

Results of the EU-ETS Observatory

Puertos del Estado



 **ETS Observatory**

Background

Action of the regulation

The EU Directive 2023/959 integrates maritime transport into the European market for Greenhouse Gas emission allowances.

Obligations

Shipping companies are required to surrender CO₂ allowances for 100% of their emissions on intra-EU routes and 50% of the emissions from maritime voyages to or from third countries with origin or destination in the EU.

Entry into force

The regulation enters into force in 2024 at 40%, increasing to 70% in 2025 and to 100% in 2026. It applies to ships larger than 5,000 GT.

Economic implications

The estimated navigation cost increases by approximately 28%. On transoceanic Asia–Northern Europe routes for container ships of more than 20,000 TEUs, the surcharge may amount to €335,000 on routes via the Suez Canal (fuel cost: €1.1 million) and €476,000 on routes via the Cape of Good Hope (fuel cost: €1.6 million). The estimate is based on a price of €70 per tonne of CO₂ equivalent emitted, an approximate average value for the 2022–2025 period.

Risks associated with the definition and application of the regulation

Regulatory design

The subject bearing the additional cost is the shipping company, which in certain segments, such as container shipping, has the ability to define the route, provided it has alternative options. In the case of Ro-Ro transport, the decision-maker is the carrier or logistics operator, who may choose between road transport and short-sea shipping.

Segments at risk

Those with alternative operational options have essentially been identified in the container segment, mainly long-distance and transit traffic, where alternatives exist in non-EU ports, as well as short-distance traffic, where road transport is an alternative.

Derived effects

In the case of container shipping:

- Loss of direct connectivity on long-distance routes
- Loss of competitiveness of EU ports compared with ports in third countries
- Loss of logistical autonomy and control over supply chains

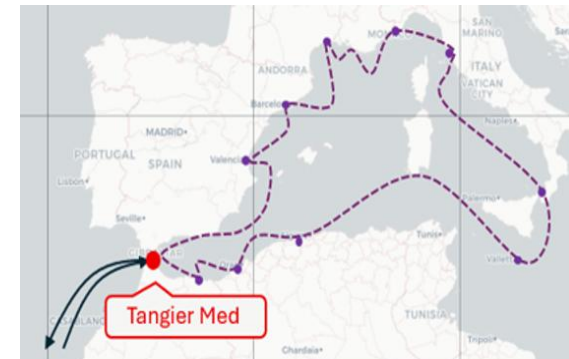
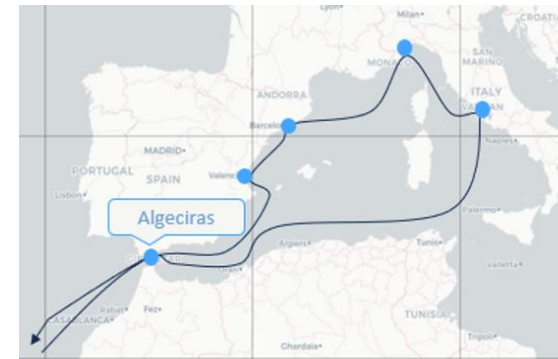
In the case of short-distance transport: shift back to road transport and an increase in emissions.

EU ETS avoidance strategies

Route Transformation: Port calls at neighbouring-country ports when entering or exiting the EU maritime area. This strategy do not break the continuity of the service, as the same vessel covers both the transoceanic leg and the EU access or exit leg.



Route Rupture: The strategy consists of splitting the original route into two distinct legs. Transoceanic vessels call at hub ports in neighbouring countries. From these locations, cargo is distributed to or consolidated from neighbouring countries via feeder routes.

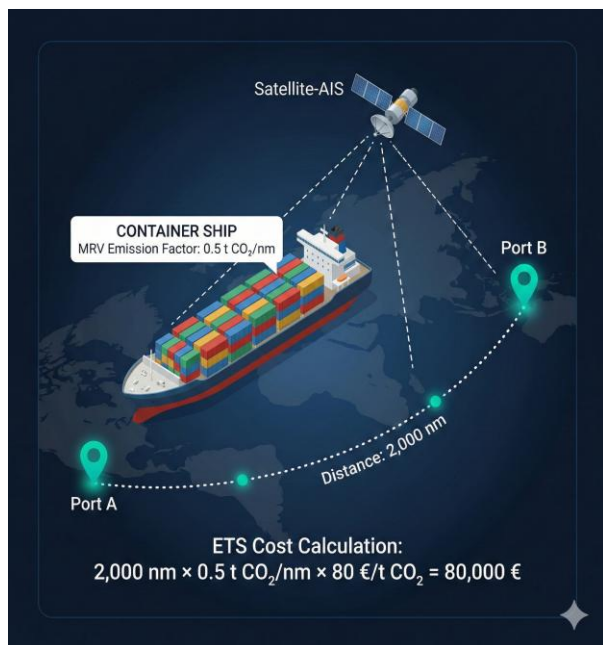


Modal backshift from sea to road: freight previously carried by sea through roll-on/roll-off maritime services returns to a fully road-based transport model



The EU-ETS Observatory

The observatory has a duration of three years and is being developed by a consortium made up of three companies with experience in the maritime sector.



AIS dataset make it possible to accurately describe the structure and evolution of maritime routes.

Based on this information, emission estimates are obtained and calibrated using MRV-EMSA emissions dataset

The observatory provides the following services:

- **Monitoring:** Tracking the evolution of routes and emissions based on AIS and EMSA data.
- **Prediction:** Forecasting the risk of route changes based on statistical transport models.

The monitoring service tracks the evolution, among others, of the following parameters:

- Number of port calls
- Number of port calls by deep-sea route vessels
- Distances sailed
- Vessel capacity
- CO₂ equivalent emissions
- TEU_Mile
- TEU-mile market share

Regional scope



● **EEA**
Ports in EU Member States

● **EEA+**
Ports in EU neighboring countries located within 300 nautical miles.

EUROMED
Ports in the EEA and EEA+ regions

⇒ **EUROMED Gateway Calls**
Calls at EUROMED ports by vessels operating on transoceanic (deep-sea) routes.

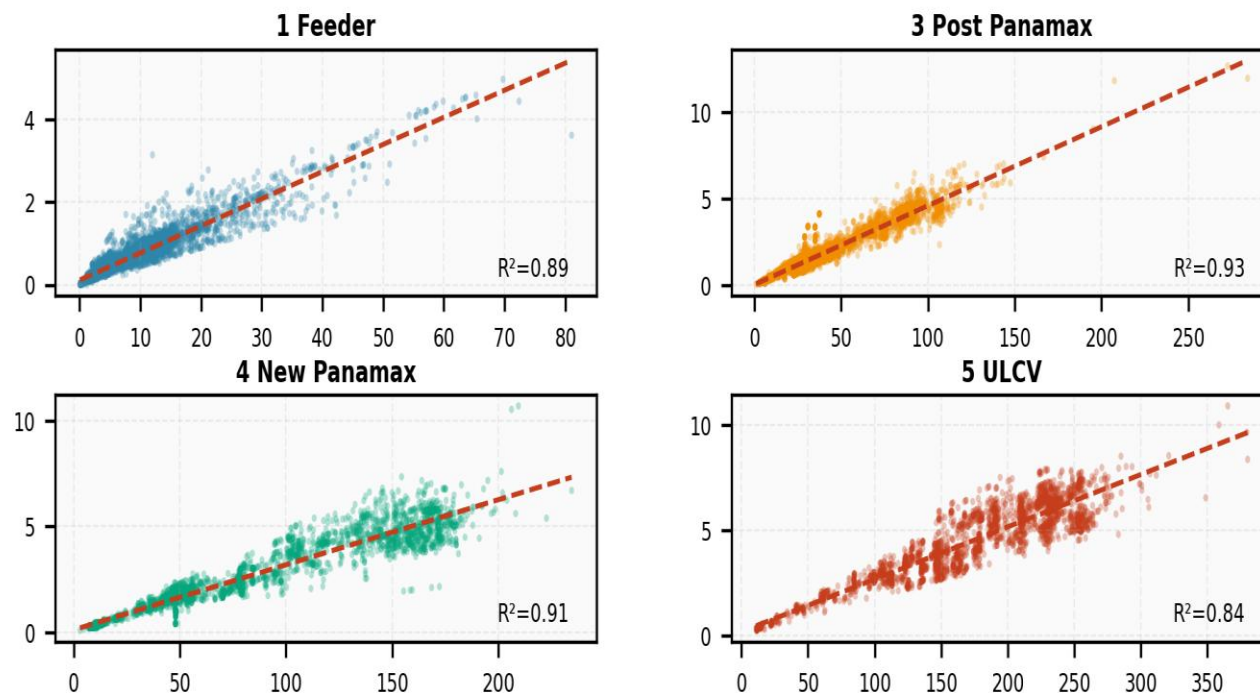
The TEU-mile indicator

- **TEU-miles of a vessel** = Vessel TEU capacity × (distance to the origin port + distance to the destination port)
- **TEU-miles of a port** = Sum of the TEU-miles of all vessels calling at the port.
- **Share_TEU-mile** = Percentage of total EUROMED TEU-miles attributable to a port.

Advantages of the TEU_mile and TEU_mile share

- **CO₂ emissions:** Strongly correlated with the CO₂ emissions reported by vessels.
- **Connectivity:** Enables the identification of changes in port connectivity.
- **Robust:** The TEU-mile share makes it possible to identify changes in the traffic balance between the EU and its neighboring countries (*EEA ports vs EEA+ ports*), even in situations involving structural changes such as those introduced by the Red Sea crisis.

