Online Appendix

The Macroeconomic Effects of Global Supply Chain Shocks

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Contents

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A Sensitivity Checks

This appendix presents the results of a series of robustness checks on both the properties of the instrument and the stability of the main findings, including supplementary checks in addition to the tests discussed in the main text.

A.1 Diagnostics of the Instrument

To assess the validity of the instrument, I conduct a set of diagnostic checks following the approach outlined in Ramey (2016). Figure 1 plots the autocorrelation function of the FEU price surcharge series. The autocorrelations are statistically indistinguishable from zero at all lags, and the Ljung–Box Q-statistic testing the joint null hypothesis that all autocorrelations up to lag 20 are zero yields a p-value of 0.39. This provides no evidence of serial correlation.

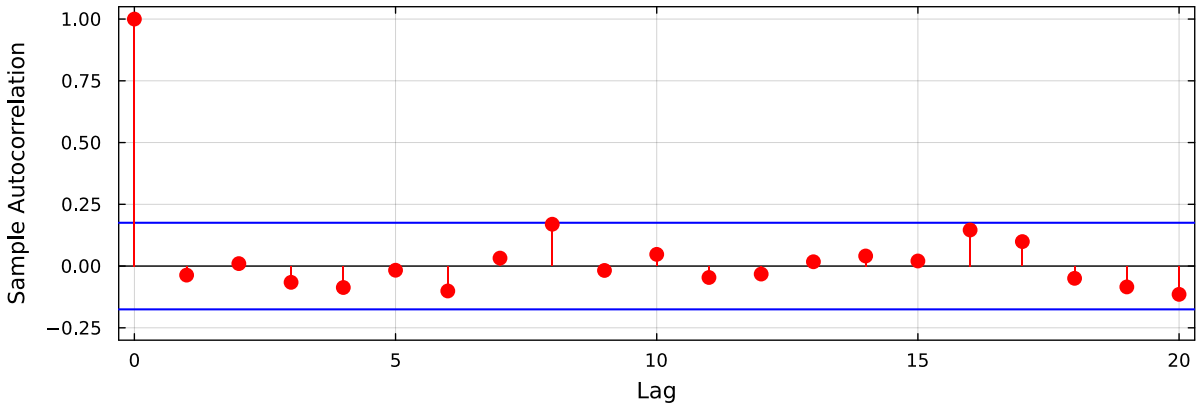

Figure 1: The Autocorrelation Function of the FEU Price Surcharge Series

*Notes:*The figure shows the autocorrelation function. The p-value for the Ljung–Box Q-statistic testing whether all autocorrelations up to lag 20 are jointly zero is 0.39.

I also examine whether the FEU price surcharge series can be forecasted using a broad set of macroeconomic variables. Table 1 reports the results of a series of Granger causality tests where the FEU price surcharge series is regressed on its own twelve lags and two lags of each control variable. The p-values are all well above conventional significance thresholds, and the null hypothesis that the instrument is not Granger-caused by other variables cannot

Table 1: Granger Causality Tests

Series	Source	Transf	p-value	F-stat	df1	df2	Sample
World Oil Production	Baumeister and Hamilton (2019)	MoM	0.76	0.27	2	98	2014M8-2024M12
US Consumer Price Index	Haver Analytics	MoM	0.56	0.58	2	98	2014M8-2024M12
US Terms of Trade	Haver Analytics	Level	0.32	1.16	2	98	2014M8-2024M12
WTI Oil Price	Haver Analytics	MoM	0.72	0.33	2	98	2014M8-2024M12
US Industrial Production	Haver Analytics	MoM	0.74	0.30	2	98	2014M8-2024M12
US Unemployment Rate	Haver Analytics	Level	0.53	0.63	2	98	2014M8-2024M12
GSCPI	Benigno et al. (2022)	Level	0.43	0.85	2	98	2014M8-2024M12
World Uncertainty Index	Ahir, Bloom and Furceri (2022)	Level	0.79	0.24	2	98	2014M8-2024M12
US Trade Policy Uncertainty Index	Baker, Bloom and Davis (2016)	Level	0.43	0.86	2	98	2014M8-2024M12
World Sentiment Index	Ahir, Bloom and Furceri (2022)	Level	0.54	0.62	2	98	2014M8-2024M12
S&P500	Haver Analytics	MoM	0.66	0.42	2	98	2014M8-2024M12
Geopolitical Risk Index	Caldara and Iacoviello (2022)	Level	0.78	0.25	2	98	2014M8-2024M12
Global Economic Condition	Baumeister, Korobilis and Lee (2022)	Level	0.78	0.25	2	98	2014M8-2024M12
Oil Price Expectations 3Months	Baumeister (2023)	Level	0.77	0.26	2	78	2014M8-2023M4
US - China Tension Index	Rogers, Sun and Sun (2024)	Level	0.61	0.50	2	89	2014M8-2024M3
Federal Funds Rate	FRED	Level	0.62	0.47	2	98	2014M8-2024M12

Note: The table shows the results of a series of Granger Causality tests of the FEU price surcharge series using a selection of macroeconomic variables. The series are made stationary when necessary by taking the MoM growth rate. The tests are conducted by regressing the shock on its own 12 lags, 2 lags of the other variable and a constant. The test is on the joint significance of the lags of the additional variable. * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

be rejected for any series. These results suggest that the instrument is not systematically predictable based on past macroeconomic indicators or indices capturing global uncertainty, geopolitical risk, and US–China trade conditions.

Next, I assess whether the instrument is correlated with structural shock series commonly used in the literature. Table 2 reports the Pearson correlation coefficients between the FEU price surcharge series and a wide range of structural shocks, including oil demand and supply shocks, monetary policy shocks, and other shocks. None of the correlations is statistically significant. Taken together, these diagnostic results support the interpretation of the FEU price surcharge series as a valid external instrument. The series is serially uncorrelated, not forecastable from past macroeconomic variables, and orthogonal to other structural shocks commonly used in the literature, reinforcing the exogeneity condition required for Proxy-SVAR identification.

Table 2: Correlation with other Structural Shocks

Series	Source	ρ	p-value	t-stat	df	Sample
Oil News Shock	Känzig (2021)	-0.05	0.62	-0.50	123	2014M8-2024M12
Carbon News Shock	Känzig (2023)	0.11	0.37	0.91	63	2014M8-2019M12
Oil Supply Shock	Baumeister and Hamilton (2019)	-0.03	0.72	-0.36	123	2014M8-2024M12
Economic Activity Shock	Baumeister and Hamilton (2019)	0.02	0.86	0.18	123	2014M8-2024M12
Oil Consumption Demand Shock	Baumeister and Hamilton (2019)	-0.14	0.12	-1.56	123	2014M8-2024M12
Oil Inventory Demand Shock	Baumeister and Hamilton (2019)	0.01	0.91	0.12	123	2014M8-2024M12
Monetary Policy Shock	Bauer and Swanson (2023)	-0.05	0.61	-0.51	111	2014M8-2023M12

Note: The table shows the correlation of the FEU price surcharge series with a wide range of structural shocks from the literature. ρ is the Pearson correlation coefficient, the p-value corresponds to the test whether the correlation is different from zero, t-stat is the corresponding test statistic, df are the degrees of freedom. * p<0.05, ** p<0.01, *** p<0.001.

A.2 Robustness of Main Results

To ensure the reliability of the baseline results, I perform a comprehensive set of robustness checks, including tests of the invertibility assumption, lag length sensitivity, and the inclusion of additional control variables. First, I test the invertibility assumption following the procedure outlined by Plagborg-Møller and Wolf (2022) and Hamilton (Forthcoming). The first panel of Table 3 reports the p-values from a set of F-tests conducted for each equation in the baseline VAR model, for increasing lag lengths of the instrument. Across all series and lag specifications, the p-values are above conventional significance levels, indicating that the coefficients on the lagged instrument are statistically indistinguishable from zero. Moreover, the joint test of the null hypothesis that all coefficients on past realizations of the instrument are jointly zero, reported in the second panel of Table 3, cannot be rejected. Taken together, these results support the validity of the invertibility assumption and suggest that the baseline VAR does not suffer from omitted information problems.

