



REFINED PETROLEUM EXPORTS FROM INDIA TO THE UNITED ARAB EMIRATES: A REVEALED COMPARATIVE ADVANTAGE AND EXPORT MARKET SHARE ANALYSIS, 2005–2024

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ABSTRACT

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India has evolved over the past two decades from a net importer of crude petroleum into one of the world's leading exporters of refined petroleum products. The United Arab Emirates (UAE) simultaneously an oil producer, a global re-export hub and a rapidly expanding consumer of refined fuels represents a uniquely challenging and strategically important export destination for India. This paper analyses India's export competitiveness in the UAE petroleum market over 2005-2024 for seven Harmonised System (HS) 4-digit product codes (HS 2707, 2708, 2710, 2711, 2712, 2713 and 2715), using data drawn entirely from the ITC Trade Map. Employing Balassa's Revealed Comparative Advantage (RCA) index, the Export Market Share (EMS) index and a product-level Compound Annual Growth Rate (CAGR) framework, the study identifies four distinct phases of India-UAE petroleum trade. RCA values for HS 2710 remain consistently above unity across all available years, confirming a structural bilateral comparative advantage. The paper concludes with policy suggestions for sustaining export competitiveness.

KEYWORDS: India petroleum exports; UAE import market; Revealed Comparative Advantage; Export Market Share; HS 2710; refined petroleum; bilateral trade competitiveness; CEPA.

1. INTRODUCTION

Refined petroleum (classified principally under HS Chapter 27), with global export values exceeding US\$ 897 billion in 2024, is the single largest traded commodity category in world merchandise trade. Within this market, India has emerged as a structural disruptor importing the vast majority of its crude oil yet converting it into refined products competitive enough to supply Europe, Southeast Asia and the Gulf simultaneously.

India's refining sector has expanded dramatically, reaching a capacity of approximately 256.8 million metric tonnes per annum (MMTPA) across 23 refineries as of 2024, anchored by the Reliance Jamnagar complex. With domestic demand of about 233.3 MMTPA, India produces a significant structural surplus. This surplus, combined with India's decision to process discounted Russian crude after February 2022, has made India the second-largest exporter of refined petroleum globally, with HS 2710 exports of US\$ 70.2 billion in 2024 (World's Top Exports, 2024; EIA, 2025; CRF India, 2025).

The UAE presents a particularly instructive case. It is at once a hydrocarbon producer, a sophisticated refining hub (ADNOC's

Ruwais complex), and a massive re-export centre through the Port of Jebel Ali. Unlike Saudi Arabia or Kuwait, where Indian refined products face domestic refining surpluses, the UAE offers genuine demand diversity importing refined products for re-export across Africa and South Asia, for domestic industry, and for free-zone processing. India's exports to the UAE under HS 2710 alone reached US\$ 6.99 billion in 2024, a CAGR of 10.5 per cent over 2005-2024.

The theoretical foundation of this paper rests on Ricardo's (1817) theory of comparative advantage and its operationalisation by Balassa (1965) into the Revealed Comparative Advantage (RCA) index, which infers latent comparative advantage from ex-post trade flows. Subsequent scholarship has refined and critiqued the index: Dalum, Laursen and Villumsen (1998) proposed the symmetric transformation, Laursen (2015) demonstrated econometric biases arising from the index's asymmetric distribution, Vollrath (1991) proposed trade-intensity alternatives that account for imports, and Stellan and Danna-Buitrago (2022) documented size biases and additivity failures in standard RCA measures. For India specifically, Batra and Khan (2005) identified comparative

advantage concentrated in labour-intensive manufactures, while Ismail and Ahmed (2022) compared static and dynamic RCA profiles of India and China. Recent multidimensional treatments of India's export competitiveness (Chakrabarty & Sinha, 2024; Idrisi et al., 2025) remain at the aggregate or economy-wide level. Bilateral, product-level competitiveness analysis of India–UAE petroleum trade remains underexplored, a gap this paper addresses.

2. OBJECTIVES

The present study serves the following objectives:

- To measure India's bilateral Revealed Comparative Advantage in refined petroleum (HS 2710) in the UAE market over 2005–2024;
- To quantify India's Export Market Share in the UAE's HS 2710 import market and derive a phase periodisation of the relationship;

3. METHODOLOGY

3.1 Data

The study is based entirely on secondary data. Bilateral trade data for seven HS 4-digit product categories (HS 2707, 2708, 2710, 2711, 2712, 2713 and 2715) over 2005–2024 were extracted from the ITC Trade Map (ITC, 2024), which draws on UN Comtrade. Three series are used:

- India's exports to the UAE by HS code and year;
- The UAE's total imports from the world by HS code and year; and
- India's total exports to the world by HS code and year.

