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The International Mercury Cartel, 1928–1954: Controlling Global Supply¹

This article describes the features of the international mercury market during the first half of the twentieth century. It analyzes the various market agreements made, their effectiveness, and their consequences. The period studied is little understood, although it was one in which mercury production underwent great increases. It was also one that saw persistent efforts at market manipulation, owing to a series of agreements between Spanish and Italian producers that proved very effective until the arrival of productions from the former **soviet bloc and from developing countries**.

The story of mercury presents an important case in the history of international market regulations. This article offers an approach to a little-understood period in the production of mercury in which market manipulation caused great increases in the production of the chemical element. The period coincides with the end of Rothschild control of Spanish mercury exports (1921), the beginning of the exclusive control of sales by the board of the Almadén and Arrayanes Mines, and the acquisition of the former Austro-Hungarian mines by the second-largest world producer, the Italian Monte Amiata. These changes led to a series of government-backed agreements between the Spanish and the Italian producers and finally to the worldwide cartel Mercurio Europeo (ME), based in Lausanne, in 1928. The Almadén and the Italian mines (Monte Amiata, Siele, and Idria) fixed production quotas and ran a common policy on prices that was only partly successful, as the asymmetric technological and commercial capacities of the partners frequently permitted outsiders and marginal mines, especially in North America, to have a say in the world market.¹ Yet it is difficult to find a clearer example of a successful price and quota cartel

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over such a long term (except, perhaps, the international aluminum cartel), especially when one considers the number of outsiders and the complexity of the commercial structure at the international level.²

Also noteworthy is the origin of the cartel, as it was promoted and managed by two public concerns.³ The Spanish government had a wealth of experience in mining (dating back to the sixteenth century. It owned the mines in Almadén), but the Treasury took control of all industrial and commercial processes only in 1921, almost a century after transferring the sales of the mercury flasks to intermediaries. The story was quite similar but much shorter in Italy: set up in 1897 by German investors since 1933, five years after the cartel was established Monte Amiata was controlled by a state holding, Istituto per la Ricostruzione Industriale (IRI),..

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There are several studies on cartels in mining commodities. We have excellent studies on bromine, chrome, tin, and aluminum, while the works on bauxite, diamonds, uranium, and copper appear more dated.⁴ One PhD thesis on the mercury cartel, some ten years after its beginning, is very informative.⁵ However, while some scholars based their studies on extensive archival research, many others used indirect sources. Our research employed **sources** that give an unprecedented inside view of the cartel management: minutes of ME, housed at the archives of the Fundación Almadén; documents on the Almadén Mines, held by the Archivo Historico Nacional in Madrid; and materials from the Monte Amiata Archives (at the Mining Museum in Abbadia S. Salvatore), the Historical Archives of the Italian Foreign Ministry, the IRI Historical Archives, and the Finmeccanica Archives, all in Rome, as well as the Rothschild Archives, in London, and the National Archives of the United States.

The main aim of this study is to describe the features of the international mercury market during the first half of the twentieth century. A second objective is to analyze the various market agreements that ensued, their effectiveness, the construction of distribution networks, and the influence on other mines. Next, we address the rationale for setting up a cartel in a period when these were considered by many economists, the League of Nations, the International Chamber of Commerce, and most governments to be one of the most efficient tools for stabilizing the economy in turbulent times.⁶ Some authors, like Jeffrey Mackie-Mason and Robert Pindyck, underline that in the case of ME the efficiency of the



cartel was largely undercut by external factors.⁷ Our sources indicate otherwise, as suggested, for instance, by Valerie Y. Suslow and Margaret Levenstein, who show that cartels are efficient when they adapt to the context in which they are supposed to work, the potential benefits of which we will discuss. Other questions of more general value also arise. Has this capacity to adapt to varying national and international conditions anything to do with the longevity and relative stability and of the cartel?

Under these conditions, as we demonstrate, the main objective of the cartel, in contrast to conventional wisdom, was not to define price policy but to drive the market supply, in an attempt to establish the best conditions for the main actors to avoid overproduction and to continue production for social reasons, since the Spanish and the Italian mines were located in areas of few economic alternatives. The specific nature of this study offers important arguments for considering the role of political institutions in cartelization and decartelization policy. In other studies, states acted as external supporters or mere supervisors; however, we show that the Italian and Spanish governments were very active during the establishment of the mercury cartel and its evolution, while Germany (during World War II) and, especially, the United States (after 1945) were key figures in shaping mercury demand and in questioning the very existence of the cartel.

Global Production of Mercury

Since ancient times, mercury has been used in paint (vermilion), cosmetics, and medicine. In the mid-sixteenth century it became associated with the silver mining process in Peru and Mexico. Demand grew with the discovery that mercury could also be used in industry for gold plating, the production of physical instruments, paints, and mirrors, and turbine manufacture.

A feature of the mercury market was its scarce supply: cinnabar (from which mercury is extracted) is rarely found in nature, with few mines on the planet. The largest and oldest deposits are in Almadén, in the province of Ciudad Real, Spain. The Spanish Crown, the exclusive owner of the mines from 1523, introduced standardization and all dealers since have adopted the Spanish measurement of production, based on the traditional 34.507-kilogram flask of mercury.⁸ The only competition to Almadén on the world market



for the next three centuries came from the Idria mines, located in present-day Slovenia. However, since these mines were under the sovereignty of the Austrian monarchs, agreements were easily made for the exclusive sale of surpluses to the Spanish Crown.

This **dynamic**—an effective duopoly reinforced by the Rothschild family, who controlled Almadén sales from 1830—ended in 1847 with the discovery of the New Almadén seam, followed by other discoveries in California, including New Idria (1854), Redington (1861), and Sulphur Bank (1873). For well over a decade, the United States outstripped Spain as the leading world producer, and even though most of its production was for domestic consumption, the existence of the Californian mercury led to a drop in international prices.

Insert Figure 1 here

Italy appeared prominently on the international stage in the twentieth century. Production conditions in Italy differed vastly from those in other countries. In Spain, for example, technological requirements were lower, and until the 1920s (and even later) **the Almadén mine** was run without any formal business accountancy; central administration provided financial support as needed. In Italy, though, mercury at the surface was rare. Deposits were some nine hundred meters below the surface, and mining the metal required highly modern and efficient methods. The **largest** Italian company, Monte Amiata—set up in 1897 by German investors who introduced the best available technologies for both mining and the industrial process—was very profitable.

Italian and Spanish producers were formal competitors, but since their markets were geographically separate, they coexisted for a long time without much interference in each other's main markets. (Italy sold through big German traders—Metallgesellschaft, Beer Sondheimer, and Aron Hirsch—exporting mainly to Germany, Switzerland, and the Austro-Hungarian Empire.) Between 1905 and 1907, Monte Amiata first proposed a cartel. The idea was rejected by the Rothschilds, who agreed only to halt the price decrease started in 1901. Contact between the two big producers during World War I, when the ownership structure of Monte Amiata was overhauled, had a different **outcome**. The German shareholders (among them Kaiser Wilhelm II) sold their shares to a Swiss banking pool,



which later sold them to Banca Commerciale Italiana, the biggest Italian bank. An agreement, supervised by the British government, led to an entente between the Rothschilds and the Spanish and Italian governments, with the former selling their mercury in London during the war at a ratio of one Italian flask per two Spanish flasks. The agreement led to a steep rise in prices, from £7 per flask in 1914 to £24 in 1918, while for the same period in New York the price rose from \$48.31 to \$123.47.⁹