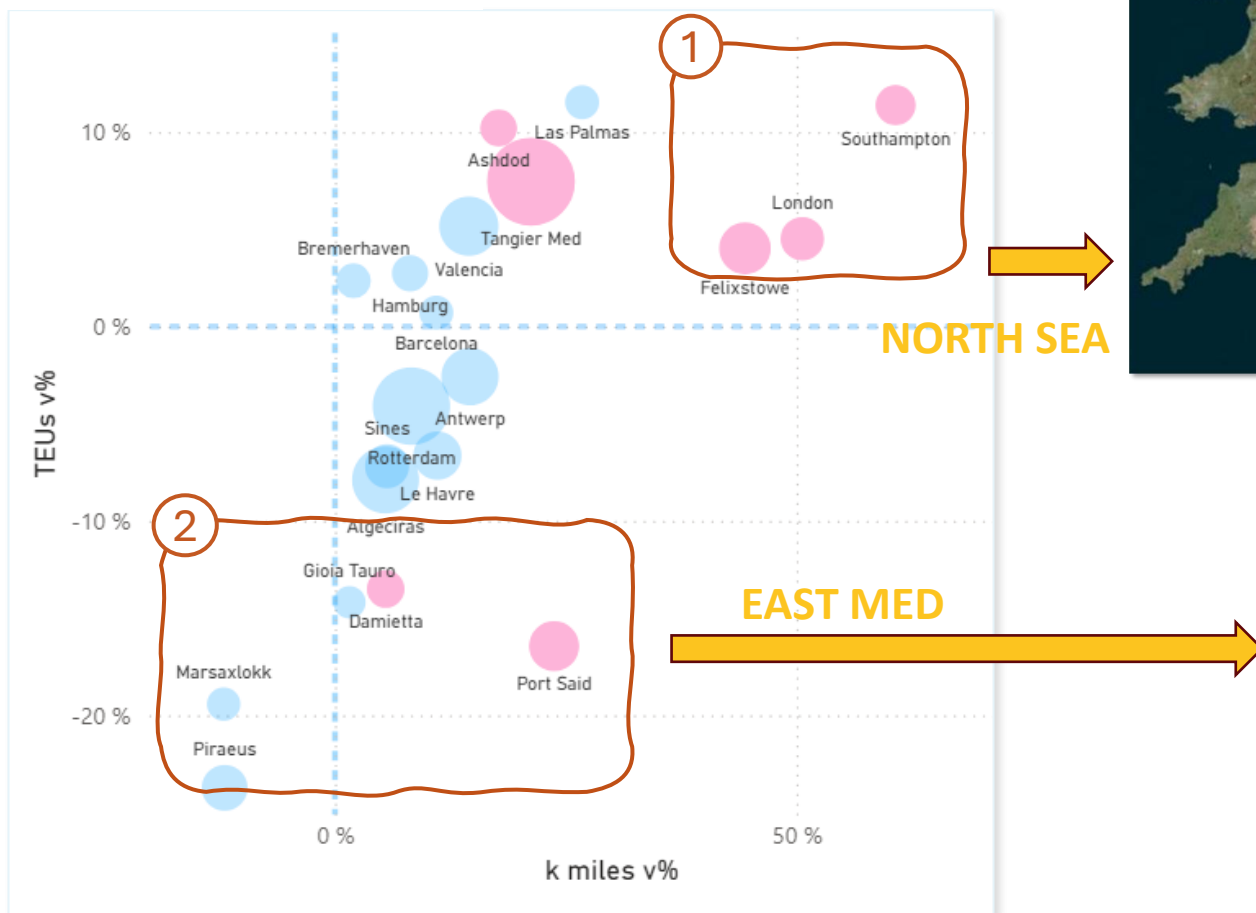
kTEU-Miles vs CO₂ - EUROMED EXTRA (Individual Calls)



Where is the TEU-mile balance changing?

Main EEA and EEA+ ports

TEU variance vs miles variance. Bubble size = k TEU mile
 [oct 2024 - sep 2025] vs [2023]



NORTH SEA - CASE STUDY.



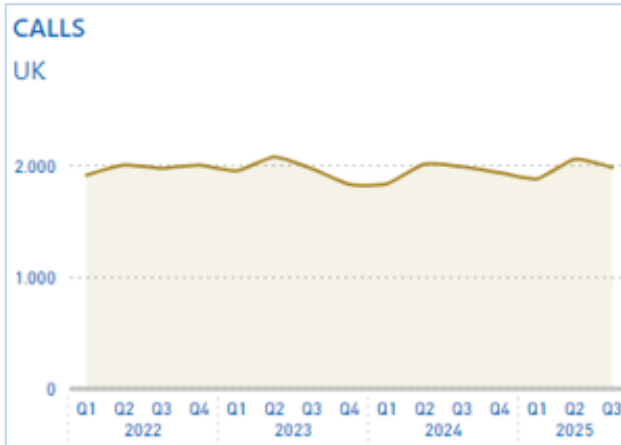
EEA Ports of EEA countries

EEA+ Ports of neighbouring countries. All neighbouring ports are within 300 miles.

NORTH SEA - CASE STUDY. Time evolution of port calls

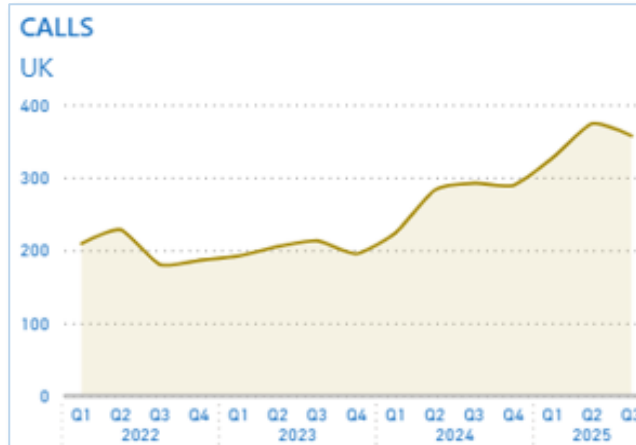
EUROMED

ALL CONTAINER SHIPPING ROUTES



EUROMED GATEWAY

DEEP-SEA CONTAINER SHIPPING ROUTE



The analysis of the number of container ship calls at ports in the United Kingdom and at ports in Northern European EU countries shows no significant changes since 2022.

However, when the analysis focuses on container ship calls on transoceanic routes, UK ports show sustained growth from late 2023 through the second quarter of 2025.

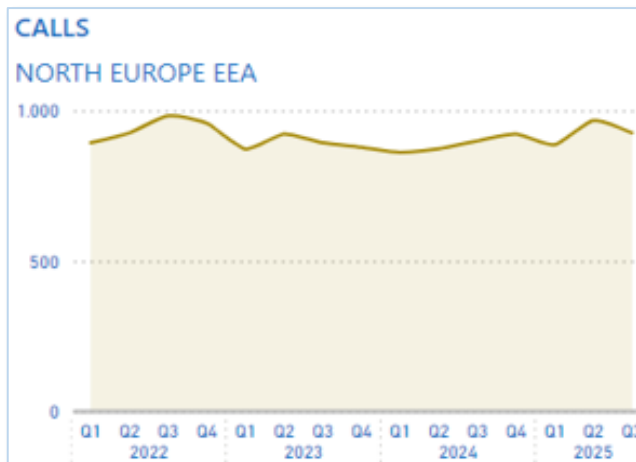
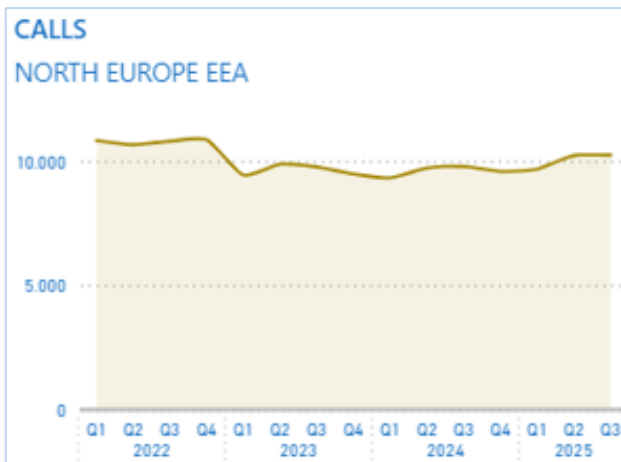
This highlights the importance of focusing the analysis on the study of entry and exit routes to the EUROMED region.

UNITED KINGDOM

NUMBER OF PORT CALLS

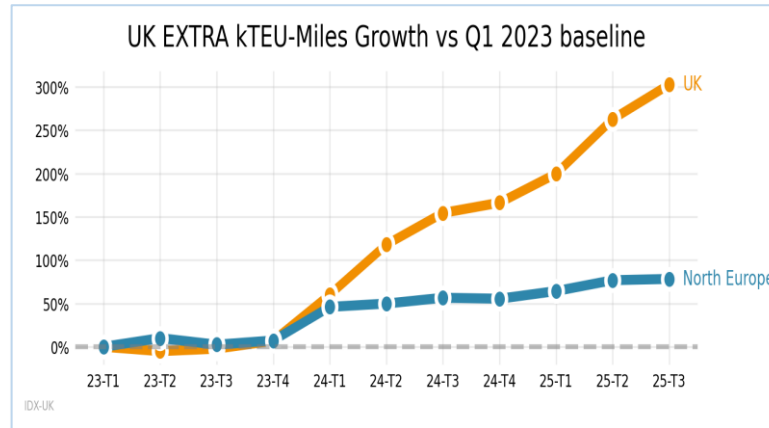
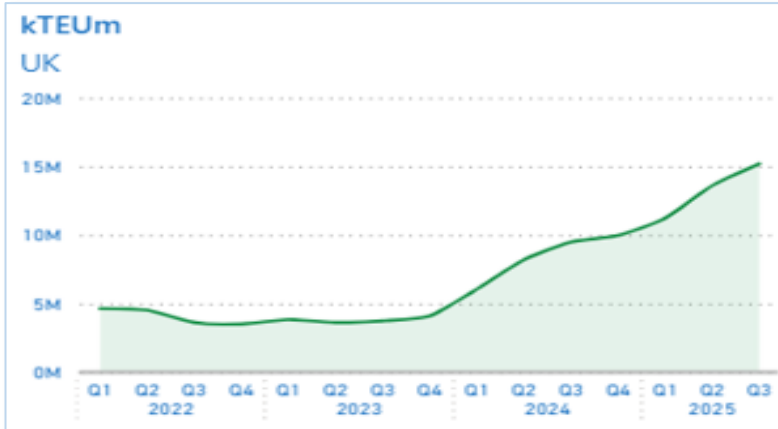
NORTHERN EUROPE

NUMBER OF PORT CALLS

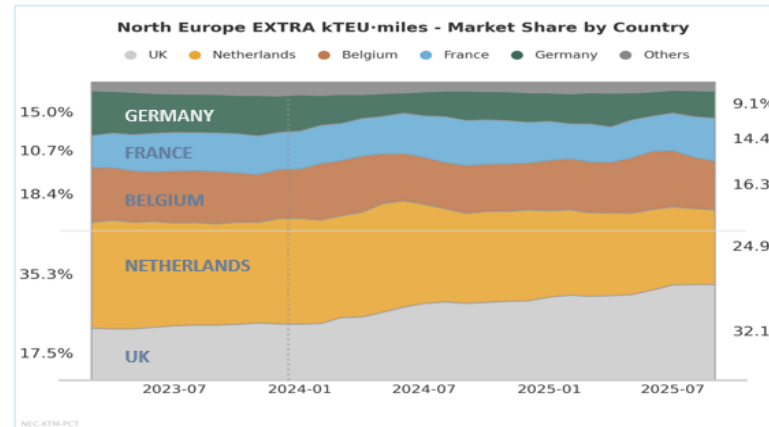


NORTH SEA - CASE STUDY. Time evolution of TEU_miles

DEEP-SEA CONTAINER SHIPPING ROUTE



Percentage growth of the TEU-mile indicator relative to Q1 2023. This chart shows, first, a faster and sustained growth of the TEU-mile indicator in UK ports, and second, a flattening of the indicator's growth in Northern European EU ports at the end of the period.