Second, I assess the sensitivity of the aggregate IRFs to alternative lag lengths. Figure 2 displays structural impulse responses estimated from VAR specifications including 14, 16, 18, and 20 lags, in addition to the 12-lag baseline. The results are robust across specifications, with the dynamic causal effects of the global supply chain shock remaining statistically and economically consistent regardless of lag length. One exception is the WTI oil price

Table 3: Testing the invertibility assumption

Lags	US CPI	WTI Oil Price	US Ind Prod	US Unemployment	GSCPI
6	0.26	0.94	0.22	0.24	0.79
7	0.35	0.91	0.32	0.34	0.78
8	0.35	0.88	0.36	0.34	0.74
9	0.25	0.29	0.22	0.14	0.43
10	0.26	0.20	0.19	0.10	0.52
11	0.34	0.26	0.24	0.14	0.61
12	0.21	0.24	0.28	0.19	0.63

Joint test: 12 lags p-value = 0.08 F-stat = 1.31 $df_1 = 60$ $df_2 = 200$

Note: The first panel shows the p-values of a series of F-test that the coefficients $\alpha_1, \ldots, \alpha_m$ are zero in the regression $y_{it} = \pi_i' \mathbf{x}_{t-1} + \alpha_1 z_{t-1} + \cdots + \alpha_m z_{t-m} + \eta_{it}$. The test is conducted for each series included in the baseline VAR model, for different numbers of lags of the instrument. The lag order of the VAR is set to 12 and in terms of deterministics, only a constant is included. The second panel shows the joint system test across all i that lags of z do not appear in any of the equations. * p<0.05, ** p<0.01, *** p<0.001.

series, which exhibits notable variation across specifications; however, these responses are not statistically significant and have wide confidence intervals. The main takeaway is that the results are stable across lag structures and consistent with the baseline specification.

Lastly, I examine whether the impulse responses are robust to the inclusion of additional control variables. Specifically, I estimate alternative specifications of the baseline VAR model by sequentially adding one control variable at a time from a broad set of economic indicators, including price expectations, sectoral price and production indices, services, world output, interest rates, and other macro-financial variables (see Appendix C for details).

Figure 3 shows that the estimated impulse responses remain remarkably stable across these specifications. These results demonstrate that the dynamic causal effects of global supply chain shocks are robust not only to lag structure but also to the inclusion of a wide range of controls. This reinforces the credibility of the baseline findings and confirms that the main takeaway holds across alternative model specifications.

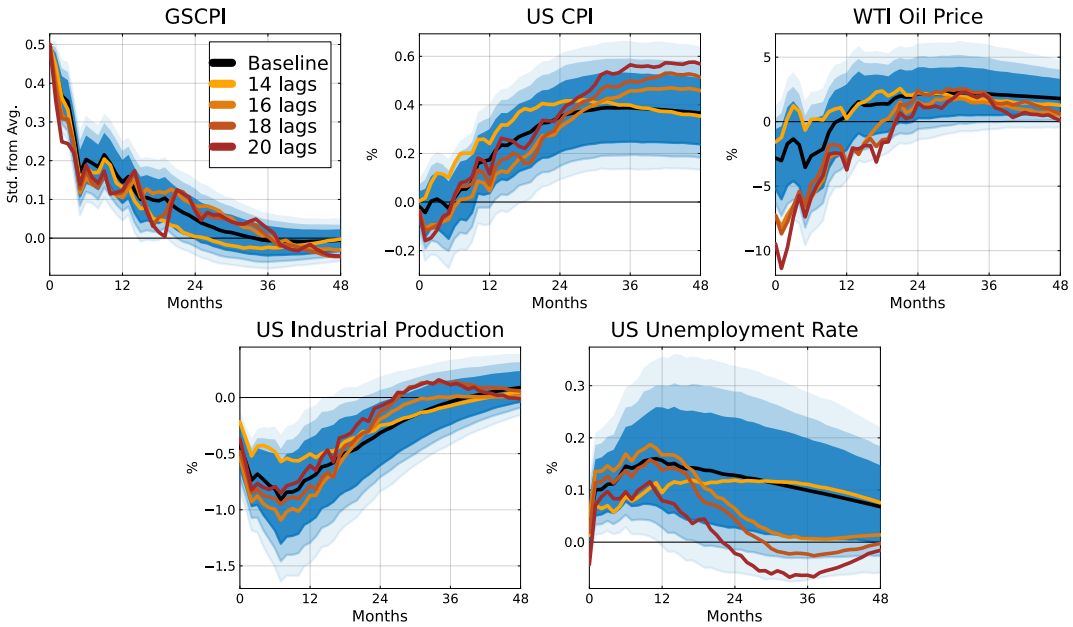

Figure 2: Robustness with respect to Lag Length

Notes: Impulse responses to a global supply chain shock corresponding to a $1,340 price surcharge. The solid lines are the point estimates and the shaded areas are 68, 80 and 90 percent confidence bands for the baseline model, respectively.

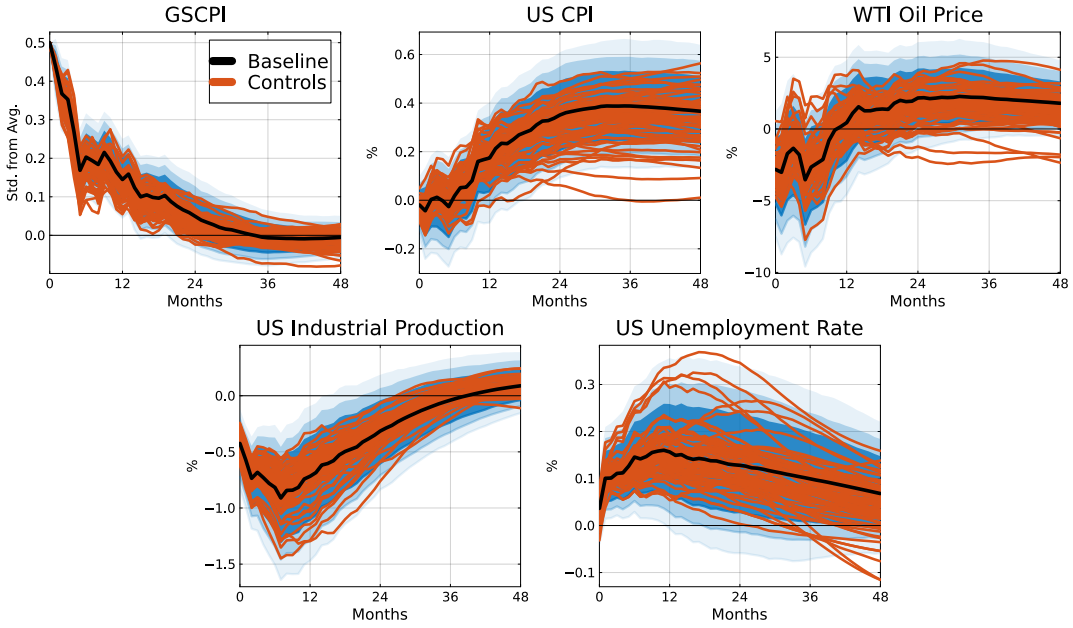

Figure 3: Robustness with respect to Additional Controls

Notes: Impulse responses to a global supply chain shock corresponding to a $1,340 price surcharge. The solid black line is the point estimate and the shaded areas are 68, 80 and 90 percent confidence bands for the baseline model. The solid orange lines are the point estimates for the model with additional controls.