In 1921, the Spanish government did not renew its agreement with the Rothschilds but rather organized sales directly through the board of the Almadén and Arrayanes Mines. After the war, the Kingdom of Italy annexed a small part of the Austro-Hungarian territory, including the Idria mines, which passed directly into state control. The Italian government tried unsuccessfully to reach an agreement for joint control of the international market, and it also failed to make a direct agreement with the Rothschilds in 1920, when prices started to plummet (despite a reduction in world production to just 75,500 flasks), due mainly to Italy's putting its mercury on the market below official prices.¹⁰

Some months later, the director of Monte Amiata, Riccardo Salvadori, appointed by the Banca Commerciale, went to Madrid with a proposal to share out the market at an annual ratio of 60,000 flasks for Italy and 40,000 for Spain. Despite Spanish production's weakness, no agreement was forthcoming. Almadén continued with its system of sales until 1925, when it decided to sell almost its entire output by open auction.¹¹ The usual intermediaries **Rothschilds and Pickering** did not attend, and the winner was the Sociedad Española del Mercurio, created for the purpose by the Banco Español de Crédito and comprising Lazard Frères and other French banks.¹² The agreements with the Sociedad Española del Mercurio—which purchased 45,000 flasks at £14 in 1926 and 50,000 flasks at £17 in 1927—proved highly profitable for the Spanish Treasury. This inflow of money (some 44.7 million pesetas) meant the Spanish mines could begin a very limited modernization.¹³

The Establishment of the Mercury Cartel

The Italians continued in their attempts to convince Spain of the need for an agreement, especially when there was a spectacular increase in Almadén production, which

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jumped from 26,220 to 75,000 flasks between 1921 and 1927, while sales soared from 19,507 flasks in 1921 to 61,885 in 1926.¹⁴

The Spaniards, meanwhile, were particularly impressed by the technology and commercial organization of Monte Amiata. Production costs were particularly high for Almadén, though, as they were forced to recognize during a visit to Italy in 1921. Despite a mineral **concentration** ten times higher, production costs in Spain were only a fraction lower than in Italy.¹⁵

The belief that prices would remain high (around £21 to £22 per flask in London in 1927–28, and between \$117 and \$123 in New York) convinced the Spaniards to shy away from any agreement. But the market trend did not confirm their assessment. After 1925, both the Italians and Almadén sold far fewer flasks, because the biggest mercury consumers were betting on a price reduction, influenced by rumors spread by traders. Despite the critical situation, their production strategies were different: Monte Amiata decided to reduce production, the Spanish mines to increase it. In the first quarter of 1928, Almadén, pushed by the Italians and in turn pressured by the government to step up the pace to reach a general agreement, produced almost the same number of flasks as in all of 1927.

The forthcoming expiry of the agreement between Almadén and the Sociedad Española del Mercurio, plus the end of the agreements between the latter and Monte Amiata, were decisive in opening the negotiations. The more rational and entrepreneurial approach to the international market shown by the Italian producers gained support during talks that started in early 1928 in Madrid. Almadén stocks reached 50,000 flasks, while the Italian producers amassed 24,800. However, the real risk was that the producers would be unable to sell at all in 1930 because traders had such a large number of flasks, bought at £4 to £5 lower than the average price over the previous two years. This new situation meant that the leading producers would have to harmonize production and control prices to set the market right.¹⁶

For the agreement to be valid only for flasks sold on the international market (the domestic markets of both groups were excluded from the entente), a single body was set up for sales of the mercury produced by the associated mines. The day after the provisional agreement, both groups started to sell as much of their stocks as possible at any price,



particularly to Lazard Frères, which purchased over 88,000 flasks. In total, big traders accounted for at least 100,000 flasks, a year's worth of consumption. This ambiguous, even counterproductive, choice condemned the cartel to a difficult start. In fact, the agreement established that **the production level of each mine** be linked to the number of flasks sold in the previous five years. The cartel was to begin its activities by reinforcing its main aim, which was to eliminate overproduction, as the only way to prevent a crisis that could be lethal for any member.

The agreement that created ME was ratified in Madrid on September 9, 1928. It was to commence on October 1, 1928 and, for greater effectiveness, both groups were bound not to make any sales with deliveries scheduled after that day.¹⁷

The agreement established the level of production and sale at a rate of 55 percent for Spain and 45 percent for Italy during the first three years.¹⁸ In the following three years—and a further four, if the agreement was extended—the figure would be 40 percent for Italy and 60 percent for Spain. The sales price would be determined by the committee, which could adjust it according to market circumstances or for other justified reasons.

The first meeting of ME's managing committee, chaired by Salvadori and held on September 26, 1928, at the Bank of Spain office in Paris, faced a challenge. The cartel could fight against the traders, who were selling their flasks at 5 percent less than ME, but this condition might last for at least eight or nine months (the time necessary for traders to sell all their flasks), at the risk of worsening the economic and social situation in both Italy and Spain. The alternative was to find a compromise in order to minimize sacrifices, which was Salvadori's initial recommendation. The committee chair proposed a price of £21.15 per flask, with the idea of avoiding a conflict with traders while also taking into account that mercury had been selling in London at over £22 for some months. The committee fully backed his arguments, insisting on the importance of promoting the image that the cartel had been set up not to increase sale prices, but to regulate the market and avoid competition between mines and the negative effects of speculation. However, the cartel rejected Salvadori's most important proposal for the U.S. market—a price strategy based on dumping—which was supposed to block smaller producers for whom the flask price of £21.15 was high enough to keep them going.¹⁹



The authoritative tone of the ME directors continued during the early months of the cartel, despite plummeting sales: 2,384 flasks in October 1928 but just 226 in December. Even so, Salvadori's report on the first three months of the cartel set off no alarms. Indeed, he confirmed that all European production was in the hands of ME, other than the tiny production of a few residual mines in Italy, which came to some 2,000 flasks a year. Even the low (but growing) level of production by the Italian outsiders was a danger for Monte Amiata, because the Spanish partner could accuse the Italians of harming relations with Almadén and so jeopardize the general agreement.²⁰ In the following years, no nation would be a competitive threat in Europe, and ME would continue to supply 50 percent of world needs. There is no question of ME's leading role in the markets. North American production grew because prices were high but it could not meet domestic demand. ME assumed that in those three months and the followings it would have to pay for the excess production of the two previous years. This excess—some 50,000 flasks, at a sales price of around £19—was in the hands of British and German traders, sustained by Lazard Frères. For normality to return, this stock had to disappear.

Salvadori proposed two options: negotiate with Lazard Frères or lower prices to £19 or less over a long period.²¹ He was in favor of maintaining the approved price, as dropping the price to £19 would allow traders to buy up stock and prolong their operations. He reckoned the pressure from the traders would last until the end of March or beginning of April.²² His reckonings were overly optimistic. By May, the cartel had sold just one-fifth of its projected amount. Meanwhile, stocks continued to accumulate in the associated mines, until they stood at 63,420 flasks, including three months' reserve production. The total market stock was around 83,000 flasks, with a growth rate that would take the number to 100,000 by the end of the year.

Faced with the possibility that the Lausanne office had mismanaged sales, ME was forced to convert its main purchasers in each country into commission agents, an option that appealed to them[AU: Who?]. The first four to take up the new role, in the summer of 1929, were Mitsubishi, Leghorn Trading Co., Roura & Forgas, and Hirsch & Sohn. From these the list grew until it covered almost all the potential markets around the world.²³

The representatives signed individual one-year contracts, all under the same conditions, except the English representative Roura & Forgas, which acted as a seller for



ME but sold independently, while the others were traders for the public. Representatives could sell no mercury other than that produced by ME, and only at the price set by ME, but they could create a stockpile and sell later at their convenience. At the same time, ME was entitled to sell directly anywhere in the world, but only at the same price as its representatives.