Evolution of kTEU-mile share over time: The United Kingdom's increase of around 15 percentage points in TEU-mile share is almost symmetrically reflected in the combined decrease of the Netherlands and Germany.

The evolution of the kTEU_mile indicator shows a sharp increase at the end of 2023 in response to the Red Sea crisis. From that point onward, sustained growth is observed in the United Kingdom, with no signs of deceleration. This increase is also recorded in ports in Northern Europe, although at a slower growth rate

NORTH SEA - CASE STUDY

Asia-North Europe 2025



Calls remain at the same Northern European ports, but now enters via Rotterdam and departs from Felixstowe

NORTH SEA - .What could be the causes of the increase in the UK's connectivity?

Has there been a significant improvement in the UK's economic activity?

The United Kingdom has not experienced economic growth that would explain higher import–export traffic

Has there been a reduction in operating costs at UK ports?

In the current inflationary environment, there are no signs that operating costs have decreased.

Are there structural congestion problems at Northern European ports?

There have been congestion problems at Northern European ports, but due to short-term factors such as strikes.

Do UK ports have better infrastructure or greater capacity?

Investments are being made in dredging and cranes, which indicates that the ports were not previously adapted for ULCVs.

Could the closure of the Suez Canal have given any advantage to UK ports?

The increase in distance implied by routing via the Cape of Good Hope affects all ports equally.

Could the expiration of the CBER have given any advantage to UK ports?

The expiration of the CBER coincided with the simultaneous end of the UK's equivalent competition exemption..

Is there any other factor that could increase the profitability of a transoceanic service if it makes an intermediate call at UK ports?

Diverting a ULCV coming from Asia to a UK port can represent an approximate saving of €1 million in ETS costs per voyage.

EAST - MED CASE STUDY.



EEA Ports of EEA countries

EEA+ Ports of neighbouring countries.
All neighbouring ports are within 300 miles.

EAST - MED CASE STUDY. Time evolution of port calls

EUROMED

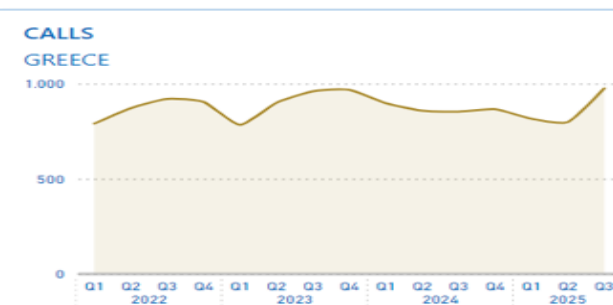
ALL CONTAINER SHIPPING ROUTES

EUROMED GATEWAY

DEEP-SEA CONTAINER SHIPPING ROUTES

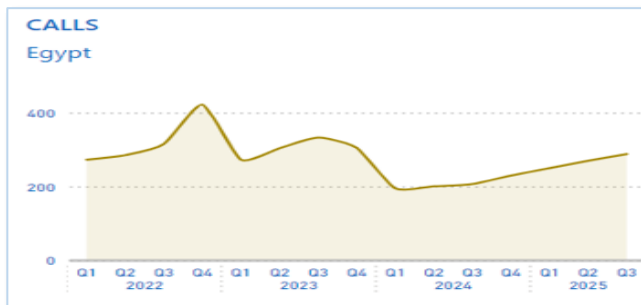
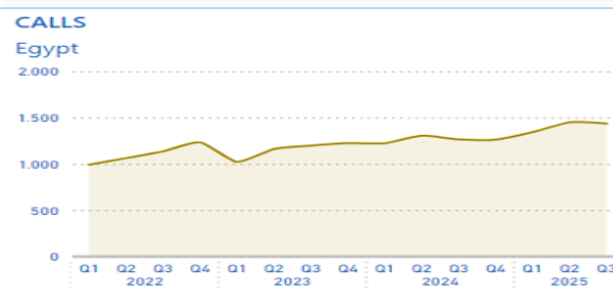
GREECE

NUMBER OF PORT CALLS



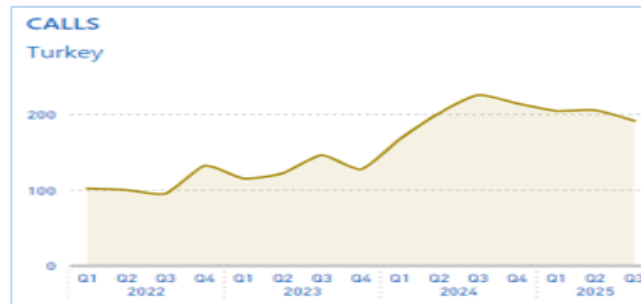
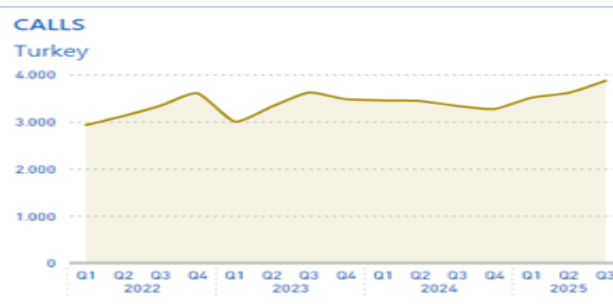
EGYPT

NUMBER OF PORT CALLS



TURKEY

NUMBER OF PORT CALLS



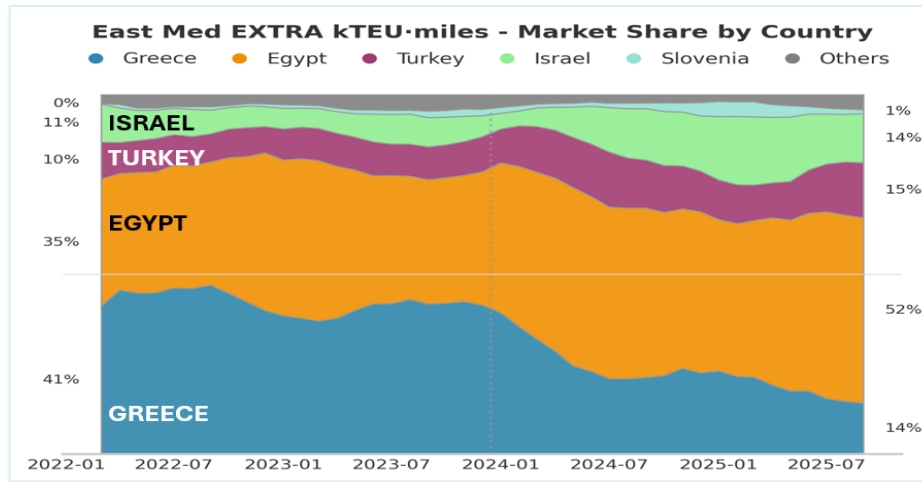
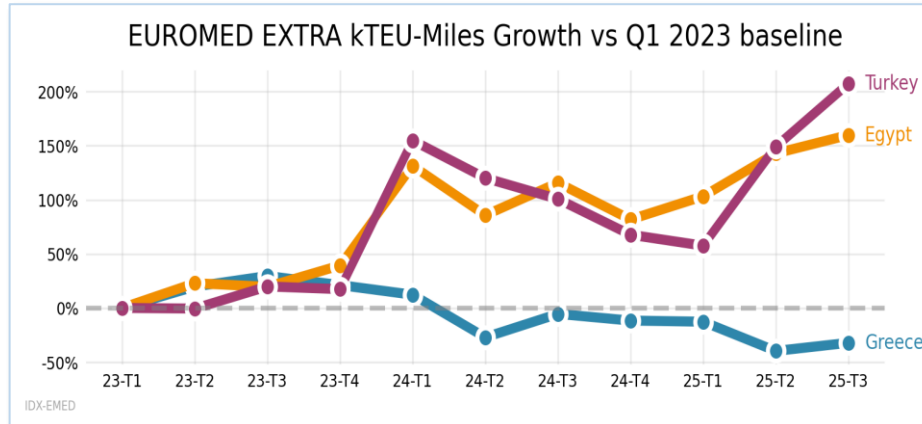
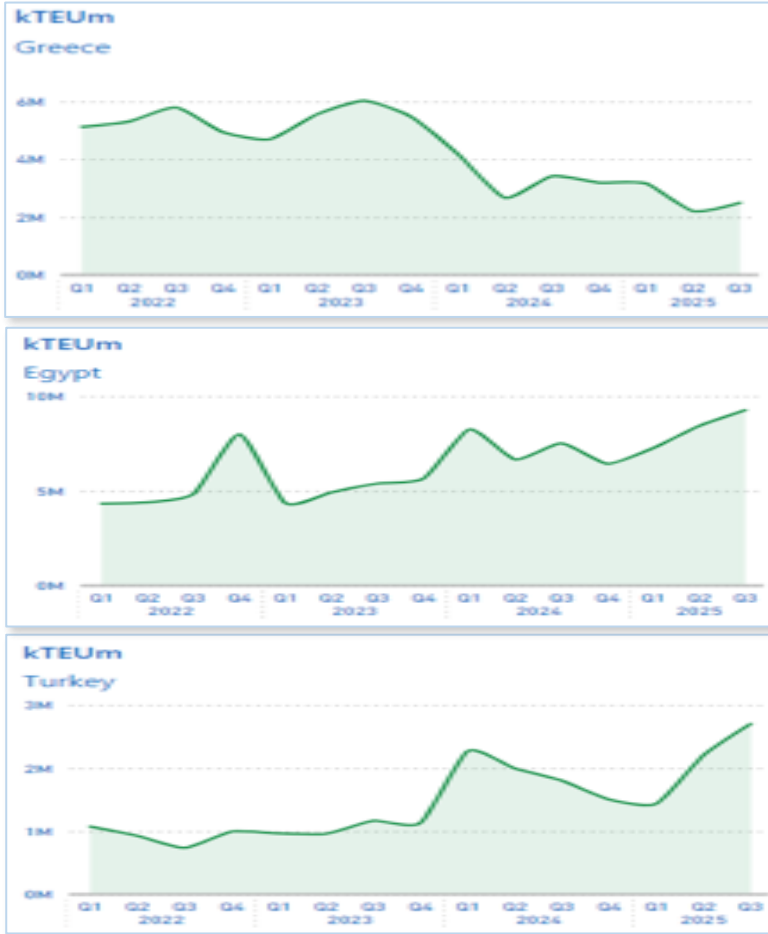
When **all routes** are analysed, the number of port calls remains stable in Greece and shows a slow but sustained increase in Egypt and Turkey.

