the low-level group (Cambodia, Myanmar, Laos, Brunei) exhibits 3.5 percent of the region's total export potential in 2022, an increase from 1.3 percent in 2010.

Within these 10 ASEAN countries, Singapore emerges as the destination with India's largest trade potential, constituting 22.1 percent of the total in 2022 (a slight increase from 20.5 percent in 2010). It covers 26 percent of present trade potential and 5.5 percent of future trade potential in 2022 (compared to 27.9 percent and 5.3 percent in 2010, respectively). Thailand follows, constituting 17.5 percent of the total trade potential in 2022, a significant decline from 28.9 percent in 2010. It covers 17.5 percent of present trade potential and 17.1 percent of future trade potential in 2022, representing a significant drop from 26 percent and 34.9 percent in 2010. This suggests a faster expansion of India's trade with Thailand compared to other ASEAN countries between 2010 and 2022. Additionally, it's noteworthy that all ASEAN countries exhibit positive trade potential growth (CAGR) between 2010 and 2022. Cambodia and Myanmar lead in growth rates, registering 26.8 percent and 13.6 percent, respectively, although their share in the total export potential is less than 2.5 percent in both years.

An analysis of sectoral export potential between 2010 and 2022, as presented in Table 12, reveals some noteworthy trends in the distribution of export potential across sectors. Significantly, the mineral sector held a dominant position, constituting 26.2 percent of the total export potential in 2010, but its share declined to 13.2 percent in 2022. The rising demand for industrial raw materials and intermediates in the ASEAN domestic market could be the determining factor for the expected growth of exports from this sector. Moreover, India with its abundant natural resources and technological capabilities is well-equipped to harness these rich reserves. Besides mineral sector, India's major export interests lie in the manufacturing sector, including machinery and mechanical appliances, base metals, and chemical products, among others. More than three fourth of India's bilateral export potential falls within manufacturing sector, increasing from approximately 65 percent in 2010 to 77 percent in 2022. The machinery and appliances sector, in particular, holds the largest potential demand for export, constituting about 23.5 percent in 2022—a significant rise from 15 percent in 2010. Other promising sectors with potential market share in ASEAN include plastics, textiles, and the auto sector. Additionally, certain products within the agricultural sector, such as vegetable products and prepared food, present promising opportunities in the ASEAN market. Together, these agricultural sectors have the potential to contribute approximately 9.9 percent to potential exports, with a combined access to additional export value of US\$ 3.5 billion in 2022—marking a significant increase from around US\$ 1.4 billion in 2010. However, it is crucial to note that India's export potential is concentrated in specific sectors, with nearly five major sectors expected to contribute approximately 70 percent of India's total potential exports in the medium term. Most of these sectors fall within the manufacturing sector, excluding the mineral sector.

Table 12: India's Sectoral Export Potential in ASEAN: A Comparative Analysis (2010 vs 2022)
(USD Million)

HS Sec	Product Description	2010		2022	
		Exp Pot.	Share (%)	Export Pot.	Share (%)
1	Live Animals and Animal Products	303.2	1.9	725.2	2.1
2	Vegetable Products	365.7	2.3	1418.5	4.0
3	Animal or Vegetable Fats & Oils	135.9	0.8	151.1	0.4
4	Prepared Foodstuff, Beverages, etc	640.0	4.0	1176.3	3.4
5	Mineral Products	4219.0	26.2	4609.3	13.2
6	Products of Chemicals	1338.9	8.3	3739.2	10.7
7	Plastics & Articles thereof	1244.5	7.7	2650.0	7.6
8	Raw Hides & Skins, Leather, etc	80.2	0.5	182.7	0.5
9	Wood & Articles of Wood	50.7	0.3	133.4	0.4
10	Pulp of wood or of other Fibres	319.8	2.0	521.9	1.5
11	Textile & Textile Articles	509.7	3.2	1491.0	4.3
12	Footwear, Headgear and Umbrella	26.2	0.2	204.2	0.6
13	Articles of Stone, Plaster, Cement	63.6	0.4	331.7	0.9
14	Natural or cultured pearls, Jewellery	885.0	5.5	2166.9	6.2
15	Base Metals & Articles of Base Metal	2660.9	16.5	4046.9	11.5
16	Machinery & Mechanical Appliances	2414.7	15.0	8230.3	23.5
17	Vehicles, Aircraft and Vessels	675.1	4.2	2230.8	6.4
18	Optical, Photograph & Cinematography	126.3	0.8	763.3	2.2
19	Arms and Ammunition	6.6	0.0	4.7	0.0
20	Miscellaneous Manufactured Articles	59.8	0.4	263.9	0.8
21	Works of Art Collectors' Pieces	0.0	0.0	0.0	0.0

Source: Authors' calculations based on UN ComTrade, WITS

Note: Estimation based on aggregation of products at HS 6-digit with bilateral time series data.

A more detailed analysis of export potential at the sectoral and country levels is outlined in Table 13, revealing several intriguing insights. In the key sector of Machinery and Appliances, Thailand, Singapore, and Malaysia collectively account for around 74.5 percent of India's total export potential with the ASEAN region in this sector in 2022, representing a slight increase from 72 percent in 2010. Similarly, in the crucial sector of Chemical Products, Singapore, Indonesia, and Thailand collectively contribute nearly 60.2 percent of India's total export potential with the region in this sector – a modest decline from 65.3 percent in 2010. Furthermore, in the sector of Base Metals, Vietnam, Thailand, and Malaysia share approximately 72-73 percent of India's export potential with the region in both 2010 and 2022. These countries are identified as India's most significant trading partners in the region, representing substantial trade opportunities. Therefore, by focusing on the five ASEAN countries (Singapore, Thailand, Malaysia, Vietnam, Indonesia) and five HS Sections (Machinery, Chemical products, Base metals, Plastics, Minerals), India can harness around 60 percent of its export potential in the region based on the trade dynamics between India and

ASEAN in 2022. It is noteworthy that these five countries and these sectors constituted around 72.9 percent of India's total export potential in 2010. Over the years, India's trade with these five nations has experienced substantial growth across the mentioned sectors, resulting in a slightly reduced trade potential share in 2022 compared to 2010. This shift is a natural outcome, reflecting the increased trade volume between India and these countries over the years.