The situation did not improve and, with the exception of a few months between the summer of 1929 and the spring of 1930, sales remained very low. In the first twenty-seven months of ME's life (October 1928 to December 1930), world consumption totaled just 267,000 flasks, so the low level of sales was no surprise.²⁴ Only the good relations established over the years with the Spanish government could limit the damages. In fact, the Italians recognized the coherent conduct of their allies, who in 1930 resisted calls from Lazard Frères in London offering £100 million to sustain the exchange rate of the Spanish peseta on the international market in return for ownership of AU: ok? control of the entire Almadén production.²⁵ The mutual trust of the cartel's members, at least in this case, was not enough. Their mines overproduced during troubled times. In late 1930 the ME directors recognized that the problem was not one of stock or speculation but of a slump in industrial demand brought about by a general crisis that was incompatible with the cartel prices. In 1929 and in 1930, sales remained below 75,000, which was 50 percent of the 1928 level and, more importantly, 25 percent below average.²⁶

That June, ME exceeded for the second time its desired quota of 7,500 flasks per month, although the figure fell again in the following months. The cartel closed its third year with losses, never having reached the 80,000 flasks per year it had envisaged. Financially, 1928–1929 and 1930 were better, with \$4,089,935.85 and \$3,487,214.90 in sales, at a price of £21 per flask; by contrast, Almadén had sold its total 1927–1928 production at £17 to the Sociedad Española del Mercurio. However, 1931 closed with just \$1,711,468.55 in sales, threatening the viability of the Italian and Spanish mines alike.

In May 1931, the Lausanne office was on the verge of collapse—an indirect symptom of the Italians' and Spaniards' mutual distrust. ME decided on May 12 to reduce the price of a flask of mercury to £16 15s. as of June 1. The partners agreed that the office should have flexibility regarding sales, with a minimum price set at £15. This decision was

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a minimum requirement, considering that the sales performance of the cartel was worse than the general negative trend of the world economy.²⁷

Nevertheless, the production increase in the U.S. generated some worries. High prices were encouraging marginal producers (the number of mines rose from ten at the end of the 1920s to almost fifty in early 1931) and provoked a slump in exports, despite significant, but very exceptional, figures in 1931. U.S. antitrust law did not allow the inclusion of these companies in the cartel. Major consideration was given to the idea of including the Mexican mines in ME; the tentative discussions showed how difficult serious negotiation with them would be.

A Single Sales Agent

In October 1931, ME's board addressed measures to stimulate sales, such as giving wider margins to some intermediaries, like Roura & Forges, or significantly increasing their commissions. To make matters worse, devaluation of the pound in September meant many customers refused to trade in it. ME immediately reacted by shifting to the **gold-backed U.S. dollar** as the currency in which to establish official mercury prices, which nevertheless fell in the fourth quarter of 1931, from \$80 to \$65.²⁸

A new strategy was necessary. Spanish mines remained in the best position because of their structure, although offset by low international opinion and the weakness of the Spanish government. Monte Amiata and the Italian government had a higher reputation, but business-related costs limited freedom of movement. Meanwhile, the managers of Monte Amiata, after toying with leaving the cartel, acknowledged in 1932 that they had overrated Spain: Spanish bureaucracy and government were largely neutralizing the richness of the mines. However, their fears about competing with Almadén in a free market did not completely disappear. For Monte Amiata's managers, negotiations had to start with the main market traders, such as Pickering, **Weis, Hirsch, Devusrme, Hondheimer, and Offembacher**. **[AU: Are these individuals or companies? If individuals, please provide first names]** the same people they had been fighting for three years. For the Italians this was the last resort; the alternative was dissolution of the cartel and all the risks that might entail.²⁹

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On behalf of the traders, Pickering offered a global contract that aimed to sell 25,000 flasks a year for three years, at the current market price (with a commission of 3 percent), with a margin of a further 5,000 against possible sales. ME would be able to sell however much it wished but always at one pound more than the traders, and not fewer than fifty flasks. Sales which would be deducted from the total sales agreed with Pickering (25,000).³⁰

Roura & Forgas immediately made a counterproposal. The Spanish company offered to sell ME mercury everywhere in the world, other than in Spain and Italy, from January 1, 1932, to September 30, 1934, under a series of conditions. The firm was to sell a minimum 30,000 flasks per year (22,500 in the nine months of 1934), excluding sales for mercury boilers, with a 3 percent commission. Roura & Forgas would aim to sell 50 percent in the first half-year, although the figure would be just 25 percent in 1932; the price was always to be fixed by ME, but after consultation, and with the possibility for Roura & Forgas of 10 percent elasticity to fight competitors.³¹ This offer was accepted. The solution implied the closure of ME's costly and inefficient Lausanne office and the chance of a worldwide distribution network for the new exclusive seller.

[Insert Figure 2 here]

The choice of Roura & Forgas could not have been better under the circumstances; sales rose immediately, although prices did not improve. Indeed, not only did the firm cover the minimum quota for October 1932 but, more importantly, it put a stop to the growing sales of the outsiders (see Figure 2), positioning the cartel as the world market leader again.

In January 1933, both parties agreed to modify the contract, after the results of the previous year, and the sales commitment increased to 50,000 flasks at \$30. If mercury sold at up to \$32, Roura & Forgas would keep the margin, while if the price reached \$32 to \$35, the margin would be split with the cartel, on which Roura & Forgas was to receive a commission of 1 percent on total sales. Nevertheless, the market continued to depress mercury prices, which fell to a low of \$21.80 in August 1933. At that price, Monte Amiata had to reduce its production and lay off most of its workforce.³² Between the summer of 1933 and that of 1934, the Italian company produced only 1,725 flasks, suffering major



financial losses. In Spain, the Almadén mine produced fewer than 20,000 flasks on average in the last five years. Yet the cartel had saved itself.

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This apparent honeymoon among ME partners masked many problems. The American market was still weak, while U.S. dollar instability permitted Mexican producers to compete with ME. On the other hand, the U.S. mercury companies, now united in the National Quicksilver Producers Association, admitted the possibility of an agreement with ME based on fixing a minimum price for flasks. Nevertheless, American companies made it clear that, without such an agreement, they were ready to ask the Roosevelt administration for strong protection against foreign mercury. The Almadén representative rejected the proposal on the basis that any price agreement with the American mines would open the door to an even more aggressive policy by Mexican producers.³³

After another visit to Almadén in 1933, Monte Amiata's managers deemed the situation an opportunity to break the agreement with their partners and return to higher sales levels. They (naïvely) hoped to renegotiate the cartel more favorably. Meanwhile, in early 1933 the ownership structure of Monte Amiata changed significantly. After the 1929 crisis, the banking system was overhauled, short- and long-term credit were separated, and, more importantly, a new state holding company, Istituto per la Ricostruzione Industriale (IRI), was set up that took over all shareholdings of the main Italian banks, making IRI the new major shareholder of Monte Amiata. A new chairman was elected, Vincenzo Fagioli, an expert in ancient Greek and Latin before becoming the secretary of Finance Minister Alberto De Stefani in the first Mussolini government. Fagioli had had recent successes as manager of two state-owned companies, Società finanziaria per l'industria e il commercio and Società egiziana fosfati.