B Narrative Analysis

Starting from the full set of approximately 7,000 surcharge announcements published by the world's three largest container shipping companies between 2014 and 2024, I adapt the keyword-based filtering algorithm of Baker, Bloom and Davis (2016) to isolate surcharges that include terms commonly associated with exogenous supply-side disruptions. I specify keywords related to the four broad categories of disruption described earlier:

1. **Operational disruptions:** pcs, disruption, congestion, long-time container dwell, late gate, blockage, operation cost recovery, driver, safe working practice, sanitary measure, weight charge, demolition, additional surcharge, temporary increase, stop receiving, reroute, divert, fire, damage.

2. **War-related disruptions:** emergency, extraordinary, risk, war, conflict, attack, pirate.

3. **Labor strikes and industrial action:** strike, industrial action, force majeure, work condition.

4. **Natural disasters and weather-related disruptions:** low water, water level, earthquake, drought, water conservation, cyclone, heavy rain.

To avoid inflated match counts, I search for core word stems only, treating singular and plural forms, as well as inflected verb forms, as equivalent. This automated filtering yields a set of 369 candidate announcements. Each is then subject to narrative analysis and external validation to confirm whether it reflects a genuinely exogenous supply-side disruption. One reason for exclusion is that many instances of port congestion are driven by high demand, rather than by supply-side disruptions. In addition, a considerable number of announcements are excluded because keywords appear in generic tariff breakdowns or standardized language used to describe pricing structures across routes, rather than to justify a surcharge linked to a specific event. Another reason for exclusion is the lack of supporting evidence: in some cases,

announcements refer to congestion without providing any concrete cause, and no further explanation can be found in local newspapers, industry reports, or port authority statements. I also exclude one port congestion surcharge attributed to reduced labor availability in the UK, as worker representatives cited in local media explicitly describe the surcharge as profit-driven and not reflective of actual port conditions.

Table 4 presents all 62 exogenous supply-side disruptions. For each event, I report the announcement and implementation dates, the source, the affected ports or trade routes, and the corresponding surcharge. I also provide a brief description of the disruption, including the results of the textual analysis, and offer links either to the original surcharge announcement, when sufficiently detailed, or to external sources that validate the exogenous supply-side nature of the event. To ensure that the keyword-based algorithm is not systematically missing relevant events, I manually review each of the approximately 7,000 surcharge announcements. This comprehensive review reveals five disruptions that are not captured by the algorithm but reflect clear exogenous supply-side shocks. First, I identify two announcements related to low-sulfur regulation in Chinese ports, which contain no keywords from the filtering list. However, supporting evidence from Tan et al. (2021) and Weng et al. (2022) documents how the expansion of Emission Control Areas (ECAs) and the introduction of low-sulfur regulation in China incentivize evasive routing behavior by shipping companies, thereby increasing shipping times. Second, I find three distinct events related to widespread inland transportation congestion across India's dry port network. By consulting local newspapers, I verify that these surcharges are introduced during the country's devastating second wave of COVID-19, which causes a widespread shortage of truck drivers and exposes the structural weaknesses of inland transport infrastructure. These findings are further corroborated by the timing and nature of a later event: the removal of the dry port surcharge following a sudden improvement in India's inland logistics system. This improvement is driven by a series of policy reforms, including the elimination of interstate checkpoints to reduce delivery times, the reclassification of logistics as infrastructure to attract investment, and the

completion of over 1,700 kilometers of high-capacity Dedicated Freight Corridors connecting major industrial hubs and ports.

Table 4: Collection of all the exogenous events

Event	Description	Text Analysis	Links
Port Congestion After Shipping Relocation in Sohar, Oman Announcement: 2014-08-25 Implementation: 2014-08-25 Source: MSC Europe to Sohar, Oman Surcharge: **200 USD**	Following the Eid holiday, congestion built up as all commercial shipping and cargo operations were shifted from Muscat to Sohar. The sudden surge was worsened by a backlog of empty containers awaiting export. Misaligned work schedules and disruptions across the logistics chain contributed to the gridlock. Type: operational	Extraordinary = 1, work condition = 1	logisticmid-dleeast.com
War Risk Surcharge in Hodeidah, Yemen Announcement: 2015-05-19 Implementation: 2015-05-19 Source: CMA-CGM All Trade to Hodeidah Surcharge: **600 USD**	In April 2015, a military intervention in Yemen led by Saudi Arabia and a coalition of regional countries heightened risks at Hodeidah Port, severely disrupting shipping activity. That same month, tensions in the Gulf further intensified following the brief seizure of the Maersk Tigris by Iranian forces Type: war	risk = 5, war = 2	wikipedia
Customs Delays at Shuwaikh Port, Kuwait Announcement: 2015-08-17 Implementation: 2015-08-17 Source: CMA-CGM From/to Shuwaikh Surcharge: **200 USD**	In July 2015, new customs procedures aimed at enhancing security were introduced at the port. However, the changes led to significant yard congestion, as vehicles experienced extended delays awaiting clearance. Type: operational	disruption = 2, congestion = 6	container-mag.com
Crane Failure and Sand Storm Disrupt Shuwaik, Kuwait Announcement: 2015-09-01 Implementation: 2015-09-01 Source: CMA-CGM From/to Shuwaikh Surcharge: **200 USD**	n August 2015, congestion worsened when two cranes were taken out of service due to damaged cable reels, just as a severe sandstorm swept through the region, further disrupting operations. Type: operational	disruption = 2, congestion = 6	container-mag.com
Hodeidah Port Closure After Attack Announcement: 2015-09-01 Implementation: 2015-09-01 Source: CMA-CGM To all cargo initially planned for Hodeidah (Bab-el-Mandeb) Surcharge: **400 USD**	On Monday, 17 August, an attack on the Yemeni port of Hodeidah caused extensive damage to key infrastructure, halting all operations indefinitely. As a result, the port was closed and cargo vessels were redirected to Aden. Type: war	stopped receiving = 1	msc

Crane Operators Strike at Nhava Sheva Announcement: 2015-08-07 Implementation: 2015-08-15 Source: CMA-CGM From all Asian Ports to/via Nhava Sheva Surcharge: **300 USD**	In August 2015, a week-long strike by RTG crane operators at Nhava Sheva disrupted terminal operations. Stemming from labor disputes involving outsourced workers, the strike led to severe congestion and delays in container handling. Type: strike	emergency = 5, force majeure = 1	thedollarbusiness.com
Yemen War Risk Surcharge Due to Conflict Announcement: 2015-10-21 Implementation: 2015-10-21 Source: CMA-CGM On Asia - Europe Mediterranean Trade Surcharge: **300 USD**	As the conflict in Yemen escalated nationwide, shipping faced widespread disruptions, rerouted port calls, and mounting insurance and operational costs—triggering a war risk surcharge. A blockade imposed by the Saudi-led coalition further restricted the flow of food, fuel, and medicine. Type: war	risk = 5, war = 2	securitycouncilreport
Road Construction Causing Shuwaikh Congestion Announcement: 2016-08-26 Implementation: 2016-08-26 Source: MSC World to Shuwaikh and Shuaiba, Kuwait Surcharge: **600 USD**	The launch of the Jahra Road Development Plan severely impacted direct access to Shuwaikh, causing heavy congestion on roads surrounding the terminal and disrupting port traffic flow. Type: operational	congestion = 2, demolition = 1	MSC
Bridge Demolition Disrupts Shuwaikh Access Announcement: 2016-09-06 Implementation: 2016-10-01 Source: CMA-CGM From/to Shuwaikh Surcharge: **600 USD**	The demolition of the Ghazali Bridge further restricted access to Shuwaikh, prompting the introduction of a delivery surcharge. The work supports construction of the elevated Jahra Road viaduct, aimed at improving traffic flow, separating local and through traffic, and expanding road capacity. Type: operational	disruption = 2, congestion = 6, demolition = 1	CMA - CGM
Nationwide Port Strike Disrupts Cargo in Spain Announcement: 2017-03-07 Implementation: 2017-03-10 Source: CMA-CGM All Spanish ports on Europe US Trade Surcharge: **200 USD**	A nationwide strike in Spain caused severe instability and heavy congestion across the country's ports, disrupting vessel berthing schedules. The resulting delays extended transit times and increased port-related costs for incoming cargo. Type: strike	pcs = 1, congestion = 2, emergency = 2	CMA - CGM
Weather and Hazard Disruptions in Kuwait Ports Announcement: 2017-08-21 Implementation: 2017-08-20 Source: CMA-CGM From/to Shuwaikh Surcharge: **200 USD**	In August 2017, a flammable liquid leak from a container ship disrupted operations at Kuwait's Shuaiba Port. That same month, both Shuwaikh and Shuaiba ports faced temporary shutdowns due to unstable weather, including strong winds and low visibility. Type: operational	congestion = 6	kuna.net