Table 13: India's Export Potential at the Sector and Country level, 2010 and 2022

(USD Million)

HS Sec	Product Description	Malaysia		Singapore		Cambodia		Vietnam		Myanmar		Brunei		Lao		Thailand		PHL	Indonesia	
		2010	2022	2010	2022	2010	2022	2010	2022	2010	2022	2010	2022	2010	2021	2010	2022	2022	2010	2022
1	Live Animals and Animal Products	49.2	116.8	69.8	108.4	0.2	3.3	40.8	118.3	0.7	1.9	3.3	4.5	0.3	0.4	87.2	121.6	124.3	51.7	125.7
2	Vegetable Products	62.2	163.4	26.4	67.8	0.4	9.6	66.0	443.1	0.5	8.6	4.3	5.5	1.6	2.1	52.1	126.8	266.6	152.3	325.1
3	Animal or Vegetable Fats & Oils	97.7	23.5	9.4	32.8	0.1	0.1	19.5	69.2	0.0	3.3	0.4	0.7	0.0	0.0	4.7	5.5	10.4	3.9	5.5
4	Prepared Foodstuff, Beverages, etc	150.2	167.1	96.2	212.3	1.8	21.3	137.2	205.1	0.2	18.6	9.7	6.8	5.8	5.4	89.8	149.1	138.0	149.2	252.7
5	Mineral Products	481.5	1085.4	987.2	657.3	0.7	108.7	399.9	756.8	5.0	5.9	8.0	18.7	18.3	38.2	1325.7	444.2	737.4	992.6	756.6
6	Products of Chemicals	206.9	508.0	215.8	948.2	2.1	41.0	248.2	573.5	0.6	28.3	4.5	15.4	2.5	8.3	367.8	754.0	314.1	290.6	548.4
7	Plastics & Articles thereof	273.5	401.3	155.1	219.6	1.9	46.1	298.4	882.5	8.9	4.3	2.9	2.6	2.0	4.1	307.6	511.1	156.6	194.1	421.8
8	Raw Hides & Skins, Leather, etc	4.9	5.7	10.3	10.3	0.2	15.8	39.1	83.5	0.1	0.4	0.0	0.2	0.0	1.7	18.7	31.9	6.6	7.0	26.7
9	Wood & Articles of Wood	6.4	14.5	4.6	13.5	0.2	7.4	30.5	59.9	0.0	0.5	0.1	0.1	0.0	0.1	1.8	12.2	7.6	7.0	17.6
10	Pulp of wood or of other Fibres	66.5	65.8	43.9	48.2	2.1	18.7	71.9	155.2	0.4	9.1	2.6	1.7	0.9	2.3	66.3	79.5	71.7	65.3	69.7
11	Textile & Textile Articles	27.0	79.6	28.1	93.8	9.4	136.5	220.5	688.6	1.9	15.3	1.0	2.8	0.2	5.4	95.6	167.3	45.4	126.2	256.3
12	Footwear, Headgear and Umbrella	1.0	21.8	4.6	35.4	0.0	0.8	14.6	67.1	0.0	0.3	0.0	0.5	0.0	0.3	4.9	28.1	12.6	1.0	37.3
13	Articles of Stone, Plaster, Cement	13.5	38.6	13.9	44.6	1.5	8.2	13.6	49.4	0.2	1.1	1.0	0.5	0.8	3.7	13.2	64.9	67.9	6.0	53.0
14	Natural or cultured pearls, Jewellery	23.3	226.5	371.5	920.0	8.2	231.0	48.3	13.6	0.0	0.0	0.1	0.1	3.7	0.6	428.9	603.0	1.0	0.9	171.0
15	Base Metals & Articles of Base Metal	515.0	583.9	263.3	303.4	3.4	58.5	462.7	1121.6	5.2	11.1	7.4	7.1	7.7	7.8	964.1	1212.8	176.0	432.1	564.6
16	Machinery & Mechanical Appliances	346.1	1640.1	784.3	3296.6	5.7	54.6	260.2	680.5	9.6	30.4	5.5	21.6	5.9	18.6	608.2	1209.4	451.0	389.1	827.4
17	Vehicles, Aircraft and Vessels	80.4	344.2	138.5	291.2	10.4	65.0	87.0	374.2	3.3	26.4	13.6	16.1	4.5	24.7	188.0	477.3	278.5	149.3	333.1
18	Optical, Photograph & Cinematography	12.8	191.5	73.0	360.2	0.1	4.2	9.8	36.5	0.0	3.9	0.1	3.3	0.0	0.4	26.0	85.4	39.8	4.3	38.3
19	Arms and Ammunition	0.1	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	1.9	1.1	4.4	1.4
20	Miscellaneous Manufactured Articles	11.4	32.8	10.6	72.5	0.2	6.8	15.9	62.7	0.1	0.7	0.6	0.9	0.0	1.1	13.3	33.4	29.1	7.7	23.8
21	Works of Art Collectors' Pieces	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Authors' calculations based on UN ComTrade, WITS.

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