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He was no less strong in defending Italian interests, but he had a clear vision of the real balance of power between the two partners. In 1933, the Spanish group threatened to decrease the flask price, in an attempt to eliminate outsiders but also to attack the Italian mines. In fact, Almadén's strategic aim was to maintain the agreement but to renegotiate the quota towards a 65:35 proportion, from the 60:40 division set in 1931. The new Spanish Republican government—which defined the Almadén mines as “very rich”—was against the renewal of the cartel. It considered that Spain could get more without the Italian producers. The general director of the mines was in favor of a new agreement, not only

because of his sympathies for Italy and its regime; he declared at the end of the Italian-Spanish mercury deal that the agreement “could be renewed with advantages for both parties.”³⁴

According to the Italian ambassador in Spain, Almadén had practical and technical interests for keeping the agreement, mainly due to the “still not perfect and efficient preparation for a competitive regime with Italy from both the metal extraction and the commercial point of view.” However, he also criticized the former Monte Amiata CEO, Salvadori, for being too optimistic in negotiations with the Spanish partners. Actually the manager started talks with the tactic of denouncing the agreement, and the strategy of offering a small piece of the cake to the Spaniards (to include some Italian outsiders in the cartel) to keep the production proportions between the two groups (40 percent for Italy and 60 percent for Spain).³⁵ Fagiuoli was a better negotiator than Salvadori, because he admitted that the modernization and the technical capabilities of the Spanish mines left the Italians little to hope for: “The Spanish will be able to deliver the mercury alone to all the market, and if we Italians remain, for national prestige, on the market and keep selling, we should incur losses and these will be only for the state.”³⁶

This more realistic position facilitated new talks between the two groups. After lengthy negotiations, the cartel partners renewed the agreement on June 7, 1934, for two years and included conditions that Spain perceived as beneficial. The quotas of each country were to incorporate all the mines, including the outsiders, because the Italian state had taken over the administration of the whole production; further, chairmanship of ME was to be permanently in Spanish hands.³⁷ Both partners appeared satisfied with the new agreement. The Spanish group still had to cope with high production costs, despite some technical improvements. For Almadén, the prospect of a commercial war with the Italians was highly unattractive, because the Italian government had far more means with which to support the Amiata mines; the slow increase of their quotas was some compensation for the Italian sales of byproducts (for instance, mercurial salts) outside the cartel, which reached the equivalent of 4,000 to 5,000 flasks per year. For the Italian mines, it was a success to keep the Spanish request for higher levels of the quota and the implicit agreement among all the Italian mines under control.³⁸



At the end of 1933, after refusing Pickering's proposal to replace Roura & Forgas as an exclusive agent, with the prospect of selling flasks on the promising Japanese market, a new contract valid until January 1936 was signed with Roura & Forgas.³⁹ It granted the company leeway of 15 percent on the price set by ME, with minimum sales of 115,000 flasks for the following twenty-three months. This figure fell far short of the cartel's final sales, which grew from 61,852 flasks in 1933 to 92,679 in 1935, when the Almadén mine had exhausted its stock and began work to extend the mine.

The evolution of the cartel caused great satisfaction among the partners during the League of the Nations' eight-month sanctions against Italy, which followed the Italo-Ethiopian War in 1935. The Italians could continue to export to non-boycotting countries (i.e., Germany, Japan, Hungary, and the U.S.), thanks to the agreement with their Spanish partners. However, Spanish mine production remained low, and their stocks were lower than the Italians had feared. The myth that Spanish mines could guarantee the entire world production was finally debunked.⁴⁰

By the outbreak of the Spanish Civil War, in 1936, the Almadén mine had recovered, with 43,000 flasks produced and sales continuing the successful trend of the previous year. The mines remained under the control of the Republican government for most of the war, which in turn considered them one of its safest financing assets. Relations with Italy became complicated, with the fascist Italian government supporting General Franco, even sending arms and troops to help him, while maintaining contacts with the Spanish Republican government.⁴¹ As early as November 1936, Italy recognized Franco's nationalist government. One month later Rome signed a provisional agreement with Franco (which again gave the Italians a 45 percent quota plus the possibility of selling outside the cartel), to be valid for one year from when nationalist troops occupied Almadén. To avoid any suspicion, and to limit any attempt by the Republican government to denounce the cartel, the Italians agreed to continue the contract with Roura & Forgas. However, Monte Amiata's real fear was that once Franco took over Almadén he could sell all the stock and pay off some of the huge international debt amassed in just a few years by the nationalist government.

The Republican government decided to continue its operations with Roura & Forgas (but now with the discrete supervision of Fagioli) under the same conditions as



the cartel. On this occasion it delegated sales to the London-based company Amalgamated Merchants Ltd., whose general manager was Cesar Sanz, a naturalized British subject and general director of Roura & Forgas. The Italians exploited the situation to go beyond the quota established in the agreement. In the first nine months of 1937, ME sold 61,021 flasks. The cartel had fastened a quota of 33,562 flasks to Almadén and 27,459 to the Italians; in reality, the Spaniards sold just 22,497 flasks and the Italians 38,614.⁴² The Mussolini government was also considering asking Franco, once he had Almadén, to give Italy total control of the Spanish mines' commercial activities as compensation for its financial support of the military coup. This was not to be, but Fagioli renegotiated a better production quota, 45 percent, for the Italian group.⁴³ The imbalance continued in 1938, when the Italians sold 22,000 flasks at \$66, while Almadén sold only 10,000, and at just \$52.⁴⁴

[Insert Table 1 here]

The War Business

Almadén fell into nationalist hands on March 27, 1939, just days before the end of the Spanish Civil War. The ME agreement was renewed on July 4, 1939, to April 1940, with revised quotas that had been requested by the Italians during the first secret negotiations with Franco, in 1938.⁴⁵ Outsider mines were not included—a sign of Spanish weakness.

Despite renewing the contract in January 1939, the Franco government broke with Roura & Forgas due to that company's support of the Republican government. It called for tenders in the fall of 1939; however, it was not awarded, since none of the bidders was considered sufficiently knowledgeable about the business, nor could any provide appropriate financial guarantees. The proposals of Pickering and Roura & Forgas, who made an offer through the banker Juan March, had been discarded beforehand.⁴⁶

According to article 17 of the existing agreement, the outbreak of World War II theoretically implied an automatic dissolution of the cartel. However, neither of the partners had any interest in taking that step. The Italians feared that the Spanish government



would start huge sales of flasks at very low prices; the Spaniards knew that their commercial network was still too poor (the biggest market, Germany, was no longer reachable, with Italy satisfying all its demand) and production costs were too high. Moreover, a negotiation for the renewal of the cartel after the war would have given the Italians the opportunity to seek higher quotas.⁴⁷ The main consequence was a spectacular increase in both sales and prices. In the last weeks of September 1939, prices rose from \$80 to over \$100 per flask, with two immediate agreements with the British and French governments to provide them with 10,000 and 5,000 flasks, respectively. This sudden demand stimulated the cartel into raising minimum prices to \$120 and \$125 for Europe and Asia at the end of November, only to increase them by another \$20 in December. A few months later the official price was \$250, which held throughout the war.⁴⁸

Following the failure of the sales auction, in early 1940 Spanish Treasury Minister José Larraz was determined to regain direct management of sales through two independent offices, one in Madrid and one in Rome, even though the Almadén directors and the Italian partners advised otherwise. The experiment was not a success; rather than cooperating, the offices often competed against each other. The upshot was that by the end of the year Italy had so exceeded its quota, largely through intense sales to Germany, that it asked to abandon the 55:45 quota agreement, because of the six-billion-lira Spanish debt to Italy.⁴⁹

By then, however, the Spanish, Italian, and German governments had decided that from mid-1941 the Frankfurt-based Metallgesellschaft would handle the cartel's sales, as indicated by the Reichstelle für Metallen, in charge of controlling metal consumption in Germany and all territories under the Third Reich.⁵⁰

[Insert Figure 3 here]

The contract with the Metallgesellschaft shared many similarities with that signed earlier with Roura & Forgas. The German company was to sell the entire ME production, at the price stipulated by ME, in Germany and in all the countries under its military control (i.e., Holland, Belgium, occupied France, Poland, Serbia, Czechoslovakia, Denmark, and Norway).⁵¹ Thereafter, Almadén sales were increasingly concentrated in Germany (see Table 2).