Port Congestion from Battle of Aden, Yemen Announcement: 2018-01-09 Implementation: 2018-01-08 Source: CMA-CGM From/to Aden Surcharge: **600 USD**	n January 2018, the Battle of Aden took place in proximity to the port, severely compromising cargo operations. The resultant instability led to substantial disruptions in cargo handling and vessel movements, contributing to significant port congestion and logistical delays. Type: war	pcs = 1, congestion = 6	wikipedia
Aden, Yemen Shipping Improves After UN Aid Plan Announcement: 2018-04-13 Implementation: 2018-04-13 Source: CMA-CGM From/to Aden Surcharge: **-200 USD**	A UN-led conference culminated in USD 2 billion in aid commitments and the adoption of an economic plan for Yemen, designed to enhance humanitarian access and streamline delivery mechanisms. The implementation of this plan improved logistical conditions. Type: war	pcs = 1, congestion = 5	news.un.org
Myanmar Port Congestion Due to Infrastructure Limits Announcement: 2018-06-01 Implementation: 2018-06-01 Source: CMA-CGM Imports into all Myanmar ports Surcharge: **200 USD**	Depots and terminals, particularly in Yangon, operated at full capacity amid a severe container backlog. Also, draft restrictions were imposed, constraining the intake capacity of all carriers. The congestion was largely attributable to inadequate port infrastructure, obsolete equipment, inefficient cargo handling practices, and a limited draft that restricted access for larger vessels. Type: operational	congestion = 6	journalofcommerce.com
Low Water Surcharge St. Lawrence Seaway, Canada Announcement: 2018-07-16 Implementation: 2018-08-01 Source: CMA-CGM From Europe and Mediterranean to Canada East Cost Surcharge: **150 USD**	In July 2017, exceptionally low water levels in the St. Lawrence River, resulting from record outflows from Lake Ontario, adversely affected commercial navigation. Vessels were compelled to operate at reduced speed and with lighter loads, diminishing overall shipping efficiency. Type: weather	low water = 2	International Lake Ontario - St. Lawrence River Board
Yangon Port Conditions Improve with Expansion Announcement: 2018-09-19 Implementation: 2018-10-01 Source: CMA-CGM Imports into all Myanmar ports Surcharge: **-200 USD**	Myanmar undertook efforts to enhance container port infrastructure in Yangon to accommodate larger vessels. The Port Authority received formal approval for the development of a new international container terminal, marking a significant step toward expanding the country's maritime capacity. Type: operational	congestion = 3	TheIrrawaddy
Port Worker Strikes Disrupt Shipping in Portugal Announcement: 2018-09-18 Implementation: 2018-10-18 Source: CMA-CGM Export from Lisbon Surcharge: **150 USD**	The surcharge was introduced following a series of strikes organized by the Sindicato dos Estivadores e da Actividade Logística in Portugal, in protest against perceived anti-union practices and exploitative labor conditions, which disrupted port operations nationwide. Type: strike	disruption = 2, congestion = 3, emergency = 1, pcs = 1	portstrategy.com

Shuwaikh Congestion from Storage Shortages Announcement: 2018-09-25 Implementation: 2018-10-25 Source: CMA-CGM From/to Shuwaikh Surcharge: **300 USD**	The congestion is largely due to deteriorating warehouses across all storage areas and insufficient open yard space. Additionally, supplier company warehouses have reached maximum capacity. Type: operational	disruption = 2, congestion = 6	AlRukaibi, AlKheder and AlMashan (2020)
Low Sulphur Surcharge and Compliance Evasion, Shangai and Ningbo. Announcement: 2018-10-31 Implementation: 2018-11-15 Source: CMA-CGM MSC From Europe destined to Ningbo and Shangai Surcharge: **46.7 USD**	A new regulation introducing a low sulphur surcharge led some carriers to avoid Emission Control Areas (ECAs) to bypass compliance. This practice extended delivery times and raised operational costs, as retrofitting vessels to meet standards was deemed prohibitively expensive. Type: operational	missing	Tan et al. (2021)Weng et al. (2022)
Aden Port Congestion from Yemen Conflict Announcement: 2018-11-28 Implementation: 2018-12-01 Source: CMA-CGM From/to Aden Surcharge: **400 USD**	On November 1, a major offensive was launched in Hodeidah by coalition-backed forces targeting Ansar Allah troops, amid escalating conflict across Yemen. Intensified ground combat and airstrikes severely disrupted port operations, resulting in heightened congestion and shipping delays. Type: war	pcs = 1, congestion = 5	Doctors Without Borders
Low Sulphur Surcharge and Compliance Evasion, extended to all China, Taiwan, Hong Kong. Announcement: 2018-12-14 Implementation: 2019-01-01 Source: CMA-CGM MSC Ex/via China, Hong Kong, Taiwan to all destinations worldwide Surcharge: **46.7 USD**	A new regulation introducing a low sulphur surcharge led some carriers to avoid Emission Control Areas (ECAs) to bypass compliance. This practice extended delivery times and raised operational costs, as retrofitting vessels was deemed prohibitively expensive. The regulation was later extended to all other Chinese ports, as well as Taiwan and Hong Kong, further amplifying its operational impact. Type: operational	missing	Tan et al. (2021)Weng et al. (2022)
Low Water Surcharge St. Lawrence Seaway, Canada Announcement: 2018-12-20 Implementation: 2019-01-17 Source: CMA-CGM From Europe and Mediterranean to Canada East Cost Surcharge: **125 USD**	In November and December 2018, Lake Ontario recorded its fourth- and fifth-highest net total supplies for those months. Despite already elevated outflows, continued inflow increases led to persistently low water levels on Lake St. Lawrence, resulting in reduced draft allowances, heightened grounding risks, and significant disruptions to commercial navigation Type: weather	low water = 2	International Lake Ontario - St. Lawrence River Board
Infrastructure Progress Reduces Congestion at Shuwaikh Announcement: 2019-05-13 Implementation: 2019-06-01 Source: CMA-CGM Shuwaikh import Surcharge: **-300 USD**	Unexpected progress in the ongoing berth development project at Shuwaikh Port contributed to a reduction in congestion and operational delays. Type: operational	congestion = 6	AlRukaibi, AlKheder and AlMashan (2020)

