date	ru_exports_to_cn_usd_bn	ru_imports_from_cn_usd_bn	total_trade_usd_bn	ru_trade_balance_usd_bn
2019-01	4.8940	4.3097	9.2037	0.5843
2019-02	4.0858	2.7524	6.8382	1.3334
2019-03	4.5336	3.5825	8.1161	0.9511
2019-04	5.1910	3.7167	8.9077	1.4743
2019-05	5.3494	3.7951	9.1445	1.5543
2019-06	5.2786	3.9867	9.2653	1.2918
2019-07	4.7247	4.5332	9.2579	0.1915
2019-08	4.9372	4.4753	9.4125	0.4619
2019-09	4.9730	4.5034	9.4764	0.4696
2019-10	5.2631	4.3830	9.6461	0.8801
2019-11	5.5280	4.5278	10.0558	1.0002
2019-12	5.5392	4.8818	10.4210	0.6574
2020-01	6.1087	4.4492	10.5579	1.6595
2020-02	5.1732	1.5776	6.7508	3.5956

2020-03	4.9724	3.1195	8.0919	1.8529
2020-04	4.2165	3.9782	8.1947	0.2384
2020-05	3.5601	3.8048	7.3649	-0.2447
2020-06	4.1982	3.9884	8.1866	0.2098
2020-07	4.7798	4.8927	9.6725	-0.1128
2020-08	4.5396	5.2586	9.7982	-0.7190
2020-09	5.4176	4.7994	10.2170	0.6181
2020-10	4.6275	4.7245	9.3520	-0.0970
2020-11	4.4370	4.7572	9.1942	-0.3202
2020-12	5.1597	5.2749	10.4347	-0.1152
2021-01	4.8967	4.7579	9.6546	0.1389
2021-02	4.9661	4.1634	9.1295	0.8027
2021-03	6.2063	4.1423	10.3487	2.0640
2021-04	5.6756	5.1282	10.8038	0.5474
2021-05	5.7187	4.7311	10.4498	0.9876

2021-06	6.2353	6.0283	12.2636	0.2070
2021-07	6.7104	5.5396	12.2500	1.1708
2021-08	7.0417	6.3216	13.3633	0.7200
2021-09	6.8678	6.6011	13.4689	0.2668
2021-10	7.5221	5.5046	13.0266	2.0175
2021-11	8.2031	6.5409	14.7441	1.6622
2021-12	8.3069	8.1368	16.4437	0.1701
2022-01	7.5748	7.3806	14.9554	0.1942
2022-02	6.2386	5.2371	11.4757	1.0015
2022-03	7.8439	3.8253	11.6692	4.0187
2022-04	8.8895	3.8017	12.6912	5.0877
2022-05	10.2690	4.3241	14.5931	5.9449
2022-06	9.7483	5.0025	14.7508	4.7458
2022-07	10.0193	6.7708	16.7901	3.2485
2022-08	11.2146	7.9957	19.2103	3.2189

2022-09	10.6561	7.9994	18.6555	2.6568
2022-10	10.2298	7.4076	17.6374	2.8222
2022-11	10.5449	7.7114	18.2563	2.8334
2022-12	8.9966	8.8085	17.8051	0.1880
2023-01	9.3053	8.0854	17.3906	1.2199
2023-02	9.3436	6.9513	16.2949	2.3923
2023-03	11.0206	9.0442	20.0648	1.9764
2023-04	9.6064	9.6219	19.2283	-0.0155
2023-05	11.3056	9.2675	20.5731	2.0381
2023-06	11.2800	9.5513	20.8313	1.7287
2023-07	9.2078	10.2801	19.4879	-1.0723
2023-08	11.5150	9.2995	20.8145	2.2155
2023-09	11.5315	9.6455	21.1770	1.8860
2023-10	11.1070	8.6850	19.7920	2.4220
2023-11	11.2085	10.2994	21.5079	0.9091

2023-12	11.1962	10.7097	21.9059	0.4865
2024-01	10.4649	9.2231	19.6879	1.2418
2024-02	9.7375	7.5848	17.3223	2.1527
2024-03	12.1970	7.6090	19.8060	4.5881
2024-04	11.4478	8.3170	19.7648	3.1308
2024-05	10.7276	9.0861	19.8137	1.6415
2024-06	10.3663	9.8835	20.2498	0.4828
2024-07	9.7062	9.9918	19.6980	-0.2856
2024-08	11.4229	10.2638	21.6867	1.1591
2024-09	10.5626	11.2467	21.8093	-0.6841
2024-10	10.7905	11.0045	21.7950	-0.2140
2024-11	10.4778	10.0383	20.5161	0.4395
2024-12	10.6704	11.3031	21.9735	-0.6327
2025-01	9.6509	9.1551	18.8060	0.4959
2025-02	10.0818	5.8010	15.8827	4.2808

2025-03	10.6786	7.7688	18.4474	2.9098
2025-04	9.7217	8.0891	17.8108	1.6326
2025-05	9.6020	8.1012	17.7032	1.5008
2025-06	9.3215	8.2820	17.6035	1.0395
2025-07	10.0576	9.0807	19.1383	0.9769
2025-08	9.3560	8.5469	17.9029	0.8091
2025-09	10.9561	8.8692	19.8253	2.0869

china_pmi	china_industrial_production_yoy	russia_industrial_production_yoy	cny_rub	brent_usd	russia_key_rate_eom
49.5		2.7	9.8262	59.4100	7.7500
49.2		4.2	9.7646	63.9600	7.7500
50.5	8.5	2.7	9.7010	66.1400	7.7500
50.1	5.4	5.2	9.6196	71.2300	7.7500
49.4	5	1	9.4373	71.3200	7.7500
49.4	6.3	3.2	9.2979	64.2200	7.5000
49.7	4.8	4.3	9.1930	63.9200	7.2500
49.5	4.4	3.90000000000001	9.2956	59.0400	7.2500
49.8	5.8	5	9.1270	62.8300	7.0000
49.3	4.7	4.40000000000001	9.0648	59.7100	6.5000
50.2	6.2	1.5	9.0987	63.2100	6.5000
50.2	6.9	2.59999999999999	8.9664	67.3100	6.2500
50		1.59999999999999	8.9413	63.6500	6.2500
35.7		5.09999999999999	9.1479	55.6600	6.0000

52	-1.1	2.8	10.5025	32.0100	6.0000
50.8	3.9	-4.40000000000001	10.5726	18.3800	5.5000
50.6	4.4	-7.7	10.1958	29.3800	5.5000
50.9	4.8	-6.59999999999999	9.7641	40.2700	4.5000
51.1	4.8	-5.59999999999999	10.1621	43.2400	4.2500
51	5.6	-3.90000000000001	10.6419	44.7400	4.2500
51.5	6.9	-3.5	11.1149	40.9100	4.2500
51.4	6.9	-5.3	11.5374	40.1900	4.2500
52.1	7	-1	11.6410	42.6900	4.2500
51.9	7.3	3.7	11.3423	49.9900	4.2500
51.3		-2.3	11.4848	54.7700	4.2500
50.6		-3.7	11.5066	62.2800	4.2500
51.9	14.1	1.59999999999999	11.4348	65.4100	4.5000
51.1	9.8	7.09999999999999	11.6685	64.8100	5.0000
51	8.8	11.7	11.5006	68.5300	5.0000

50.9	8.3	10	11.3105	73.1600	5.5000
50.4	6.4	6.8	11.4141	75.1700	6.5000
50.1	5.3	4.5	11.3598	70.7500	6.5000
49.6	3.1	6.8	11.2932	74.4900	6.7500
49.2	3.5	7.59999999999999	11.1226	83.5400	7.5000
50.1	3.8	7.59999999999999	11.3784	81.0500	7.5000
50.3	4.3	6.09999999999999	11.5832	74.1700	8.5000
50.1		9.09999999999999	12.0621	86.5100	8.5000
50.2		6.59999999999999	12.1560	97.1300	20.0000
49.5	5	3.59999999999999	16.3161	117.2500	20.0000
47.4	-2.9	-1.7	12.1424	104.5800	17.0000
49.6	0.7	-1.3	9.4918	113.3400	11.0000
50.2	3.9	-1.2	8.6752	122.7100	9.5000
49	3.8	0.599999999999994	8.7939	111.9300	8.0000
49.4	4.2	0.900000000000006	8.8900	100.4500	8.0000

50.1	6.3	-2	8.5248	89.7600	7.5000
49.2	5	-1.5	8.4649	93.3300	7.5000
48	2.2	-0.200000000000003	8.4454	91.4200	7.5000
47	1.3	-2.2	9.3783	80.9200	7.5000
50.1		-2	10.1588	82.5000	7.5000
52.6		-1.2	10.6598	82.5900	7.5000
51.9	3.9	1.40000000000001	11.0163	78.4300	7.5000
49.2	5.6	5.2	11.7397	84.6400	7.5000
48.8	3.5	7.3	11.3021	75.4700	7.5000
49	4.4	6.09999999999999	11.6182	74.8400	7.5000
49.3	3.7	6	12.5570	80.1100	8.5000
49.7	4.5	6.59999999999999	13.1167	86.1500	12.0000
50.2	4.5	6.7	13.2237	93.7200	13.0000
49.5	4.6	6.3	13.2664	90.6000	15.0000
49.4	6.6	5.3	12.4767	82.9400	15.0000

49	6.8	3.8	12.6918	77.6300	16.0000
49.2		5.3	12.3079	80.1200	16.0000
49.1		8.90000000000001	12.6574	83.4800	16.0000
50.8	4.5	4.5	12.6895	85.4100	16.0000
50.4	6.7	5.3	12.7988	89.9400	16.0000
49.5	5.6	6.3	12.4942	81.7500	16.0000
49.5	5.3	2.8	11.9755	82.2500	16.0000
49.4	5.1	4	11.9302	85.1500	18.0000
49.1	4.5	3.2	11.9125	80.3600	18.0000
49.8	5.4	3	12.7892	74.0200	19.0000
50.1	5.3	5.5	13.5109	75.6300	21.0000
50.3	5.4	3.8	13.8952	74.3500	21.0000
50.1	6.2	8.7	13.8898	73.8600	21.0000
49.1		1	13.6692	79.2700	21.0000
50.2		-0.900000000000006	12.6122	75.4400	21.0000

50.5	7.7	0.200000000000003	11.7962	72.7300	21.0000
49	6.1	1.3	11.3879	68.1300	21.0000
49.5	5.8	1.2	11.1087	64.4500	21.0000
49.7	6.8	2.09999999999999	10.9249	71.4400	20.0000
49.3	5.7	1.5	10.9683	71.0400	18.0000
49.4	5.2	1	11.1325	67.8700	18.0000
49.8	6.5	1.09999999999999	11.6073	67.9900	17.0000

ru_exports_yoy	ru_imports_yoy	total_trade_yoy	ru_exports_mom	ru_imports_mom	total_trade_mom
			-16.5%	-36.1%	-25.7%
			11.0%	30.2%	18.7%
			14.5%	3.7%	9.8%
			3.1%	2.1%	2.7%
			-1.3%	5.0%	1.3%
			-10.5%	13.7%	-0.1%
			4.5%	-1.3%	1.7%
			0.7%	0.6%	0.7%
			5.8%	-2.7%	1.8%
			5.0%	3.3%	4.2%
			0.2%	7.8%	3.6%
24.8%	3.2%	14.7%	10.3%	-8.9%	1.3%
26.6%	-42.7%	-1.3%	-15.3%	-64.5%	-36.1%

9.7%	-12.9%	-0.3%	-3.9%	97.7%	19.9%
-18.8%	7.0%	-8.0%	-15.2%	27.5%	1.3%
-33.4%	0.3%	-19.5%	-15.6%	-4.4%	-10.1%
-20.5%	0.0%	-11.6%	17.9%	4.8%	11.2%
1.2%	7.9%	4.5%	13.9%	22.7%	18.2%
-8.1%	17.5%	4.1%	-5.0%	7.5%	1.3%
8.9%	6.6%	7.8%	19.3%	-8.7%	4.3%
-12.1%	7.8%	-3.0%	-14.6%	-1.6%	-8.5%
-19.7%	5.1%	-8.6%	-4.1%	0.7%	-1.7%
-6.9%	8.1%	0.1%	16.3%	10.9%	13.5%
-19.8%	6.9%	-8.6%	-5.1%	-9.8%	-7.5%
-4.0%	163.9%	35.2%	1.4%	-12.5%	-5.4%
24.8%	32.8%	27.9%	25.0%	-0.5%	13.4%
34.6%	28.9%	31.8%	-8.6%	23.8%	4.4%
60.6%	24.3%	41.9%	0.8%	-7.7%	-3.3%

48.5%	51.1%	49.8%	9.0%	27.4%	17.4%
40.4%	13.2%	26.6%	7.6%	-8.1%	-0.1%
55.1%	20.2%	36.4%	4.9%	14.1%	9.1%
26.8%	37.5%	31.8%	-2.5%	4.4%	0.8%
62.6%	16.5%	39.3%	9.5%	-16.6%	-3.3%
84.9%	37.5%	60.4%	9.1%	18.8%	13.2%
61.0%	54.3%	57.6%	1.3%	24.4%	11.5%
54.7%	55.1%	54.9%	-8.8%	-9.3%	-9.1%
25.6%	25.8%	25.7%	-17.6%	-29.0%	-23.3%
26.4%	-7.7%	12.8%	25.7%	-27.0%	1.7%
56.6%	-25.9%	17.5%	13.3%	-0.6%	8.8%
79.6%	-8.6%	39.6%	15.5%	13.7%	15.0%
56.3%	-17.0%	20.3%	-5.1%	15.7%	1.1%
49.3%	22.2%	37.1%	2.8%	35.3%	13.8%
59.3%	26.5%	43.8%	11.9%	18.1%	14.4%

55.2%	21.2%	38.5%	-5.0%	0.0%	-2.9%
36.0%	34.6%	35.4%	-4.0%	-7.4%	-5.5%
28.5%	17.9%	23.8%	3.1%	4.1%	3.5%
8.3%	8.3%	8.3%	-14.7%	14.2%	-2.5%
22.8%	9.5%	16.3%	3.4%	-8.2%	-2.3%
49.8%	32.7%	42.0%	0.4%	-14.0%	-6.3%
40.5%	136.4%	71.9%	17.9%	30.1%	23.1%
8.1%	153.1%	51.5%	-12.8%	6.4%	-4.2%
10.1%	114.3%	41.0%	17.7%	-3.7%	7.0%
15.7%	90.9%	41.2%	-0.2%	3.1%	1.3%
-8.1%	51.8%	16.1%	-18.4%	7.6%	-6.4%
2.7%	16.3%	8.4%	25.1%	-9.5%	6.8%
8.2%	20.6%	13.5%	0.1%	3.7%	1.7%
8.6%	17.2%	12.2%	-3.7%	-10.0%	-6.5%
6.3%	33.6%	17.8%	0.9%	18.6%	8.7%

24.4%	21.6%	23.0%	-0.1%	4.0%	1.9%
12.5%	14.1%	13.2%	-6.5%	-13.9%	-10.1%
4.2%	9.1%	6.3%	-7.0%	-17.8%	-12.0%
10.7%	-15.9%	-1.3%	25.3%	0.3%	14.3%
19.2%	-13.6%	2.8%	-6.1%	9.3%	-0.2%
-5.1%	-2.0%	-3.7%	-6.3%	9.2%	0.2%
-8.1%	3.5%	-2.8%	-3.4%	8.8%	2.2%
5.4%	-2.8%	1.1%	-6.4%	1.1%	-2.7%
-0.8%	10.4%	4.2%	17.7%	2.7%	10.1%
-8.4%	16.6%	3.0%	-7.5%	9.6%	0.6%
-2.8%	26.7%	10.1%	2.2%	-2.2%	-0.1%
-6.5%	-2.5%	-4.6%	-2.9%	-8.8%	-5.9%
-4.7%	5.5%	0.3%	1.8%	12.6%	7.1%
-7.8%	-0.7%	-4.5%	-9.6%	-19.0%	-14.4%
3.5%	-23.5%	-8.3%	4.5%	-36.6%	-15.5%

-12.4%	2.1%	-6.9%	5.9%	33.9%	16.1%
-15.1%	-2.7%	-9.9%	-9.0%	4.1%	-3.5%
-10.5%	-10.8%	-10.7%	-1.2%	0.1%	-0.6%
-10.1%	-16.2%	-13.1%	-2.9%	2.2%	-0.6%
3.6%	-9.1%	-2.8%	7.9%	9.6%	8.7%
-18.1%	-16.7%	-17.4%	-7.0%	-5.9%	-6.5%
3.7%	-21.1%	-9.1%	17.1%	3.8%	10.7%

cny_rub_mom_calc	brent_mom	brent_yoy	ln_ru_exports	ln_ru_imports	ln_total_trade	ln_cny_rub
			1.588010	1.460868	2.219606	2.285055
-0.6%	7.7%		1.407518	1.012473	1.922525	2.278760
-0.7%	3.4%		1.511516	1.276061	2.093850	2.272226
-0.8%	7.7%		1.646926	1.312836	2.186916	2.263800
-1.9%	0.1%		1.676984	1.333711	2.213153	2.244667
-1.5%	-10.0%		1.663651	1.382967	2.226272	2.229792
-1.1%	-0.5%		1.552804	1.511428	2.225477	2.218439
1.1%	-7.6%		1.596798	1.498573	2.242039	2.229544
-1.8%	6.4%		1.604023	1.504833	2.248804	2.211237
-0.7%	-5.0%		1.660720	1.477733	2.266554	2.204398
0.4%	5.9%		1.709826	1.510236	2.308150	2.208132
-1.5%	6.5%		1.711850	1.585514	2.343823	2.193488
-0.3%	-5.4%	7.1%	1.809718	1.492720	2.356875	2.190680
2.3%	-12.6%	-13.0%	1.643489	0.455915	1.909661	2.213522

