

Empirical geographic market definition for antitrust: the case of Russian cement market

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Introduction

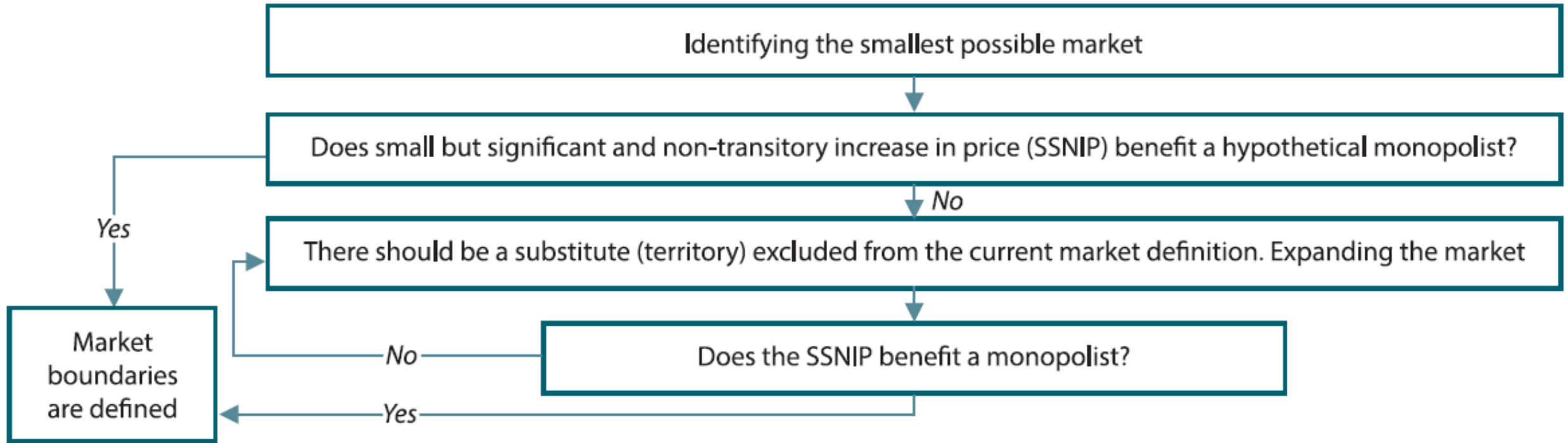
- The purpose of research is to develop and test a methodology for geographic market definition based on actual data for implementing antitrust laws.
- The uniqueness of the work lies in testing the effectiveness of the unfairly forgotten Elzinga-Hogarty test on actual statistical data.
- This research proves the falsity of the assumptions underlying the regulatory authority's decisions without due regard for the structure of product flows between federal districts.
- Our approach meets the managerial goals and objectives both in state regulation and at the level of firm and allows:
 - improving the validity/conclusiveness of decisions made in the field of antitrust enforcement without increasing their complexity;
 - strengthening the methodological part of antitrust.

Geographic market definition methods

In accordance with para 4.5 of the Order No. 220, the geographic product market can be defined through:

- 1) the SSNIP test (para 4.6 of the Order No. 220);
- 2) identification of (a) actual sales areas (buyer locations), and (b) economic entities (sellers) making sales in the given product market;
- 3) the combination of methods (1) and (2) or any other method that unambiguously localizes sales areas where sellers compete with each other in selling goods to predetermined buyers.

The SSNIP test



Disadvantages:

- 1) inapplicability for those markets, where goods are sold through direct contracts that do not allow estimating the price level and the size of consumption on the basis of open market data;
- 2) labour intensity (resource and time) of using the survey method with a significant number of market participants.

The Elzinga-Hogarty (E-H) test

$$\text{LIFO} = 1 - (\text{import}/\text{consumption})$$

$$\text{LOFI} = 1 - (\text{export}/\text{production})$$

The general idea of this combined test lies in expanding the possible market boundaries until both indicators are close to 1, which characterizes the situation where imports and exports for the territory defined as the geographic market are close to zero.

Disadvantages:

- its results are contingent on the selected reference point, i.e., the E-H test-based geographic market definition varies according to the pre-defined relevant market;
- interpretation of imports and exports is not always applicable to service markets, which imposes restrictions on the use of the test in certain industries.

Analysis of price indicators

- The idea behind correlation criterion is that if goods belong to the same market, i.e., they exert competitive pressure on each other, then the dynamics of their prices cannot differ significantly. Then, with change in the price of one good, the price of the other good shifts accordingly.
- According to the criterion of relative price stability, goods in the same market face similar supply and demand, and this interaction results in the market price. Then, the price ratio of such goods should be relatively stable in time.