Strait of Hormuz Attack Triggers War Risk Surcharge Announcement: 2019-07-02 Implementation: 2019-08-01 Source: CMA-CGM MSC From/to Bahrein, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, UAE Surcharge: **76 USD**	On 13 June 2019, two oil tankers, the Kokuka Courageous and Front Altair, were attacked near the Strait of Hormuz while transiting the Gulf of Oman, sustaining fire damage reportedly caused by limpet mines or airborne projectiles. Coming shortly after a similar incident in May, the attacks led to the imposition of additional risk coverage surcharges. Type: war	risk = 2 (CMA - CGM); risk = 4, war = 4 (MSC)	wikipedia.com
Conflict-Driven Port Delays in Aden, Yemen Announcement: 2019-07-19 Implementation: 2019-08-20 Source: CMA-CGM From/to Aden Surcharge: **300 USD**	In July 2019, intensified conflict in Aden, Yemen, including fatal attacks, heightened instability around the port. The resulting disruption impaired operations, leading to congestion and delays in cargo handling. Type: war	operation cost recovery = 5	aljazeera
Transport Strikes Disrupt Shipping in South France Announcement: 2020-01-22 Implementation: 2020-02-01 Source: MAERSK From/to Southern France Surcharge: **425 USD**	Nationwide strikes in France disrupted all modes of transport, including ocean and inland services. The resulting impact on the shipping network was particularly pronounced in the southern regions, where significant operational delays were reported. Type: strike	disruption = 4, congestion = 2, emergency = 1, risk = 1, strike = 2	MAERSK
COVID Congestion Disrupts Manila Port Operations Announcement: 2020-01-28 Implementation: 2020-03-01 Source: MAERSK From/to Philippines Surcharge: **1255 USD**	Congestions occurred in all Philippine ports, particularly in Manila. Continued cargo accumulation and slow container retrieval—exacerbated by COVID-19 restrictions and labor shortages—left minimal space for new arrivals, pushing port operations toward shutdown and severely impairing shipping efficiency. Type: operational	additional surcharge = 2, low water = 1	Philippine Ports Authority
Felixstowe Congestion from COVID and Driver Shortage Announcement: 2020-09-22 Implementation: 2020-10-01 Source: CMA-CGM From/to Felixstowe to/from Far East and South East Asia Surcharge: **300 USD**	Felixstowe faced reduced terminal productivity due to newly introduced COVID-19 safety protocols and mandatory deep cleaning between shifts. A severe shortage of Heavy Goods Vehicle drivers compounded congestion, slowing container movement and raising operational costs. Compared to the same period in 2019, the port handled fewer containers, as carriers increasingly omitted Felixstowe from their rotations amid ongoing delays and difficulties in clearing space for empty returns. Type: operational	congestion = 5, driver = 1, safe working practices = 1, safe working practice = 1	metro.global.com

Australia Port Congestions from Weather and Strikes Announcement: 2020-09-08 Implementation: 2020-10-08 Source: CMA-CGM MAERSK MSC From/to Sidney, Melbourne, Brisbane Surcharge: **556.7 USD**	Shipping companies reported significant vessel delays at ports across Australia. Congestion at the Port of Sydney, initially caused by weather disruptions and later compounded by industrial action, had a cascading effect, resulting in prolonged delays at Melbourne and Brisbane ports as well. Type: strike	pcs = 1, congestion = 3, emergency = 2, industrial action = 1 (CMA - CGM); congestion = 5, industrial action = 1 (MAERSK); congestion = 5, industrial action = 1, disruption = 1 (MSC)	CMA-CGMMAERSKMSC
Bilbao Port Strike Causes Widespread Disruption Announcement: 2020-11-07 Implementation: 2020-11-16 Source: CMA-CGM MSC From/to Bilbao Surcharge: **250 USD**	Stevedores strike at the Port of Bilbao, with operations limited to 50% capacity, caused severe congestion. The disruption forced carriers to reroute vessels, leading to substantial delays and costs, with ripple effects reaching other Spanish ports. Type: strike	pcs = 1, congestion = 5 (CMA - CGM); congestion = 5, strike = 1 (MSC)	Allmed Road - Sea - Logistics
UK-Wide Port Congestion from COVID and Labor Shortages Announcement: 2020-11-19 Implementation: 2020-12-01 Source: CMA-CGM From/to all UK ports to/from Asia Surcharge: **240 USD**	Severe labor shortages caused by the intensifying second wave of COVID-19, which was approaching its peak, played a central role in disrupting operations across UK ports. Compounded by reduced terminal productivity due to strict safety protocols and mandatory deep cleaning between shifts, these shortages led to widespread congestion. The lack of available HGV drivers further slowed container movement and increased operational costs. The introduction of a second national lockdown on 5 November added further pressure to an already critical situation. Type: operational	pcs = 1, congestion = 6	metro.global.com
Inland Transport Congestion During Second COVID Wave at LA–LB Ports Announcement: 2020-11-04 Implementation: 2020-12-04 Source: MSC Deliveries made by truck or rail to Chicago, Houston, Columbus, Cincinnati, Dallas, Memphis, Nashville, St Louise, Minneapolis, LA-LB, Seattle, Oakland, Tacoma Surcharge: **700 USD**	The surcharge was introduced during the peak of the second wave of COVID-19 in California, a period marked by record case numbers, strict regional lockdowns, and the emergence of the Alpha variant, which severely congested all major seaports, particularly Los Angeles and Long Beach. The situation resulted in a severe lack of truck drivers and port labor. Notably, the surcharge applied only when MSC arranged inland transport, highlighting the challenges faced by carrier-managed intermodal services. Type: operational	congestion = 1, emergency = 4	AmericanJournalofTransportationCBSnews
Tension at the Bab-el-Mandeb Strait Announcement: 2020-11-13 Implementation: 2020-12-13 Source: CMA-CGM From/to Aden, From/to Port Sudan Surcharge: **400 USD**	In November 2020, Yemen experienced compounded disruptions, most critically from escalating conflict that intensified instability in the Bab el-Mandeb Strait. Concurrently, Tropical Cyclone Gati brought heavy rainfal and hazardous sea conditions, and a cholera outbreak further impaired port efficiency and inland logistics. Type: war	pcs = 1, congestion = 5	reliefwebWHO

Port Surcharge Due to Sanitary Protocols, US Announcement: 2021-02-04 Implementation: 2021-02-04 Source: CMA-CGM Ports of Los Angeles, Long Beach, Oakland, Seattle and Tacoma Surcharge: **3 USD**	According to the official announcement, the surcharge was introduced to offset rising operational costs associated with enhanced sanitary measures, which also contributed to reduced efficiency in container handling and overall shipping operations. Type: operational	sanitary measure = 2	CMA - CGM
Low Water Surcharge St. Lawrence Seaway, Canada Announcement: 2021-01-11 Implementation: 2021-02-07 Source: CMA-CGM From /to Canada East Cost Surcharge: **50 USD**	Low water levels in the St. Lawrence River hindered shipping operations in Canada, as vessels were required to reduce cargo loads and adopt more cautious navigation, resulting in diminished operational efficiency. Type: operational	low water = 2, water level = 1	CMA - CGM
UK Surcharge on Indian Imports Due to Colombo Congestion Announcement: 2021-03-12 Implementation: 2021-03-15 Source: CMA-CGM From India to Southampton and London Gateway Surcharge: **400 USD**	The surcharge applied exclusively to goods imported from India, reflecting severe congestion at Colombo Port in Sri Lanka. Operating at roughly 40% capacity, the port faced a significant backlog that disrupted the feeder network and delayed cargo movement from India and neighboring countries, including Bangladesh, where over 10,000 containers reportedly awaited export. Type: operational	pcs = 1, congestion = 6	PFE Express
Port Surcharge Due to Sanitary Protocols, Canada Announcement: 2021-04-01 Implementation: 2021-05-01 Source: CMA-CGM From/to Canada West Coast Surcharge: **10 USD**	According to the official announcement, the surcharge was introduced to offset rising operational costs associated with enhanced sanitary measures, which also contributed to reduced efficiency in container handling and overall shipping operations. Type: operational	sanitary measure = 2	CMA - CGM
Suez Blockage Surcharge Due to Peak Capacity Strain Announcement: 2021-05-07 Implementation: 2021-05-07 Source: MAERSK From/to Europe and Mediterranean Surcharge: **42.5215 USD**	Following the March 2021 blockage, the Suez Canal reopened to vessel transits; however, the subsequent surge in arrivals placed considerable strain on port terminals and depots. This led to prolonged waiting times across all inland transport modes. In response, a surcharge was imposed on all Carrier Haulage and Multi-Carrier shipments for the month of May. Type: operational	congestion = 1, blockage = 1, extraordinary = 1	MAERSK
Suez Blockage Surcharge Due to Peak Capacity Strain Announcement: 2021-05-07 Implementation: 2021-06-01 Source: MAERSK From/to Europe and Mediterranean Surcharge: **42.1435 USD**	The prolonged and more severe-than-anticipated impact of the Suez Canal blockage prompted shipping companies to extend the surcharge for an additional month. Type: operational	congestion = 1, blockage = 1, extraordinary = 1	MAERSK