If the analysis focuses on **calls on trans-oceanic routes**, a sharp drop in port calls is observed in Greece and Egypt at the end of 2023. In Egypt, after this decline, there is a sustained recovery up to levels close to those of the first quarter of 2022. By contrast, in Greece port calls do not recover.

In Turkey, the canal closure triggers a rapid increase in deep-sea route calls, which levels off in the third quarter of 2024.

EAST - MED CASE STUDY. Time evolution of TEU_miles

DEEP-SEA CONTAINER SHIPPING ROUTES

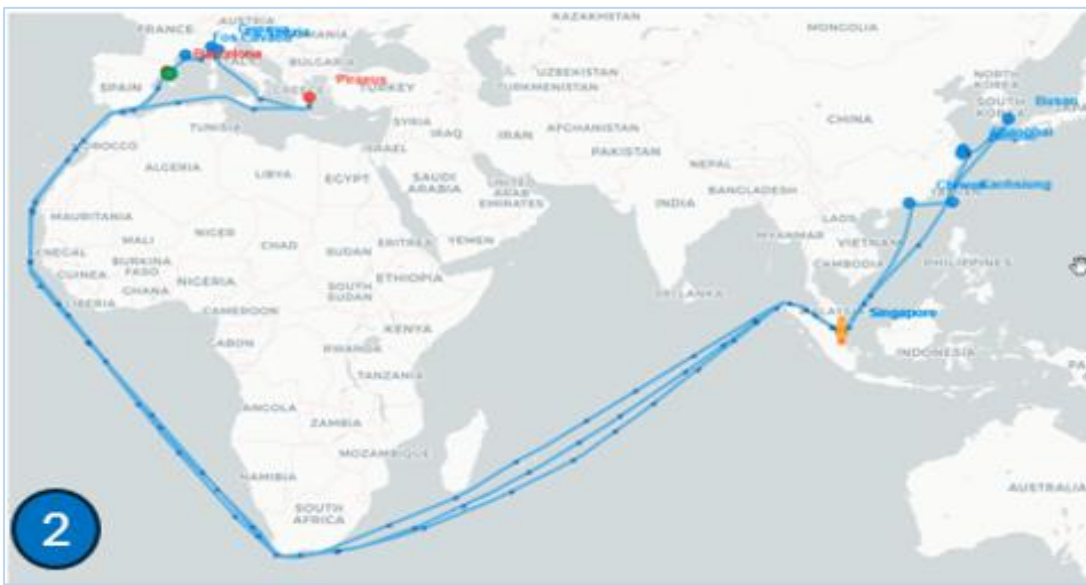
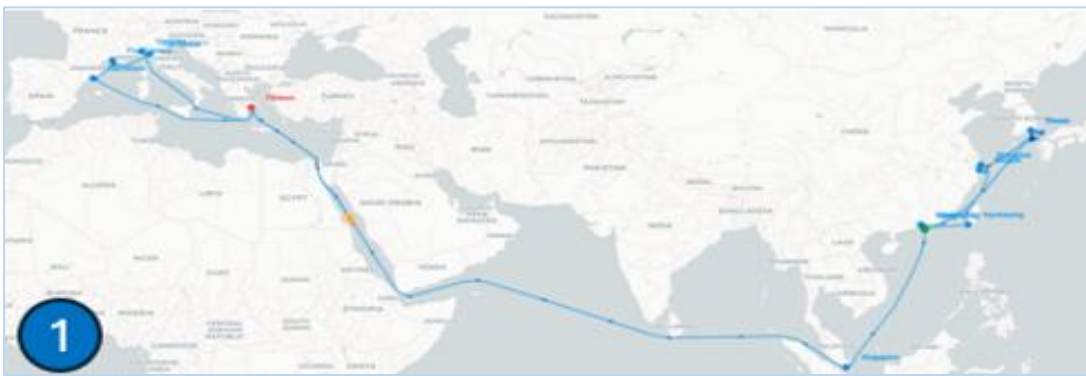


Percentage growth of the TEU-mile indicator relative to Q1 2023. In Egypt and Turkey, the indicator exhibits rapid and sustained growth. By contrast, in Greece the indicator shows a gradual and steady decline.

After the Red Sea crisis, Greece has progressively lost TEU-mile share, while Turkey, Israel and Egypt have gained TEU-mile share, with Egypt showing both the largest TEU-mile share and the strongest growth trend.

In Greece, the TEU-mile indicator reacts to the Red Sea crisis with a sharp drop, followed by a slow and sustained decline. In Egypt and Turkey, the TEU-mile indicator responds to the canal closure with sudden increases.

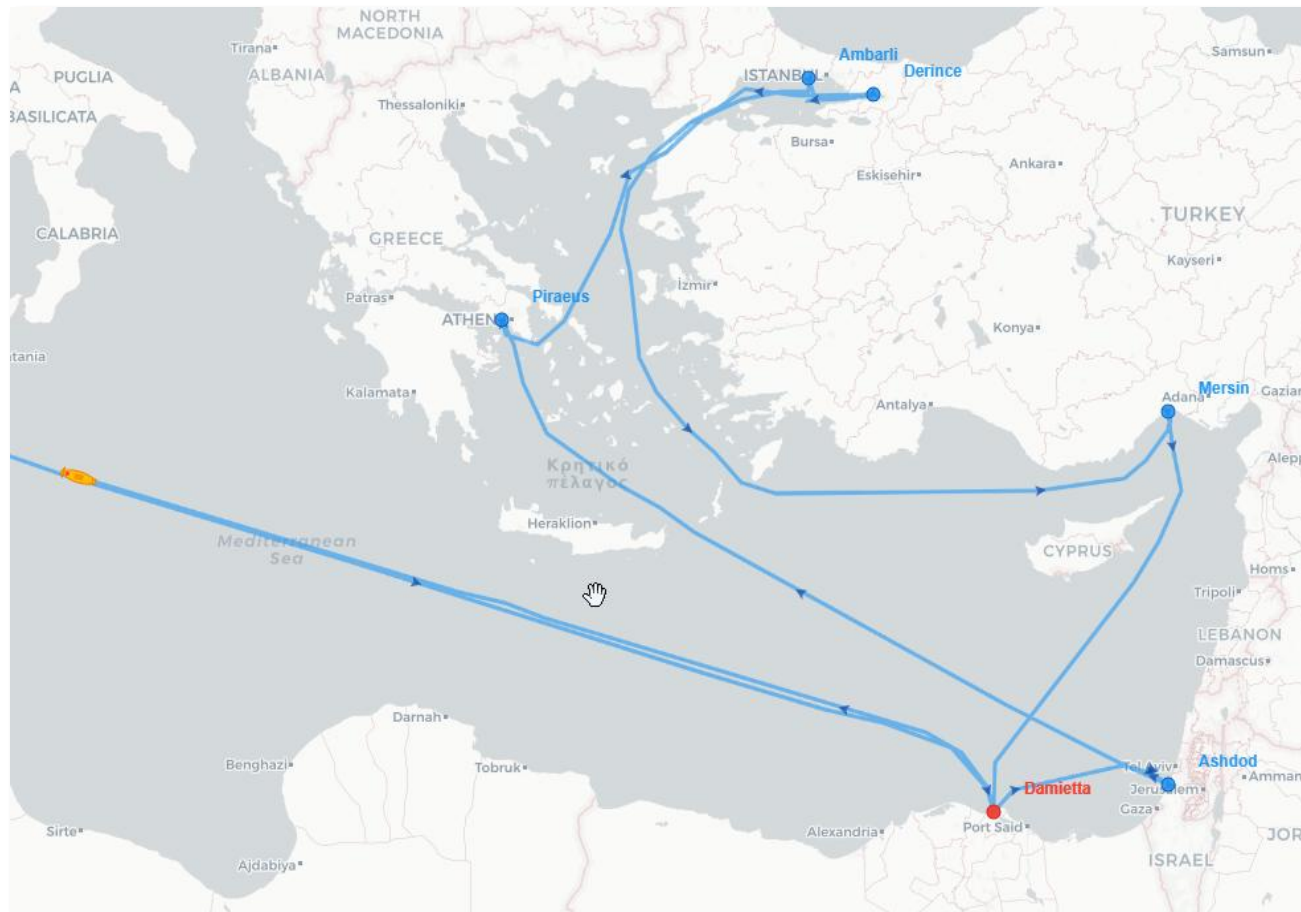
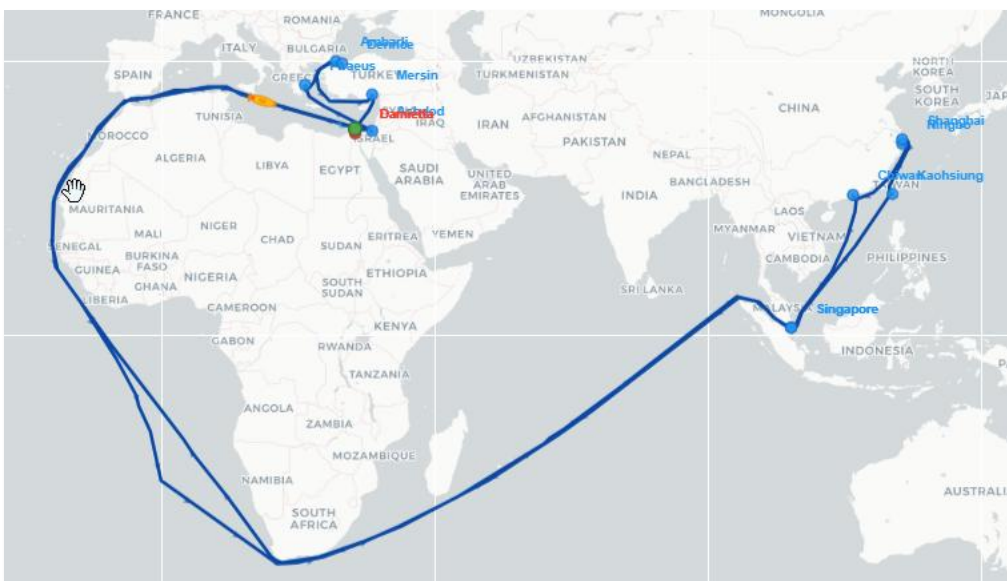
EAST - MED CASE STUDY. Changes over time in the route