14.8%	-42.5%	-51.6%	1.603903	1.137668	2.090862	2.351613
0.7%	-42.6%	-74.2%	1.439012	1.380822	2.103487	2.358266
-3.6%	59.8%	-58.8%	1.269777	1.336264	1.996720	2.321974
-4.2%	37.1%	-37.3%	1.434654	1.383381	2.102493	2.278713
4.1%	7.4%	-32.4%	1.564403	1.587734	2.269284	2.318665
4.7%	3.5%	-24.2%	1.512833	1.659861	2.282194	2.364799
4.4%	-8.6%	-34.9%	1.689648	1.568500	2.324055	2.408287
3.8%	-1.8%	-32.7%	1.532018	1.552765	2.235593	2.445594
0.9%	6.2%	-32.5%	1.489980	1.559664	2.218576	2.454533
-2.6%	17.1%	-25.7%	1.640882	1.662968	2.345133	2.428539
1.3%	9.6%	-14.0%	1.588570	1.559798	2.267435	2.441024
0.2%	13.7%	11.9%	1.602636	1.426343	2.211516	2.442921
-0.6%	5.0%	104.3%	1.825566	1.421262	2.336856	2.436661
2.0%	-0.9%	252.6%	1.736177	1.634754	2.379898	2.456893
-1.4%	5.7%	133.3%	1.743747	1.554157	2.346585	2.442399

-1.7%	6.8%	81.7%	1.830229	1.796464	2.506636	2.425731
0.9%	2.7%	73.8%	1.903664	1.711921	2.505528	2.434849
-0.5%	-5.9%	58.1%	1.951843	1.843978	2.592511	2.430081
-0.6%	5.3%	82.1%	1.926847	1.887230	2.600382	2.424201
-1.5%	12.1%	107.9%	2.017841	1.705580	2.566996	2.408979
2.3%	-3.0%	89.9%	2.104514	1.878080	2.690840	2.431717
1.8%	-8.5%	48.4%	2.117087	2.096394	2.799941	2.449556
4.1%	16.6%	58.0%	2.024829	1.998857	2.705075	2.490068
0.8%	12.3%	56.0%	1.830761	1.655766	2.440234	2.497823
34.2%	20.7%	79.3%	2.059742	1.341625	2.456953	2.792152
-25.6%	-10.8%	61.4%	2.184869	1.335461	2.540911	2.496703
-21.8%	8.4%	65.4%	2.329128	1.464203	2.680547	2.250426
-8.6%	8.3%	67.7%	2.277093	1.609938	2.691297	2.160464
1.4%	-8.8%	48.9%	2.304513	1.912619	2.820789	2.174059
1.1%	-10.3%	42.0%	2.417216	2.078908	2.955448	2.184932

-4.1%	-10.6%	20.5%	2.366137	2.079360	2.926141	2.142975
-0.7%	4.0%	11.7%	2.325303	2.002511	2.870022	2.135931
-0.2%	-2.0%	12.8%	2.355638	2.042702	2.904509	2.133625
11.0%	-11.5%	9.1%	2.196842	2.175719	2.879483	2.238393
8.3%	2.0%	-4.6%	2.230581	2.090054	2.855931	2.318340
4.9%	0.1%	-15.0%	2.234695	1.938927	2.790854	2.366480
3.3%	-5.0%	-33.1%	2.399766	2.202124	2.998967	2.399376
6.6%	7.9%	-19.1%	2.262430	2.264042	2.956383	2.462976
-3.7%	-10.8%	-33.4%	2.425298	2.226514	3.023984	2.424989
2.8%	-0.8%	-39.0%	2.423031	2.256677	3.036457	2.452573
8.1%	7.0%	-28.4%	2.220051	2.330210	2.969794	2.530278
4.5%	7.5%	-14.2%	2.443651	2.229961	3.035650	2.573886
0.8%	8.8%	4.4%	2.445082	2.266491	3.052916	2.582011
0.3%	-3.3%	-2.9%	2.407576	2.161597	2.985278	2.585235
-6.0%	-8.5%	-9.3%	2.416672	2.332086	3.068420	2.523863

1.7%	-6.4%	-4.1%	2.415573	2.371148	3.086754	2.540956
-3.0%	3.2%	-2.9%	2.348024	2.221706	2.980005	2.510241
2.8%	4.2%	1.1%	2.275985	2.026152	2.851997	2.538242
0.3%	2.3%	8.9%	2.501191	2.029326	2.985983	2.540775
0.9%	5.3%	6.3%	2.437798	2.118301	2.983903	2.549351
-2.4%	-9.1%	8.3%	2.372820	2.206746	2.986374	2.525265
-4.2%	0.6%	9.9%	2.338560	2.290867	3.008145	2.482863
-0.4%	3.5%	6.3%	2.272763	2.301762	2.980515	2.479073
-0.1%	-5.6%	-6.7%	2.435620	2.328623	3.076699	2.477588
7.4%	-7.9%	-21.0%	2.357319	2.420075	3.082336	2.548601
5.6%	2.2%	-16.5%	2.378666	2.398304	3.081681	2.603497
2.8%	-1.7%	-10.4%	2.349259	2.306408	3.021210	2.631543
0.0%	-0.7%	-4.9%	2.367472	2.425074	3.089835	2.631155
-1.6%	7.3%	-1.1%	2.267055	2.214306	2.934175	2.615144
-7.7%	-4.8%	-9.6%	2.310727	1.758023	2.765231	2.534665

-6.5%	-3.6%	-14.8%	2.368242	2.050116	2.914923	2.467777
-3.5%	-6.3%	-24.2%	2.274361	2.090517	2.879805	2.432554
-2.5%	-5.4%	-21.2%	2.261971	2.092012	2.873745	2.407726
-1.7%	10.8%	-13.1%	2.232324	2.114084	2.868098	2.391042
0.4%	-0.6%	-16.6%	2.308329	2.206151	2.951692	2.395009
1.5%	-4.5%	-15.5%	2.236015	2.145570	2.884962	2.409869
4.3%	0.2%	-8.1%	2.393896	2.182585	2.986959	2.451634

ln_brent	dln_ru_exports	dln_ru_imports	dln_total_trade	dln_cny_rub	dln_brent	china_pmi_lag1
4.084463						
4.158258	-0.180492	-0.448395	-0.297081	-0.006296	0.073795	49.5
4.191774	0.103999	0.263588	0.171325	-0.006534	0.033516	49.2
4.265914	0.135410	0.036775	0.093066	-0.008426	0.074140	50.5
4.267177	0.030058	0.020875	0.026237	-0.019133	0.001263	50.1
4.162315	-0.013333	0.049256	0.013120	-0.014875	-0.104862	49.4
4.157632	-0.110847	0.128461	-0.000795	-0.011353	-0.004682	49.4
4.078215	0.043994	-0.012855	0.016561	0.011105	-0.079417	49.7
4.140433	0.007225	0.006259	0.006766	-0.018307	0.062217	49.5
4.089500	0.056697	-0.027099	0.017749	-0.006839	-0.050933	49.8
4.146463	0.049106	0.032503	0.041596	0.003734	0.056963	49.3
4.209309	0.002024	0.075278	0.035673	-0.014644	0.062846	50.2
4.153399	0.097868	-0.092794	0.013052	-0.002808	-0.055909	50.2
4.019262	-0.166229	-1.036805	-0.447214	0.022842	-0.134138	50

3.466048	-0.039586	0.681753	0.181200	0.138091	-0.553213	35.7
2.911263	-0.164891	0.243154	0.012626	0.006652	-0.554785	52
3.380314	-0.169235	-0.044558	-0.106767	-0.036292	0.469051	50.8
3.695607	0.164877	0.047117	0.105773	-0.043260	0.315293	50.6
3.766766	0.129749	0.204353	0.166791	0.039952	0.071159	50.9
3.800868	-0.051570	0.072127	0.012910	0.046134	0.034102	51.1
3.711375	0.176816	-0.091362	0.041861	0.043488	-0.089493	51
3.693618	-0.157630	-0.015735	-0.088462	0.037307	-0.017756	51.5
3.753965	-0.042038	0.006898	-0.017017	0.008939	0.060346	51.4
3.911823	0.150902	0.103305	0.126557	-0.025994	0.157858	52.1
4.003143	-0.052312	-0.103171	-0.077699	0.012485	0.091320	51.9
4.131640	0.014066	-0.133455	-0.055918	0.001896	0.128498	51.3
4.180675	0.222931	-0.005081	0.125340	-0.006259	0.049035	50.6
4.171460	-0.089389	0.213492	0.043042	0.020232	-0.009215	51.9
4.227272	0.007569	-0.080597	-0.033313	-0.014494	0.055812	51.1

4.292649	0.086482	0.242307	0.160051	-0.016668	0.065377	51
4.319752	0.073435	-0.084543	-0.001108	0.009118	0.027103	50.9
4.259153	0.048178	0.132057	0.086983	-0.004769	-0.060600	50.4
4.310665	-0.024996	0.043252	0.007870	-0.005880	0.051512	50.1
4.425326	0.090994	-0.181650	-0.033385	-0.015222	0.114661	49.6
4.395066	0.086673	0.172501	0.123843	0.022738	-0.030259	49.2
4.306360	0.012573	0.218314	0.109102	0.017839	-0.088706	50.1
4.460260	-0.092258	-0.097537	-0.094867	0.040513	0.153900	50.3
4.576050	-0.194068	-0.343091	-0.264841	0.007755	0.115790	50.1
4.764308	0.228981	-0.314141	0.016719	0.294329	0.188258	50.2
4.649952	0.125127	-0.006164	0.083958	-0.295449	-0.114356	49.5
4.730392	0.144259	0.128742	0.139636	-0.246277	0.080440	47.4
4.809824	-0.052035	0.145735	0.010750	-0.089962	0.079432	49.6
4.717874	0.027420	0.302681	0.129492	0.013596	-0.091950	50.2
4.609660	0.112703	0.166289	0.134658	0.010872	-0.108214	49

4.497139	-0.051079	0.000453	-0.029307	-0.041957	-0.112521	49.4
4.536142	-0.040834	-0.076850	-0.056118	-0.007044	0.039002	50.1
4.515464	0.030334	0.040192	0.034486	-0.002305	-0.020677	49.2
4.393461	-0.158796	0.133017	-0.025025	0.104768	-0.122003	48
4.412798	0.033740	-0.085665	-0.023552	0.079947	0.019337	47
4.413889	0.004114	-0.151127	-0.065078	0.048139	0.001090	50.1
4.362207	0.165071	0.263197	0.208113	0.032896	-0.051682	52.6
4.438407	-0.137337	0.061918	-0.042584	0.063600	0.076200	51.9
4.323735	0.162869	-0.037528	0.067601	-0.037988	-0.114672	49.2
4.315353	-0.002267	0.030164	0.012472	0.027584	-0.008383	48.8
4.383401	-0.202980	0.073533	-0.066663	0.077705	0.068048	49
4.456090	0.223600	-0.100249	0.065856	0.043608	0.072689	49.3
4.540312	0.001432	0.036531	0.017266	0.008124	0.084222	49.7
4.506454	-0.037507	-0.104894	-0.067638	0.003224	-0.033857	50.2
4.418117	0.009097	0.170488	0.083142	-0.061372	-0.088337	49.5

4.351954	-0.001099	0.039062	0.018334	0.017093	-0.066164	49.4
4.383526	-0.067549	-0.149442	-0.106749	-0.030715	0.031572	49
4.424607	-0.072039	-0.195554	-0.128008	0.028001	0.041082	49.2
4.447463	0.225206	0.003174	0.133986	0.002533	0.022856	49.1
4.499143	-0.063392	0.088976	-0.002080	0.008577	0.051680	50.8
4.403666	-0.064978	0.088444	0.002471	-0.024087	-0.095477	50.4
4.409763	-0.034260	0.084121	0.021771	-0.042402	0.006098	49.5
4.444414	-0.065797	0.010895	-0.027630	-0.003790	0.034651	49.5
4.386517	0.162857	0.026861	0.096184	-0.001485	-0.057898	49.4
4.304335	-0.078301	0.091452	0.005637	0.071013	-0.082181	49.1
4.325853	0.021347	-0.021770	-0.000656	0.054896	0.021518	49.8
4.308784	-0.029407	-0.091897	-0.060471	0.028047	-0.017069	50.1
4.302171	0.018214	0.118667	0.068625	-0.000389	-0.006612	50.3
4.372860	-0.100417	-0.210768	-0.155660	-0.016011	0.070688	50.1
4.323338	0.043672	-0.456283	-0.168944	-0.080479	-0.049522	49.1

4.286754	0.057515	0.292093	0.149692	-0.066888	-0.036584	50.2
4.221418	-0.093881	0.040402	-0.035118	-0.035223	-0.065336	50.5
4.165890	-0.012389	0.001495	-0.006060	-0.024828	-0.055528	49
4.268858	-0.029648	0.022072	-0.005648	-0.016684	0.102968	49.5
4.263243	0.076005	0.092067	0.083594	0.003967	-0.005615	49.7
4.217594	-0.072313	-0.060581	-0.066729	0.014859	-0.045649	49.3
4.219361	0.157881	0.037014	0.101997	0.041765	0.001767	49.4

china_pmi_lag 2	china_pmi_lag 3	china_pmi_lag 6	cny_rub_lag 1	cny_rub_lag 2	cny_rub_lag 3	cny_rub_mom_lag 1
			9.82623			
49.5			9.76456	9.82623		-0.00627605907861
49.2	49.5		9.70097	9.76456	9.82623	-0.00651232620825
50.5	49.2		9.61957	9.70097	9.76456	-0.00839091348597
50.1	50.5		9.43727	9.61957	9.70097	-0.01895095103004
49.4	50.1	49.5	9.29793	9.43727	9.61957	-0.01476486314368
49.4	49.4	49.2	9.19297	9.29793	9.43727	-0.01128853411458
49.7	49.4	50.5	9.29563	9.19297	9.29793	0.011167228871627
49.5	49.7	50.1	9.127	9.29563	9.19297	-0.01814078228157
49.8	49.5	49.4	9.06479	9.127	9.29563	-0.00681604031993
49.3	49.8	49.4	9.0987	9.06479	9.127	0.0037408478299
50.2	49.3	49.7	8.96643	9.0987	9.06479	-0.01453724158396
50.2	50.2	49.5	8.94129	8.96643	9.0987	-0.00280379147554

50	50.2	49.8	9.14788	8.94129	8.96643	0.023105167151496
35.7	50	49.3	10.5025	9.14788	8.94129	0.148080210934118
52	35.7	50.2	10.5726	10.5025	9.14788	0.006674601285408
50.8	52	50.2	10.19578	10.5726	10.5025	-0.03564118570645
50.6	50.8	50	9.76411	10.19578	10.5726	-0.04233810458837
50.9	50.6	35.7	10.1621	9.76411	10.19578	0.040760499420838
51.1	50.9	52	10.6419	10.1621	9.76411	0.047214650515149
51	51.1	50.8	11.1149	10.6419	10.1621	0.044446950262641
51.5	51	50.6	11.5374	11.1149	10.6419	0.038012037895078
51.4	51.5	50.9	11.641	11.5374	11.1149	0.008979492780002
52.1	51.4	51.1	11.3423	11.641	11.5374	-0.02565930761962
51.9	52.1	51	11.4848	11.3423	11.641	0.012563589395449
51.3	51.9	51.5	11.5066	11.4848	11.3423	0.001898161047646
50.6	51.3	51.4	11.4348	11.5066	11.4848	-0.00623989710253
51.9	50.6	52.1	11.6685	11.4348	11.5066	0.020437611501732

51.1	51.9	51.9	11.5006	11.6685	11.4348	-0.01438916741655
51	51.1	51.3	11.3105	11.5006	11.6685	-0.01652957237014
50.9	51	50.6	11.4141	11.3105	11.5006	0.009159630431899
50.4	50.9	51.9	11.3598	11.4141	11.3105	-0.00475727389807
50.1	50.4	51.1	11.2932	11.3598	11.4141	-0.00586277927428
49.6	50.1	51	11.1226	11.2932	11.3598	-0.01510643573124
49.2	49.6	50.9	11.3784	11.1226	11.2932	0.022998219840685
50.1	49.2	50.4	11.5832	11.3784	11.1226	0.01799901567883
50.3	50.1	50.1	12.0621	11.5832	11.3784	0.041344360798398
50.1	50.3	49.6	12.156	12.0621	11.5832	0.007784714104509
50.2	50.1	49.2	16.3161	12.156	12.0621	0.342226061204343
49.5	50.2	50.1	12.1424	16.3161	12.156	-0.25580255085468
47.4	49.5	50.3	9.49178	12.1424	16.3161	-0.21829457108974
49.6	47.4	50.1	8.67516	9.49178	12.1424	-0.08603444243335
50.2	49.6	50.2	8.79391	8.67516	9.49178	0.013688508338751

49	50.2	49.5	8.89004	8.79391	8.67516	0.010931428681895
49.4	49	47.4	8.52476	8.89004	8.79391	-0.04108867901607
50.1	49.4	49.6	8.46492	8.52476	8.89004	-0.00701955245661
49.2	50.1	50.2	8.44543	8.46492	8.52476	-0.00230244349622
48	49.2	49	9.37825	8.44543	8.46492	0.110452635330587
47	48	49.4	10.1588	9.37825	8.44543	0.083229813664596
50.1	47	50.1	10.6598	10.1588	9.37825	0.049316848446667
52.6	50.1	49.2	11.0163	10.6598	10.1588	0.033443404191448
51.9	52.6	48	11.7397	11.0163	10.6598	0.065666330800723
49.2	51.9	47	11.3021	11.7397	11.0163	-0.03727522849817
48.8	49.2	50.1	11.6182	11.3021	11.7397	0.027968253687368
49	48.8	52.6	12.557	11.6182	11.3021	0.080804255392402
49.3	49	51.9	13.1167	12.557	11.6182	0.044572748267898
49.7	49.3	49.2	13.2237	13.1167	12.557	0.008157539625058
50.2	49.7	48.8	13.2664	13.2237	13.1167	0.003229050870785