Terms of product circulation – Shares of Russian cement producers in total supplies in the RF, 2014–2020, %

Producers	2014	2015	2016	2017	2018	2019	2020 (November)
Eurocement Group	27.5	31.7	29.7	28.6	26.5	28.4	28.3
Gazmetallproekt	8.5	9.9	9.2	9	9.7	10.1	9.4
Lafarge & Holcim	8.8	7.7	7.7	8.4	9.7	9.1	8.9
HeidelbergCement	5.5	6.8	8.2	7.9	8.2	7.8	8.2
Sibcem	9.5	9.4	8.7	8.4	8.7	8.3	8.2
SLK Cement	3	4.2	4.7	4.7	4.9	5.2	6.6
Smikom	2.7	3.5	3.7	3.6	3.8	4.4	4.6
Sebryakovcement	4.3	4.7	5.1	5.3	5.2	4.5	4.6
Vostokcement	3	3.3	3.6	3.9	4.2	4.4	4.4
Others	20.4	14	15.9	16.4	16.4	15.2	13.9

Source: compiled based on data from the information-analytical portal Beton.ru. <https://beton.ru/>

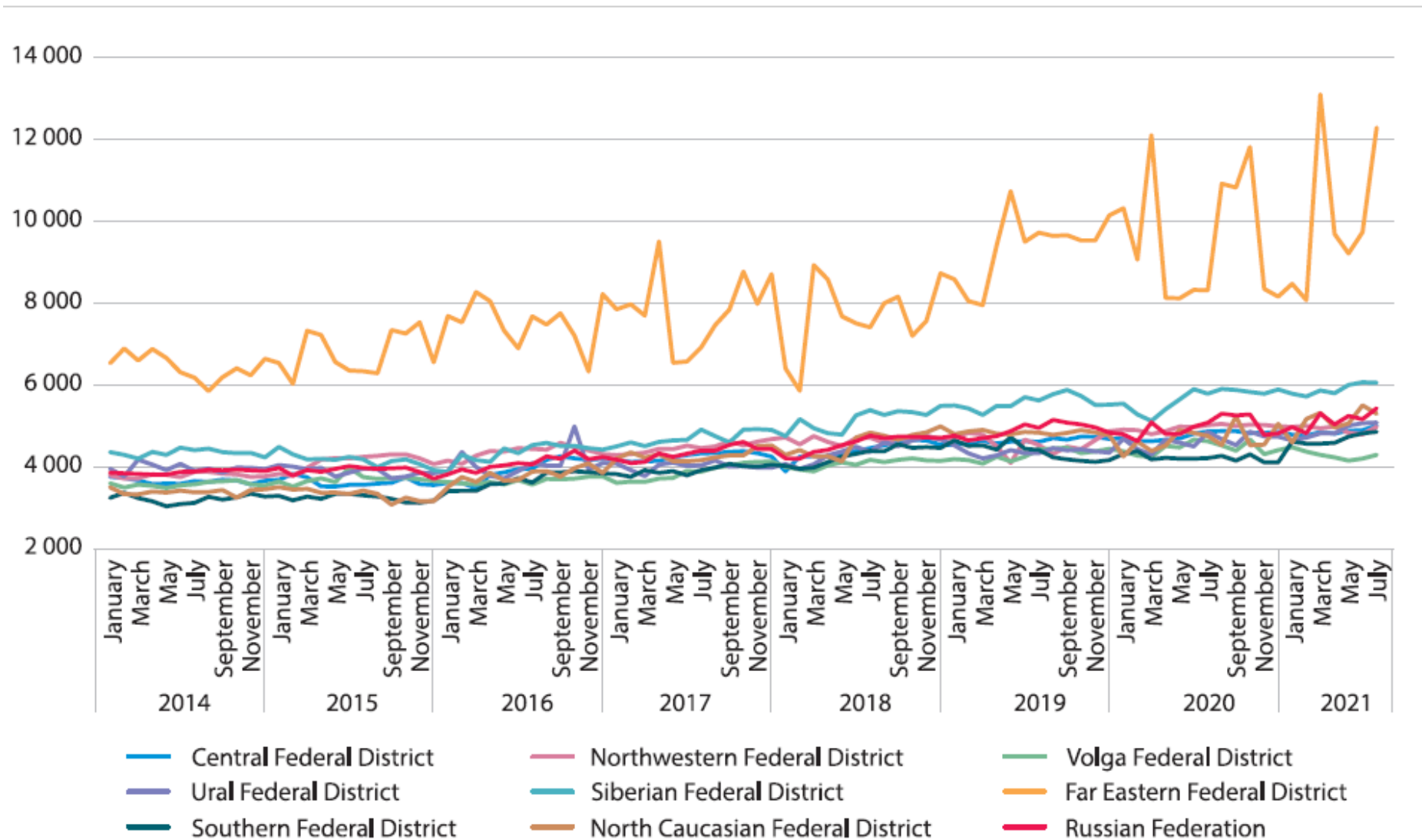
LOFI and LIFO test results for product flows between the federal districts, 2014–2020