All values are in US\$ thousands at current prices. Supplementary macroeconomic context is drawn from MoPNG (2024), PPAC (2024) and EIA (2025).

3.2 Analytical framework

Revealed Comparative Advantage (Balassa index):

$$RCA_{ij} = (X_{ij} / X_i) / (M_{vj} / M_v),$$

where X_{ij} is India's exports of product j to the UAE,

X_i is India's total exports to the UAE,

M_{vj} is the UAE's world imports of product j , and

M_v is the UAE's total merchandise imports from the world.

$RCA > 1$ indicates a bilateral revealed comparative advantage.

Export Market Share (EMS)

$$EMS_j = \frac{\text{India's exports of product } j \text{ to the UAE}}{\text{UAE's total world imports of product } j} * 100$$

EMS values above 100 per cent occur when bilateral export data exceed the UAE's reported world imports a methodological artefact of re-export flows, transit trade classification and partner-reporting discrepancies well documented in Middle Eastern trade statistics.

4. RESULTS & DISCUSSION

4.1 India's global positioning

India ranked as the second-largest exporter of refined petroleum oils globally in 2024, with HS 2710 exports of US\$ 70.2 billion, trailing only the United States (US\$ 117.5 billion), and a net export surplus of US\$ 61.7 billion. Refining throughput exceeded 250 million tonnes in 2023 against domestic consumption of roughly 233 MMTPA. Within the UAE, India is consistently among the top suppliers: of the UAE's US\$ 11.2 billion world imports of HS 2710 in 2024, India supplied US\$ 6.99 billion, a 62.4 per cent Export Market Share. Across all seven HS categories, India's petroleum exports to the UAE reached US\$ 8.74 billion in 2024, a post-2021 record.

4.2 Bilateral trade in HS 2710

Table 1 presents the 2005–2024 series. Four patterns stand out. First, exports grew from US\$ 1.04 billion (2005) to US\$ 6.99 billion (2024) - a 571 per cent increase and a CAGR of 10.5 per cent. Second, the UAE's share in India's global HS 2710 exports ranged between 6.5 per cent (2013) and 18.4 per cent (2006), averaging roughly 12 per cent, making the UAE consistently India's second or third most important refined-petroleum destination. Third, 2017–2021 saw a marked compression of India's market share from 51.6 per cent (2017) to 13.4 per cent (2021), reflecting expansion of the UAE's total import base rather than any absolute decline in Indian exports. Fourth, the post-2022 resurgence is pronounced: exports surged 78.9 per cent in 2022 to US\$ 7.98 billion, underpinned by India's Russian-crude cost advantage and the India-UAE Comprehensive Economic Partnership Agreement (CEPA, May 2022). The 2022–2024 average (US\$ 7.16 billion) is 61.2 per cent above the 2005–2021 average (US\$ 4.44 billion).

Table 1: India–UAE Bilateral Trade in Refined Petroleum Oils (HS 2710), 2005–2024 (US\$ Million)

Year	India → UAE (US\$ Mn)	UAE ← World (US\$ Mn)	India → World (US\$ Mn)	YoY Growth (India→UAE)	UAE Share in India's Global Exports (%)
2005	1,042.8	366.5	10,096.6	—	10.3%
2006	3,194.9	N/A	17,401.4	206.4%	18.4%
2007	4,162.2	751.9	22,846.2	30.3%	18.2%
2008	5,707.0	1,092.6	31,558.8	37.1%	18.1%
2009	2,945.5	N/A	23,226.0	−48.4%	12.7%
2010	4,995.0	N/A	36,641.3	69.6%	13.6%
2011	5,537.1	N/A	54,611.1	10.9%	10.1%
2012	5,698.2	7,160.2	52,763.9	2.9%	10.8%
2013	4,371.5	1,856.5	67,075.2	−23.3%	6.5%
2014	6,365.6	1,885.5	60,838.6	45.6%	10.5%
2015	3,801.5	1,139.8	29,965.2	−40.3%	12.7%
2016	3,514.2	2,349.7	26,947.7	−7.6%	13.0%
2017	4,323.7	8,381.7	34,859.4	23.0%	12.4%
2018	6,358.6	11,587.7	47,181.2	47.1%	13.5%

2019	5,746.0	12,430.1	42,560.1	-9.6%	13.5%
2020	3,272.2	16,174.8	26,174.7	-43.1%	12.5%
2021	4,461.3	33,297.3	54,037.1	36.3%	8.3%
2022	7,982.4	16,144.1	94,398.7	78.9%	8.5%
2023	6,493.9	16,781.9	84,978.1	-18.6%	7.6%
2024	6,994.8	11,210.2	70,212.1	7.7%	10.0%

Source: Researcher's own compilation and calculation using data from ITC Trade Map (2024).