49.5	50.2	49	12.4767	13.2664	13.2237	-0.05952632213713
49.4	49.5	49.3	12.6918	12.4767	13.2664	0.017240135612782
49	49.4	49.7	12.3079	12.6918	12.4767	-0.03024787658173
49.2	49	50.2	12.6574	12.3079	12.6918	0.028396395810821
49.1	49.2	49.5	12.6895	12.6574	12.3079	0.002536065858707
50.8	49.1	49.4	12.7988	12.6895	12.6574	0.008613420544545
50.4	50.8	49	12.4942	12.7988	12.6895	-0.0237991061662
49.5	50.4	49.2	11.9755	12.4942	12.7988	-0.04151526308207
49.5	49.5	49.1	11.9302	11.9755	12.4942	-0.00378272305958
49.4	49.5	50.8	11.9125	11.9302	11.9755	-0.00148362977989
49.1	49.4	50.4	12.7892	11.9125	11.9302	0.073594963273872
49.8	49.1	49.5	13.5109	12.7892	11.9125	0.056430425671661
50.1	49.8	49.5	13.8952	13.5109	12.7892	0.028443701011776
50.3	50.1	49.4	13.8898	13.8952	13.5109	-0.00038862340952
50.1	50.3	49.1	13.6691875	13.8898	13.8952	-0.01588305807139

49.1	50.1	49.8	12.61221	13.6691875	13.8898	-0.07732555428038
50.2	49.1	50.1	11.796195238	12.61221	13.6691875	-0.06470037859382
50.5	50.2	50.3	11.387931818	11.796195238	12.61221	-0.03460975438885
49	50.5	50.1	11.108673684	11.387931818	11.796195238	-0.02452228713957
49.5	49	49.1	10.924872222	11.108673684	11.387931818	-0.01654576119646
49.7	49.5	50.2	10.9683	10.924872222	11.108673684	0.00397512912686
49.3	49.7	50.5	11.1325	10.9683	10.924872222	0.014970414740662

cny_rub_mom_lag 2	cny_rub_mom_lag 3	brent_lag1	brent_lag2	brent_lag3	post_2022	year_2022	covid_shock_fla g
					0	0	0
		59.41			0	0	0
		63.96	59.41		0	0	0
-0.00627605907861		66.14	63.96	59.41	0	0	0
-0.00651232620825	-0.00627605907861	71.23	66.14	63.96	0	0	0
-0.00839091348597	-0.00651232620825	71.32	71.23	66.14	0	0	0
-0.01895095103004	-0.00839091348597	64.22	71.32	71.23	0	0	0
-0.01476486314368	-0.01895095103004	63.92	64.22	71.32	0	0	0
-0.01128853411458	-0.01476486314368	59.04	63.92	64.22	0	0	0
0.011167228871627	-0.01128853411458	62.83	59.04	63.92	0	0	0
-0.01814078228157	0.011167228871627	59.71	62.83	59.04	0	0	0
-0.00681604031993	-0.01814078228157	63.21	59.71	62.83	0	0	0
0.0037408478299	-0.00681604031993	67.31	63.21	59.71	0	0	0
-0.01453724158396	0.0037408478299	63.65	67.31	63.21	0	0	1

-0.00280379147554	-0.01453724158396	55.66	63.65	67.31	0	0	1
0.023105167151496	-0.00280379147554	32.01	55.66	63.65	0	0	1
0.148080210934118	0.023105167151496	18.38	32.01	55.66	0	0	1
0.006674601285408	0.148080210934118	29.38	18.38	32.01	0	0	0
-0.03564118570645	0.006674601285408	40.27	29.38	18.38	0	0	0
-0.04233810458837	-0.03564118570645	43.24	40.27	29.38	0	0	0
0.040760499420838	-0.04233810458837	44.74	43.24	40.27	0	0	0
0.047214650515149	0.040760499420838	40.91	44.74	43.24	0	0	0
0.044446950262641	0.047214650515149	40.19	40.91	44.74	0	0	0
0.038012037895078	0.044446950262641	42.69	40.19	40.91	0	0	0
0.008979492780002	0.038012037895078	49.99	42.69	40.19	0	0	0
-0.02565930761962	0.008979492780002	54.77	49.99	42.69	0	0	0
0.012563589395449	-0.02565930761962	62.28	54.77	49.99	0	0	0
0.001898161047646	0.012563589395449	65.41	62.28	54.77	0	0	0
-0.00623989710253	0.001898161047646	64.81	65.41	62.28	0	0	0

0.020437611501732	-0.00623989710253	68.53	64.81	65.41	0	0	0
-0.01438916741655	0.020437611501732	73.16	68.53	64.81	0	0	0
-0.01652957237014	-0.01438916741655	75.17	73.16	68.53	0	0	0
0.009159630431899	-0.01652957237014	70.75	75.17	73.16	0	0	0
-0.00475727389807	0.009159630431899	74.49	70.75	75.17	0	0	0
-0.00586277927428	-0.00475727389807	83.54	74.49	70.75	0	0	0
-0.01510643573124	-0.00586277927428	81.05	83.54	74.49	0	0	0
0.022998219840685	-0.01510643573124	74.17	81.05	83.54	1	1	0
0.01799901567883	0.022998219840685	86.51	74.17	81.05	1	1	0
0.041344360798398	0.01799901567883	97.13	86.51	74.17	1	1	0
0.007784714104509	0.041344360798398	117.25	97.13	86.51	1	1	0
0.342226061204343	0.007784714104509	104.58	117.25	97.13	1	1	0
-0.25580255085468	0.342226061204343	113.34	104.58	117.25	1	1	0
-0.21829457108974	-0.25580255085468	122.71	113.34	104.58	1	1	0
-0.08603444243335	-0.21829457108974	111.93	122.71	113.34	1	1	0

0.013688508338751	-0.08603444243335	100.45	111.93	122.71	1	1	0
0.010931428681895	0.013688508338751	89.76	100.45	111.93	1	1	0
-0.04108867901607	0.010931428681895	93.33	89.76	100.45	1	1	0
-0.00701955245661	-0.04108867901607	91.42	93.33	89.76	1	1	0
-0.00230244349622	-0.00701955245661	80.92	91.42	93.33	1	0	0
0.110452635330587	-0.00230244349622	82.5	80.92	91.42	1	0	0
0.083229813664596	0.110452635330587	82.59	82.5	80.92	1	0	0
0.049316848446667	0.083229813664596	78.43	82.59	82.5	1	0	0
0.033443404191448	0.049316848446667	84.64	78.43	82.59	1	0	0
0.065666330800723	0.033443404191448	75.47	84.64	78.43	1	0	0
-0.03727522849817	0.065666330800723	74.84	75.47	84.64	1	0	0
0.027968253687368	-0.03727522849817	80.11	74.84	75.47	1	0	0
0.080804255392402	0.027968253687368	86.15	80.11	74.84	1	0	0
0.044572748267898	0.080804255392402	93.72	86.15	80.11	1	0	0
0.008157539625058	0.044572748267898	90.6	93.72	86.15	1	0	0

0.003229050870785	0.008157539625058	82.94	90.6	93.72	1	0		0
-0.05952632213713	0.003229050870785	77.63	82.94	90.6	1	0		0
0.017240135612782	-0.05952632213713	80.12	77.63	82.94	1	0		0
-0.03024787658173	0.017240135612782	83.48	80.12	77.63	1	0		0
0.028396395810821	-0.03024787658173	85.41	83.48	80.12	1	0		0
0.002536065858707	0.028396395810821	89.94	85.41	83.48	1	0		0
0.008613420544545	0.002536065858707	81.75	89.94	85.41	1	0		0
-0.0237991061662	0.008613420544545	82.25	81.75	89.94	1	0		0
-0.04151526308207	-0.0237991061662	85.15	82.25	81.75	1	0		0
-0.00378272305958	-0.04151526308207	80.36	85.15	82.25	1	0		0
-0.00148362977989	-0.00378272305958	74.02	80.36	85.15	1	0		0
0.073594963273872	-0.00148362977989	75.63	74.02	80.36	1	0		0
0.056430425671661	0.073594963273872	74.35	75.63	74.02	1	0		0
0.028443701011776	0.056430425671661	73.86	74.35	75.63	1	0		0
-0.00038862340952	0.028443701011776	79.27	73.86	74.35	1	0		0

-0.01588305807139	-0.00038862340952	75.44	79.27	73.86	1	0	0
-0.07732555428038	-0.01588305807139	72.73	75.44	79.27	1	0	0
-0.06470037859382	-0.07732555428038	68.13	72.73	75.44	1	0	0
-0.03460975438885	-0.06470037859382	64.45	68.13	72.73	1	0	0
-0.02452228713957	-0.03460975438885	71.44	64.45	68.13	1	0	0
-0.01654576119646	-0.02452228713957	71.04	71.44	64.45	1	0	0
0.00397512912686	-0.01654576119646	67.87	71.04	71.44	1	0	0

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CBR_official_daily_fixings_monthly_arithmetic_mean_historical_transport	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean_historical_transport	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean_historical_transport	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100

CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100

CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100
CBR_official_daily_fixings_monthly_arithmetic_mean; direct_CBR_published_mean_available_for_validation	Rosstat_official_monthly_yoy_full_window; percent_change=index_minus_100

source_hardening_status	gacc_exact_ru_exports_to_cn_usd_bn	gacc_exact_ru_imports_from_cn_usd_bn
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	4.8940	4.3097
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	4.0858	2.7524
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	4.5336	3.5825
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	5.1910	3.7167
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	5.3494	3.7951
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	5.2786	3.9867
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	4.7247	4.5332
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	4.9372	4.4753
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	4.9730	4.5034
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	5.2631	4.3830
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	5.5280	4.5278
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	5.5392	4.8818
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	6.1087	4.4492
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	5.1732	1.5776

GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	4.9724	3.1195
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	4.2165	3.9782
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	3.5601	3.8048
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	4.1982	3.9884
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	4.7798	4.8927
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	4.5396	5.2586
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	5.4176	4.7994
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	4.6275	4.7245
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	4.4370	4.7572
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	5.1597	5.2749
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	4.8967	4.7579
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	4.9661	4.1634
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	6.2063	4.1423
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	5.6756	5.1282
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	5.7187	4.7311

GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	6.2353	6.0283
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	6.7104	5.5396
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	7.0417	6.3216
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	6.8678	6.6011
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	7.5221	5.5046
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	8.2031	6.5409
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	8.3069	8.1368
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	7.5748	7.3806
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	6.2386	5.2371
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	7.8439	3.8253
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	8.8895	3.8017
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.2690	4.3241
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	9.7483	5.0025
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.0193	6.7708
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	11.2146	7.9957

GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.6561	7.9994
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.2298	7.4076
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.5449	7.7114
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	8.9966	8.8085
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	9.3053	8.0854
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	9.3436	6.9513
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	11.0206	9.0442
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	9.6064	9.6219
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	11.3056	9.2675
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	11.2800	9.5513
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	9.2078	10.2801
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	11.5150	9.2995
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	11.5315	9.6455
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	11.1070	8.6850
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	11.2085	10.2994

GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	11.1962	10.7097
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.4649	9.2231
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	9.7375	7.5848
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	12.1970	7.6090
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	11.4478	8.3170
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.7276	9.0861
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.3663	9.8835
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	9.7062	9.9918
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	11.4229	10.2638
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.5626	11.2467
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.7905	11.0045
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.4778	10.0383
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.6704	11.3031
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	9.6509	9.1551
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.0818	5.8010

GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.6786	7.7688
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	9.7217	8.0891
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	9.6020	8.1012
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	9.3215	8.2820
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.0576	9.0807
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	9.3560	8.5469
GACC_closed; CBR_mean_closed_for_analysis_with_historical_transport_caveat; Russia_IP_closed	10.9561	8.8692

gacc_exact_total_trade_usd_bn	gacc_published_total_usd_bn	gacc_value_method	gacc_source_note
9.2037	9.2037	official_GACC_published_month	
6.8382	6.8382	official_GACC_published_month	
8.1161	8.1162	official_GACC_published_month	
8.9077	8.9077	official_GACC_published_month	
9.1445	9.1445	official_GACC_published_month	
9.2653	9.2653	official_GACC_published_month	
9.2579	9.2579	official_GACC_published_month	
9.4125	9.4126	official_GACC_published_month	
9.4764	9.4764	official_GACC_published_month	
9.6461	9.6462	official_GACC_published_month	
10.0558	10.0559	official_GACC_published_month	
10.4210	10.4210	official_GACC_published_month	
10.5579	10.5579	official_GACC_detailed_USD_thousand	
6.7508	6.7508	official_GACC_detailed_USD_thousand	

8.0919	8.0919	official_GACC_detailed_USD_thousand
8.1947	8.1947	official_GACC_detailed_USD_thousand
7.3649	7.3649	official_GACC_detailed_USD_thousand
8.1866	8.1866	official_GACC_detailed_USD_thousand
9.6725	9.6725	official_GACC_detailed_USD_thousand
9.7982	9.7982	official_GACC_detailed_USD_thousand
10.2170	10.2170	official_GACC_detailed_USD_thousand
9.3520	9.3520	official_GACC_detailed_USD_thousand
9.1942	9.1942	official_GACC_detailed_USD_thousand
10.4347	10.4347	official_GACC_detailed_USD_thousand
9.6546	9.6546	official_GACC_detailed_USD_thousand
9.1295	9.1295	official_GACC_detailed_USD_thousand
10.3487	10.3487	official_GACC_detailed_USD_thousand
10.8038	10.8038	official_GACC_detailed_USD_thousand
10.4498	10.4498	official_GACC_detailed_USD_thousand

12.2636	12.2636	official_GACC_detailed_USD_thousand
12.2500	12.2500	official_GACC_detailed_USD_thousand
13.3633	13.3633	official_GACC_detailed_USD_thousand
13.4689	13.4689	official_GACC_detailed_USD_thousand
13.0266	13.0266	official_GACC_detailed_USD_thousand
14.7441	14.7441	official_GACC_detailed_USD_thousand
16.4437	16.4437	official_GACC_detailed_USD_thousand
14.9554	14.9554	official_GACC_detailed_USD_thousand
11.4757	11.4757	official_GACC_detailed_USD_thousand
11.6692	11.6692	official_GACC_detailed_USD_thousand
12.6912	12.6912	official_GACC_detailed_USD_thousand
14.5931	14.5931	official_GACC_detailed_USD_thousand
14.7508	14.7508	official_GACC_major_country_USD_million
16.7901	16.7901	official_GACC_major_country_USD_million
19.2103	19.2103	official_GACC_detailed_USD_thousand

18.6555	18.6555	official_GACC_detailed_USD_thousand	
17.6374	17.6374	official_GACC_detailed_USD_thousand	
18.2563	18.2563	official_GACC_detailed_USD_thousand	
17.8051	17.8051	official_GACC_detailed_USD_thousand	
17.3906	17.3906	official_GACC_detailed_USD_thousand_derived_Jan=FebYTD-Feb	Derived from exact Feb 2023 month and Jan-Feb cumulative GACC detailed table
16.2949	16.2949	official_GACC_detailed_USD_thousand	
20.0648	20.0648	official_GACC_major_country_USD_million	
19.2283	19.2283	official_GACC_major_country_USD_million	
20.5731	20.5731	official_GACC_major_country_USD_million	
20.8313	20.8313	official_GACC_major_country_USD_million	
19.4879	19.4880	official_GACC_major_country_USD_million	
20.8145	20.8146	official_GACC_major_country_USD_million	
21.1770	21.1771	official_GACC_major_country_USD_million	
19.7920	19.7920	official_GACC_major_country_USD_million	
21.5079	21.5078	official_GACC_major_country_USD_million	

21.9059	21.9059	official_GACC_detailed_USD_thousand	
19.6879	19.6879	official_GACC_detailed_USD_thousand_derived_Jan=FebYTD-Feb	Component-derived; published total differs by USD 1k due table rounding
17.3223	17.3223	official_GACC_detailed_USD_thousand	
19.8060	19.8060	official_GACC_detailed_USD_thousand_derived_from_AprYTD	Component-derived; published total differs by USD 1k due table rounding
19.7648	19.7648	official_GACC_detailed_USD_thousand	
19.8137	19.8137	official_GACC_major_country_USD_million	
20.2498	20.2498	official_GACC_major_country_USD_million	
19.6980	19.6980	official_GACC_detailed_USD_thousand	
21.6867	21.6867	official_GACC_major_country_USD_million	
21.8093	21.8093	official_GACC_major_country_USD_million	
21.7950	21.7950	official_GACC_major_country_USD_million	
20.5161	20.5161	official_GACC_major_country_USD_million	
21.9735	21.9735	official_GACC_detailed_USD_thousand	
18.8060	18.8060	official_GACC_detailed_USD_thousand_derived_Jan=FebYTD-Feb	Component-derived; published total differs by USD 1k due table rounding
15.8827	15.8827	official_GACC_detailed_USD_thousand	

18.4474	18.4474	official_GACC_major_country_USD_million
17.8108	17.8108	official_GACC_major_country_USD_million
17.7032	17.7032	official_GACC_major_country_USD_million
17.6035	17.6034	official_GACC_major_country_USD_million
19.1383	19.1383	official_GACC_major_country_USD_million
17.9029	17.9029	official_GACC_detailed_USD_thousand
19.8253	19.8253	official_GACC_major_country_USD_million

cbr_published_mean_cny_rub	cbr_eop_cny_rub	cbr_mean_source_method
		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
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		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
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		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
		historical_transport_of_CBR_official_daily_fixings_arithmetic_monthly_mean
10.0767	10.3077	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
10.6821	10.7928	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
11.0098	11.1847	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
11.7273	11.5659	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
11.2842	11.3615	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
11.6084	11.9894	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
12.5487	12.6891	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
13.1117	13.1311	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
13.2284	13.3587	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
13.2516	12.7071	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
12.4887	12.4527	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean

