

Markets of joint products: A theoretical model and policy implications[☆]

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Abstract

The article considers the phenomenon of price behavior in markets of joint products. It shows that conclusions about the nature of economic entities' behavior on this type of market could be inaccurate if the characteristics of these markets, such as joint costs, are not taken into account. For this purpose, a theoretical model, built according to basic microeconomic principals, is applied. This model provides an opportunity to reveal—without further new institutional analysis—that the reason for price deviation from a competitive level does not always lie in actions restricting competition.

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1. Introduction

This analysis is motivated by a sound antitrust case brought by the Federal Antitrust Services of Russia (hereafter FAS) against Russian companies in the chemical industry in 2011, which was closed by final court decision in April 2015.¹

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¹ Open Joint-Stock Company (OJSC) Edinaja Torgovaja Kompanija (United Trade Company), Ltd. Sibmanagement Group, Ltd. Sibmanagement, OJSC Himprom (Volgograd), Closed Joint-Stock Company (CJSC) NPO Reagenty, OJSC Sajanskhipast, Ltd. Sibirskaja Himicheskaja Kompanija (Siberian Chemical Company), Ltd. Usol'ehimprom, group of companies: Ltd. “Sibur”, CJSC “Sibur Holding”, OJSC “Sibur-Neftehim”, group of companies: OJSC Novomoskovskaja Akcionernaja Kompanija Azot (New Moscow Joint-Stock Company Nitrogen), OJSC Mineral'no-Himicheskaja Kompanija EvroHim (Mineral and Chemical Company EvroHim),

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Three interconnected cases were brought against companies operating in the markets of chlorine, liquid caustic soda and polyvinylchloride (PVC). The case on the market of chlorine was brought on the basis of an investigation launched by the unscheduled inspection of the Caustic company (Volgograd), when documents proving a price maintenance and market sharing agreement were revealed. The investigation was continued by other unscheduled inspections when corresponding documents were found. According to these documents, the cartel on the market of chlorine took place over 3.5 years and led to an increase in prices by a factor of 3.5 times. An investigation in the market of caustic soda was also based on unscheduled inspections and economic analysis that revealed a cartel operating since 2005 throughout the entire country. Unscheduled inspections and economic analysis were also used for an investigation on the market of PVC. It was revealed that the cartel on this market was already at least five years old (Artemiev et al., 2013, pp. 35–39).

Despite the fact that in each case the antitrust authority possesses documents proving, as it seems, agreement, the conclusions of appellate courts where decisions by the FAS were contested were not unambiguous, which is the consequence of the peculiarities of these markets.

One of the key arguments of the FAS proving a price maintenance agreement is the fact that the domestic price of liquid caustic soda exceeds its export price (Artemiev et al., 2013, pp. 66–67). According to the antitrust authority, this fact implies intensive competition on the foreign market and weak competition on the domestic market.

The case on the market of caustic soda ended up with the win of companies, and one of the decisive arguments was that there is constant relationship between the production of caustic soda and the production of chlorine, and this relationship explains the behavior of companies in corresponding markets.

The main goal of this study is to show, basing on the neoclassical model, that the difference in prices pointed out by FAS can be a consequence of the peculiarities of production and is not necessarily caused by a market structure. In turn, the approach of the antitrust authority that disregards these particularities could lead to errors of law enforcement (in this case—a type 1 error—unreasonable accusation).

The key particularity in the production of caustic soda is that the latter is produced in fixed proportion with chlorine. If within a single production process two or more products are manufactured, these products are called joint products. Costs of production of this type of product are joint until the split-off point. In turn, the split-off point is the stage in the production process after which joint products follow their own patterns. There are joint products in fixed and variable proportions. The chemical industry provides a variety of examples of joint products both in fixed and variable proportions (Kreps, 1930). The production of chlorine and caustic soda is one such example.

The significance of the question under review goes beyond not only the important and particular case of caustic soda and chlorine but also beyond the chemical

(continued) Ltd. Novomoskovskij Hlor (New Moscow Chlorine), group of companies: OJSC Bashkirskaia Himija (Chemistry of Bashkiriya), OJSC Kaustik (Caustic) (Sterlitamak), group of companies: CJSC Renova Orgsintez, OJSC Himprom (Novocheboksarsk), group of companies: Ltd. Nikohim, OJSC Kaustic (Caustic) (Volgograd), group of companies: OJSC GaloPolimer, Ltd. GaloPolimer Kirovo-Chepetsk, group of companies: Ltd. Torgovjy Dom Himprom (Firm Himprom) (Kemerovo), Ltd. Production Association Himprom (Kemerovo).

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