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Post-merger time series analysis: Iron ore mining

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ABSTRACT

In Brazil, mergers and acquisitions are usually analyzed by the antitrust authorities ex post, following a Structure-Conduct-Performance approach close to the US Merger Guidelines. However, this framework was unable to address the complexity posed by a series of acquisitions of four mining companies by the newly privatized national champion Companhia Vale do Rio Doce (known then as CVRD, nowadays as Vale). This article extends a Vector Error Correction model estimated by the Brazilian Ministry of Justice, which eventually came to reinforce the definition of the relevant geographic market and to test for structural breaks in the price series. A formal horizontal merger simulation model was not viable from the available data. Though international prices Granger-caused domestic prices in Brazil, they explain less than a third of the variance. Domestic price hikes in the acquired miners' series were observed above the export price increase not long after the acquisitions, and a structural break could not be rejected. Since convergence of domestic prices to international levels were not to be punished, remedies eventually applied by the Brazilian Antitrust Tribunal focused on preventing CVRD from abusing dominant position to vertically foreclose competitors in logistics, a key competitive issue for the industry.

Introduction

The Brazilian government privatized, in the early 1990s, the whole flat steel industry, which had benefited from public investment in the plants themselves and in the exploration and transportation of the competitive, high-quality iron ore abundant in the country since the World War II.[3] In 1997 CVRD, a national champion of the metal mining industry, along with all its logistic facilities, was also privatized. As long as they had been "children of the same father", in the words of a CVRD director, prices and other contractual features had been harmonically set.

The move of the Brazilian State out from most of the productive activities was then accompanied by a greater emphasis on competition promotion and antitrust action, and it proved extremely necessary. After a radical societal reorganization imposed by antitrust authorities (see below) and a change of management in 2000, CVRD moved aggressively to dominate the iron ore market by acquiring four of its main competitors, one after the other: (i) Socoimex and (ii) Samitri (2000), (iii) Ferteco and (iv) Caemi/MBR (2001).[4] It is worth pointing out that CVRD took advantage of its vertically integrated business model and of its huge cash turnover, choosing a deliberate strategy of concentrating its business in mining and logistics. As such, with the incorporation of these four companies, CVRD got a 34% share in the seaborne market (Brasil—Ministério da Justiça, 2005, p. 64; Ericsson, 2003) enabling the company to reap the fruits of the demand boom led by China, starting in 2002. As it is, in February 2005, CVRD announced its first seaborne contract of iron ore supply in Asia with Nippon Steel Corporation, obtaining an unprecedented record of 71.5% price raise as compared to the previous year. Two weeks later, the same CVRD reached a similar agreement with Arcelor for the European market.

In the seaborne iron ore market, the first contract sets up the base price for all transactions throughout the year. The numbers of buyers and sellers with market power in the European and Asian markets are minute, thus producing a repeated bargaining game in a bilateral oligopolistic setting (Priovolos, 1987). Although CVRD had been the company which had closed the first

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[3] From 1991 to 1994, the Big Six Companies (Usiminas, CST, Acesita, CSN, Cosipa and Açominas) were sold through public auctions, with part of the stock being reserved for public offerings at a discount, in order to attract small investors. The role of the State remained important, however, for providing financial capital to the industry. For more on the privatization process and the resulting (complex) ownership structure, see Amman et al. (2004).

[4] Acquisitions nos. 08012.000640/2000-09, 08012.001872/2000-76, 08012.002838/2001-08 and 08012.002962/2001-65 notified to the Brazilian Antitrust System.

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deal of the year most often in the previous fifteen years, its bargaining position was pretty much enhanced by the four local acquisitions, and by a right of first refusal settled in 2000 with the steel company Companhia Siderúrgica Nacional (CSN). In other words, if CSN agreed to sell any quantity of iron ore from its gigantic mine Casa de Pedra in excess of its own consumption to a third-party buyer, the same commercial conditions should be extended to CVRD, who could exercise its right of preference and replace the third party in the contract. This agreement was part of a settlement between the two companies in order to dissolve their crow-ownership and thus increase the chances of approval by the Brazilian Antitrust Tribunal (hereafter "Cade").[5]

The enhancement of CVRD's market power was facilitated by Brazilian Antitrust Law, which allowed at that time that mergers were carried out before the antitrust authorities analyzed the competition issues of the deal. Under the Brazilian competition legislation, merging parties can submit the operation for antitrust assessment after the deal's conclusion, and, if it is the case, antitrust authorities can order modifications or divestitures regardless of the elapsed time after the transaction.[6]

CVRD's strategy to defend the acquisitions aimed at convincing the antitrust authorities that the whole domestic market pegged closely the behavior of the international market. But how would the authorities be assured of such a claim if mining companies and steelworks had been living together, as private companies, for such a short period of time before the acquisitions under analysis? Couldn't any price hike be found after the acquisitions due to them?