Meanwhile, the agent for North America, Nussbaumer, informed the cartel that the U.S. government would consider a possible purchase of 50,000 to 100,000 flasks from Almadén, on condition that the price was around \$200. This did not materialize once the United States entered the war.⁵² From then on, exports to Japan, which had been the largest buyer of Spanish mercury before the attack on Pearl Harbor, became increasingly complicated, not so much for problems of transport as for payments.⁵³ Note the figures in Table 2 for exports to Portugal, a country whose industry had no mercury needs. It seems these shipments ended up in the hands of the Allies.

[Insert Table 2 here]

In short, the early years of World War II marked the highpoint of the cartel's activity, but did not stem growing distrust among its members. Almadén and the Italians enjoyed record sales in 1940 (98,199 flasks) as well as record production in both 1941 and 1942 for Italy (94,230 and 94,161 flasks, respectively) and Spain (86,473 and 72,288 flasks).⁵⁴ This did not mean that Spain sold below its quota in those years, since in 1942 the Italian group compensated the Spaniards for the deficits of the two previous years by increasing its stock. The Italians were keen to keep good bilateral relations as they knew that the cartel's dissolution could let Almadén sell to Germany at \$70 to \$80, when they, with Spain's permission, were selling at \$200 outside the cartel.⁵⁵

In 1943, the Allies' military operations in Italy led to further difficulties for the cartel; nevertheless, ME continued to function formally. The last meeting of the cartel during the war was held in August 1943 in Zurich. After that, the partners accessed less information about each other's dealings, and what did arrive came by letter or telegram, since the Italians were unable to get visas to visit Switzerland. In 1943, the Italians declared sales of 19,797 flasks, although the Spaniards suspected fraud, since they had evidence of sales of 42,800 flasks in total and could hardly believe that the difference was due solely to domestic consumption. As the months went by, Spain felt increasingly free not only to impose its own price policies, but also to sell to Germany (where an official representative was set up).⁵⁶

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The situation in Almadén became dire in 1944: only 343 flasks were sold in the whole year. The messages sent to the Italians at the end of the year all pointed towards the need for a reduction in the official price as soon as possible.⁵⁷ The Italian response was an emphatic no, since they needed funds to restore the lamentable state of their mines, destroyed by the retreating German troops.

The first days of 1945 saw a series of meetings held in Madrid between U.S. embassy staff and the Almadén directors. These meetings proved a turning point, both in the mercury export policy of the Spanish government and in the structure of the world mercury market. The Franco government admitted to a stock of unsold mercury of 89,754 flasks at the end of 1944.⁵⁸ From then on, sales to the United States began to rise and, even before the war was over, it had become the largest importer of Spanish mercury.

Destabilizing the Cartel

Peace brought a glut of flasks onto the biggest markets: 100,000 flasks in the U.S. and 30,000 in the U.K. The American stockpiling strategy included massive purchases of mercury, which would affect the market over the coming decade. The general slump in international prices had pushed the U.S. mines to the verge of collapse, after the 1943–44 boom had transformed the country for the first time into a mercury exporter. Most of the mines were by now incapable of operating below \$200, while the New York price was barely holding at \$100. Although domestic demand was high, U.S. consumers wanted to buy at a lower price than the cartel was demanding.⁵⁹

In August 1945, ME held its first formal meeting in two years. The aim was to rebuild the sales structure and generate a new sales policy. The price of \$100 was considered unrealistic, but \$80 was not, thereby marking an end to the war market. However, discussions were also influenced by the new approach to cartelization by the U.S. administration. Conceived during the war, it **it opposed** all international cartels and any restrictive business practices.⁶⁰

In 1946 the cartel was renewed and the partners discussed finding a new exclusive agent. For the Italian group, the Zurich-based Anglo-Foreign Securities, later renamed **Transalpina**, offered the best conditions (i.e., a three-year contract for 65,000 flasks per

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year, with a commission of 4.5 percent up to 30,000, 5 percent to 40,000, and 5.5 percent thereafter). The Almadén directors were reluctant to accept an Italian firm as sole seller, but finally agreed.⁶¹ However, Transalpina[AU: was not able to raise the \$600,000 deposit/guarantee required by the contract, so ME was forced temporarily to revert to the old system of multiple, regional representatives.⁶²

A price agreement proved more complicated. In a weak international market (prices fell from \$92 in 1946 to \$76 in 1948), the two main partners had opposing needs: the Spanish wanted low prices to raise consumption, while the Italians wanted more stable or higher prices to increase their balance-sheet liquidity. The Italians were also tricking their Spanish partners by selling flasks to the Allied Commission, officially through outsiders that technically no longer existed, despite the establishment in 1946 of special rules for these sales.⁶³

In 1948, the cartel discussed establishing a central sales bureau in Paris or in Zurich, but the Spaniards opposed this for domestic political reasons.⁶⁴ However, ensuing events made any agreement between the members of the cartel impossible. Despite doubts in the system of representatives and low sales, the market held good opportunities for both groups. In 1948, the cartel sold 113,583 flasks (the Spanish 85,117 and the Italians 28,466). Prices were slowly returning to manageable levels for both groups, while the Italians had accepted the idea of some compensation for Almadén, such as the exclusive sale of 10,000 flasks to Imperial Chemical in 1948. The U.S. government requested that the cartel sell 80,000 flasks at a maximum price of \$75, but preferably at \$70. The cartel confirmed that it could immediately sell up to 100,000 flasks at those prices. Negotiations continued during the spring of 1949.⁶⁵

The American strategy became clearer in the coming months. On the one hand, the U.S. government started separate, secret negotiations with each group to buy 80,000 flasks outside the cartel; on the other hand, in April 1949, after reaching an agreement with the Italians, it made efforts to disclose the information in order to destabilize the cartel. Protests to the committee of directors and to the highest levels of both governments followed, at a time when other diplomatic discussions on the payment of the Spanish debt to Italy and opportunities for Italian firms to enter the Spanish market were in full swing. The Italian government claimed that the sales had been made under the Marshall Plan rules, within the



framework of the U.S. strategic stockpiling, which would not in any case affect the market—an opinion Spain clearly did not share.⁶⁶ Hypocrisy and mistrust were rife among the partners.

To complete the destabilization of ME, in 1952 the U.S. administration discreetly offered the Italian government information about 1950 Almadén sales that took place outside the cartel: 45,000 flasks under the British-Spanish trade agreement, 40,000 to Global Trading Co. of Lichtenstein (a company working for the Soviet government), and 7,000 to an American buyer.⁶⁷ This information greatly reduced the space for Spanish legal complaints, despite the Madrid government having officially announced its intention to ask the Italians to pay \$47 million under article 5 of the cartel agreement.⁶⁸ Moreover, the U.S. administration authorized the Pacific Foundry Co. to export new furnaces to Spain—to increase Almadén production—to replace obsolete Bustamante furnaces. Real modernization was finally underway.⁶⁹

Once it became clear that all these tactical moves were made **just for better positioning to recover the agreement in better conditions**, the members of the cartel started negotiations.⁷⁰ These were completed by 1954, when a secret agreement came into force, with a new, more formal one planned for 1958. Meanwhile, the Italians had already agreed to compensate the Spaniards for the 1949 sale to the U.S. stockpile, with 812 million **lira** or \$1.3 million and the exclusive right to sell mercury to the United States for twelve to eighteen months, up to **a value of** \$8.3 million.⁷¹

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However, the cartel and market conditions would now be vastly different, with new entries from the Soviet bloc, Africa, and Asia, where production costs were lower than in Spain (see Figure 1). The duopoly was over, even though the cartel formally continued until 1972.