1. **2023** Piraeus is the HUB port in the Eastern Mediterranean
2. **2024** The service via the Cape of Good Hope is maintained
3. **2025** Port Said becomes the new HUB of the Eastern Mediterranean

EAST - MED CASE STUDY

New maritime service in the Mediterranean with 14 Panamax vessels, using the port of Damietta as the regional gateway. The service includes a call at Piraeus as an intermediate port on its Mediterranean route



EAST – MED: What could be the causes of the increase in Egypt’s activity?

Has there been a significant improvement in Egypt’s economic activity?

Egypt has not experienced economic growth that would explain higher import–export traffic.

Has there been a reduction in operating costs at Egyptian ports?

In the current inflationary environment, there is no evidence that operating costs have fallen.

Are there structural congestion problems in EU ports in the Eastern Mediterranean?

EU ports in this region have not shown congestion problems; Piraeus has available capacity.

Do Egyptian ports have better infrastructure or greater capacity?

The Port of Piraeus has available capacity. Egyptian ports have undergone investment and upgrades.

Could the closure of the Suez Canal have given Egyptian ports any advantage?

The Port of Piraeus is now on the shortest route from Asia to the central Mediterranean.

Could the expiration of the CBER have given Egyptian ports any advantage?

In Egypt there are laws and authorities aimed at protecting competition and prohibiting monopolistic practices.

Can the ETS explain Egypt’s higher activity compared to Greece, considering Port Said is a “transshipment port of a neighbouring country”?

This measure is not effective in the case of a route disruption such as that occurring in a Hub-and-Spoke system. Moreover, ports such as Abu Qir, Alexandria and Damietta operate without this constraint.

Investments in container terminals in ports of neighboring countries

Since 2021, significant investments have been made in ports of EU neighbouring countries

- **New ports:**

Morocco: Nador West Med and Dakhla Atlantique

- **New terminals:**

Egypt: Abu Qir, Damietta and Alexandria **Turkey:** Mersin **UK:** London Gateway

- **Improvement of existing facilities** (increase draught, expand berthing lines and storage surfaces, and install new handling equipment)

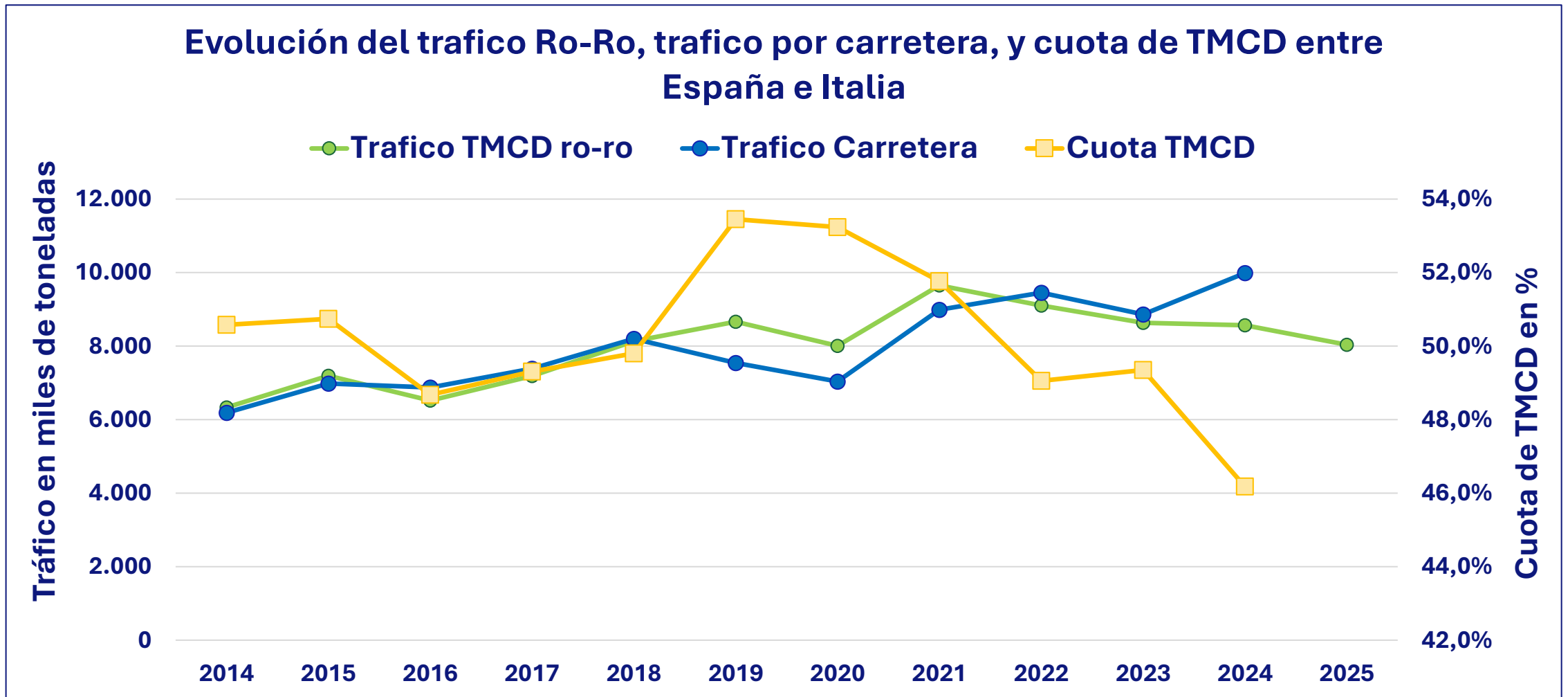
Egypt: Port Said **Israel:** Ashdod **Turkey:** Aliaga **UK:** Felixstowe, Southampton

- Executed or planned investments in Morocco, Israel, Egypt, Türkiye, and UK, in the period 2021-2029: **€7.428 billion.**
- Estimated combined operational capacity of the ports listed above before 2024: **32,35 million TEU per year.**
- Estimated combined operational capacity of the ports listed above by 2029: **51,5 million TEU per year** (60% increased compared to the pre-2024 level)