12.6898	12.5762	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
12.3866	12.4066	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
12.6650	12.7085	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
12.6802	12.6710	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
12.7860	12.5657	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
12.5224	12.3650	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
12.0293	11.5756	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
11.9197	11.8368	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
11.9054	12.0151	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
12.7562	13.2163	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
13.4981	13.5876	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
13.8527	14.7233	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
13.9040	13.4272	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
13.6054	13.3729	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
12.6332	11.9563	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean

11.8040	11.4575	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
11.3821	11.2016	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
11.1271	10.8897	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
10.9288	10.9433	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
10.9627	11.3683	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
11.1323	11.2713	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean
11.6056	11.5978	CBR_official_daily_fixings_arithmetic_monthly_mean; compared_to_direct_CBR_published_monthly_mean

date	official_ru_exports_usd_bn	official_ru_imports_usd_bn	official_total_usd_bn
2019-01	4.894000	4.309700	9.203700
2019-02	4.085800	2.752400	6.838200
2019-03	4.533600	3.582500	8.116100
2019-04	5.191000	3.716700	8.907700
2019-05	5.349400	3.795100	9.144500
2019-06	5.278550	3.986712	9.265262
2019-07	4.724700	4.533200	9.257900
2019-08	4.937200	4.475300	9.412500
2019-09	4.973000	4.503400	9.476400
2019-10	5.263100	4.383000	9.646100
2019-11	5.528000	4.527800	10.055800
2019-12	5.539200	4.881800	10.421000
2020-01	6.108726	4.449182	10.557908
2020-02	5.173186	1.577616	6.750802
2020-03	4.972401	3.119484	8.091885
2020-04	4.216529	3.978170	8.194699
2020-05	3.560059	3.804802	7.364861
2020-06	4.198191	3.988365	8.186556
2020-07	4.779820	4.892651	9.672471
2020-08	4.539571	5.258582	9.798153
2020-09	5.417576	4.799443	10.217019
2020-10	4.627507	4.724517	9.352024
2020-11	4.437008	4.757221	9.194229
2020-12	5.159720	5.274945	10.434665
2021-01	4.896743	4.757858	9.654601
2021-02	4.966105	4.163444	9.129549
2021-03	6.206309	4.142344	10.348653
2021-04	5.675606	5.128195	10.803801
2021-05	5.718730	4.731096	10.449826

2021-06	6.235315	6.028295	12.263610
2021-07	6.710439	5.539592	12.250031
2021-08	7.041652	6.321637	13.363289
2021-09	6.867821	6.601057	13.468878
2021-10	7.522064	5.504575	13.026639
2021-11	8.203115	6.540936	14.744051
2021-12	8.306905	8.136777	16.443682
2022-01	7.574814	7.380617	14.955431
2022-02	6.238633	5.237091	11.475724
2022-03	7.843946	3.825255	11.669201
2022-04	8.889483	3.801747	12.691230
2022-05	10.268980	4.324095	14.593075
2022-06	9.748300	5.002500	14.750800
2022-07	10.019300	6.770800	16.790100
2022-08	11.214592	7.995731	19.210323
2022-09	10.656147	7.999350	18.655497
2022-10	10.229783	7.407630	17.637413
2022-11	10.544851	7.711419	18.256270
2022-12	8.996554	8.808515	17.805069
2023-01	9.305275	8.085351	17.390626
2023-02	9.343636	6.951287	16.294923
2023-03	11.020600	9.044200	20.064800
2023-04	9.606400	9.621900	19.228300
2023-05	11.305600	9.267500	20.573100
2023-06	11.280000	9.551300	20.831300
2023-07	9.207800	10.280100	19.487900
2023-08	11.515000	9.299500	20.814500
2023-09	11.531500	9.645500	21.177000
2023-10	11.107000	8.685000	19.792000
2023-11	11.208500	10.299400	21.507900

2023-12	11.196184	10.709681	21.905865
2024-01	10.464869	9.223050	19.687919
2024-02	9.737504	7.584844	17.322348
2024-03	12.197009	7.608955	19.805964
2024-04	11.447808	8.316998	19.764806
2024-05	10.727600	9.086100	19.813700
2024-06	10.366300	9.883500	20.249800
2024-07	9.706183	9.991769	19.697952
2024-08	11.422900	10.263800	21.686700
2024-09	10.562600	11.246700	21.809300
2024-10	10.790500	11.004500	21.795000
2024-11	10.477800	10.038300	20.516100
2024-12	10.670387	11.303071	21.973458
2025-01	9.650937	9.155053	18.805990
2025-02	10.081753	5.800956	15.882709
2025-03	10.678600	7.768800	18.447400
2025-04	9.721700	8.089100	17.810800
2025-05	9.602000	8.101200	17.703200
2025-06	9.321500	8.282000	17.603500
2025-07	10.057600	9.080700	19.138300
2025-08	9.355977	8.546915	17.902892
2025-09	10.956100	8.869200	19.825300

old_ru_exports_usd_bn	old_ru_imports_usd_bn	old_total_usd_bn
4.920000	4.172000	9.092000
4.269000	2.969000	7.238000
4.530000	3.456000	7.986000
5.180000	3.717000	8.897000
5.375000	3.798000	9.173000
5.342000	3.977000	9.319000
4.855000	4.497000	9.352000
4.952000	4.497000	9.449000
5.034000	4.497000	9.531000
5.277000	4.399000	9.676000
5.570000	4.530000	10.100000
5.603000	4.887000	10.490000
6.025000	4.497000	10.522000
5.391000	2.156000	7.547000
4.952000	2.806000	7.758000
4.334000	3.879000	8.213000
3.652000	3.847000	7.499000
4.123000	3.944000	8.067000
4.790000	4.530000	9.320000
4.627000	5.180000	9.807000
5.310000	4.822000	10.132000
4.822000	4.676000	9.498000
4.530000	4.757000	9.287000
5.180000	5.147000	10.327000
5.082000	4.822000	9.904000
5.115000	4.237000	9.352000
6.188000	4.139000	10.327000
5.895000	4.936000	10.831000
5.765000	4.757000	10.522000

6.220000	5.733000	11.953000
6.741000	5.570000	12.311000
7.066000	6.123000	13.189000
6.952000	6.513000	13.465000
7.488000	5.668000	13.156000
8.236000	6.318000	14.554000
8.334000	7.846000	16.180000
7.879000	7.358000	15.237000
6.741000	5.603000	12.344000
7.586000	4.107000	11.693000
9.131000	3.749000	12.880000
10.447000	4.188000	14.635000
9.992000	4.920000	14.912000
10.057000	6.480000	16.537000
11.179000	7.797000	18.976000
10.870000	7.911000	18.781000
10.382000	7.391000	17.773000
10.545000	7.586000	18.131000
9.358000	8.594000	17.952000
9.423000	8.139000	17.562000
9.505000	7.066000	16.571000
10.854000	8.562000	19.416000
9.960000	9.505000	19.465000
11.163000	9.212000	20.375000
11.455000	9.505000	20.960000
9.765000	10.236000	20.001000
11.358000	9.407000	20.765000
11.716000	9.570000	21.286000
11.293000	8.838000	20.131000
11.195000	10.025000	21.220000

11.260000	10.643000	21.903000
10.708000	9.407000	20.115000
10.025000	7.781000	17.806000
11.781000	7.619000	19.400000
11.651000	8.204000	19.855000
10.870000	9.017000	19.887000
10.480000	9.797000	20.277000
9.830000	10.025000	19.855000
11.228000	10.252000	21.480000
10.708000	11.195000	21.903000
10.870000	11.065000	21.935000
10.643000	10.155000	20.798000
10.740000	11.130000	21.870000
9.927000	9.179000	19.106000
10.090000	6.253000	16.343000
10.675000	7.423000	18.098000
9.927000	8.074000	18.001000
9.700000	8.074000	17.774000
9.505000	8.269000	17.774000
10.057000	8.984000	19.041000
9.570000	8.594000	18.164000
10.773000	8.822000	19.595000

ru_exports_pct_error	ru_imports_pct_error	total_trade_pct_error
0.53%	-3.20%	-1.21%
4.48%	7.87%	5.85%
-0.08%	-3.53%	-1.60%
-0.21%	0.01%	-0.12%
0.48%	0.08%	0.31%
1.20%	-0.24%	0.58%
2.76%	-0.80%	1.02%
0.30%	0.48%	0.39%
1.23%	-0.14%	0.58%
0.26%	0.37%	0.31%
0.76%	0.05%	0.44%
1.15%	0.11%	0.66%
-1.37%	1.07%	-0.34%
4.21%	36.66%	11.79%
-0.41%	-10.05%	-4.13%
2.79%	-2.49%	0.22%
2.58%	1.11%	1.82%
-1.79%	-1.11%	-1.46%
0.21%	-7.41%	-3.64%
1.93%	-1.49%	0.09%
-1.99%	0.47%	-0.83%
4.20%	-1.03%	1.56%
2.10%	0.00%	1.01%
0.39%	-2.43%	-1.03%
3.78%	1.35%	2.58%
3.00%	1.77%	2.44%
-0.30%	-0.08%	-0.21%
3.87%	-3.75%	0.25%
0.81%	0.55%	0.69%

-0.25%	-4.90%	-2.53%
0.46%	0.55%	0.50%
0.35%	-3.14%	-1.30%
1.23%	-1.33%	-0.03%
-0.45%	2.97%	0.99%
0.40%	-3.41%	-1.29%
0.33%	-3.57%	-1.60%
4.02%	-0.31%	1.88%
8.05%	6.99%	7.57%
-3.29%	7.37%	0.20%
2.72%	-1.39%	1.49%
1.73%	-3.15%	0.29%
2.50%	-1.65%	1.09%
0.38%	-4.29%	-1.51%
-0.32%	-2.49%	-1.22%
2.01%	-1.10%	0.67%
1.49%	-0.22%	0.77%
0.00%	-1.63%	-0.69%
4.02%	-2.44%	0.83%
1.27%	0.66%	0.99%
1.73%	1.65%	1.69%
-1.51%	-5.33%	-3.23%
3.68%	-1.21%	1.23%
-1.26%	-0.60%	-0.96%
1.55%	-0.48%	0.62%
6.05%	-0.43%	2.63%
-1.36%	1.16%	-0.24%
1.60%	-0.78%	0.51%
1.67%	1.76%	1.71%
-0.12%	-2.66%	-1.34%

0.57%	-0.62%	-0.01%
2.32%	1.99%	2.17%
2.95%	2.59%	2.79%
-3.41%	0.13%	-2.05%
1.77%	-1.36%	0.46%
1.33%	-0.76%	0.37%
1.10%	-0.88%	0.13%
1.28%	0.33%	0.80%
-1.71%	-0.11%	-0.95%
1.38%	-0.46%	0.43%
0.74%	0.55%	0.64%
1.58%	1.16%	1.37%
0.65%	-1.53%	-0.47%
2.86%	0.26%	1.60%
0.08%	7.79%	2.90%
-0.03%	-4.45%	-1.89%
2.11%	-0.19%	1.07%
1.02%	-0.34%	0.40%
1.97%	-0.16%	0.97%
-0.01%	-1.06%	-0.51%
2.29%	0.55%	1.46%
-1.67%	-0.53%	-1.16%

gacc_value_method	source_url
official_GACC_published_month	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_published_month	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_published_month	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_published_month	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_published_month	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_published_month	https://english.customs.gov.cn/statics/report/monthly.html
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official_GACC_published_month	https://english.customs.gov.cn/statics/report/monthly.html
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official_GACC_published_month	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_published_month	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_published_month	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html
official_GACC_detailed_USD_thousand	https://english.customs.gov.cn/statics/report/monthly.html

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date	russia_industrial_production_index_yoy	russia_industrial_production_yoy	source
2019-01	102.7	2.7	Rosstat annual industrial production releases; latest available revision used where extracted
2019-02	104.2	4.2	Rosstat annual industrial production releases; latest available revision used where extracted
2019-03	102.7	2.7	Rosstat annual industrial production releases; latest available revision used where extracted
2019-04	105.2	5.2	Rosstat annual industrial production releases; latest available revision used where extracted
2019-05	101	1	Rosstat annual industrial production releases; latest available revision used where extracted
2019-06	103.2	3.2	Rosstat annual industrial production releases; latest available revision used where extracted
2019-07	104.3	4.3	Rosstat annual industrial production releases; latest available revision used where extracted
2019-08	103.9	3.90000000000001	Rosstat annual industrial production releases; latest available revision used where extracted
2019-09	105	5	Rosstat annual industrial production releases; latest available revision used where extracted
2019-10	104.4	4.40000000000001	Rosstat annual industrial production releases; latest available revision used where extracted
2019-11	101.5	1.5	Rosstat annual industrial production releases; latest available revision used where extracted
2019-12	102.6	2.59999999999999	Rosstat annual industrial production releases; latest available revision used where extracted
2020-01	101.6	1.59999999999999	Rosstat annual industrial production releases; latest available revision used where extracted
2020-02	105.1	5.09999999999999	Rosstat annual industrial production releases; latest available revision used where extracted
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2020-12	103.7	3.7	Rosstat annual industrial production releases; latest available revision used where extracted
2021-01	97.7	-2.3	Rosstat annual industrial production releases; latest available revision used where extracted
2021-02	96.3	-3.7	Rosstat annual industrial production releases; latest available revision used where extracted
2021-03	101.6	1.59999999999999	Rosstat annual industrial production releases; latest available revision used where extracted
2021-04	107.1	7.09999999999999	Rosstat annual industrial production releases; latest available revision used where extracted
2021-05	111.7	11.7	Rosstat annual industrial production releases; latest available revision used where extracted

2021-06	110	10	Rosstat annual industrial production releases; latest available revision used where extracted
2021-07	106.8	6.8	Rosstat annual industrial production releases; latest available revision used where extracted
2021-08	104.5	4.5	Rosstat annual industrial production releases; latest available revision used where extracted
2021-09	106.8	6.8	Rosstat annual industrial production releases; latest available revision used where extracted
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2021-11	107.6	7.59999999999999	Rosstat annual industrial production releases; latest available revision used where extracted
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check	value
rows	81
period_start	2019-01
period_end	2025-09
duplicate_months	0
missing_ru_exports_to_cn_usd_bn	0
missing_ru_imports_from_cn_usd_bn	0
missing_total_trade_usd_bn	0
missing_china_pmi	0
missing_cny_rub	0
missing_brent_usd	0
missing_china_industrial_production_yoy	14
missing_russia_industrial_production_yoy	0
missing_russia_key_rate_eom	0
trade_identity_max_abs_error	1.77635683940025E-15
official_GACC_months	81
GACC_old_vs_official_total_trade_MAPE_pct	1.39984882315196
GACC_old_vs_official_max_abs_pct	11.7941246091946
GACC_max_discrepancy_month	2020-02
CBR_old_IMFcross_vs_CBRfixing_mean_MAPE_pct	2.23534273495313
CBR_old_IMFcross_max_abs_pct	18.7490270346468
CBR_max_discrepancy_month	2022-03

period	variable	n	mean	median	std	min	max
overall	ru_exports_to_cn_usd_bn	81	8.0702	8.9966	2.6172	3.5601	12.1970
overall	ru_imports_from_cn_usd_bn	81	6.7237	6.6011	2.4412	1.5776	11.3031
overall	total_trade_usd_bn	81	14.7939	14.9554	4.8577	6.7508	21.9735
overall	china_pmi	81	49.8086	49.8000	1.8698	35.7000	52.6000
overall	cny_rub	81	11.1141	11.3423	1.5550	8.4454	16.3161
overall	brent_usd	81	73.1502	74.1700	19.0147	18.3800	122.7100
overall	china_industrial_production_yoy	67	5.2433	5.3000	2.3149	-2.9000	14.1000
overall	russia_industrial_production_yoy	81	2.6136	3.0000	4.0322	-7.7000	11.7000
overall	russia_key_rate_eom	81	10.6975	7.7500	5.7887	4.2500	21.0000
pre_2022	ru_exports_to_cn_usd_bn	36	5.4400	5.1821	1.1041	3.5601	8.3069
pre_2022	ru_imports_from_cn_usd_bn	36	4.6575	4.5305	1.1697	1.5776	8.1368
pre_2022	total_trade_usd_bn	36	10.0974	9.6504	2.1098	6.7508	16.4437
pre_2022	china_pmi	36	50.0639	50.3500	2.6031	35.7000	52.1000
pre_2022	cny_rub	36	10.4170	10.5376	1.0010	8.9413	11.6685
pre_2022	brent_usd	36	58.9317	63.4300	15.1210	18.3800	83.5400
pre_2022	china_industrial_production_yoy	30	5.8633	5.5000	2.5909	-1.1000	14.1000
pre_2022	russia_industrial_production_yoy	36	2.2139	3.0000	4.8274	-7.7000	11.7000
pre_2022	russia_key_rate_eom	36	6.0556	6.2500	1.3708	4.2500	8.5000
post_2022	ru_exports_to_cn_usd_bn	45	10.1745	10.3663	1.1382	6.2386	12.1970
post_2022	ru_imports_from_cn_usd_bn	45	8.3767	8.6850	1.8601	3.8017	11.3031
post_2022	total_trade_usd_bn	45	18.5511	19.2103	2.6228	11.4757	21.9735
post_2022	china_pmi	45	49.6044	49.5000	0.9332	47.0000	52.6000
post_2022	cny_rub	45	11.6717	11.9302	1.6982	8.4454	16.3161
post_2022	brent_usd	45	84.5251	82.2500	13.3330	64.4500	122.7100
post_2022	china_industrial_production_yoy	37	4.7405	5.1000	1.9587	-2.9000	7.7000
post_2022	russia_industrial_production_yoy	45	2.9333	3.0000	3.2846	-2.2000	9.1000
post_2022	russia_key_rate_eom	45	14.4111	16.0000	5.2627	7.5000	21.0000