Conclusion

ME provides an example of a cartel for a single product with a tremendously varied internal organization over a relatively long period and allows for reflection on the effectiveness of collusion in a series of situations, not to mention the efficiency of publicly run economic sectors.



The rationale behind the cartel was optimization of the mining producers' income in response to traditional international market intermediaries by avoiding competition between its members. The level of concentration in the mercury industry contributed to the agreement, although the cartel's costs and production tipped **in favor of** Almadén. The strategy of cheating or excluding the Italian mines, through sharp price reductions, was in theory a card held by the Spaniards. Yet, in the long-term, both countries gained more by cooperating than they would have if competing. In addition, the cartel worked, despite the instability of the 1930s and 1940s. However, the cartel had internal problems during its twenty-six most active years. Therefore, we do not support the general findings of Mackie-Mason and Pindyck.⁷² The cartel was far more efficient than believed, and it was able to overcome external factors by adopting coherent market strategies. ME was one of the longest-running and most successful cartels in the history of modern mining.⁷³

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The experience of the ME sales office in the first stages of the cartel confirms that without an efficient network and minimum flexibility in prices, it is impossible to generate any commercial policy. Nevertheless, the outsourcing of sales proved to be a workable system, although only when exercised by a single seller, as in the case of Roura & Forgas or Metallgesellschaft. In contrast, the system of representatives did not work, due to insufficient incentives or inflexibility in negotiating prices amid an economic crisis. Our research underlines that keeping prices artificially high and fixed is an error in this type of cartel, especially in the case of a fall in demand, however small the market participation of outsiders. In short, this policy can be justified only under extraordinary conditions, such as occurred during World War II. The experience of ME shows that traders and producer members did not share the same interpretation of the concept of price flexibility.

Alternatives to a cartel, in the form of real competition among European producers or of continuing the system of delegating sales, would not necessarily have generated an improvement in technological development in the face of rigid demand. Indeed, earlier experiences, such as that of the Rothschilds, had shown that intermediaries require stable production to manipulate the market and that the intermediaries end up taking the lion's share of the extraordinary profits made from holding all the production and increasing the prices.



In both countries there was a double governance structure in public companies: technical and political. The former comprised the engineers and state lawyers working for the IRI or the Almadén board, who retained their positions regardless of political change. In general, they were efficient managers but were at the mercy of the politicians when it came to certain decisions. The politicians facilitated the cartel and guaranteed its stability, although at times they meddled and imposed changes in the agreements that did not make economic sense.

Interference by the Spanish and Italian governments hindered the smooth running of the cartel. Instances included the defenestration of the cartel's best sales agent, Roura & Forgas; the meddling in the sales policies of the Spanish government in 1940; and the lack of coordination in the 1949 sale to the U.S. government, which resulted in five years of crisis for the cartel. The state's active role in establishing and governing a cartel is no guarantee of rational business conduct. Both the Spanish and the Italian governments were more motivated by the defense of their national interests than by market optimization. Far from being used as a special foreign-policy tool by the Italian and Spanish governments, as Clemens Wurm suggests, ME was able to deal well with the delicate balance between governments, traders, and the long-term interests of the members of the cartel.⁷⁴ As the more pragmatic approach by Levenstein and Suslow suggests, ME can be considered a perfect example of adaptation to its complex and contradictory context.

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¹ On mercury market history, see Victoriano Martín, *Los Rothschild y las minas de Almadén* (Madrid, 1980); Jeffrey MacKie-Mason and Robert Pindyck, “Cartel Theory and Cartel Experience in International Minerals Markets,” in *Energy: Markets and Regulation*, ed. Richard Gordon, Henry Jacoby, and Martin Zimmerman (Cambridge, 1987), 187–214; Luciano Segreto, *Monte Amiata: Il mercurio Italiano—Strategie internazionali e vincoli extraeconomici* (Milan, 1991); and Miguel López-Morell, “La comercialización del Mercurio de Almadén durante el Siglo XIX y el primer tercio del S. XIX,” *Boletín Geológico y Minero* 119 (2008): 309–30.

² For general literature on cartels in business history, see Akira Kudo and Terushi Hara, eds., *International Cartels in Business History* (Tokyo, 1992); Dominique Barjot, ed., *International Cartels Revisited, 1880–1980* (Caen, France, 1994); Geoffrey Jones, ed., *Coalitions and Collaboration in International Business* (Cheltenham, 1993); and Margaret Levenstein and Valerie Suslow, “What Determines Cartel Success?,” *Journal of Economic Literature* 54 (2006): 43–95.

³ Marian Radetzki, “The Role of State Owned Enterprises in the International Metal Mining Industry,” *Resources Policy* 15 (1985): 45–57.

⁴ Margaret Levenstein, “Price Wars and the Stability of Collusion: A Study of the Pre–World War I Bromine Industry,” *Journal of Industrial Economics* 45, no. 2 (1997): 117–37; Ian Phimister, “The Chrome Trust: The Creation of an International Cartel, 1908–38,” *Business History* 38 (1996): 77–89; John Hillman, *The International Tin Cartel* (New York, 2010); Marco Bertilorenzi, “Big Business, Inter-firm Cooperation and National Governments: The International Aluminum Cartel, 1886–1939,” in *Organizing Global Technology Flows: Institutions, Actors, Processes*, ed. Pierre-Yves Donzé and Shigehiro Nishimura (London, 2013); Steven K. Holloway, *The Aluminium Multinationals and the Bauxite Cartel*, (New York, 1988); Debora Spar, *The Cooperative Edge: The Internal Politics of International Cartels* (Ithaca, 1994); Orris Herfindahl, *Copper, Cost and Prices, 1870–1957* (Baltimore, 1959); William Elliott, Elizabeth May, J. Rowe, Alex Skelton, and Donald H. Wallace, *International Control in the Non-ferrous Metals* (New York, 1937); Ervin Hexner, *International Cartels* (London, 1946); Great Britain Board of Trade, *Survey of International Cartels and Internal Cartels, 1944–1946* (London, 1976).



⁵ Richard Hess, 'Mercurio Europeo': Das internationale Quecksilber Kartell und die natürlichen ONLY ONE „E“ und ökonomischen Voraussetzungen für die monopolistischen Stellung des Quecksilbers auf dem Weltmarkt" (dissertation Faculty of law, Zurich University, 1940)

⁶ Barbara Curli, "L'Italia, la Società delle Nazioni e la discussione sugli accordi industriali internazionali, 1927–31," *Rivista di Storia Economica* 1 (1990): pp 21–46.; Terushi Hara, "La conférence économique internationale de 1927 et ses effets sur la formation des cartels internationaux", in *Interantional Cartels Revisited (1880-1980)*, edited by Dominc Barjor, Caen, Editions-diffusson du Lys, pp. 265-272 Eric Bussière, "La SDN, les cartels et l'organisation économique de l'Europe entre les deux guerres," in *International Cartels*, ed. Barjot, pp 273-283; Marco Bertilorenzi, "The International Industrial Cartels Committee: The League of Nations, the International Chamber of Commerce, and the Governance of International Cartels (1920s–1940s)" (paper presented at EBHA conference, Paris, 2012).