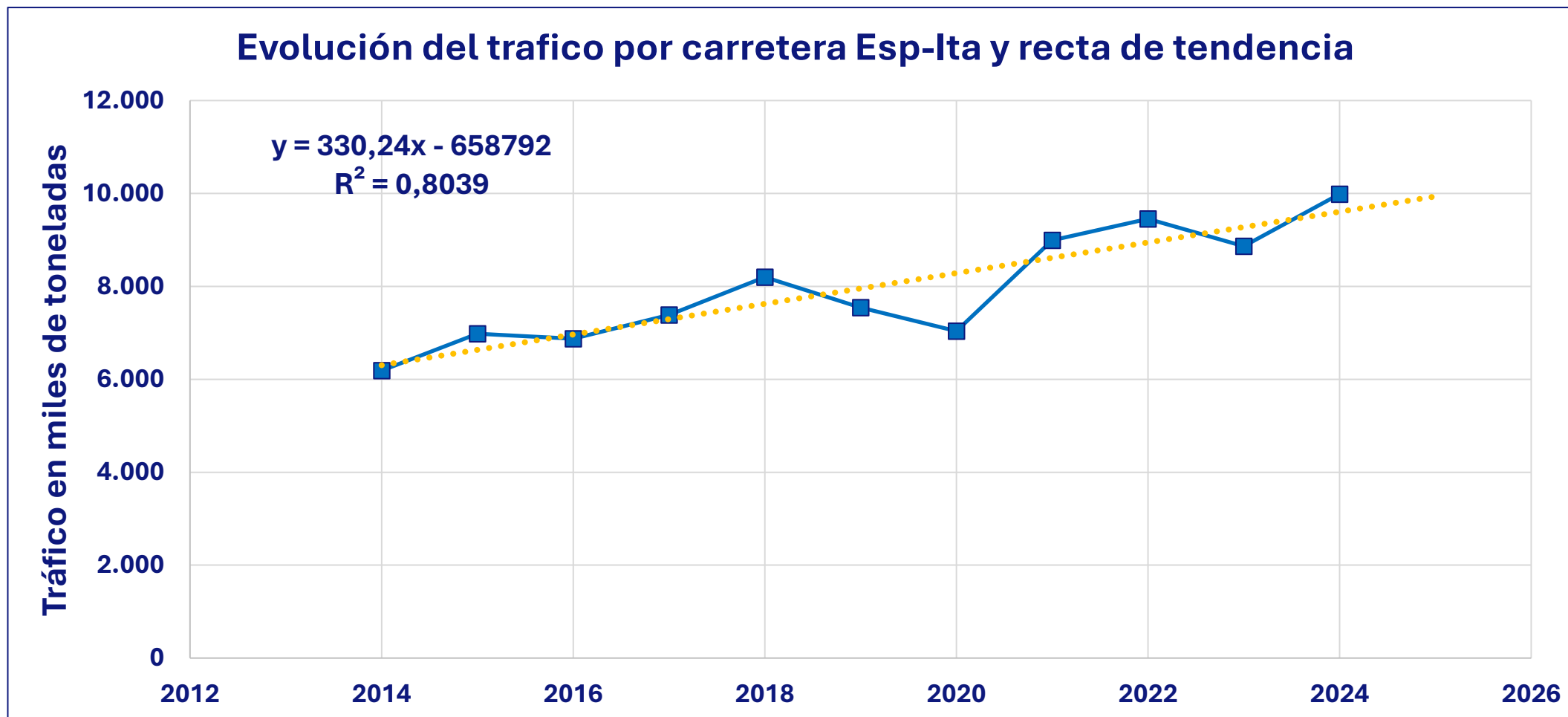
RO-RO services Spain-Italy



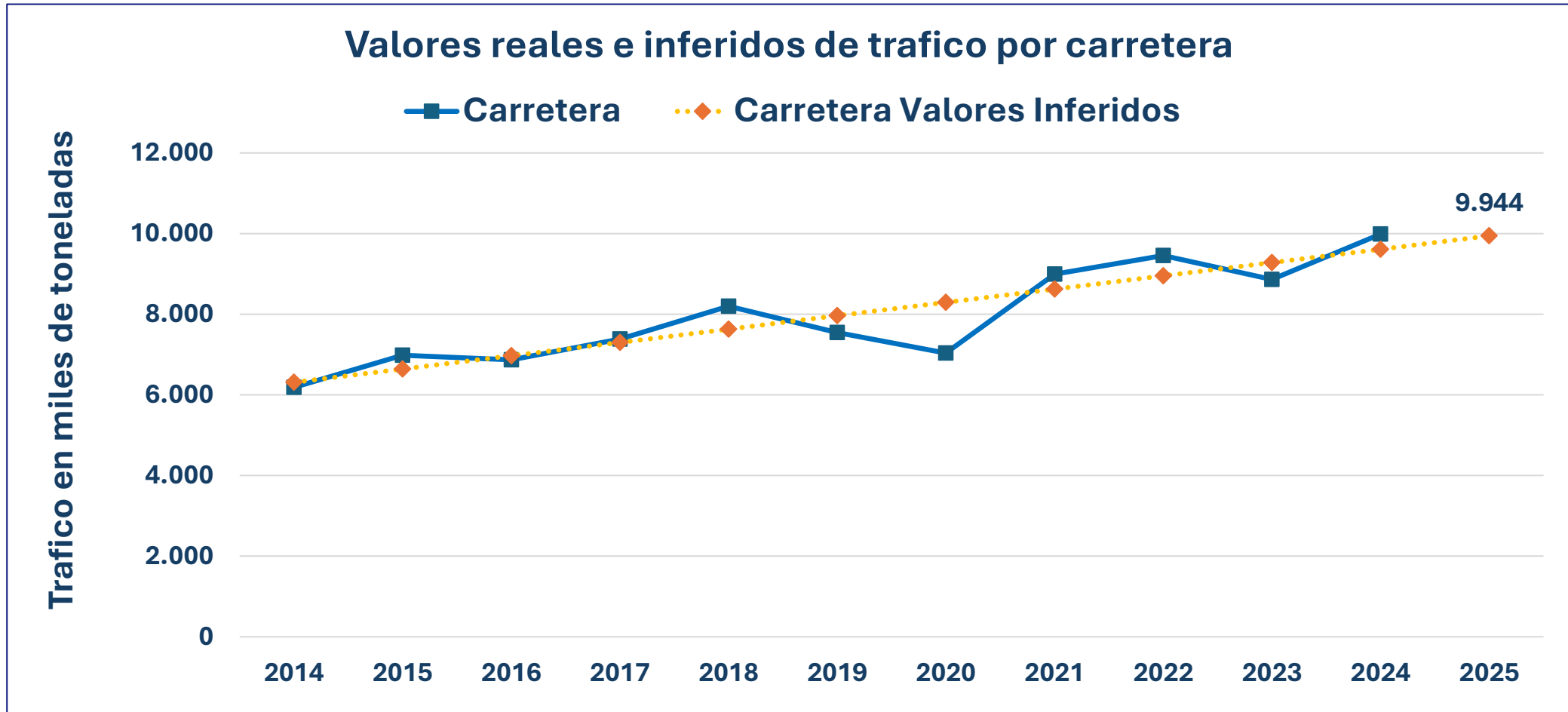
Evolución del TMCD Ro-Ro entre España e Italia