variable	pre_2022_mean	post_2022_mean	absolute_change	relative_change
ru_exports_to_cn_usd	5.4400	10.1745	4.7345	87.0%
ru_imports_from_cn_	4.6575	8.3767	3.7192	79.9%
total_trade_usd_bn	10.0974	18.5511	8.4537	83.7%
china_pmi	50.0639	49.6044	-0.4594	-0.9%
cny_rub	10.4170	11.6717	1.2547	12.0%
brent_usd	58.9317	84.5251	25.5934	43.4%
china_industrial_prod	5.8633	4.7405	-1.1228	-19.1%
russia_industrial_pro	2.2139	2.9333	0.7194	32.5%
russia_key_rate_eom	6.0556	14.4111	8.3556	138.0%

	ru_exports_yoy	ru_imports_yoy	total_trade_yoy	china_pmi	cny_rub_mom_calc
ru_exports_yoy	1.000	0.150	0.811	-0.082	-0.162
ru_imports_yoy	0.150	1.000	0.682	0.194	0.130
total_trade_yoy	0.811	0.682	1.000	0.074	-0.004
china_pmi	-0.082	0.194	0.074	1.000	0.059
cny_rub_mom_calc	-0.162	0.130	-0.004	0.059	1.000
brent_yoy	0.671	0.028	0.503	0.026	-0.092

brent_yoy
0.671
0.028
0.503
0.026
-0.092
1.000

	ru_exports_yoy	ru_imports_yoy	total_trade_yoy	china_pmi	cny_rub_mom_calc
ru_exports_yoy	1.000	0.169	0.900	-0.178	-0.023
ru_imports_yoy	0.169	1.000	0.556	0.305	-0.186
total_trade_yoy	0.900	0.556	1.000	0.042	-0.116
china_pmi	-0.178	0.305	0.042	1.000	0.044
cny_rub_mom_calc	-0.023	-0.186	-0.116	0.044	1.000
brent_yoy	0.725	0.294	0.751	0.026	-0.212

brent_yoy
0.725
0.294
0.751
0.026
-0.212
1.000

	ru_exports_yoy	ru_imports_yoy	total_trade_yoy	china_pmi	cny_rub_mom_calc
ru_exports_yoy	1.000	0.138	0.744	0.094	-0.235
ru_imports_yoy	0.138	1.000	0.755	0.103	0.205
total_trade_yoy	0.744	0.755	1.000	0.147	0.021
china_pmi	0.094	0.103	0.147	1.000	0.127
cny_rub_mom_calc	-0.235	0.205	0.021	0.127	1.000
brent_yoy	0.682	-0.325	0.229	-0.141	-0.106

brent_yoy
0.682
-0.325
0.229
-0.141
-0.106
1.000

relationship	lag_months	correlation	n
PMI_to_RU_exports_	0	-0.0819	69
PMI_to_RU_exports_	1	-0.0741	69
PMI_to_RU_exports_	2	0.0191	69
PMI_to_RU_exports_	3	0.1192	69
PMI_to_RU_exports_	4	0.1338	69
PMI_to_RU_exports_	5	0.0900	69
PMI_to_RU_exports_	6	0.1585	69
FX_mom_to_total_tra	0	-0.0042	69
FX_mom_to_total_tra	1	-0.0204	69
FX_mom_to_total_tra	2	0.0707	69
FX_mom_to_total_tra	3	-0.0400	69

series	n	adf_stat	p_value	used_lag	nobs	crit_1pct	crit_5pct	crit_10pct
ru_exports_level	81	-1.203051	0.672282	2.000000	###	-3.517114	-2.899375	-2.586955
ru_imports_level	81	-1.556450	0.505425	2.000000	###	-3.517114	-2.899375	-2.586955
total_trade_level	81	-1.128468	0.703587	###	###	-3.530399	-2.905087	-2.590001
cny_rub_level	81	-2.520962	0.110457	0.000000	###	-3.514869	-2.898409	-2.586439
brent_level	81	-2.025287	0.275597	1.000000	###	-3.515977	-2.898886	-2.586694
china_pmi_level	81	-8.404057	0.000000	0.000000	###	-3.514869	-2.898409	-2.586439
ru_exports_yoy	69	-2.555166	0.102622	0.000000	###	-3.530399	-2.905087	-2.590001
ru_imports_yoy	69	-3.877384	0.002208	0.000000	###	-3.530399	-2.905087	-2.590001
total_trade_yoy	69	-2.356424	0.154415	0.000000	###	-3.530399	-2.905087	-2.590001
dln_cny_rub	80	-7.532582	0.000000	0.000000	###	-3.515977	-2.898886	-2.586694
dln_brent	80	-7.408017	0.000000	1.000000	###	-3.517114	-2.899375	-2.586955

conclusion
nonstationary_5pct
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nonstationary_5pct
nonstationary_5pct
nonstationary_5pct
stationary_5pct
nonstationary_5pct
stationary_5pct
nonstationary_5pct
stationary_5pct
stationary_5pct

model	pmi_lag_months	n	intercept	pmi_beta_pp_per_point	std_error	t_stat
Model_1	0	69	71.240124	-1.108602	1.648558	-0.672468
Model_2_lag1	1	69	66.001001	-1.003328	1.649145	-0.608393
Model_2_lag2	2	69	3.107562	0.258834	1.653550	0.156532
Model_2_lag3	3	69	-64.402002	1.613384	1.642065	0.982533

p_value	ci95_low	ci95_high	r_squared	adj_r_squared
0.503598	-4.399137	2.181933	0.006704	-0.008121
0.544984	-4.295035	2.288379	0.005494	-0.009349
0.876084	-3.041666	3.559335	0.000366	-0.014554
0.329372	-1.664192	4.890960	0.014204	-0.000510

date	ru_exports_to_cn_usd_bn	ru_imports_from_cn_usd_bn	component_sum_total_usd_bn	gacc_published_total_usd_bn	source_unit	gacc_value_method
2019-01	4.894000	4.309700	9.203700	9.203700	m	official_GACC_published_month
2019-02	4.085800	2.752400	6.838200	6.838200	m	official_GACC_published_month
2019-03	4.533600	3.582500	8.116100	8.116200	m	official_GACC_published_month
2019-04	5.191000	3.716700	8.907700	8.907700	m	official_GACC_published_month
2019-05	5.349400	3.795100	9.144500	9.144500	m	official_GACC_published_month
2019-06	5.278550	3.986712	9.265262	9.265261	k	official_GACC_published_month
2019-07	4.724700	4.533200	9.257900	9.257900	m	official_GACC_published_month
2019-08	4.937200	4.475300	9.412500	9.412600	m	official_GACC_published_month
2019-09	4.973000	4.503400	9.476400	9.476400	m	official_GACC_published_month
2019-10	5.263100	4.383000	9.646100	9.646200	m	official_GACC_published_month
2019-11	5.528000	4.527800	10.055800	10.055900	m	official_GACC_published_month
2019-12	5.539200	4.881800	10.421000	10.421000	m	official_GACC_published_month
2020-01	6.108726	4.449182	10.557908	10.557908	k	official_GACC_detailed_USD_thousand
2020-02	5.173186	1.577616	6.750802	6.750802	k	official_GACC_detailed_USD_thousand
2020-03	4.972401	3.119484	8.091885	8.091885	k	official_GACC_detailed_USD_thousand
2020-04	4.216529	3.978170	8.194699	8.194698	k	official_GACC_detailed_USD_thousand
2020-05	3.560059	3.804802	7.364861	7.364861	k	official_GACC_detailed_USD_thousand
2020-06	4.198191	3.988365	8.186556	8.186556	k	official_GACC_detailed_USD_thousand
2020-07	4.779820	4.892651	9.672471	9.672472	k	official_GACC_detailed_USD_thousand
2020-08	4.539571	5.258582	9.798153	9.798153	k	official_GACC_detailed_USD_thousand
2020-09	5.417576	4.799443	10.217019	10.217020	k	official_GACC_detailed_USD_thousand
2020-10	4.627507	4.724517	9.352024	9.352025	k	official_GACC_detailed_USD_thousand
2020-11	4.437008	4.757221	9.194229	9.194230	k	official_GACC_detailed_USD_thousand
2020-12	5.159720	5.274945	10.434665	10.434664	k	official_GACC_detailed_USD_thousand
2021-01	4.896743	4.757858	9.654601	9.654600	k	official_GACC_detailed_USD_thousand
2021-02	4.966105	4.163444	9.129549	9.129549	k	official_GACC_detailed_USD_thousand
2021-03	6.206309	4.142344	10.348653	10.348653	k	official_GACC_detailed_USD_thousand
2021-04	5.675606	5.128195	10.803801	10.803801	k	official_GACC_detailed_USD_thousand
2021-05	5.718730	4.731096	10.449826	10.449826	k	official_GACC_detailed_USD_thousand

2021-06	6.235315	6.028295	12.263610	12.263609	k	official_GACC_detailed_USD_thousand
2021-07	6.710439	5.539592	12.250031	12.250031	k	official_GACC_detailed_USD_thousand
2021-08	7.041652	6.321637	13.363289	13.363289	k	official_GACC_detailed_USD_thousand
2021-09	6.867821	6.601057	13.468878	13.468878	k	official_GACC_detailed_USD_thousand
2021-10	7.522064	5.504575	13.026639	13.026639	k	official_GACC_detailed_USD_thousand
2021-11	8.203115	6.540936	14.744051	14.744050	k	official_GACC_detailed_USD_thousand
2021-12	8.306905	8.136777	16.443682	16.443682	k	official_GACC_detailed_USD_thousand
2022-01	7.574814	7.380617	14.955431	14.955432	k	official_GACC_detailed_USD_thousand
2022-02	6.238633	5.237091	11.475724	11.475723	k	official_GACC_detailed_USD_thousand
2022-03	7.843946	3.825255	11.669201	11.669201	k	official_GACC_detailed_USD_thousand
2022-04	8.889483	3.801747	12.691230	12.691230	k	official_GACC_detailed_USD_thousand
2022-05	10.268980	4.324095	14.593075	14.593076	k	official_GACC_detailed_USD_thousand
2022-06	9.748300	5.002500	14.750800	14.750800	m	official_GACC_major_country_USD_million
2022-07	10.019300	6.770800	16.790100	16.790100	m	official_GACC_major_country_USD_million
2022-08	11.214592	7.995731	19.210323	19.210323	k	official_GACC_detailed_USD_thousand
2022-09	10.656147	7.999350	18.655497	18.655497	k	official_GACC_detailed_USD_thousand
2022-10	10.229783	7.407630	17.637413	17.637413	k	official_GACC_detailed_USD_thousand
2022-11	10.544851	7.711419	18.256270	18.256270	k	official_GACC_detailed_USD_thousand
2022-12	8.996554	8.808515	17.805069	17.805069	k	official_GACC_detailed_USD_thousand
2023-01	9.305275	8.085351	17.390626	17.390626	k	official_GACC_detailed_USD_thousand_derived_Jan=FebYTD-Feb
2023-02	9.343636	6.951287	16.294923	16.294923	k	official_GACC_detailed_USD_thousand
2023-03	11.020600	9.044200	20.064800	20.064800	m	official_GACC_major_country_USD_million
2023-04	9.606400	9.621900	19.228300	19.228300	m	official_GACC_major_country_USD_million
2023-05	11.305600	9.267500	20.573100	20.573100	m	official_GACC_major_country_USD_million
2023-06	11.280000	9.551300	20.831300	20.831300	m	official_GACC_major_country_USD_million
2023-07	9.207800	10.280100	19.487900	19.488000	m	official_GACC_major_country_USD_million
2023-08	11.515000	9.299500	20.814500	20.814600	m	official_GACC_major_country_USD_million
2023-09	11.531500	9.645500	21.177000	21.177100	m	official_GACC_major_country_USD_million
2023-10	11.107000	8.685000	19.792000	19.792000	m	official_GACC_major_country_USD_million
2023-11	11.208500	10.299400	21.507900	21.507800	m	official_GACC_major_country_USD_million

2023-12	11.196184	10.709681	21.905865	21.905866	k	official_GACC_detailed_USD_thousand
2024-01	10.464869	9.223050	19.687919	19.687918	k	official_GACC_detailed_USD_thousand_derived_Jan=FebYTD-Feb
2024-02	9.737504	7.584844	17.322348	17.322348	k	official_GACC_detailed_USD_thousand
2024-03	12.197009	7.608955	19.805964	19.805965	k	official_GACC_detailed_USD_thousand_derived_from_AprYTD
2024-04	11.447808	8.316998	19.764806	19.764806	k	official_GACC_detailed_USD_thousand
2024-05	10.727600	9.086100	19.813700	19.813700	m	official_GACC_major_country_USD_million
2024-06	10.366300	9.883500	20.249800	20.249800	m	official_GACC_major_country_USD_million
2024-07	9.706183	9.991769	19.697952	19.697952	k	official_GACC_detailed_USD_thousand
2024-08	11.422900	10.263800	21.686700	21.686700	m	official_GACC_major_country_USD_million
2024-09	10.562600	11.246700	21.809300	21.809300	m	official_GACC_major_country_USD_million
2024-10	10.790500	11.004500	21.795000	21.795000	m	official_GACC_major_country_USD_million
2024-11	10.477800	10.038300	20.516100	20.516100	m	official_GACC_major_country_USD_million
2024-12	10.670387	11.303071	21.973458	21.973458	k	official_GACC_detailed_USD_thousand
2025-01	9.650937	9.155053	18.805990	18.805991	k	official_GACC_detailed_USD_thousand_derived_Jan=FebYTD-Feb
2025-02	10.081753	5.800956	15.882709	15.882708	k	official_GACC_detailed_USD_thousand
2025-03	10.678600	7.768800	18.447400	18.447400	m	official_GACC_major_country_USD_million
2025-04	9.721700	8.089100	17.810800	17.810800	m	official_GACC_major_country_USD_million
2025-05	9.602000	8.101200	17.703200	17.703200	m	official_GACC_major_country_USD_million
2025-06	9.321500	8.282000	17.603500	17.603400	m	official_GACC_major_country_USD_million
2025-07	10.057600	9.080700	19.138300	19.138300	m	official_GACC_major_country_USD_million
2025-08	9.355977	8.546915	17.902892	17.902892	k	official_GACC_detailed_USD_thousand
2025-09	10.956100	8.869200	19.825300	19.825300	m	official_GACC_major_country_USD_million

source_note	source_url
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	https://english.customs.gov.cn/Statics/e73c8aef-a6f4-49fe-8ee0-47a2ac6b4762.html
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date	analysis_cny_rub_monthly_mean	cbr_published_monthly_mean	cbr_published_eop	analysis_minus_published_mean	analysis_mean_method
2019-01	9.826230				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2019-02	9.764560				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2019-03	9.700970				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2019-04	9.619570				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2019-05	9.437270				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2019-06	9.297930				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2019-07	9.192970				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2019-08	9.295630				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2019-09	9.127000				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2019-10	9.064790				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2019-11	9.098700				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2019-12	8.966430				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2020-01	8.941290				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2020-02	9.147880				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2020-03	10.502500				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2020-04	10.572600				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2020-05	10.195780				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2020-06	9.764110				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2020-07	10.162100				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean

2020-08	10.641900	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2020-09	11.114900	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2020-10	11.537400	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2020-11	11.641000	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2020-12	11.342300	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2021-01	11.484800	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2021-02	11.506600	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2021-03	11.434800	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2021-04	11.668500	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2021-05	11.500600	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2021-06	11.310500	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2021-07	11.414100	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2021-08	11.359800	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2021-09	11.293200	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2021-10	11.122600	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2021-11	11.378400	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2021-12	11.583200	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2022-01	12.062100	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2022-02	12.156000	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2022-03	16.316100	historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean

2022-04	12.142400				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2022-05	9.491780				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2022-06	8.675160				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2022-07	8.793910				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2022-08	8.890040				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2022-09	8.524760				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2022-10	8.464920				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2022-11	8.445430				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2022-12	9.378250				historical transport of Bank of Russia official daily CNY fixing; arithmetic monthly mean
2023-01	10.158800	10.076700	10.307700	0.082100	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2023-02	10.659800	10.682100	10.792800	-0.022300	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2023-03	11.016300	11.009800	11.184700	0.006500	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2023-04	11.739700	11.727300	11.565900	0.012400	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2023-05	11.302100	11.284200	11.361500	0.017900	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2023-06	11.618200	11.608400	11.989400	0.009800	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2023-07	12.557000	12.548700	12.689100	0.008300	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2023-08	13.116700	13.111700	13.131100	0.005000	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2023-09	13.223700	13.228400	13.358700	-0.004700	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2023-10	13.266400	13.251600	12.707100	0.014800	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2023-11	12.476700	12.488700	12.452700	-0.012000	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative

2023-12	12.691800	12.689800	12.576200	0.002000	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2024-01	12.307900	12.386600	12.406600	-0.078700	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2024-02	12.657400	12.665000	12.708500	-0.007600	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2024-03	12.689500	12.680200	12.671000	0.009300	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2024-04	12.798800	12.786000	12.565700	0.012800	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2024-05	12.494200	12.522400	12.365000	-0.028200	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2024-06	11.975500	12.029300	11.575600	-0.053800	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2024-07	11.930200	11.919700	11.836800	0.010500	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2024-08	11.912500	11.905400	12.015100	0.007100	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2024-09	12.789200	12.756200	13.216300	0.033000	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2024-10	13.510900	13.498100	13.587600	0.012800	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2024-11	13.895200	13.852700	14.723300	0.042500	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2024-12	13.889800	13.904000	13.427200	-0.014200	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2025-01	13.669188	13.605400	13.372900	0.063788	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2025-02	12.612210	12.633200	11.956300	-0.020990	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2025-03	11.796195	11.804000	11.457500	-0.007805	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2025-04	11.387932	11.382100	11.201600	0.005832	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2025-05	11.108674	11.127100	10.889700	-0.018426	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2025-06	10.924872	10.928800	10.943300	-0.003928	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2025-07	10.968300	10.962700	11.368300	0.005600	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative

2025-08	11.132500	11.132300	11.271300	0.000200	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative
2025-09	11.607300	11.605600	11.597800	0.001700	arithmetic monthly mean of Bank of Russia official daily CNY fixing; validated against direct CBR monthly derivative

primary_direct_status	official_daily_source_url
No published CNY monthly derivative in the CBR retrospective table; analytical value is author aggregation of official daily fixings	https://www.cbr.ru/currency_base/daily/
No published CNY monthly derivative in the CBR retrospective table; analytical value is author aggregation of official daily fixings	https://www.cbr.ru/currency_base/daily/
No published CNY monthly derivative in the CBR retrospective table; analytical value is author aggregation of official daily fixings	https://www.cbr.ru/currency_base/daily/
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https://www.cbr.ru/statistics/macro_itm/external_sector/er/

Lag	N (common sample)	Beta	OLS p	HAC(3) p	HAC(12) p	AIC
1	78	0.0007	0.917	0.815	0.758	-126.1125
2	78	0.0095	0.135	0.000	0.000	-128.4064
3	78	0.0113	0.073	0.001	0.000	-129.4156

Specification check

BIC	Adj R^2	Selection note
-121.3991	-0.0130	
-123.6930	0.0163	
-124.7022	0.0290	Best common-sample AIC/BIC

Model	Variable	N	Beta	OLS p	HAC(3) p
Model 3 baseline	china_pmi_lag3	78	0.0140	0.0329	0.0072
Model 3 baseline	dln_brent	78	0.1392	0.1358	0.0668
Model 4 baseline	china_pmi_lag3	78	0.0139	0.0341	0.0096
Model 4 baseline	dln_brent	78	0.1356	0.1483	0.0674
Model 4 baseline	dln_cny_rub	78	-0.1223	0.4898	0.4114
Model 4 + month FE	china_pmi_lag3	78	0.0173	0.0061	0.0008
Model 4 + month FE	dln_brent	78	0.2168	0.0160	0.0012
Model 4 + month FE	dln_cny_rub	78	-0.3668	0.0400	0.0023

Preferred reporting

HAC(12) p	Adj R^2	Month FE	Interpretation
0.0035	0.0450	No	
0.0489	0.0450	No	
0.0052	0.0384	No	
0.0380	0.0384	No	
0.2911	0.0384	No	
0.0000	0.2467	Yes	Significant in full sample, but fails leave-one-out/COVID-excluded robustness
0.0000	0.2467	Yes	Positive in seasonal full sample; loses significance in the strict COVID-excluded sample
0.0005	0.2467	Yes	Negative in seasonal model; remains HAC3-significant in strict COVID-excluded seasonal check
			Report baseline Model 4 for comparability, plus month-FE sensitivity. Do not call the PMI coefficient robust.