FDs	2014		2015		2016		2017		2018		2019		2020*	
	LOFI	LIFO	LOFI	LIFO	LOFI	LIFO	LOFI	LIFO	LOFI	LIFO	LOFI	LIFO	LOFI	LIFO
CFD	0.925	0.792	0.900	0.821	0.894	0.806	0.894	0.784	0.896	0.804	0.889	0.793	0.897	0.823
VFD	0.793	0.911	0.807	0.892	0.771	0.881	0.720	0.900	0.744	0.905	0.711	0.902	0.719	0.895
SFD	0.594	0.831	0.614	0.800	0.639	0.801	0.639	0.802	0.623	0.822	0.650	0.808	0.720	0.865
UFD	0.822	0.772	0.786	0.742	0.775	0.785	0.780	0.766	0.779	0.738	0.745	0.736	0.732	0.792
SibFD	0.855	0.930	0.861	0.924	0.878	0.951	0.870	0.939	0.866	0.934	0.837	0.918	0.890	0.943
NFD	0.969	0.896	0.994	0.886	0.993	0.824	0.995	0.741	0.985	0.746	0.986	0.694	0.992	0.674
NCFD	0.760	0.487	0.832	0.524	0.832	0.509	0.846	0.503	0.878	0.482	0.877	0.549	0.929	0.550
FEFD	0.940	0.997	0.953	0.997	0.960	0.996	0.956	0.992	0.986	0.985	0.988	0.962	0.998	0.977

Cement geographic market based on the Elzinga-Hogarty test



Average purchase price of cement, 2014–2021, rubles per tonne



Correlation coefficient for the CPI-adjusted purchase price, January 2014 – July 2021

FDs	CFD	NFD	VFD	UFD	SibFD	FEFD	SFD	NCFD
CFD	1.0000	–	–	–	–	–	–	–
NFD	0.4115*	1.0000	–	–	–	–	–	–
VFD	0.6698*	0.6963*	1.0000	–	–	–	–	–
UFD	0.6409*	0.6123*	0.7571*	1.0000	–	–	–	–
SibFD	0.8391*	0.2767*	0.6662*	0.6069*	1.0000	–	–	–
FEFD	0.2089*	–0.1701	0.0692	0.0509	0.2757*	1.0000	–	–
SFD	0.6664*	0.0987	0.2677*	0.3389*	0.6011*	0.1427	1.0000	–
NCFD	0.6032*	–0.1105	0.1337	0.1604	0.6796*	0.2177*	0.7463*	1

Results of the Dickey-Fuller test for stationarity of the logarithm of the consumption price ratio (p-value)

FDs	CFD	NFD	VFD	SFD	UFD	SibFD	NCFD	FEFD
CFD	-	-	-	-	-	-	-	-
NFD	0.0251	-	-	-	-	-	-	-
VFD	0.0553	0.0062	-	-	-	-	-	-
SFD	0.0026	0.1004	0.3264	-	-	-	-	-
UFD	0.0003	0.0001	0.0001	0.0106	-	-	-	-
SibFD	0.0013	0.1201	0.0887	0.0056	0.0034	-	-	-
NCFD	0.0006	0.0772	0.0557	0.0000	0.0127	0.0004	-	-
FEFD	-	-	-	-	-	-	-	-

The Engle-Granger cointegration testing for consumption price (z-statistics), January 2014 – July 2021

FDs	CFD	NFD	VFD	SFD	UFD	SibFD	NCFD	FEFD
CFD	-	-	-	-	-	-	-	-
NFD	-3.944	-	-	-	-	-	-	-
VFD	-3.847	-3.459	-	-	-	-	-	-
SFD	-3.871	-3.66	-2.734	-	-	-	-	-
UFD	-6.085	-4.283	-4.055	-5.354	-	-	-	-
SibFD	-4.211	-3.36	-4.35	-3.447	-5.471	-	-	-
NCFD	-6.024	-3.95	-4.218	-8.225	-5.133	-5.023	-	-
FEFD	-	-	-	-	-	-	-	-

Cement geographic market based on the Elzinga-Hogarty test and price indicators



Conclusion

- The advantage of the proposed methodology lies in using actual statistical data, obtaining research results based on statistical tests, as well as enshrining the tests in the logic of the Order No. 220, which provides formal grounds to apply it when defining a geographic market.
- Limitations: it is necessary to comply with the requirements for the statistical properties of the time series under study and have access to data.
- If the issue of data access is resolved, then the proposed approach may become one of the standard practices for analysing the geographic market. The use of statistical data and statistical tests will increase the independence and validity of conclusions about the relevant market and produce more correct results.