Low Water Surcharge, St. Lawrence Seaway, Canada Announcement: 2021-06-01 Implementation: 2021-06-15 Source: CMA-CGM MAERSK MSC From Europe and Mediterranean to Canada Surcharge: **250 USD**	Extreme weather conditions led to reduced water levels on the St. Lawrence River, constraining vessel draft and limiting cargo capacity. Type: weather	low water = 2, water level = 1 (CMA - CGM); low water = 2, water level = 2 (MAERSK); low water = 3, water level = 1 (MSC)	CMA-CGMMAERSKMSC
Suez Blockage Surcharge Due to Peak Capacity Strain Announcement: 2021-06-21 Implementation: 2021-07-01 Source: MAERSK From/to Europe and Mediterranean Surcharge: **41.3875 USD**	The prolonged and more severe-than-anticipated impact of the Suez Canal blockage prompted shipping companies to extend the surcharge for an additional month. Type: operational	extraordinary = 1	MAERSK
Suez Blockage Surcharge Due to Peak Capacity Strain Announcement: 2021-07-21 Implementation: 2021-08-01 Source: MAERSK From/to Europe and Mediterranean Surcharge: **41.118 USD**	The prolonged and more severe-than-anticipated impact of the Suez Canal blockage prompted shipping companies to extend the surcharge for an additional month. Type: operational	extraordinary = 1	MAERSK
Full Closure of Meishan Terminal at Ningbo, China Amid COVID-19 Outbreak Announcement: 2021-08-03 Implementation: 2021-08-15 Source: MSC All shipment from Asia to Europe and Mediterranean Surcharge: **1000 USD**	In August 2021, China's Ningbo port (world's third busiest) shutted down the Meishan terminal following a local COVID-19 outbreak and the enforcement of strict containment measures. This was one of several partial or full closures of terminal gate operations across China between March and August 2021 due to renewed outbreaks. The disruption exacerbated ongoing congestion along the West–East trade route, compounding delays caused by the March 2021 Suez Canal blockage. Type: operational	disruption = 4	MSCCARSON-IntlMAERSK
Emergency Dwell Fees at LA–LB Triggered by Terminal Restrictions on Empty Returns Announcement: 2021-11-03 Implementation: 2021-11-01 Source: MSC Ports of Los Angeles and Long Beach Surcharge: **100 USD**	The Excess Container Dwell Fee was introduced in November 2021 to address record-high dwell times at LA–LB ports. Terminal operators had restricted the return of empty containers, preventing container swaps and turning terminals into storage yards. This led to off-terminal pileups, chassis shortages, and a breakdown in container flow. To ease yard congestion and restore operational fluidity, fees were applied to import containers dwelling over 9 days (truck) or 6 days (rail). Type: operational	disruption = 2, congestion = 2, emergency = 1	MSCFREIGHT-WAWES

Indian Inland Transportation Paralysis from COVID Trucking Shortage Announcement: 2021-11-08 Implementation: 2021-12-01 Source: MAERSK All Indian locations via Indian Ports to World Surcharge: **31.18 USD**	During the second wave of COVID-19, India experienced severe inland transportation congestion due to a critical shortage of truck drivers. Health risks, poor infrastructure, and lack of sanitation facilities left nearly 65% of the national fleet inactive, leading to significant delays and congestion at dry ports. Type: operational	missing	wikipedia.comtruck-suvidha.com
LA–LB Congestion Worsens as Dwell Times and Empties Peak Announcement: 2021-12-01 Implementation: 2021-12-29 Source: MAERSK Ports of Los Angeles and Long Beach Surcharge: **100 USD**	The surcharge reflected worsening terminal conditions, as terminals increasingly served as overflow storage sites, adding to existing delays. Despite efforts like the Emergency Dwell Fee program, congestion persisted into December, with the number of containers dwelling 13 days or more rising from 14,309 to 15,387. The situation peaked with 94 vessels waiting offshore, a record high, even though overall arrivals remained below pre-COVID levels. At the same time, empty containers piled up, reaching a peak of 90,397 units. Type: operational	temporary increase = 1	DHLLogisticUp-dateAfrica
War Risk Surcharge on Black Sea Trade Announcement: 2022-03-02 Implementation: 2022-04-03 Source: MAERSK From/to all Black Sea Ports Surcharge: **1100 USD**	In response to the conflict in Ukraine and the designation of the Black Sea as a war zone, a war risk surcharge was introduced for vessels calling at regional ports. Shipping companies faced elevated insurance costs and operational risks, along with extended transit times, cargo detention, and rerouting. Type: war	emergency = 8, risk = 8, conflict = 1	MAERSK
Port Congestion Surcharge, Le Havre Announcement: 2022-04-20 Implementation: 2022-04-19 Source: MAERSK Port of Le Havre TDF Surcharge: **135.4375 USD**	The surcharge at the Port of LeHavre was introduced in response to severe congestion at the TNMSC terminal, stemming from truck logistics and operational problems that caused significant delays in the gate in/out movement of full containers. As a direct consequence, inland transport suppliers imposed congestion surcharges for intermodal services. Type: operational	congestion = 3, extraordinary = 1	Linerlyt-icaMAERSK
Widespread Dry Port Congestion Surcharge in India Announcement: 2022-05-02 Implementation: 2022-06-01 Source: MAERSK All Indian locations via Indian Ports to World Surcharge: **24.71 USD**	The dry port surcharge was extended across 92 inland ports in response to the severe shortage of truck drivers and inadequate infrastructure. A sharp rise in COVID-19 cases from April 2022 further exacerbated the driver shortage. Type: operational	missing	trucksu-vidha.com

Strikes in Northern Europe Announcement: 2022-09-07 Implementation: 2022-09-07 Source: MAERSK Ports of Le Havre TDF, Dunkirque Surcharge: **122.5 USD**	Since July 2022, "warning strikes" by approximately 12,000 dockworkers in German ports—including Hamburg, Bremerhaven, and Wilhelmshaven—have led to terminal shutdowns. Similar labor actions in Belgium and France further disrupted port operations, contributing to widespread delays. Type: strike	congestion = 2, extraordinary = 1	portstrategy.com
Labor Strike Fears and Rerouting Trigger Congestion at Port Houston Announcement: 2022-11-15 Implementation: 2022-12-01 Source: MAERSK Port of Houston Surcharge: **45 USD**	The surcharge at Port Houston was introduced in response to the growing congestion caused by a surge in rerouted cargo. Fearing disruptions from unresolved International Longshore and Warehouse Union (ILWU)–Pacific Maritime Association (PMA) labor talks on the West Coast, shippers redirected volumes through the Panama Canal to Gulf ports. The resulting spike in imports overwhelmed Houston's yard capacity, with terminals backed up with both loaded and empty containers. The Sustained Import Dwell Fee was introduced to encourage faster container pickup and improve terminal flow. Type: operational	late gate = 9	flexport.comSeatrade-Maritimeitime MAERSK
Missed Appointment and Yard Congestion at LA-LB Announcement: 2022-11-22 Implementation: 2022-12-01 Source: MAERSK Ports of Los Angeles and Long Beach Surcharge: **270 USD**	A Late Gate Receiving Fee was introduced in response to persistent truck appointment no-shows, reportedly reaching up to 70%, which severely disrupted labor planning and terminal logistics, wasting significant resources, especially during weekends or late gate operations. The causes of these missed appointments were varied, including delays at other terminals or warehouses, traffic congestion, and documentation issues. As a result, yard congestion increased, further delaying normal operations. Type: operational	late gate = 9	worldcargonews.comAPMTerminal
India Dry Port Surcharge Lifted After Infrastructure Reforms Announcement: 2023-01-23 Implementation: 2023-02-20 Source: MAERSK All Indian locations via Indian Ports to World Surcharge: **-250.85 USD**	The dry port surcharge in India was reduced following major improvements in inland transportation driven by key government reforms. The introduction of a unified indirect tax system eliminated interstate check-post delays, while the designation of logistics as infrastructure attracted investment in modern transport and warehousing. Over 1,700 kilometers of Dedicated Freight Corridors connecting key industrial hubs and ports enhanced reliability and reduced turnaround times. Type: operational	missing	Indian Brend Equity Foundation