4.3 Revealed Comparative Advantage

Table 2 reports bilateral Balassa RCA values for HS 2710 for all years in which both bilateral exports and UAE world imports are available. The results are unambiguous: India maintains a persistent, strong revealed comparative advantage across the entire study period, with every available year well in excess of unity from 1.66 (2021) to 85.24 (2007). The 2007 peak reflects years in which India's bilateral exports exceeded the UAE's recorded world imports, indicative of transit and re-export

misclassification in UAE customs data. The decline from the 2005-2008 peaks to the 2017-2021 trough reflects the UAE's expanding and diversifying import base growing faster than India's bilateral exports; the recovery to 5.87 in 2024 signals renewed intensification consistent with the post-2022 arbitrage surge and CEPA facilitation. The finding of $RCA > 1$ is robust to the choice of denominator, confirming a structural rather than cyclical advantage.

Table 2: Balassa Revealed Comparative Advantage (RCA) - India in the UAE Market (HS 2710)

Year	RCA (Balassa)	Classification
2005	75.16	Strong CA
2007	85.24	Strong CA (peak; re-export flows)
2008	61.70	Strong CA
2012	7.30	Strong CA
2013	21.28	Strong CA
2014	28.36	Strong CA
2015	28.13	Strong CA
2016	12.46	Strong CA
2017	4.24	Strong CA
2018	4.57	Strong CA
2019	4.03	Strong CA
2020	2.61	Strong CA
2021	1.66	Strong CA (trough)
2022	5.33	Strong CA
2023	3.87	Strong CA
2024	5.87	Strong CA

Source: Researcher's own computation using data from ITC Trade Map (2024).

4.4 Export Market Share and phase periodisation

Table 3 contextualises India's exports against the size of the UAE's HS 2710 import market and yields four structurally distinct phases.

Phase I-Emergence and dominance (2005–2011): EMS registers extraordinarily high values (284.6 per cent in 2005; 553.5 per cent in 2007). Values above 100 per cent reflect documented UAE trade-data issues, but confirm India's position as the overwhelmingly dominant supplier in this period.

Phase II - Consolidation (2012–2016): the UAE's reported world imports rise substantially from 2012, reflecting improved reporting and genuine diversification of suppliers (Russia, South Korea, Singapore). India's EMS settles into a range of 79.6–337.6 per cent — still dominant, but within a more competitive import environment.

Phase III - Competitive compression (2017–2021): UAE world imports expand dramatically to a peak of US\$ 33.3 billion in 2021 (partly reflecting an LNG/LPG surge and data reclassification), compressing India's EMS to its historical low of 13.4 per cent, coinciding with ADNOC's downstream expansion and diversification of the UAE's energy import portfolio.

Phase IV- Sanctions-driven resurgence (2022–2024): Discounted Russian crude improved Indian refining margins, enabling aggressive pricing; EMS recovers to 49.4 per cent (2022) and 62.4 per cent (2024) as UAE world imports normalise, with CEPA providing an additional structural tailwind.

Table 3: Export Market Share (EMS) — India's Penetration of the UAE's HS 2710 Import Market

Year	India's Exports to UAE -HS 2710 (US\$ '000)	UAE Imports from World- HS 2710 (US\$ '000)	EMS -India in UAE (%)	Phase
2005	1,042,804	366,451	284.6%	Phase I: Emergence
2007	4,162,189	751,947	553.5%	Phase I: Emergence
2008	5,706,988	1,092,556	522.4%	Phase I: Emergence
2012	5,698,166	7,160,183	79.6%	Phase II: Consolidation
2013	4,371,487	1,856,493	235.5%	Phase II: Consolidation
2014	6,365,635	1,885,466	337.6%	Phase II: Consolidation
2016	3,514,164	2,349,749	149.6%	Phase III: Compression
2017	4,323,681	8,381,735	51.6%	Phase III: Compression
2019	5,745,997	12,430,066	46.2%	Phase III: Compression
2020	3,272,200	16,174,806	20.2%	Phase III: Compression
2021	4,461,305	33,297,286	13.4%	Phase III: Compression
2022	7,982,417	16,144,140	49.4%	Phase IV: Resurgence
2023	6,493,887	16,781,868	38.7%	Phase IV: Resurgence
2024	6,994,849	11,210,170	62.4%	Phase IV: Resurgence

Source: Researcher's own computation using data from ITC Trade Map (2024).