Specification	Variable	N
Original: import dln ~ FX dln + Russia IP YoY	dln_cny_rub	80
Original: import dln ~ FX dln + Russia IP YoY	russia_industrial_production_yoy	80
Aligned: import dln ~ FX dln + ΔRussia IP YoY	dln_cny_rub	80
Aligned: import dln ~ FX dln + ΔRussia IP YoY	d_russia_ip_yoy	80
Aligned + month FE	dln_cny_rub	80
Aligned + month FE	d_russia_ip_yoy	80

Transformation note

Beta	OLS p	HAC(3) p	HAC(12) p	Adj R^2	Status
-0.0645	0.8552	0.8682	0.8650	-0.0199	Reference only
-0.0036	0.5340	0.4184	0.4489	-0.0199	Reference only
-0.0881	0.8023	0.8279	0.8251	-0.0245	Preferred transform
-0.0017	0.8469	0.9008	0.9007	-0.0245	Preferred transform
-0.2004	0.4944	0.6227	0.5928	0.4309	Seasonal sensitivity
-0.0016	0.8063	0.8667	0.8825	0.4309	Seasonal sensitivity

Interpretation
No statistically reliable coefficient in full sample
No statistically reliable coefficient in full sample
No statistically reliable coefficient in full sample
No statistically reliable coefficient in full sample
No statistically reliable coefficient in full sample
No statistically reliable coefficient in full sample

ΔRussia IP YoY = monthly percentage-point change in Rosstat YoY industrial-production growth; ADF p≈0.0009.

Model	Period	N	Adj R²	Variable
Export Model 4	pre-2022	33	0.1942	const
Export Model 4	pre-2022	33	0.1942	china_pmi_lag3
Export Model 4	pre-2022	33	0.1942	dln_brent
Export Model 4	pre-2022	33	0.1942	dln_cny_rub
Export Model 4	post-2022	45	-0.0598	const
Export Model 4	post-2022	45	-0.0598	china_pmi_lag3
Export Model 4	post-2022	45	-0.0598	dln_brent
Export Model 4	post-2022	45	-0.0598	dln_cny_rub
Import aligned	pre-2022	35	0.0636	const
Import aligned	pre-2022	35	0.0636	dln_cny_rub
Import aligned	pre-2022	35	0.0636	d_russia_ip_yoy
Import aligned	post-2022	45	0.1074	const
Import aligned	post-2022	45	0.1074	dln_cny_rub
Import aligned	post-2022	45	0.1074	d_russia_ip_yoy
Total Trade Main	pre-2022	33	-0.0416	const
Total Trade Main	pre-2022	33	-0.0416	china_pmi_lag3
Total Trade Main	pre-2022	33	-0.0416	dln_brent
Total Trade Main	pre-2022	33	-0.0416	dln_cny_rub
Total Trade Main	post-2022	45	0.0883	const
Total Trade Main	post-2022	45	0.0883	china_pmi_lag3
Total Trade Main	post-2022	45	0.0883	dln_brent
Total Trade Main	post-2022	45	0.0883	dln_cny_rub

Interpretation

These split-sample coefficients are descriptive. Formal break inference is in S16 Robust Break and uses HAC(3)-robust joint tests.

Beta	OLS p	HAC(3) p	HAC(12) p
-0.9140	0.0080	0.0000	0.0000
0.0186	0.0069	0.0000	0.0000
0.2118	0.0900	0.0413	0.0091
-0.0866	0.8975	0.8892	0.8747
0.2892	0.7491	0.7063	0.5660
-0.0057	0.7540	0.7130	0.5757
-0.0994	0.6693	0.6705	0.4618
-0.0778	0.7148	0.7242	0.6262
0.0095	0.8245	0.7645	0.6642
2.1691	0.1211	0.0455	0.0011
-0.0159	0.2641	0.3924	0.3871
0.0043	0.8430	0.8347	0.7556
-0.4506	0.0932	0.0167	0.0112
0.0215	0.0254	0.0484	0.0623
-0.4382	0.2738	0.0023	0.0000
0.0091	0.2527	0.0021	0.0000
0.0368	0.8049	0.6683	0.6527
0.3536	0.6680	0.5638	0.5356
0.9121	0.2118	0.0634	0.0016
-0.0183	0.2134	0.0652	0.0016
-0.3724	0.0506	0.0345	0.0003
-0.1246	0.4657	0.4383	0.1970

Outcome	Interaction	N	Base slope pre	Interaction β3	OLS p β3
Total trade	FX	80	0.4221	-0.6148	0.3238
Total trade	PMI lag3	78	0.0092	-0.0250	0.1555
Exports	FX	80	-0.5178	0.4233	0.4977
Imports	FX	80	2.3498	-2.7098	0.0209
Exports	PMI lag3	78	0.0137	-0.0181	0.3218

Interpretation

Strict COVID-excluded Interaction Sensitivity

Outcome	Interaction	N full	β3 full	HAC3 p full	Max centered VIF full
Total trade	FX	80	-0.6148	0.1589	10.3208
Exports	FX	80	0.4233	0.2567	10.3208
Imports	FX	80	-2.7098	0.0205	10.3208
Total trade	PMI lag3	78	-0.0250	0.0336	1.1859
Exports	PMI lag3	78	-0.0181	0.2171	1.1859

HAC(3) p β3	HAC(12) p β3	Post slope	HAC(3) p post slope
0.1589	0.0638	-0.1926	0.0167
0.0336	0.0017	-0.0158	0.1700
0.2567	0.1856	-0.0945	0.6084
0.0205	0.0004	-0.3600	0.0858
0.2171	0.0314	-0.0044	0.7608

N strict COVID-excluded	β3 strict COVID-excluded	HAC3 p strict COVID-excluded	Max centered VIF strict COVID-excluded
65.0000	-1.5597	0.1800	93.4476
65.0000	-0.0917	0.9277	93.4476
65.0000	-3.4996	0.1081	93.4476
63.0000	-0.0276	0.1527	5.1981
63.0000	0.0045	0.8416	5.1981

Max centered VIF	Robustness note
10.3208	
1.1859	Strict COVID-excluded HAC3 p≈0.153; interaction is not robust
10.3208	
10.3208	Strict COVID-excluded HAC3 p≈0.108; full-sample result is COVID-sensitive
1.1859	

Diagnostic note	Interpretation
High multicollinearity after strict COVID exclusion	Loss of significance cannot be read as clean evidence of no slope change
High multicollinearity after strict COVID exclusion	Loss of significance cannot be read as clean evidence of no slope change
High multicollinearity after strict COVID exclusion	Loss of significance cannot be read as clean evidence of no slope change
Full-sample interaction is not robust to strict COVID exclusion	Treat as suggestive only
No material interaction evidence	Do not emphasize

Classical Chow Tests — Conventional Reference Only

Because core models show serial correlation/heteroskedasticity, these classical p-values are not the primary formal

Model	Break date	N pre	N post	F	p-value	df1
Export Model 4	2022-01	33	45	0.8373	0.5061	4
Import aligned	2022-01	35	45	3.6252	0.0168	3
Total Trade Main	2022-01	33	45	1.4025	0.2422	4
Export Model 4	2022-03	35	43	0.5309	0.7134	4
Import aligned	2022-03	37	43	2.9733	0.0371	3
Total Trade Main	2022-03	35	43	0.5368	0.7091	4
Export Model 4	2022-06	38	40	1.3717	0.2526	4
Import aligned	2022-06	40	40	0.8362	0.4783	3
Total Trade Main	2022-06	38	40	1.0546	0.3856	4

inference. See S16 Robust Break.

df2	Reference decision
70	Do not reject
74	Reject
70	Do not reject
70	Do not reject
74	Reject
70	Do not reject
70	Do not reject
74	Do not reject
70	Do not reject

Model	N	Adj R^2	Durbin-Watson	BP p	BG(1) p
Model 4 baseline	78	0.0384	2.6144	0.0229	0.0020
Model 4 + month FE	78	0.2467	2.5403	0.2553	0.0039
Import aligned	80	-0.0245	2.2169	0.4469	0.2085
Import aligned + month FE	80	0.4309	2.4953	0.0191	0.0237
Total trade + month FE	78	0.5020	2.3434	0.0358	0.0767

Influence note

BG(3) p	BG(12) p	Conclusion
0.0017	0.0193	heteroskedasticity, serial correlation
0.0106	0.0711	serial correlation
0.0664	0.0200	serial correlation
0.0532	0.2695	heteroskedasticity, serial correlation
0.2803	0.0127	heteroskedasticity, serial correlation

Influence diagnostics are reported in S17 Influence and materially affect the PMI interpretation.

Model	Variable	N	Beta	OLS p
Model 4 baseline	china_pmi_lag3	78	0.0139	0.0341
Model 4 baseline	dln_brent	78	0.1356	0.1483
Model 4 baseline	dln_cny_rub	78	-0.1223	0.4898
Model 4 + month FE	china_pmi_lag3	78	0.0173	0.0061
Model 4 + month FE	dln_brent	78	0.2168	0.0160
Model 4 + month FE	dln_cny_rub	78	-0.3668	0.0400
Model 4 + month FE, no 2020-05	china_pmi_lag3	77	0.0060	0.5942
Model 4 + month FE, no 2020-05	dln_brent	77	0.2510	0.0082
Model 4 + month FE, no 2020-05	dln_cny_rub	77	-0.3622	0.0419
Import aligned	dln_cny_rub	80	-0.0881	0.8023
Import aligned	d_russia_ip_yoy	80	-0.0017	0.8469
Total trade + month FE	china_pmi_lag3	78	0.0056	0.2391
Total trade + month FE	dln_brent	78	-0.0218	0.7495
Total trade + month FE	dln_cny_rub	78	-0.2950	0.0338

Bandwidth policy

HAC(3) SE	HAC(3) p	HAC(12) SE	HAC(12) p
0.0052	0.0096	0.0048	0.0052
0.0730	0.0674	0.0642	0.0380
0.1480	0.4114	0.1150	0.2911
0.0049	0.0008	0.0036	0.0000
0.0638	0.0012	0.0482	0.0000
0.1155	0.0023	0.1003	0.0005
0.0087	0.4925	0.0054	0.2673
0.0673	0.0004	0.0469	0.0000
0.1093	0.0015	0.0937	0.0003
0.4040	0.8279	0.3975	0.8251
0.0134	0.9008	0.0134	0.9007
0.0041	0.1741	0.0044	0.2035
0.0486	0.6549	0.0553	0.6944
0.0818	0.0006	0.0656	0.0000

Inference note
HAC3 primary; HAC12 sensitivity only
HAC3 primary; HAC12 sensitivity only
HAC3 primary; HAC12 sensitivity only
HAC3 primary; HAC12 sensitivity only
HAC3 primary; HAC12 sensitivity only
HAC3 primary; HAC12 sensitivity only
PMI becomes non-significant when dominant observation is removed
HAC3 primary; HAC12 sensitivity only
HAC3 primary; HAC12 sensitivity only
HAC3 primary; HAC12 sensitivity only
HAC3 primary; HAC12 sensitivity only
HAC3 primary; HAC12 sensitivity only
HAC3 primary; HAC12 sensitivity only
HAC3 primary; HAC12 sensitivity only

Use HAC(3) as primary monthly inference. HAC(12) is a sensitivity check and is not ranked as 'stronger evidence' when p-values are smaller.

Check	Specification	N
R1 strict COVID-excluded	Model 4; exclude 2020 + Jan-Mar 2021	63
R2 strict remove 2022	Model 4; exclude 2022 + Jan-Mar 2023	63
R3 YoY	Exports log-YoY ~ PMI lag3 + Brent log-YoY + FX log-YoY	69
R3 YoY	Exports log-YoY ~ PMI lag3 + Brent log-YoY + FX log-YoY	69
R3 YoY	Exports log-YoY ~ PMI lag3 + Brent log-YoY + FX log-YoY	69
R4 PMI lag choice	Common sample N=78	78
R4 PMI lag choice	Common sample N=78	78
R4 PMI lag choice	Common sample N=78	78
R5 separate trade sides	Total trade FX×Post	80
R5 separate trade sides	Exports FX×Post	80
R5 separate trade sides	Imports FX×Post	80
R6 influence	Exclude only 2020-05	77
R6 influence	Month FE + exclude 2020-05	77
R7 seasonality	Model 4 + month FE	78
R7 seasonality	Model 4 + month FE	78
R7 seasonality	Model 4 + month FE	78

Key coefficient	Beta	OLS p	HAC(3) p	HAC(12) p
PMI lag3	-0.0030	0.8300	0.8017	0.7577
PMI lag3	0.0171	0.0101	0.0000	0.0000
PMI lag3	0.0035	0.7221	0.7387	0.7101
Brent log YoY	0.3663	0.0000	0.0000	0.0000
CNY/RUB log YoY	-0.2960	0.0052	0.0289	0.0580
PMI lag1	0.0007	0.9167	0.8146	0.7584
PMI lag2	0.0095	0.1352	0.0004	0.0000
PMI lag3	0.0113	0.0733	0.0010	0.0003
FX×Post	-0.6148	0.3238	0.1589	0.0638
FX×Post	0.4233	0.4977	0.2567	0.1856
FX×Post	-2.7098	0.0209	0.0205	0.0004
PMI lag3	0.0035	0.7691	0.7183	0.6454
PMI lag3	0.0060	0.5942	0.4925	0.2673
china_pmi_lag3	0.0173	0.0061	0.0008	0.0000
dln_brent	0.2168	0.0160	0.0012	0.0000
dln_cny_rub	-0.3668	0.0400	0.0023	0.0005

Validity / result	Interpretation
Valid strict exclusion	PMI disappears in the COVID-excluded sample
Valid strict exclusion	PMI remains when 2022 shock year is removed
Diagnostic only: nonstationary outcome/FX	ADF p(exports YoY)=0.085; ADF p(FX YoY)=0.200
Diagnostic only within nonstationary YoY equation	ADF p(exports YoY)=0.085; ADF p(FX YoY)=0.200
Diagnostic only: nonstationary outcome/FX	ADF p(exports YoY)=0.085; ADF p(FX YoY)=0.200
Valid common-sample comparison	AIC=-126.11
Valid common-sample comparison	AIC=-128.41
Valid common-sample comparison	AIC=-129.42
Full-sample interaction	No 5% HAC3 interaction change
Full-sample interaction	No 5% HAC3 interaction change
Full-sample interaction	Strict COVID-excluded HAC3 p=0.108
Valid leave-one-out sensitivity	PMI becomes non-significant
Valid leave-one-out sensitivity	PMI becomes non-significant
Valid seasonal-control robustness	See S19 Seasonality
Valid seasonal-control robustness	See S19 Seasonality
Valid seasonal-control robustness	See S19 Seasonality

Result	Headline
1	Nominal Russia–China trade value rose sharply after 2022
2	PMI lag 3 ranks best, but there is no robust evidence of a stable PMI–export relationship
3	Seasonality is essential, but some coefficient inference is seasonal-specification-sensitive
4	Structural-change evidence is concentrated on the import side and is sensitive to COVID and seasonal treatment
5	The post-2022 FX interaction for imports is suggestive, but its magnitude is not precisely identified

Annual sums of the frozen monthly GACC vintage (USD bn)

Year	Exports
2019	60.298
2020	57.190
2021	78.351
2022	112.225
2023	127.627
2024	128.571
2025 Jan–Sep	89.426

Core evidence

Average monthly total trade: $10.10bn pre-2022 vs $18.55bn post-2022 (+83.7%). Exports +87.0%; imports +79.9%.

Common-sample lag3 AIC=-129.42; baseline Model 4 PMI β=0.0139, HAC3 p=0.010.