Turkey Port Congestion After Earthquake Announcement: 2023-03-27 Implementation: 2023-03-27 Source: CMA-CGM From Mersin to all destinations worldwide Surcharge: **100 USD**	A devastating 7.8-magnitude earthquake struck southern Turkey in February 2023, causing extensive damage to port infrastructure and regional road networks. Trucking activity around Mersin was severely disrupted, while operations at the nearby Port of Iskenderun were suspended due to fire damage. As vessels were rerouted to Mersin, significant delays and congestion ensued. Type: weather	pcs = 3, congestion = 2	portcast.io
Turkey Port Congestion After Earthquake Announcement: 2023-04-07 Implementation: 2023-04-07 Source: CMA-CGM From North East Asia, South East Asia and Hong Kong SAR to Mersin Surcharge: **100 USD**	As conditions deteriorated, the port congestion surcharge was subsequently increased to reflect the escalating operational challenges. Type: weather	pcs = 2, congestion = 1	portcast.io
Panama Canal Surcharge Due to Drought Announcement: 2023-04-06 Implementation: 2023-06-01 Source: CMA-CGM From Northeast Asia, China to East Coast Central America Surcharge: **600 USD**	Severe drought conditions disrupted canal operations. A prolonged water shortage, intensified by the El Niño phenomenon, led the Panama Canal Authority to reduce daily vessel transits and lower maximum draft limits. AMany vessels were forced to lighten loads or reroute. Type: weather	low water = 2, water level = 1	pancanal.com
Panama Canal Surcharge Due to Drought Announcement: 2023-07-07 Implementation: 2023-08-03 Source: MAERSK All cargo transiting the Panama Canal Surcharge: **240 USD**	The Panama Canal Authority imposed restrictions on both the number and size of vessels transiting the canal, due to historically low water levels in Lake Gatun—the canal's primary water source. These limitations disrupted global shipping. Type: weather	emergency = 1, risk = 1	worldweatherat-tribution.org
Iskenderun Congestion After Reopening with Damaged Equipment Announcement: 2023-08-25 Implementation: 2023-09-01 Source: CMA-CGM From/to Iskenderun Turkey to/from Europe and Middle East Surcharge: **207.6 USD**	The Port of Iskenderun reopened three months after the February earthquake and subsequent fire that severely damaged its infrastructure. Post-reopening, the port faced significant congestion, extended delivery times, and operational delays due to limited and impaired equipment. Type: weather	pcs = 2, congestion = 2	Kuehne-Nagel1Kuehne-Nagel2
Panama Canal Surcharge Due to Drought Announcement: 2023-11-23 Implementation: 2023-12-15 Source: CMA-CGM MSC All cargo transiting the Panama Canal Surcharge: **298.5 USD**	Due to ongoing drought conditions driven by the El Niño phenomenon and insufficient regional rainfall, the Panama Canal Authority reduced the maximum allowable draft from 14.94m to 13.41m. This led to higher delivery times, congestion, and operational costs. Type: weather	drought = 1, precipitation = 1, water conservation = 1 (CMA - CGM); emergency = 2, water level = 1 (MSC);	CMA-CGMMSCDescartes

Red Sea Conflict Forces Cape of Good Hope Rerouting Announcement: 2023-12-20 Implementation: 2024-01-01 Source: MSC From/to Europe and Mediterranean to/from Asia Surcharge: **891.67 USD**	The Contingency Adjustment Surcharge was introduced in response to the ongoing conflict in the Red Sea, including attacks by Houthi forces. To safeguard crews, cargo, and vessels, carriers re-routed shipments via the Cape of Good Hope, substantially extending transit times and increasing operational costs. Type: war	re-routing = 2 (CMA - CGM); disruption = 8, emergency = 4, risk = 1, re-routing = 1, divert = 5, diverting = 1 (MAERSK); divert = 1 (MSC)	CMA-CGMMAERSKMSC
Low Water Surcharge St. Lawrence Seaway, Canada Announcement: 2024-10-21 Implementation: 2024-11-01 Source: CMA-CGM MAERSK MSC From Europe and Mediterranean to Montreal, Canada Surcharge: **400 USD**	The surcharge was introduced in response to exceptionally low water levels in the St. Lawrence River, which significantly reduced tonnage capacity on trade routes from Europe to Montreal. These constraints disrupted shipping schedules and raised operational costs. Type: weather	low water = 4, water level = 1 (MSC); pcs = 5, congestion = 5 (CMA - CGM); low water = 4 (MAERSK)	CMA-CGMMAERSKMSC
Low Water Level Surcharge In North and Central America Announcement: 2024-11-04 Implementation: 2024-12-01 Source: CMA-CGM MAERSK All cargo transiting the Panama Canal Surcharge: **300 USD**	Extreme weather conditions reduced water levels in the Panama Canal, limiting vessel draft and restricting cargo capacity. Type: weather	low water = 1 (CMA - CGM); emergency = 2, risk = 2, low water = 4 (MAERSK)	CMA-CGMMAERSK

C Data

This appendix provides details on the variables used in the aggregate and sectoral analysis, as well as those included in the robustness check involving additional control variables. Specifically, Table 6 lists the series ID, series name, data source, and the transformation applied to each variable. The table is divided into panels, each containing the variables used in a specific analysis, as indicated by the corresponding panel title. All variables in Panels B through E were added individually to the baseline specification to test the robustness of the main results to additional controls (Figure 3). Variables used exclusively in the Granger causality tests (Table 1) or the correlation analysis with other structural shocks (Table 2) are not included, as their sources are already documented in the corresponding tables. All variables were used over the sample period from January 1998 to December 2024.