⁷ MacKie-Mason and Pindyck, "Cartel Theory and Cartel Experience," 201.

⁸ Although the mercury figures are universal, there is a slight deviation with North American production, where flasks are marginally smaller. Specifically, U.S. flasks weighed 76 pounds while Spanish ones were 34.5 kilograms, equivalent to 76.0582 pounds (75 Spanish pounds).

⁹ Segreto, *Monte Amiata*, 58–62, 47, 221; López-Morell, "La comercialización del Mercurio de Almadén." 325

¹⁰ Julio Zarraluqui, *Los Almadénes de azogue* (Madrid, 1934), 748–49; Report of the meeting of 19 Apr. 1920 and N. M.M Rothschild & Sons to Alfredo Bauer (Madrid), 15 July 1921, both at XI-111-151, Rothschild Archives, London.

¹¹ Meeting of 30 Aug. 1941, R-15/527, Mercurio Europeo (hereafter ME), Grupo Español, vol. 6, Fundación Almadén Archives, Almadén (hereinafter AFA).

¹² J. L. García Ruiz, "El Banco Español de Crédito, 1902–2002: Un siglo de servicio a la economía Española" (, Unpublished document, 2002). The Banca Commerciale Italiana, the main shareholder in Monte Amiata, would take a share. See Segreto, *Monte Amiata*, 86.

¹³ Javier Puigarnau, "Las minas de Almadén," in *Revista nacional de Economia* (1925).

¹⁴ Zarraluqui, *Los Almadénes de azogue*, 800. According to some sources, Spanish mines sold only 46,000 flasks in 1926.

¹⁵ "Visita a las minas de azogue de Italia," 12 Nov. 1921, b. 2 file 2752, Sociedad Minas Almadén, Archivo Historico Nacional, Madrid (hereafter SMA, AHN); documents dated 12 Mar. 1922 and 3 Feb. 1923, Serie Rossa, 520, Archivio Storico IRI, Archivio centrale dello Stato, Rome (hereafter ASIRI, ACS).

¹⁶ Minutes of the Monte Amiata (hereinafter MA) board of directors, 14 Jan. 1928 and 3 Feb. 1928, Archives Finmeccanica, Rome (hereinafter AF); "Venta del mercurio de las minas de Almadén," 1 Feb. 1930, b. 2, file 3080, SMA, AHN

¹⁷ Meeting of 29 Sept. 1928, ME managing committee minutes, vol. 1, R-15/513, AFA.

¹⁸ The Italian share was distributed as follows: Monte Amiata, 51.03 percent; Idria, 25.67 percent; Siele, 23.3 percent.

¹⁹ Meeting of 29 Sept. 1928, ME managing committee minutes, AFA; ME, "Considerazioni sull'esercizio 1930," 16 Jan. 1931, Serie Rossa, b. 520, ASIRI, ACS.

²⁰ Italian producers sold, in total, 61,200 flasks in 1928, 21,800 in 1929, and 23,000 in 1930, but the companies outside the consortium sold, in the same years, 1,000, 1,200, and 3,500 flasks, respectively. ME, "Considerazioni sull'esercizio 1930," ASIRI, ACS.

²¹ Meeting of 5 Feb. 1929, ME managing committee minutes, vol. 1, R-15/513, AFA.

²² There was a proposal for a reduction of 5 shillings to exceptional customers, on condition that they did not make this public.

²³ Meeting of 7 Oct. 1929, ME managing committee minutes vol. 1, R-15/513, AFA; meeting of 12 May 1931, ME managing committee minutes, vol. 2, R-15/514, AFA.

²⁴ ME, report on the year 1930, Serie Rossa, b. 520, ASIRI, ACS.

²⁵ Riccardo Salvadori to J. Toepfritz, CEO of Banca Commerciale, 28 June 1930, Serie Rossa, b. 520, ASIRI, ACS.

²⁶ Meeting of 20 Oct. 1930, ME managing committee minutes, vol. 1, R-15/513, AFA; Mercurio Europeo, Report on year 1930, Serie Rossa, b. 520, ASIRI, ACS. In particular, the large American market fell spectacularly in 1930: only 1,200 flasks sold, compared to 11,356 in 1929.

²⁷ "Mercurio Europeo, Considerazioni sull'esercizio 1931," Serie Rossa, b. 520, ASIRI, ACS; "Sistema seguidos para la venta de las minas de Almadén desde la rescision del contrato con la casa Rothschild," b. 2, file 2715, SMA, AHM.

²⁸ Meetings of October 1931, ME managing committee minutes, vol. 2, R-15/514, AFA; ME, report on the year 1931 ACS, ASIRI, Serie Rossa, b. 520

²⁹ Meeting of 14 Dec. 1931, MA minutes of the board of directors, AF [AU: Please provide full location.]

³⁰ Meeting of 17–18 Nov. 1931, ME managing committee minutes, vols. 2 and 3, R-15/514–515, AFA.

³¹ Finally, as guaranteed, Roura & Forgas was to deposit \$150,000 in a leading bank, agreed upon with ME, and would allow the cartel to have a delegate in its offices to supervise the whole process (Meeting of 20 Nov. 1931, ME managing committee minutes, vol. 3, R-15/515, AFA).

³² The Italian mercury mines went from employing 3,207 workers in 1929 to just 865 in 1934 (Segreto, *Monte Amiata*, 226).

³³ "Annexe au procès verbal de la réunion du Mercurio Europeo tenue à Paris les 9–14 octobre 1933," Serie Rossa, b. 520, ASIRI, ACS.

³⁴ Document signed by Luigi Cardella [AU: First name?], 14 Aug. 1933, Serie Rossa, b. 520, ASIRI, ACS; Report dated 9 Feb. 1934, b. 2 file 2715, SMA, AHM.

³⁵ Italian ambassador Raffaele Guariglia [AU: First name?] to Italian Foreign Ministry, 26 Aug. 1933, Serie Rossa, b. 520, ASIRI, ACS.

³⁶ Vincenzo Fagioli to the Italian Ministry of Corporations, 7 Jan. 1933, Serie Rossa, b. 520, ASIRI, ACS.

³⁷ Almadén would retain 60 to 66 percent and the Italian group, 40 to 44 percent; ME managing committee minutes, vol. 4, session 9, 11 Oct. 1934, R-15/516, AFA.

³⁸ Siam and Argus mines accumulated over 4,000 flasks. "Nota acerca de la negociaciones mantenidas con el grupo italiano sobre la posible renovacion del contrato en vigor con Italia para la venta del azogue," 9 Feb. 1934; documents dated 16 Sept. 1936 ; and "El primer contrato entre los gobiernos espanol e italiano," undated draft, all in b. 2 file 2715, SMA, AHN.

³⁹ ME managing committee minutes, vol. 4, 15 Jan. 1934, R-15/516, AFA; "Mercurio Europeo, Rapporto sulle sedute del Comitato direttivo di 'Mercurio Europeo, tenute a Parigi dal 10 al 15 dicembre 1934," Serie Rossa, b. 520, ASIRI, ACS.

⁴⁰ Document dated 3 Mar. 1936, n. 1, file 1240, SMA, AHN.

⁴¹ Vincenzo Giura, *Tra politica ed economia: L'Italia e la guerra civile spagnola* (Naples, 1993).

⁴² Meeting of 22 Sept. 1937, MA minutes of the board of directors, General Legal Affairs Department, Added Archives, AF (Monte Amiata mining activities were concentrated in a new state owned company in 1974 controlling all the mercury mines of the Amiata region. Finmeccanica, the Italian state holding for the mechanical and defense sector, acquired its real estate and financial assets) [AU: Please provide complete location.]