Month fixed effects raise export Model 4 adj. R^2 from 0.038 to 0.247 and are jointly significant. Brent: β=0.217, HAC3 p=0.001 with month FE; Fourier β=0.173, p=0.029. FX: β=-0.367, p=0.002 with month FE, but Fourier β=-0.155, p=0.393.

At the primary Jan-2022 break: export HAC3 Wald p=0.260 (month FE p=0.024), but after strict COVID-excluded sample p=0.568 / 0.564. Import aligned p=0.058 (month FE p=0.001); after strict COVID-excluded sample p=0.062 / 0.017.

Full sample import FX×Post: β=-2.710, HAC3 p=0.020, max centered VIF≈10.3. Strict COVID-excluded: β=-3.500, HAC3 p=0.108, max centered VIF≈93.4.

Imports
49.448
50.625
67.596
76.265
111.441
115.552
73.694

Robustness / limitation
Descriptive level comparison; values are nominal USD and the post sample includes 2025 Jan–Sep.
2020-05 leverage=0.761, Cook's D=0.845; excluding only 2020-05 gives HAC3 p=0.718; strict COVID-excluded p=0.802.
Oil's positive association is reproduced by Fourier seasonality but weakens in the strict COVID-excluded sample. The FX result is not invariant to the seasonal-control method.
Export break evidence does not survive the COVID exclusion. Import-side evidence survives in the month-FE specification. Total-trade tests are supplementary because ADF/KPSS give mixed stationarity evidence.
After the COVID exclusion statistical precision collapses because multicollinearity becomes extreme; the loss of significance is therefore not a clean null result.

Total trade
109.745
107.815
145.947
188.490
239.068
244.123
163.120

Recommended use in paper

Lead result. Describe a large shift in trade value, not a proven causal structural break.

Use lag3 for specification consistency, but state that the PMI association is COVID/influence-sensitive and not robust.

Treat seasonality as a core part of the model. Present oil as the more reproducible seasonal-control result; describe FX as specification-sensitive.

Main structural conclusion: post-2022 parameter instability is more credible for imports than for exports; Jan-2022 is the pre-specified primary break.

Use as suggestive evidence of a changed import–FX relationship, not as a stable point estimate or causal effect.

YoY total growth
-1.8%
35.4%
29.2%
26.8%
2.1%

Date	PMI lag3 residual	Date	Model 3 export residual
2019-04	0.1277	2019-04	0.1183
2019-05	0.0258	2019-05	0.0273
2019-06	-0.0323	2019-06	-0.0195
2019-07	-0.1253	2019-07	-0.1254
2019-08	0.0374	2019-08	0.0497
2019-09	0.0007	2019-09	-0.0068
2019-10	0.0467	2019-10	0.0542
2019-11	0.0414	2019-11	0.0344
2019-12	-0.0091	2019-12	-0.0177
2020-01	0.0925	2020-01	0.1017
2020-02	-0.1818	2020-02	-0.1641
2020-03	-0.0552	2020-03	0.0209
2020-04	-0.1782	2020-04	-0.1014
2020-05	-0.0206	2020-05	-0.0485
2020-06	0.1289	2020-06	0.0793
2020-07	0.1073	2020-07	0.0949
2020-08	-0.0717	2020-08	-0.0785
2020-09	0.1533	2020-09	0.1629
2020-10	-0.1834	2020-10	-0.1843
2020-11	-0.0667	2020-11	-0.0782
2020-12	0.1206	2020-12	0.0942
2021-01	-0.0815	2021-01	-0.0984
2021-02	-0.0231	2021-02	-0.0469
2021-03	0.1881	2021-03	0.1758
2021-04	-0.1175	2021-04	-0.1200
2021-05	-0.0126	2021-05	-0.0224
2021-06	0.0516	2021-06	0.0371
2021-07	0.0476	2021-07	0.0405
2021-08	0.0235	2021-08	0.0289
2021-09	-0.0485	2021-09	-0.0585
2021-10	0.0731	2021-10	0.0557
2021-11	0.0722	2021-11	0.0757
2021-12	0.0038	2021-12	0.0167
2022-01	-0.0965	2022-01	-0.1163
2022-02	-0.2085	2022-02	-0.2254
2022-03	0.2122	2022-03	0.1848
2022-04	0.1106	2022-04	0.1259
2022-05	0.1286	2022-05	0.1165
2022-06	-0.0597	2022-06	-0.0699
2022-07	0.0435	2022-07	0.0628
2022-08	0.1039	2022-08	0.1196
2022-09	-0.0667	2022-09	-0.0520
2022-10	-0.0429	2022-10	-0.0461
2022-11	0.0238	2022-11	0.0278
2022-12	-0.1733	2022-12	-0.1570
2023-01	0.0295	2023-01	0.0285
2023-02	0.0134	2023-02	0.0181

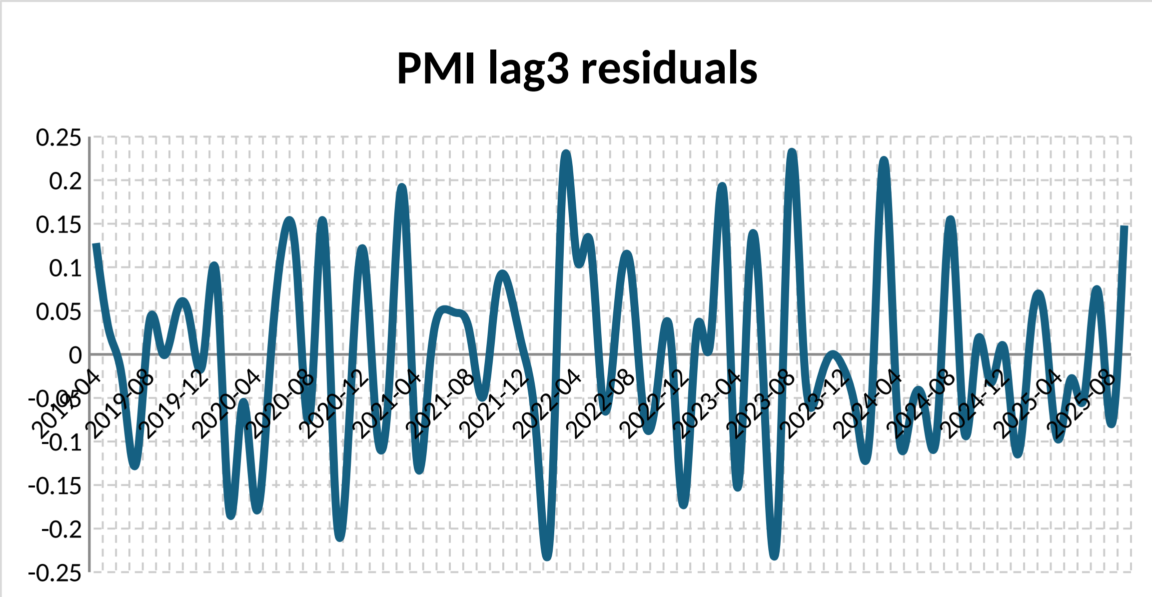
2023-03	0.1857	2023-03	0.2004
2023-04	-0.1518	2023-04	-0.1631
2023-05	0.1201	2023-05	0.1287
2023-06	-0.0371	2023-06	-0.0414
2023-07	-0.2073	2023-07	-0.2150
2023-08	0.2238	2023-08	0.2165
2023-09	-0.0006	2023-09	-0.0101
2023-10	-0.0429	2023-10	-0.0368
2023-11	-0.0009	2023-11	0.0118
2023-12	-0.0167	2023-12	-0.0085
2024-01	-0.0752	2024-01	-0.0787
2024-02	-0.0786	2024-02	-0.0831
2024-03	0.2232	2024-03	0.2222
2024-04	-0.0677	2024-04	-0.0732
2024-05	-0.0681	2024-05	-0.0529
2024-06	-0.0567	2024-06	-0.0601
2024-07	-0.0837	2024-07	-0.0900
2024-08	0.1552	2024-08	0.1641
2024-09	-0.0860	2024-09	-0.0736
2024-10	0.0148	2024-10	0.0130
2024-11	-0.0326	2024-11	-0.0282
2024-12	0.0071	2024-12	0.0082
2025-01	-0.1149	2025-01	-0.1254
2025-02	0.0269	2025-02	0.0326
2025-03	0.0430	2025-03	0.0474
2025-04	-0.0970	2025-04	-0.0860
2025-05	-0.0280	2025-05	-0.0212
2025-06	-0.0487	2025-06	-0.0647
2025-07	0.0740	2025-07	0.0770
2025-08	-0.0800	2025-08	-0.0727
2025-09	0.1479	2025-09	0.1481

Date	Model 4 export residual	Date	Import aligned residual
2019-04	0.1172	2019-02	-0.4556
2019-05	0.0246	2019-03	0.2513
2019-06	-0.0219	2019-04	0.0311
2019-07	-0.1270	2019-05	0.0030
2019-08	0.0504	2019-06	0.0425
2019-09	-0.0091	2019-07	0.1201
2019-10	0.0529	2019-08	-0.0217
2019-11	0.0348	2019-09	-0.0027
2019-12	-0.0195	2019-10	-0.0379
2020-01	0.1008	2019-11	0.0188
2020-02	-0.1621	2019-12	0.0667
2020-03	0.0355	2020-01	-0.1039
2020-04	-0.1029	2020-02	-1.0381
2020-05	-0.0522	2020-03	0.6809
2020-06	0.0749	2020-04	0.2225
2020-07	0.0998	2020-05	-0.0625
2020-08	-0.0730	2020-06	0.0360
2020-09	0.1677	2020-07	0.2004
2020-10	-0.1800	2020-08	0.0699
2020-11	-0.0771	2020-09	-0.0960
2020-12	0.0914	2020-10	-0.0246
2021-01	-0.0967	2020-11	0.0057
2021-02	-0.0464	2020-12	0.0997
2021-03	0.1750	2021-01	-0.1213
2021-04	-0.1178	2021-02	-0.1448
2021-05	-0.0242	2021-03	-0.0059
2021-06	0.0351	2021-04	0.2153
2021-07	0.0415	2021-05	-0.0833
2021-08	0.0278	2021-06	0.2288
2021-09	-0.0593	2021-07	-0.0983
2021-10	0.0540	2021-08	0.1186
2021-11	0.0781	2021-09	0.0374
2021-12	0.0183	2021-10	-0.1908
2022-01	-0.1111	2021-11	0.1653
2022-02	-0.2243	2021-12	0.2082
2022-03	0.2212	2022-01	-0.0981
2022-04	0.0891	2022-02	-0.3558
2022-05	0.0864	2022-03	-0.3024
2022-06	-0.0809	2022-04	-0.0503
2022-07	0.0637	2022-05	0.0985
2022-08	0.1202	2022-06	0.1288
2022-09	-0.0578	2022-07	0.2977
2022-10	-0.0471	2022-08	0.1586
2022-11	0.0272	2022-09	-0.0173
2022-12	-0.1449	2022-10	-0.0858
2023-01	0.0380	2022-11	0.0330
2023-02	0.0237	2022-12	0.1297

2023-03	0.2038	2023-01	-0.0875
2023-04	-0.1553	2023-02	-0.1547
2023-05	0.1235	2023-03	0.2613
2023-06	-0.0383	2023-04	0.0647
2023-07	-0.2056	2023-05	-0.0465
2023-08	0.2217	2023-06	0.0214
2023-09	-0.0091	2023-07	0.0710
2023-10	-0.0368	2023-08	-0.1046
2023-11	0.0037	2023-09	0.0282
2023-12	-0.0069	2023-10	-0.1145
2024-01	-0.0827	2023-11	0.1542
2024-02	-0.0799	2023-12	0.0289
2024-03	0.2223	2024-01	-0.1588
2024-04	-0.0723	2024-02	-0.1962
2024-05	-0.0565	2024-03	-0.0131
2024-06	-0.0655	2024-04	0.0819
2024-07	-0.0906	2024-05	0.0788
2024-08	0.1634	2024-06	0.0653
2024-09	-0.0656	2024-07	0.0034
2024-10	0.0195	2024-08	0.0162
2024-11	-0.0252	2024-09	0.0882
2024-12	0.0078	2024-10	-0.0219
2025-01	-0.1274	2024-11	-0.1014
2025-02	0.0223	2024-12	0.1177
2025-03	0.0389	2025-01	-0.2343
2025-04	-0.0908	2025-02	-0.4757
2025-05	-0.0247	2025-03	0.2789
2025-06	-0.0667	2025-04	0.0300
2025-07	0.0771	2025-05	-0.0100
2025-08	-0.0714	2025-06	0.0129
2025-09	0.1529	2025-07	0.0822
		2025-08	-0.0693
		2025-09	0.0317

Date	Total FX interaction residual	Date	Total PMI interaction residual
2019-02	-0.3090	2019-04	0.0770
2019-03	0.1595	2019-05	0.0129
2019-04	0.0820	2019-06	-0.0121
2019-05	0.0197	2019-07	-0.0224
2019-06	0.0048	2019-08	0.0014
2019-07	-0.0106	2019-09	-0.0084
2019-08	-0.0027	2019-10	-0.0002
2019-09	-0.0001	2019-11	0.0255
2019-10	0.0060	2019-12	0.0169
2019-11	0.0254	2020-01	-0.0012
2019-12	0.0273	2020-02	-0.4697
2020-01	-0.0004	2020-03	0.1587
2020-02	-0.4715	2020-04	-0.0080
2020-03	0.1083	2020-05	0.0035
2020-04	-0.0048	2020-06	0.0668
2020-05	-0.1060	2020-07	0.1388
2020-06	0.1094	2020-08	-0.0132
2020-07	0.1353	2020-09	0.0130
2020-08	-0.0212	2020-10	-0.1192
2020-09	0.0089	2020-11	-0.0468
2020-10	-0.1188	2020-12	0.0922
2020-11	-0.0354	2021-01	-0.1112
2020-12	0.1229	2021-02	-0.0958
2021-01	-0.0976	2021-03	0.0873
2021-02	-0.0713	2021-04	0.0105
2021-03	0.1134	2021-05	-0.0595
2021-04	0.0199	2021-06	0.1220
2021-05	-0.0418	2021-07	-0.0318
2021-06	0.1525	2021-08	0.0572
2021-07	-0.0196	2021-09	-0.0210
2021-08	0.0744	2021-10	-0.0577
2021-09	-0.0042	2021-11	0.1023
2021-10	-0.0416	2021-12	0.0921
2021-11	0.0996	2022-01	-0.1058
2021-12	0.0870	2022-02	-0.2615
2022-01	-0.0912	2022-03	0.0232
2022-02	-0.2675	2022-04	0.0873
2022-03	0.0693	2022-05	0.1445
2022-04	0.0229	2022-06	0.0046
2022-05	0.0880	2022-07	0.0900
2022-06	-0.0107	2022-08	0.1300
2022-07	0.1279	2022-09	-0.0244
2022-08	0.1326	2022-10	-0.0702
2022-09	-0.0416	2022-11	0.0267
2022-10	-0.0616	2022-12	-0.0217
2022-11	0.0299	2023-01	-0.0345
2022-12	-0.0090	2023-02	-0.0950

2023-01	-0.0123	2023-03	0.1623
2023-02	-0.0600	2023-04	-0.0393
2023-03	0.2103	2023-05	0.1105
2023-04	-0.0345	2023-06	0.0443
2023-05	0.0561	2023-07	-0.0776
2023-06	0.0136	2023-08	0.0486
2023-07	-0.0559	2023-09	0.0031
2023-08	0.0701	2023-10	-0.0770
2023-09	0.0147	2023-11	0.0801
2023-10	-0.0712	2023-12	0.0232
2023-11	0.0672	2024-01	-0.1129
2023-12	0.0175	2024-02	-0.1358
2024-01	-0.1168	2024-03	0.1199
2024-02	-0.1268	2024-04	-0.0130
2024-03	0.1303	2024-05	-0.0101
2024-04	-0.0046	2024-06	0.0362
2024-05	-0.0063	2024-07	-0.0196
2024-06	0.0094	2024-08	0.0900
2024-07	-0.0325	2024-09	-0.0006
2024-08	0.0917	2024-10	-0.0084
2024-09	0.0152	2024-11	-0.0730
2024-10	0.0058	2024-12	0.0672
2024-11	-0.0592	2025-01	-0.1524
2024-12	0.0644	2025-02	-0.1625
2025-01	-0.1629	2025-03	0.1530
2025-02	-0.1886	2025-04	-0.0477
2025-03	0.1326	2025-05	-0.0012
2025-04	-0.0461	2025-06	0.0040
2025-05	-0.0150	2025-07	0.0695
2025-06	-0.0130	2025-08	-0.0729
2025-07	0.0802	2025-09	0.0990
2025-08	-0.0680		
2025-09	0.1059		


PMI lag3 residuals
0.25
0.2
0.15
0.1
0.05
0
-0.05
-0.1
-0.15
-0.2
-0.25
2019-04
2019-08
2019-12
2020-04
2020-08
2020-12
2021-04
2021-08
2021-12
2022-04
2022-08
2022-12
2023-04
2023-08
2023-12
2024-04
2024-08
2024-12
2025-04
2025-08


Model 3 export residuals
0.25
0.2
0.15
0.1
0.05
0
-0.05
-0.1
-0.15
-0.2
-0.25
2019-04
2019-08
2019-12
2020-04
2020-08
2020-12
2021-04
2021-08
2021-12
2022-04
2022-08
2022-12
2023-04
2023-08
2023-12
2024-04
2024-08
2024-12
2025-04
2025-08