Table 6: Data description

Series ID	Series Name	Data Source	Transformation
Panel A. Aggregate Analysis			
GSCPI@NY	Global Supply Chain Pressure Index	New York FED	Level
S111PC@G10	US CPI	Haver Analytics	100 log
N111POIL@G10	WTI Oil Price	Haver Analytics	100 log
S111D@G10	US Industrial Production	Haver Analytics	100 log
S111ELUR@G10	US Unemployment Rate	Haver Analytics	Level
Panel B. Sectoral Production Analysis			
IPMFG@USECON	US IP Manufacturing	Haver Analytics	100 log
IPB0@USECON	US IP Mining	Haver Analytics	100 log
IPMDG@USECON	US IP Durable Goods	Haver Analytics	100 log
IPMND@USECON	US IP Nondurable Goods	Haver Analytics	100 log
IPE1T2@USECON	US IP Food and Beverages	Haver Analytics	100 log
IPG61T3@USECON	US IP Motor Vehicles and Parts	Haver Analytics	100 log
IP53@USECON	US IP Materials	Haver Analytics	100 log
IPFP@USECON	US IP Final Products	Haver Analytics	100 log
Panel C. Non-Tradable Analysis			
NMFBAIA@USECON	Services Activity Index	Haver Analytics	100 log
NMFEIA@USECON	Services Employment Index	Haver Analytics	100 log
NAPMOI@USECON	Manufacturing Production Index	Haver Analytics	100 log
Panel D. Sectoral Prices Analysis			
CPILFESL	US CPI Core	FRED	100 log
PCUCS@USECON	US CPI Services	Haver Analytics	100 log
PCUCCD@USECON	US CPI Durable Goods	Haver Analytics	100 log
PCUSND@USECON	US CPI Nondurable Goods	Haver Analytics	100 log
S111PCFB@G10	US CPI Food and Beverages	Haver Analytics	100 log
PCUTPV@USECON	US CPI New Vehicles	Haver Analytics	100 log
S111PCH@G10	US CPI Housing	Haver Analytics	100 log
S111PCM@G10	US CPI Medical Care	Haver Analytics	100 log
Panel E. Additional Controls			
H111PFTT@G10	US Terms of Trade	Haver Analytics	100 log
FFR	Fed Funds Rate	FRED	Level
CINF5@USECON	Inflation Expectations 5Y	Haver Analytics	Level
CINF1@USECON	Inflation Expectations 1Y	Haver Analytics	Level
S001DPP@G10	World Industrial Production	Haver Analytics	100 log

CUSR0000SEHF	US CPI Energy Services	FRED	100 log
PCUCC@USECON	US CPI Commodities	Haver Analytics	100 log
S111PCH@G10	US CPI Recreation	Haver Analytics	100 log
PCUHF@USECON	US CPI Fuels and Utilities	Haver Analytics	100 log
S111PCT@G10	US CPI Transportation	Haver Analytics	100 log
S111PCO@G10	US CPI Others	Haver Analytics	100 log
PCUSE@USECON	US CPI Energy	Haver Analytics	100 log
PCUTV@USECON	US CPI Motor Vehicles	Haver Analytics	100 log
PCUA@USECON	US CPI Apparel	Haver Analytics	100 log
UHFGE@USECON	US CPI Household Electricity	Haver Analytics	100 log
UHFGU@USECON	US CPI Piped Gas Service	Haver Analytics	100 log
PPIACO	US PPI	FRED	100 log
PCUOMFGOMFG	US PPI Manufacturing	FRED	100 log
PCU311311	US PPI Food Manufacturing	FRED	100 log
IP521@USECON	US IP Business Equipment	Haver Analytics	100 log
IPHT@USECON	US IP High Tech Industries	Haver Analytics	100 log
IP54@USECON	US IP Nonindustrial Supplies	Haver Analytics	100 log
IPUTL@USECON	US IP Electric and Gas Utilities	Haver Analytics	100 log
IPG3@USECON	US IP Machinery	Haver Analytics	100 log
IPG61@USECON	US IP Motor Vehicles	Haver Analytics	100 log
IPF1@USECON	US IP Wood	Haver Analytics	100 log
IPF7@USECON	US IP Nonmetallic Mineral Products	Haver Analytics	100 log
IPG1@USECON	US IP Primary Metals	Haver Analytics	100 log
IPG2@USECON	US IP Fabricated Metal Products	Haver Analytics	100 log
IPG4@USECON	US IP Comp and Elec Comp	Haver Analytics	100 log
IPG5@USECON	US IP Elec Eqpt, Appliances	Haver Analytics	100 log
IPG64T9@USECON	US IP Aerospace	Haver Analytics	100 log
IPG7@USECON	US IP Furniture	Haver Analytics	100 log
IPE1T2@USECON	US IP Food Bev and Tob	Haver Analytics	100 log
IPE3T4@USECON	US IP Textile	Haver Analytics	100 log
IPE5T6@USECON	US IP Apparel	Haver Analytics	100 log
IPF2@USECON	US IP Paper	Haver Analytics	100 log
IPF3@USECON	US IP Printing and Rel	Haver Analytics	100 log
IPF5@USECON	US IP Chemicals	Haver Analytics	100 log
IPF4@USECON	US IP Petroleum and Coal	Haver Analytics	100 log
IPF6@USECON	US IP Plastics and Rubber	Haver Analytics	100 log
IPN221113S	US IP Nuclear El Gen	FRED	100 log
IPB51222S	US IP Residential En Utilities	FRED	100 log

IPG2211S	US IP Electric Power	FRED	100 log
IPG2212S	US IP Gas Distribution	FRED	100 log
NMFVDI@USECON	Services Supplier Deliveries Index	Haver Analytics	100 log
NRSV2@USECON	Food Drinking Services	Haver Analytics	100 log
	Real Food Services (CPI Defl.)	Own Calculation	100 log
	Real Food Services (CPI Food Defl.)	Own Calculation	100 log
NAPMC@USECON	Manufacturing Composite Index	Haver Analytics	100 log
NAPMEI@USECON	Manufacturing Employment Index	Haver Analytics	100 log

References

Ahir, Hites, Nicholas Bloom, and Davide Furceri. 2022. "The world uncertainty index." National bureau of economic research.

AlRukaibi, Fahad, Sharaf AlKheder, and Nourah AlMashan. 2020. "Sustainable port management in Kuwait: Shuwaikh port system." *The Asian Journal of Shipping and Logistics*, 36(1): 20–33.

Baker, Scott R, Nicholas Bloom, and Steven J Davis. 2016. "Measuring economic policy uncertainty." *The quarterly journal of economics*, 131(4): 1593–1636.

Bauer, Michael D, and Eric T Swanson. 2023. "A reassessment of monetary policy surprises and high-frequency identification." *NBER Macroeconomics Annual*, 37(1): 87–155.

Baumeister, Christiane. 2023. "Measuring market expectations." *Handbook of economic expectations*, 413–441.

Baumeister, Christiane, and James D Hamilton. 2019. "Structural interpretation of vector autoregressions with incomplete identification: Revisiting the role of oil supply and demand shocks." *American Economic Review*, 109(5): 1873–1910.

Baumeister, Christiane, Dimitris Korobilis, and Thomas K Lee. 2022. "Energy markets and global economic conditions." *Review of Economics and Statistics*, 104(4): 828–844.

Benigno, Gianluca, Julian Di Giovanni, Jan J Groen, and Adam I Noble. 2022. "The GSCPI: A new barometer of global supply chain pressures." *FRB of New York Staff Report*, , (1017).

Caldara, Dario, and Matteo Iacoviello. 2022. "Measuring geopolitical risk." *American economic review*, 112(4): 1194–1225.

Hamilton, James D. Forthcoming. *Vector Autoregressions*. Cambridge University Press.

Känzig, Diego R. 2021. "The macroeconomic effects of oil supply news: Evidence from OPEC announcements." *American Economic Review*, 111(4): 1092–1125.

Känzig, Diego R. 2023. "The unequal economic consequences of carbon pricing." National Bureau of Economic Research.

Plagborg-Møller, Mikkel, and Christian K Wolf. 2022. "Instrumental variable identification of dynamic variance decompositions." *Journal of Political Economy*, 130(8): 2164–2202.

Ramey, Valerie A. 2016. "Macroeconomic shocks and their propagation." *Handbook of macroeconomics*, 2: 71–162.

Rogers, John H, Bo Sun, and Tony Sun. 2024. "US-China tension." *Available at SSRN 4815838*.

Tan, Zhijia, Haiyan Liu, Shuai Shao, Jiaguo Liu, and Jihong Chen. 2021. "Efficiency of Chinese ECA policy on the coastal emission with evasion behavior of ships." *Ocean & Coastal Management*, 208: 105635.

Weng, Jinxian, Tong Han, Kun Shi, and Guorong Li. 2022. "Impact analysis of ECA policies on ship trajectories and emissions." *Marine pollution bulletin*, 179: 113687.