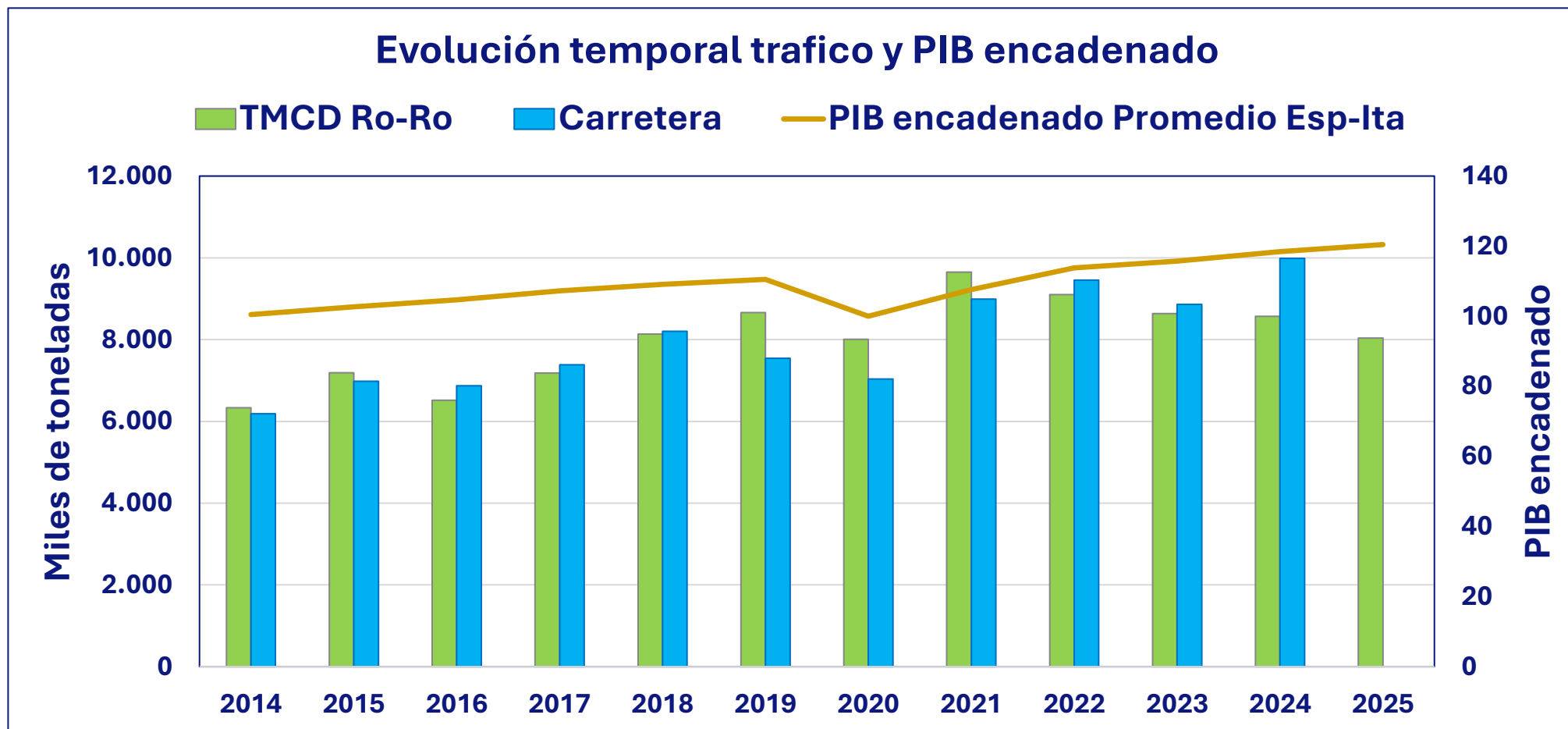
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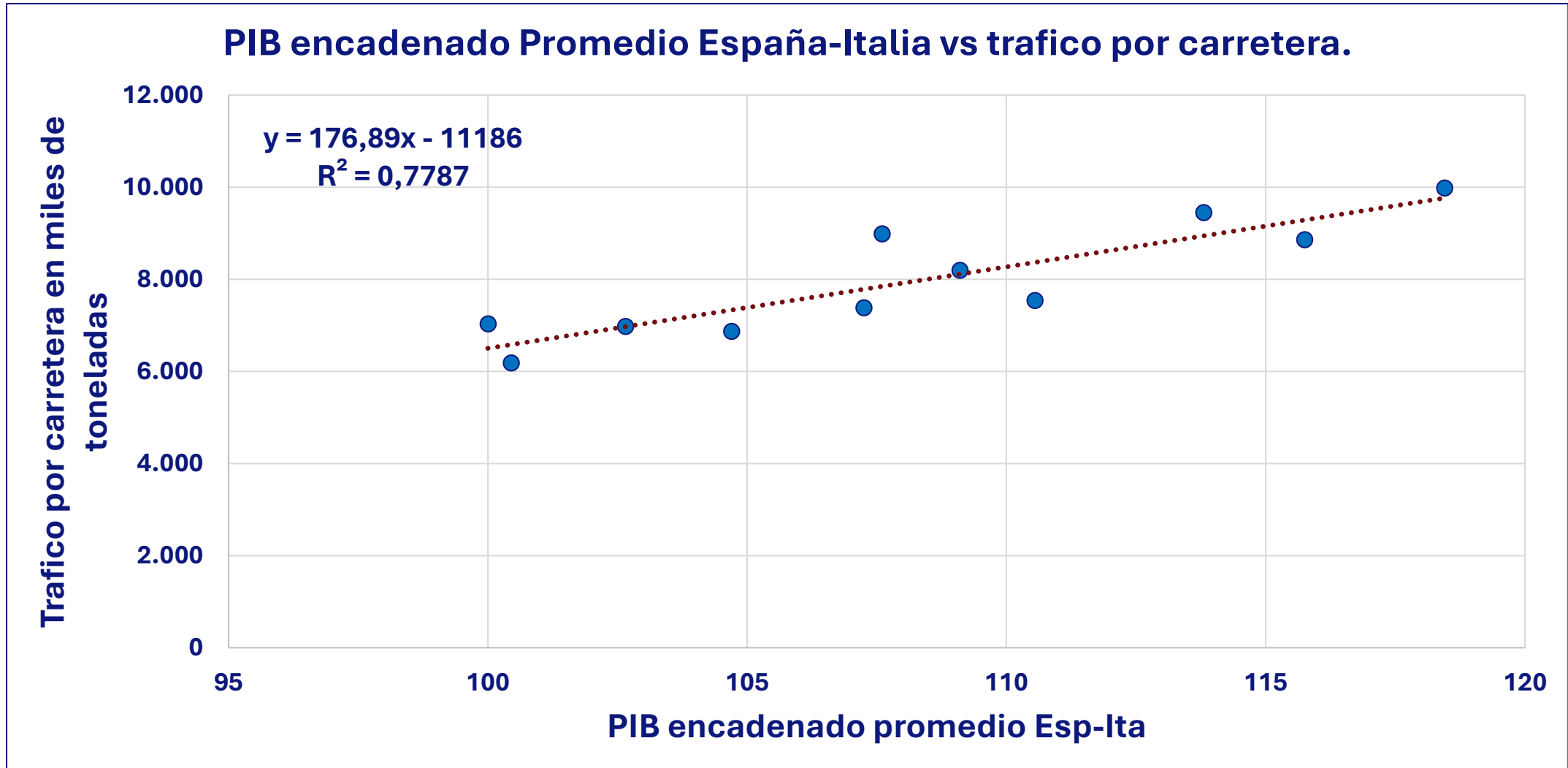
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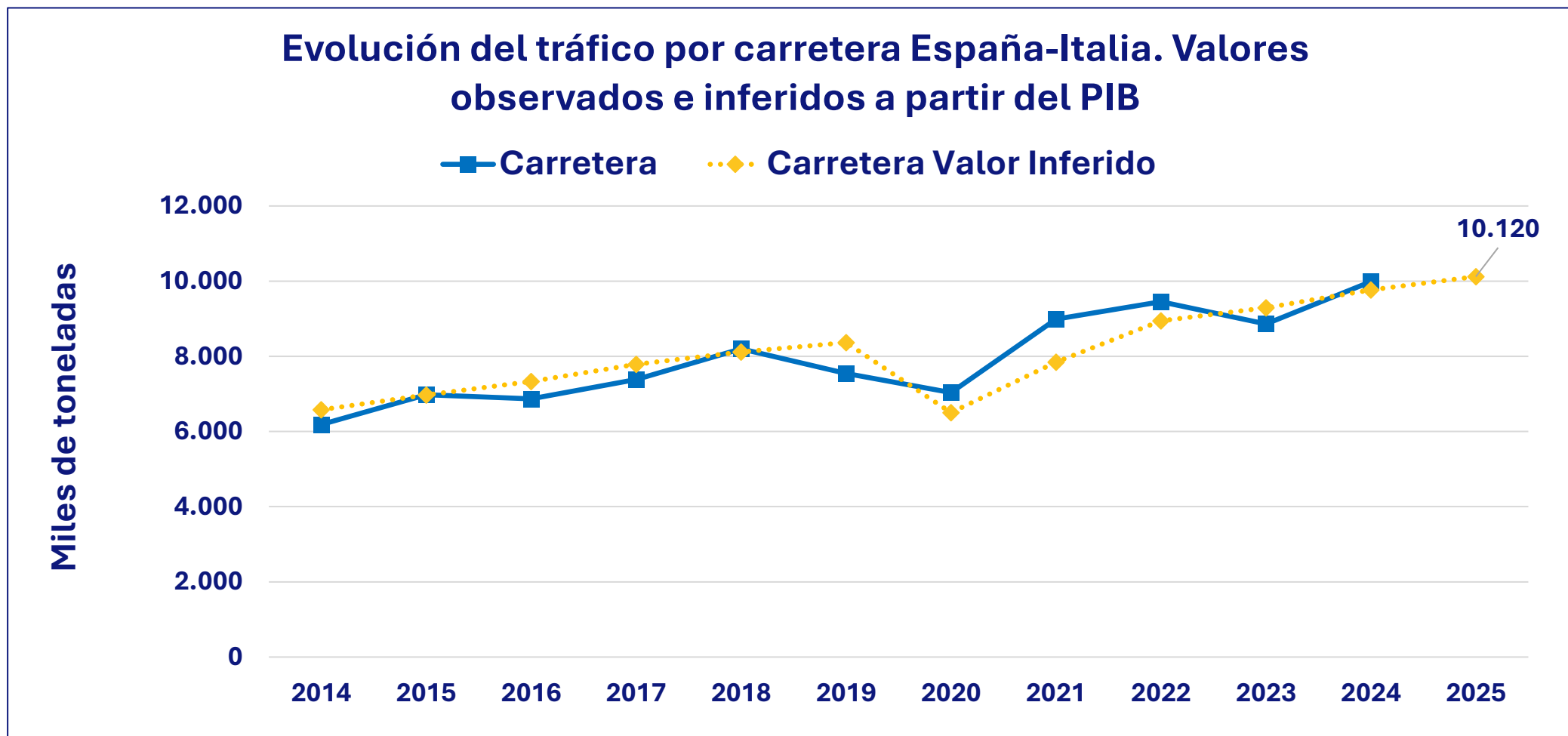
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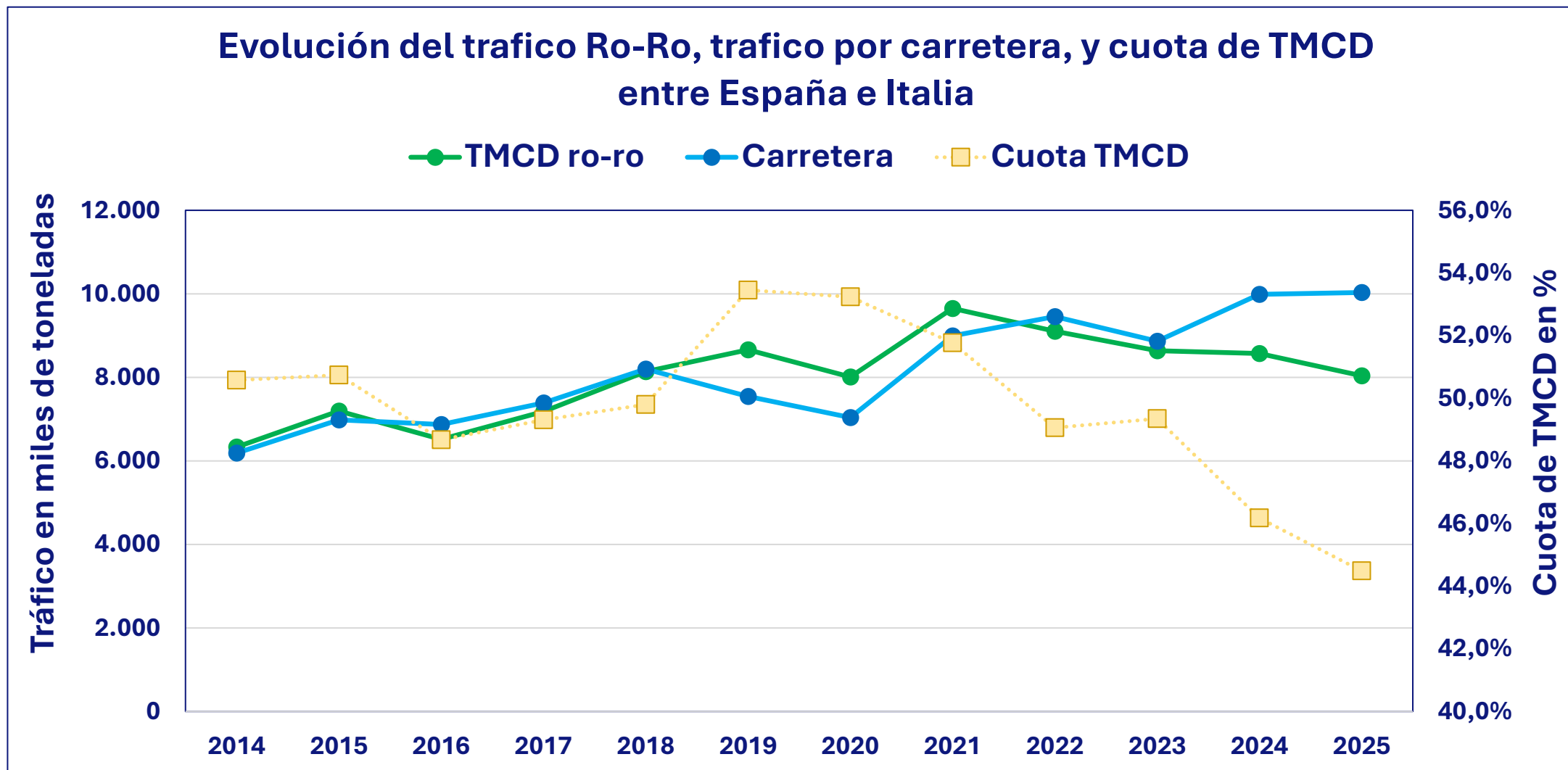