⁴³ Segreto, *Monte Amiata*, 129. Mussolini government was also considering to ask Franco, once he would occupy Almadén, to leave Italy the total control of the Spanish mines commercial activities, as a compensation for its financial support to the military coup. With an international market price of \$62–67, the project was to give the Spaniards [AU: Please clarify this confusing phrase] \$8–10 per flask, with the balance for the Italian Ministry of Finance. A prudent estimation affirmed this would bring about 40 million lira to the Italians (Meeting of 27 Feb. 1937, MA minutes of the board of directors, General Legal Affairs Department, Added Archives, AF). [AU: Please provide complete location.]

⁴⁴ Meeting of 19 Oct. 1938, MA minutes of the board of directors, General Legal Affairs Department, Added Archives, AF. [AU: Please provide complete location.]

⁴⁵ Meeting of 18 July 1940, MA minutes of the board of directors, General Legal Affairs Department, Added Archives, AF; Meeting of 8 May 1939, ME Spanish group minutes, vol. 5, R-15/526, AFA.

⁴⁶ Hess, *Mercurio Europeo*, 130.

⁴⁷ “Prórroga del convenio Hispano-Italiano,” June–Sept. 1940, b. 2 file 3126, SMA, AHN.

⁴⁸ Meetings of 5 Nov. 1939, 25 Nov. 1939, and 28 Nov. 1939, ME Spanish group minutes, vol. 5, R-15/526, AFA.

⁴⁹ Meeting of 13 May 1940, MA minutes of the board of directors, General Legal Affairs Department, Added Archives, AF. [AU: Please provide complete location.]

⁵⁰ Meetings of 30 Aug. 1941 and 22 Jan. 1942, ME Spanish group minutes, vol. 6, R-15/527, AFA; meetings of 14–19 Dec. 1941 (meetings in Geneva, Zurich, Basel, and Frankfurt), ME managing committee minutes, vol. 6, R-15/518, AFA. After the agreement was signed, meetings were held in Berlin.

⁵¹ During the negotiations, the Reichstettefuer Metallen tried to decide the price but was opposed by the cartel.

⁵² Meeting of 30 Oct. 1941, ME Spanish group minutes, vol. 6, R-15/527, AFA.

⁵³ In August 1942 an offer from Japan to purchase 20,000 flasks had to be rejected because half the payment was offered in gold, with no guarantee that it could be delivered (Meeting of 4 Sept. 1942, ME Spanish group minutes, vol. 6, R-15/527, AFA).

⁵⁴ A good part of the increase in Spanish production figures was due to the use of forced labor in the Almadén mines (Angel Hernández, *Los esclavos del rey* [Almadén, 2010], 364–70).

⁵⁵ Meeting of 6 Nov. 1941, MA minutes of the board of directors, General Legal Affairs Department, Added Archives, AF. [AU: Please provide complete location.]

⁵⁶ Meetings of 12 May 1944 and 19 Oct. 1944, ME Spanish group minutes, vol. 6, R-15/527, AFA; [AU: what is this document?] b.2, files 2763 and 3138, SMA, AHN. A special representative was also nominated for the United States.

⁵⁷ Meeting of 1 Nov. 1944, ME Spanish group minutes, vol. 6, R-15/527, AFA.

⁵⁸ Meeting of 12 Feb. 1945, ME Spanish group minutes, vol. 7, R-15/528, AFA.

⁵⁹ Meeting of 26 Mar. 1946, MA minutes of the board of directors, AFA. The situation was probably also influenced by the fact that the Allies found 45,000 to 50,000 flasks in Germany when they occupied the country in 1945, but it is not known in what proportion the U.S. and U.K. split this quantity of flasks.

⁶⁰ [AU: add first names] Wendy Asbeek, and Richard Griffiths, “L’European Recovery Program e i cartelli,” *Studi storici* 37, no. 1 (1996): pp 41–68; Luciano Segreto and Ben Wubs, “The Resistance of the Defeated: German and Italian Big Business and the American Anti-Trust Policy, 1945–57,” *Enterprise and Society*, Volume 15, issue 2, pages 307–336

⁶¹ Meeting of 12 Oct. 1946, MA minutes of the board of directors, AFA. ME received other proposals from Pickering and Roura & Forgas.

⁶² Meeting of 7–8 Dec. 1946, ME managing committee minutes, vol. 6, R-13/520, AFA.

⁶³ [AU: what is this document?] b. 2, file 3133, SMA, AHN; Segreto, *Monte Amiata*, 152–54.

⁶⁴ [AU: please identify this document], Us commercial attaché in Bern to State Department, RG 59, 865.602/7-2388, Archives II, National Archives and Records Administration, College Park, Maryland (hereafter NARA).

⁶⁵ Notes for the meeting of the board of directors of the MA, 10 Feb. 1949, b. 520, ASIRI, ACS; Sessions of 28 May 1948 and 2–5 Apr. 1949, ME managing committee minutes, vols. 6 and 8, R-15/520, AFA.

⁶⁶ MA minutes of the board of directors, 13 Sept. 1949, AFA; [AU: what is this document? Same as in note 68?] b. 2, file 3133, SMA, AHN; Note for the Ministry of Foreign Affairs, 6 Mar. 1952, b. 520, ASIRI, ACS; Ministero industria e commercio, Commissione central industria, sottocommissione industriale Alta Italia, b. 116, file 125, ASIRI, ACS; Giura, *Tra politica ed economia*, 87; Pablo Hierro de Lecea, “Desafíos en la aplicación de un enfoque transnacional para el estudio de las relaciones hispano-italianas, 1943–1957” (working paper, Seminario de Investigación del Doctorado en Historia Contemporánea, Departamento de Historia Contemporánea Universidad Complutense, Madrid, 2009). The U.S. decision was probably linked to the perspective that the Italian government was ready to include some deliveries of flasks to the Soviet Union in the framework of war reparations (Segreto, *Monte Amiata*, 163).

⁶⁷ [AU: what is this document?] Us embassy in Rome to Monte Amiata, RG 59, 865.602/7-2348, NARA.

⁶⁸ Note for the Ministry of Foreign Affairs, 6 Mar. 1952, b. 520, ASIRI, ACS.

⁶⁹ “Mejora de las instalaciones metalúrgicas,” b. 2, file 1951, SMA, AHN.

⁷⁰ Minutes of the Spanish sales committee, 27 Jan. 1950, AFA.

⁷¹ Comité Exterior de ventas, vol. 2, 30 Aug. 1954, R-15/527, AFA. See also Segreto, *Monte Amiata*, 164; MacKie-Mason and Pindyck, “Cartel Theory and Cartel Experience,” 193.

⁷² MacKie-Mason and Pindyck “Cartel Theory and Cartel Experience,” 201.

⁷³ Harm Schröter, “Cartelization and Decartelization in Europe, 1870–1995: Rise and Decline of an Economic Institution,” *Journal of European Economic History* 25, no. 1 (1996): 129–53; Harm Schröter, “Small European States and Cooperative Capitalism, 1920–1960,” in *Big Business and the Wealth of Nations*, ed. Alfred D. Chandler Jr., Franco Amatori, and Takashi Hikino (Cambridge, U.K., 1997), 176–204; Harm Schröter, “Cartels Revisited: An Overview on Fresh Questions, New Methods, and Surprising Results,” *Revue économique* 64, no. 6 (2013): 989–1010.

⁷⁴ Clemens Wurm, *Business, Politics and International Relations: Steel, Cotton and International Cartels in British Politics, 1924–1939* (London, 1988).