Model 4 export residuals
0.25
0.2
0.15
0.1
0.05
0
-0.05
-0.1
-0.15
-0.2
-0.25
2019-04
2019-08
2019-12
2020-04
2020-08
2020-12
2021-04
2021-08
2021-12
2022-04
2022-08
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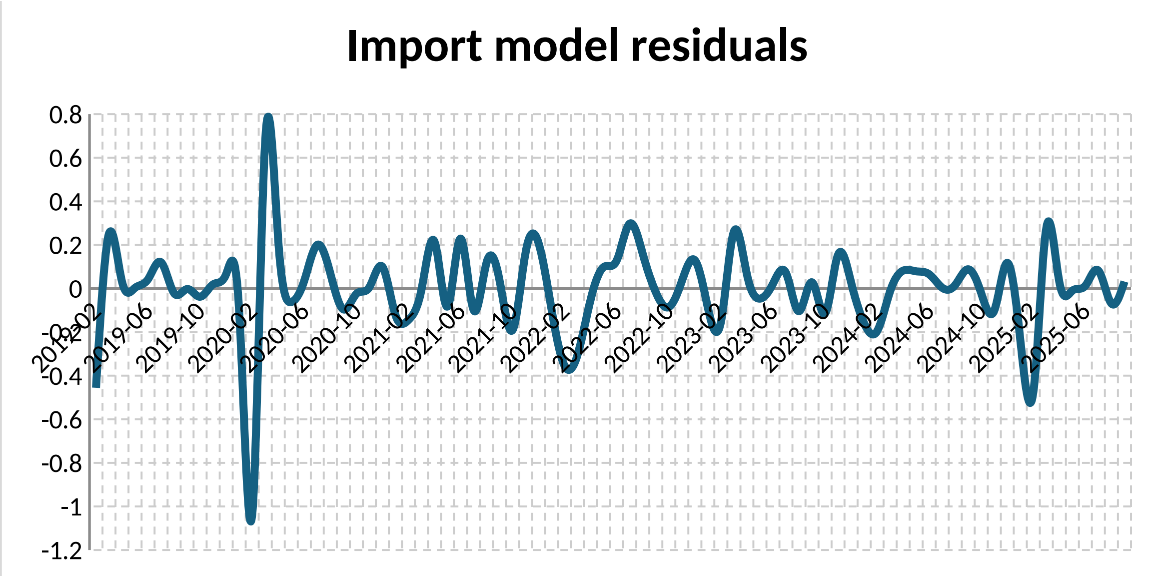
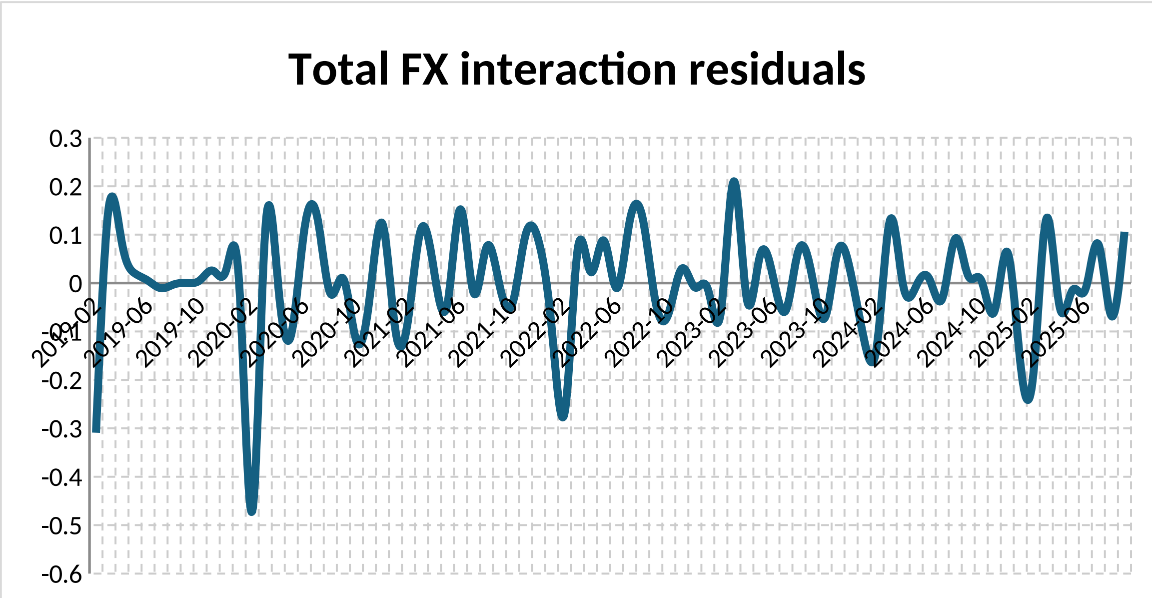
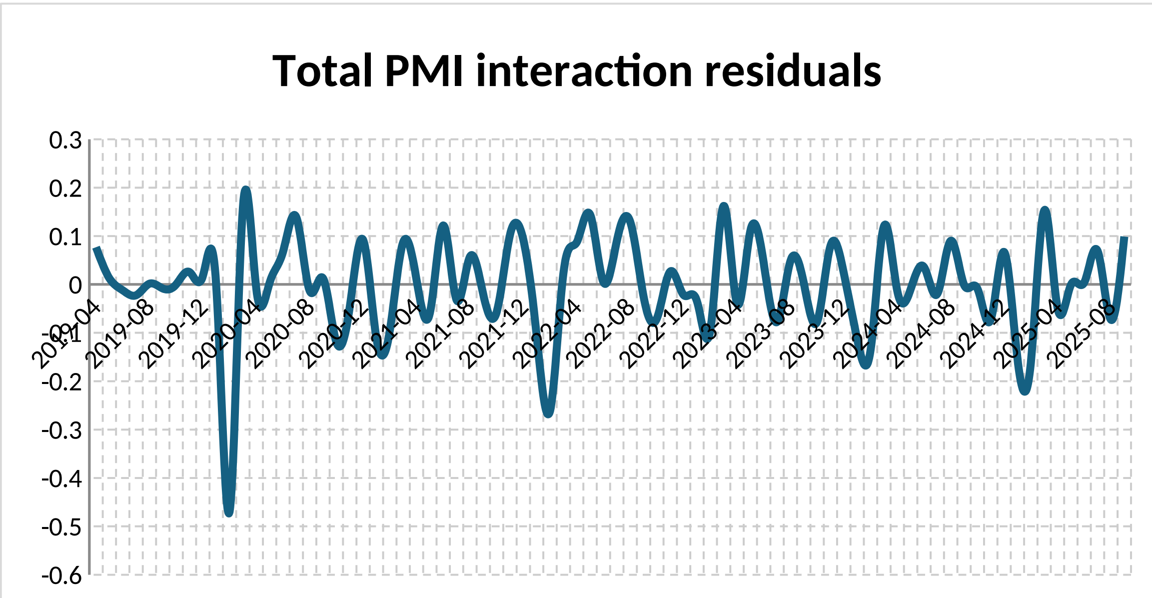
2025-04
2025-08


Import model residuals
0.8
0.6
0.4
0.2
0
-0.4
-0.6
-0.8
-1
-1.2
2019-06
2019-10
2020-02
2020-06
2020-10
2021-02
2021-06
2021-10
2022-02
2022-06
2022-10
2023-02
2023-06
2023-10
2024-02
2024-06
2024-10
2025-02
2025-06


Total FX interaction residuals
0.3
0.2
0.1
0
-0.2
-0.3
-0.4
-0.5
-0.6
2019-06
2019-10
2020-02
2020-06
2020-10
2021-02
2021-06
2021-10
2022-02
2022-06
2022-10
2023-02
2023-06
2023-10
2024-02
2024-06
2024-10
2025-02
2025-06


Total PMI interaction residuals
0.3
0.2
0.1
0
-0.2
-0.3
-0.4
-0.5
-0.6
2019-08
2019-12
2020-04
2020-08
2020-12
2021-04
2021-08
2021-12
2022-04
2022-08
2022-12
2023-04
2023-08
2023-12
2024-04
2024-08
2024-12
2025-04
2025-08

Joint null: Post coefficient and all slope interactions = 0. Wald χ² is primary; small-sample F p-valu

Model	Break	N	Restrictions q	Wald p
Export Model 4	2022-01	78	4	0.2599
Import aligned	2022-01	80	3	0.0580
Total Trade Main	2022-01	78	4	0.0288
Export Model 4	2022-03	78	4	0.2831
Import aligned	2022-03	80	3	0.1477
Total Trade Main	2022-03	78	4	0.2073
Export Model 4	2022-06	78	4	0.0061
Import aligned	2022-06	80	3	0.5333
Total Trade Main	2022-06	78	4	0.0357

Overall: formal break evidence exists, but it is date/model/specification-sensitive. Do not summarize
Stationarity caveat: export/import log differences are supported as stationary; total-trade log differe

COVID-Excluded Structural-Break Sensitivity — remove 2020 + Jan–Mar 2021
This sensitivity removes 2020 and the following three months so PMI(t−3) and monthly first differen

Model	Break	N	Wald p full	Wald p + month FE full
Export Model 4	2022-01	63	0.2599	0.0238
Import aligned	2022-01	65	0.0580	0.0012
Total Trade Main	2022-01	63	0.0288	0.0002
Export Model 4	2022-03	63	0.2831	0.0737
Import aligned	2022-03	65	0.1477	0.0038
Total Trade Main	2022-03	63	0.2073	0.0008
Export Model 4	2022-06	63	0.0061	0.1350
Import aligned	2022-06	65	0.5333	0.0576
Total Trade Main	2022-06	63	0.0357	0.0006

Primary Structural-Break Inference — HAC(3)-Robust Joint Wald Tests

e is shown as sensitivity. Month fixed effects are included in the second pair of columns.

Small-sample F p	Wald p + month FE	F p + month FE
0.2712	0.0238	0.0332
0.0666	0.0012	0.0025
0.0374	0.0002	0.0007
0.2939	0.0737	0.0877
0.1575	0.0038	0.0065
0.2196	0.0008	0.0022
0.0100	0.1350	0.1503
0.5368	0.0576	0.0676
0.0451	0.0006	0.0018

the evidence as either universal instability or universal stability.

nce has mixed ADF/KPSS evidence. Prefer side-specific export/import break evidence for interpretation.

ces do not carry excluded-year information into 2021.

Wald p strict COVID-excluded	Wald p + month FE strict COVID-excluded	COVID sensitivity
0.5679	0.5636	Break evidence disappears after COVID exclusion
0.0620	0.0173	Some break evidence survives COVID exclusion
0.0156	0.0026	Some break evidence survives COVID exclusion
0.6128	0.9208	No robust 5% break evidence
0.5133	0.0173	Some break evidence survives COVID exclusion
0.2349	0.0556	Break evidence disappears after COVID exclusion
0.2163	0.6755	Break evidence disappears after COVID exclusion
0.5293	0.1247	No robust 5% break evidence
0.0456	0.0751	Some break evidence survives COVID exclusion

Primary reading	Specification sensitivity
Break evidence	Changes with seasonal control
Break evidence	Changes with seasonal control
Break evidence	Stable across seasonal control
No 5% break evidence	Stable across seasonal control
Break evidence	Changes with seasonal control
Break evidence	Changes with seasonal control
Break evidence	Changes with seasonal control
No 5% break evidence	Stable across seasonal control
Break evidence	Stable across seasonal control

Primary interpretation	Break-date role
Export break evidence is not COVID-robust	Primary ex ante
Import-side break is strongest with month FE	Primary ex ante
Supplementary only: total-trade stationarity evidence is mixed	Primary ex ante
Export break evidence is not COVID-robust	Alternative date
Import-side break is strongest with month FE	Alternative date
Supplementary only: total-trade stationarity evidence is mixed	Alternative date
Export break evidence is not COVID-robust	Alternative date
Import break evidence weak after purge	Alternative date
Supplementary only: total-trade stationarity evidence is mixed	Alternative date

Influence Diagnostics

Cook's D and leverage are added because the PMI lag-3 result is dominated by an extreme COVID-period obs

Rank	Date	Cook's D	Leverage	PMI(t-3)
1	2020-05	0.8455	0.7614	35.7000
2	2022-03	0.6982	0.3005	50.3000
3	2020-04	0.1140	0.2563	50.0000
4	2022-04	0.1022	0.2840	50.1000
5	2023-03	0.0564	0.0525	47.0000
6	2022-05	0.0518	0.1939	50.2000
7	2023-07	0.0357	0.0339	49.2000
8	2022-02	0.0307	0.0250	50.1000
9	2023-08	0.0290	0.0241	48.8000
10	2022-12	0.0284	0.0522	50.1000

Leave-one-out / COVID sensitivity

Specification	N	PMI beta	OLS p	HAC(3) p
Baseline Model 4	78	0.0139	0.0341	0.0096
Exclude only 2020-05	77	0.0035	0.7691	0.7183
Month FE Model 4	78	0.0173	0.0061	0.0008
Month FE, exclude 2020-05	77	0.0060	0.5942	0.4925
Strict COVID-excluded (remove 2020 + Jan-Mar 2021)	63	-0.0030	0.8300	0.8017
Month FE + strict COVID-excluded	63	0.0054	0.6877	0.6416

; — Export Model 4

;ervation.

Residual	Flag	Interpretation
-0.0522	HIGH	Dominant influence on PMI coefficient
0.2212	HIGH	
-0.1029	HIGH	
0.0891	HIGH	
0.2038	HIGH	
0.0864	HIGH	
-0.2056		
-0.2243		
0.2217		
-0.1449		

Adj R^2	Conclusion
0.0384	PMI association survives
0.0138	PMI association does not survive
0.2467	PMI association survives
0.2321	PMI association does not survive
-0.0445	PMI association does not survive
0.2060	PMI association does not survive

January is the omitted month; 11 monthly dummies are included. Month effects are jointly tested with HA

Model	Variable	N	Beta	HAC(3) p
Export Model 4	china_pmi_lag3	78	0.0173	0.0008
Export Model 4	dln_brent	78	0.2168	0.0012
Export Model 4	dln_cny_rub	78	-0.3668	0.0023
Import aligned	dln_cny_rub	80	-0.2004	0.6227
Import aligned	d_russia_ip_yoy	80	-0.0016	0.8667
Total Trade Main	china_pmi_lag3	78	0.0056	0.1741
Total Trade Main	dln_brent	78	-0.0218	0.6549
Total Trade Main	dln_cny_rub	78	-0.2950	0.0006

Seasonality Robustness — Month-of-Year Fixed Effe

C(3)-robust Wald tests.

Adj R^2 baseline	Adj R^2 + month FE	Month-FE joint Wald p
0.0384	0.2467	0.0002
0.0384	0.2467	0.0002
0.0384	0.2467	0.0002
-0.0245	0.4309	0.0000
-0.0245	0.4309	0.0000
-0.0015	0.5020	0.0000
-0.0015	0.5020	0.0000
-0.0015	0.5020	0.0000

cts

Main implication	Caveat
Seasonality strengthens full-sample PMI coefficient	Still disappears after excluding 2020-05 / in the strict COVID-excluded sample
Oil becomes positive/significant in full seasonal sample	Not statistically significant in the strict COVID-excluded sample (remove 2020 + Jan-Mar 2021)
FX becomes negative/significant	Remains HAC3-significant in seasonal strict COVID-excluded check

Fourier specification uses annual seasonal sine/cosine harmonics (k=1,2). It is a robustness check, not a

Model	Variable	N	β baseline	HAC3 p baseline
Export Model 4	china_pmi_lag3	78	0.0139	0.0096
Export Model 4	dln_brent	78	0.1356	0.0674
Export Model 4	dln_cny_rub	78	-0.1223	0.4114
Import aligned	dln_cny_rub	80	-0.0881	0.8279
Import aligned	d_russia_ip_yoy	80	-0.0017	0.9008
Total Trade Main	china_pmi_lag3	78	0.0042	0.3391
Total Trade Main	dln_brent	78	-0.1021	0.1608
Total Trade Main	dln_cny_rub	78	-0.1450	0.1056

Alternative Seasonality Check — Month Fixed Effects vs Fourier Seasonality

replacement for month fixed effects.

Adj R^2 baseline	β month FE	HAC3 p month FE	Adj R^2 month FE	β Fourier	HAC3 p Fourier
0.0384	0.0173	0.0008	0.2467	0.0152	0.0048
0.0384	0.2168	0.0012	0.2467	0.1732	0.0288
0.0384	-0.3668	0.0023	0.2467	-0.1555	0.3927
-0.0245	-0.2004	0.6227	0.4309	0.2933	0.5723
-0.0245	-0.0016	0.8667	0.4309	-0.0036	0.7626
-0.0015	0.0056	0.1741	0.5020	0.0051	0.3518
-0.0015	-0.0218	0.6549	0.5020	-0.1034	0.1391
-0.0015	-0.2950	0.0006	0.5020	-0.0070	0.9526

Adj R^2 Fourier	Interpretation
0.0362	PMI remains significant under Fourier but still fails influence/COVID robustness
0.0362	Oil remains positive/significant under Fourier; still COVID-sensitive in the strict COVID-excluded sample
0.0362	FX significance depends on seasonal specification; month FE result is not reproduced by Fourier terms
0.0968	Seasonal fit changes, core coefficient remains statistically weak
0.0968	Seasonal fit changes, core coefficient remains statistically weak
0.0664	Use only as sensitivity because total-trade stationarity tests are mixed
0.0664	Use only as sensitivity because total-trade stationarity tests are mixed
0.0664	Use only as sensitivity because total-trade stationarity tests are mixed

Stationarity Cross-C

ADF null: unit root. KPSS null: stationarity. KPSS p=0.10 means the statistic is beyond the tabulated upper p-

Series	N	ADF p	ADF reading	KPSS p
Export log difference	80	0.0000	Reject unit root	0.1000
Import log difference	80	0.0001	Reject unit root	0.1000
Total-trade log difference	80	0.3012	Do not reject unit root	0.1000
Δ Russia IP YoY	80	0.0009	Reject unit root	0.1000

heck — ADF and KPSS

·value bound (fail to reject stationarity).

KPSS reading	Combined reading	Use in main analysis
Fail to reject stationarity	Stationarity supported	Core regression acceptable
Fail to reject stationarity	Stationarity supported	Core regression acceptable
Fail to reject stationarity	Mixed / inconclusive	Use with caveat / sensitivity only
Fail to reject stationarity	Stationarity supported	Aligned activity control acceptable