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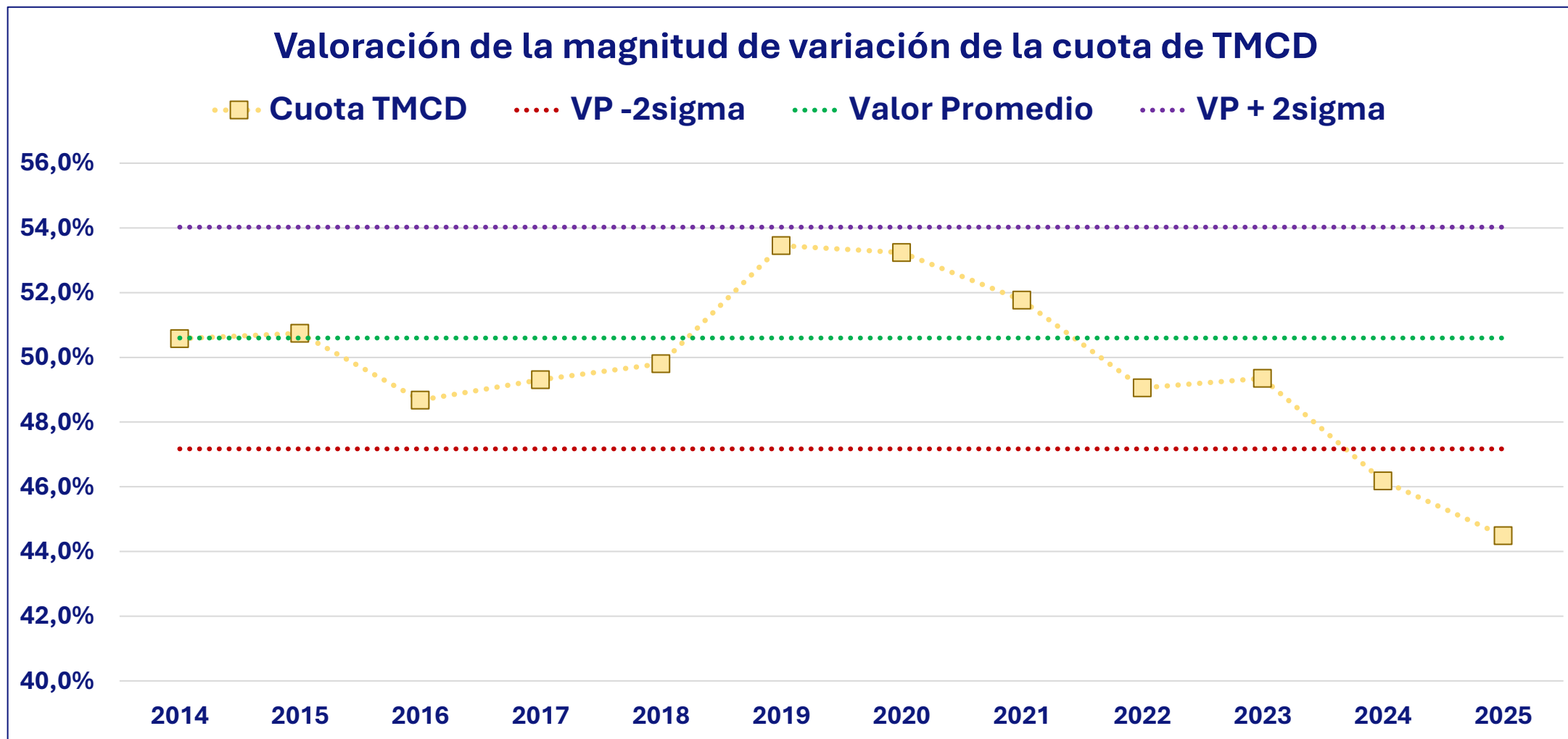
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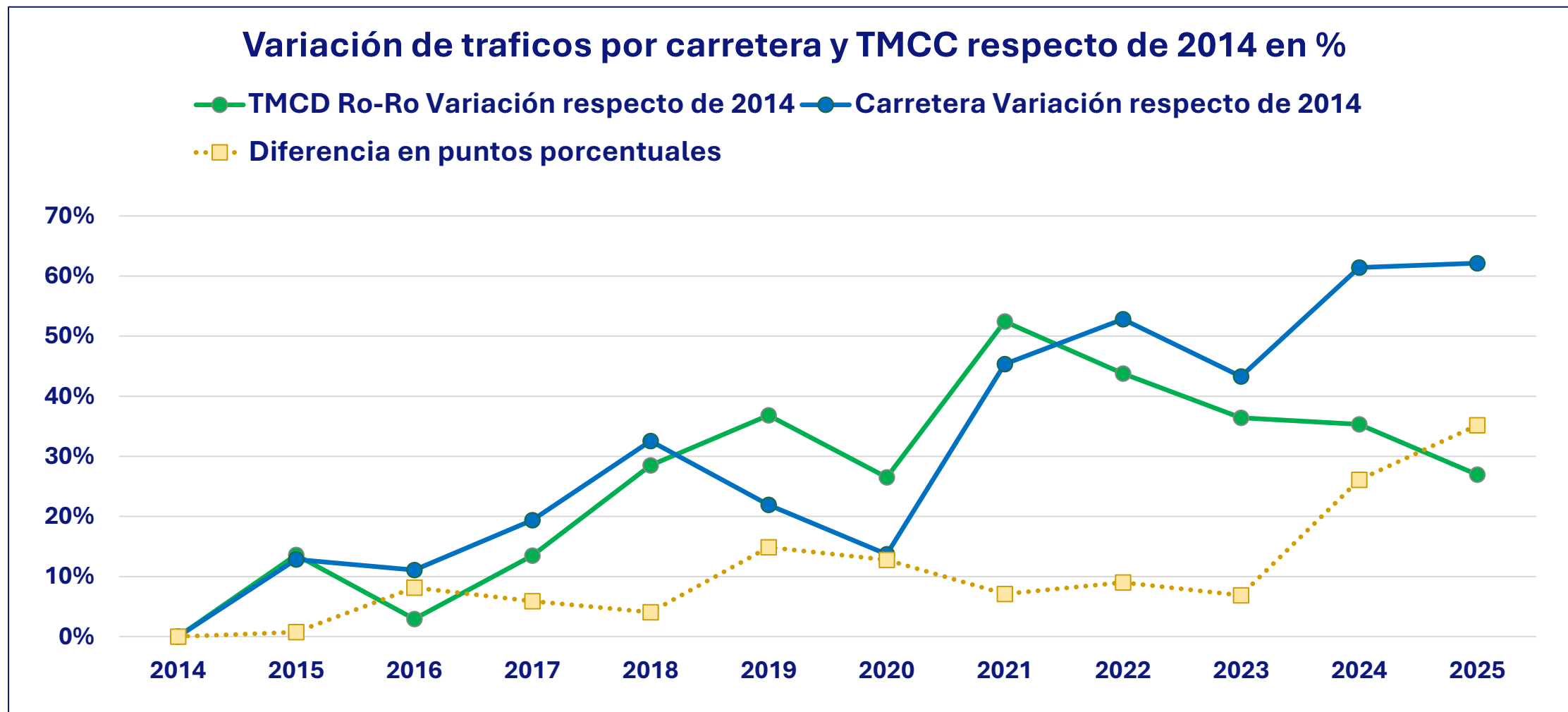
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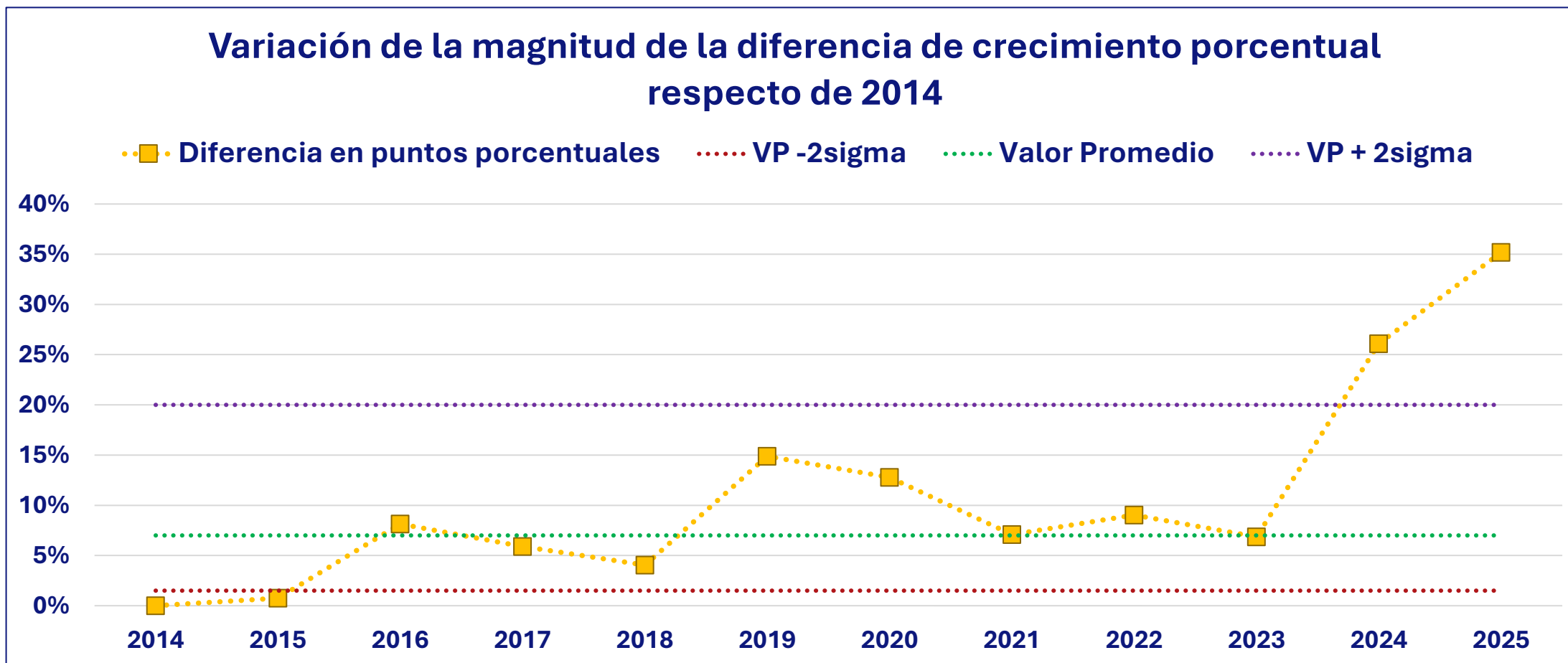
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THANK YOU FOR YOUR ATTENTION