The unfortunate feature of the Brazilian Antitrust Law that allows for post-acquisition notification ended up enabling the antitrust analysts to gather a reasonably large number of observations to put CVRD's claim under test by using Time Series Analysis. A Vector Error Correction model was then estimated for prices of lumps and sinter feed of the main domestic iron ore mining companies. As such, Granger causality tests and cointegration analysis were performed to verify how truthful the claim for an international relevant market definition for iron ore was. On top of that some structural break tests showed that a pronounced raise taking place in 2003 could not be explained by demand conditions, neither in the international nor in the domestic market, thus suggesting that CVRD was finally exercising its domestic market power one and a half year after the last set of acquisitions (the most important ones).

Having all analyses and investigations been carried out, only in August 2005 Cade issued a decision on the matters clearing the four acquisitions in block, subject to two remedies:

(1) *Annulment of the right of first refusal.*[7] This would create a significant competitor to CVRD in Southeastern Brazilian market, with a capacity beyond its total demand and

(2) *Consolidation of CVRD's stakes in MRS* (a major railway carrier of iron ore controlled by CVRD along with CSN, Usiminas and Gerdau—three major Brazilian steelworks), *into a single one*, so that CVRD joins the group controller of MRS through a single agent and does not hold, directly or indirectly, more than 20% of the voting capital of MRS. Previously, the shares belonged to Caemi/MBR and Ferteco, the largest mining companies acquired by CVRD. This remedy would prevent CVRD from exercising veto power and would warrant some balance among partners with diverging goals.

Alternatively, CVRD could simply divest the mining company Ferteco, which owned the only inland pellet plant – closer to the domestic consumers – and at the same time had access to the two major railways, MRS and EFVM.

The present paper summarizes the main features of CVRD's acquisitions and extends the econometric exercises undertaken at that time by the Brazilian Ministry of Justice, which were only possible thanks to the long time elapsed since the first two acquisitions (2000 and 2001)—and since CVRD's own privatization as well. In a sense, one might claim that the paper acts as a showcase of the advantages of a post-merger analysis, but of course these advantages have to be balanced against the well-known risks of irreversibility.[8]

The article has three more sections besides this introduction. The next section outlines the main elements of the acquisitions and describes the economic analysis performed by the Antitrust Divisions of the Brazilian Ministries of Finance and Justice, based on the Brazilian Horizontal Merger Guidelines. The third section introduces the econometric framework adopted by the authors during the case in order to address more precisely the claims of the merging parties, and reports the estimations performed and their interpretation. The last section amasses the conclusions.

Main elements of the acquisitions[9]

CVRD was established in 1942 by the Brazilian Government and was privatized in 1997. At that time the company was already the largest iron ore supplier in Brazil and the largest in seaborne exports value. The privatization faced a tough opposition from unions, which delayed the auction for several weeks. The acquirer was a consortium led by Vicunha, a traditional textile industry that had won the first big privatization auction in the early 1990s, of the leading steelwork CSN.[10]

[5] CSN had been privatized just four years before CVRD, and the then State-owned CVRD took part in the consortium that won the bidding. On the other hand, when CVRD was privatized, the winning bidder was a consortium led by CSN and its major stakeholders. The cross-ownership dissolution agreement was signed on May 31, 2000 (cases nos. 08012.005250/2000-17 and 08012.005226/2000-88), three years and three days after CVRD's privatization had been notified to the antitrust authorities (case no. 080000.013801/97-52) and nine months after the Ministry of Justice's opinion was released (see Section 'The Structure-Conduct-Performance (Merger Guidelines style) analysis'), but almost exactly one year before Cade's verdict on the matter.

[6] On September 1, 2005, a new Bill was sent to the Congress that would reform the Brazilian Act 8884 (enacted in 1994), instituting among other things the requirement of previous approval for mergers and acquisitions. As of the closure of this article, the Bill had passed in the House, but it was still pending for approval in a number of Senate committees before proceeding to plenary voting.

[7] The remedy was also a recommendation made by the Ministry of Justice for the cases nos. 08012.005250/2000-17 and 08012.005226/2000-88 aforementioned.

[8] In fact, as of the closure of this article, CVRD had already appealed to the Courts in all instances in order to suspend the deadline for the divestitures and to overrule Cade's decisions on procedural grounds, as Brazilian Law rules out a revision of the judgment of merit. The appeals were rejected by all Courts. The Supreme Court's verdict was issued on December 18, 2007, and closed the case; thus obligating CVRD to renounce to its right of first refusal to CSN's iron ore. Another paramount case in Cade's history was the acquisition of a local chocolate company by Nestlé, judged in April 2004. Even though it was suspended by Cade, as long as the approval was not issued, and even though it ended up being completely reproved by the Tribunal members, the decision was appealed at a first level judicial court and it had moved to a second level, the Fourth Federal Circuit (Tribunal Regional Federal, 4ª Região), where two Justices proposed to send the case back to Cade for new judgment (!!) (***O Globo*** and ***Valor Econômico***, January 22, 2009). The final verdict had not been reached as of the closure date of this article.

[9] This section draws mainly from the proceedings of the merger analyses performed by SDE (Ministry of Justice) and Seae (Ministry of Finance) on the matters (see Brasil—Ministério da Justiça, 2005, and Section 'The Structure-Conduct-Performance (Merger Guidelines style) analysis').

[10] For more on the history of the steel industry in Brazil and on the privatization of CVRD itself, see Amman et al. (2004) and its references therein.