4.5 Product portfolio dynamics

Table 4 presents product-level CAGRs across all seven HS codes. HS 2710 remains dominant (10.5 per cent CAGR). The most striking finding is HS 2707 (coal-tar distillation oils and aromatic fractions), which expanded from US\$ 1.5 million (2005) to US\$ 1.70 billion (2024) a CAGR of 44.8 per cent and now constitutes about 19.5 per cent of India's total petroleum exports to the UAE. This reflects India's rising production of

petrochemical feedstocks and movement up the petroleum value chain, amplified by the UAE's role as a petrochemical hub. Conversely, three categories exhibit structural decline: HS 2713 (petroleum coke and bitumen; -17.1 per cent), HS 2712 (petroleum jelly and waxes; -3.6 per cent) and HS 2711 (petroleum gases; -8.3 per cent), reflecting displacement by regional producers with structural cost advantages in these sub-categories.

Table 4: Product Portfolio Analysis — India's Petroleum Exports to the UAE (All HS Codes), CAGR 2005–2024

HS Code	Product Description	Exports 2005 (US\$ Mn)	Exports 2024 (US\$ Mn)	CAGR	Strategic Assessment
HS 2710	Refined petroleum oils	1,042.8	6,994.8	10.5%	Dominant; sustained leader
HS 2707	Coal-tar distillation oils	1.5	1,704.6	44.8%	Explosive; emerging star
HS 2708	Pitch and pitch coke	0.0	25.6	N/A	Rising from zero base
HS 2713	Petroleum coke and bitumen	28.5	0.8	-17.1%	Sharp decline
HS 2712	Petroleum jelly and waxes	19.1	9.5	-3.6%	Moderate decline
HS 2711	Petroleum gases	2.7	0.5	-8.3%	Structural exit
HS 2715	Bituminous mixtures	0.1	0.2	2.9%	Marginal

Source: Researcher's own CAGR computations using data from ITC Trade Map (2024).

5. SUGGESTIONS

First, the Phase IV resurgence is structurally fragile: it rests on discounted Russian crude and CEPA preferences, both carrying geopolitical risk. Indian refiners should diversify crude sourcing and lock in term contracts to insulate margins from sanctions-enforcement shocks. Second, the appropriate response to Phase III-type market-share compression is not defensive protection but offensive capacity expansion and product upgrading India's absolute exports held firm even as the UAE market grew. Third, the explosive growth of HS 2707 should be consolidated through investment in secondary and tertiary processing capacity, deepening India's presence in higher-value feedstock segments. Fourth, exporters and policymakers should institutionalise the CEPA advantage through mutual recognition of standards, logistics integration with Jebel Ali, and long-term supply arrangements with UAE

trading houses so that competitiveness does not rest solely on cyclical price advantages.

6. CONCLUSION

India's competitiveness in refined petroleum within the UAE market is structural rather than conjunctural. The bilateral RCA for HS 2710 exceeds unity in every year for which data are available, reflecting refining cost efficiency, geographic proximity, established logistics and embedded commercial relationships. EMS-based periodisation adds temporal nuance that aggregate metrics conceal: the compression of 2017–2021 reflected a growing UAE import market, not deteriorating Indian competitiveness, while the 2022–2024 resurgence lifted India's market share to 62.4 per cent. The product portfolio is simultaneously upgrading toward higher-value distillation fractions even as India exits low-margin niches. Sustaining this

position will require crude diversification, technological deepening and institutional consolidation of the CEPA framework.

7. AREA FOR FURTHER RESEARCH

Future work could extend the analysis to HS 6-digit disaggregation to identify the fuel grades driving the HS 2707 surge, apply gravity-model estimation of untapped India–GCC export potential, and test the causal contribution of CEPA preferences versus Russian-crude margins using difference-in-differences designs once post-2024 data are available.

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