07-011

# Cartels and Competition: Neither Markets nor Hierarchies

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**Abstract:** This article provides an overview on the rise and fall of cartels since the late 19th century when the modern cartel movement properly arrived with the rise of big business based on scale and scope. The general narrative about cartels may not be a story of rise and fall, but rise, boom, collapse, revitalization, gradual decline, and then criminalization. Yet, until the 1980s, the global story of big business must be told in conjunction with cartels rather than without them. They affected technological development, corporate strategy, and organizational change. Viewing cartels only as a "conspiracy against the public" short-circuits many important questions and obscures the great variations in objectives, type, and services provided by cartels.

Before 1945 most of the world thought that cartels brought widespread benefits. Backed by U.S. economic might, after 1945 antitrust ideas spread across the world so that now Adam Smith's devastating verdict of them as "conspiracies against the public" has become the prevailing interpretation. Business historians have shown, however, that this consensus about cartels as conspiracy is historically the exception to the rule, a product of a post-1945 constellation of ideas and events. Cartels are not necessarily the opposite of liberalism and competition, but a variation on them. For better or for worse, they shaped economic and business history since the late 19th century. From the company perspective, joining, managing, or combating cartels was a major entrepreneurial act. Finally, business historians have shown the varied effects and services provided by cartels (quality standards, technology transfers, or risk management) that extend beyond the conspiratorial motivation to raise prices.

In short, studying cartels through the lens of conspiracy does a severe injustice to their empirical reality and short-circuits many important theoretical questions. Section 1 offers an array of different cartel types that blur the distinction between legitimate cooperation and illegitimate collusion. It is actually difficult to decide when a cartel is a cartel, what cartel success means, let alone if it acts inefficiently or destructively. Section 2 argues that the voluminous scale and scope of cartels before 1939, together with lingering cartelization after 1945 in Europe and Japan means that any analysis of entrepreneurship, corporate strategy, and organization, as well as national economic development must incorporate the impact of cartels. Yet the most neglected area of research is the most important one for business historians. What impact did cartels have on economic and corporate development (Section 3)?

This chapter makes a few broad points. First, cartels do not abolish competition, but regulate it. The question is not cartels *or* competition, but cartels *and* competition. Historically, cartels provided participating firms a range of market-ordering options that antitrust has since foreclosed. Economic analysis works with a stark dichotomy of markets (cartels as distortions) or hierarchies (cartels as incomplete, inefficient internalization). This conceptual straitjacket leads to one of the largest misconceptions about cartels that they halt competition and innovation. Instead they reshape the rules of the game on which competition rests (similarly Wurm 1993: 291).

Second, to fully understand company development and behavior in a cartel-laced world—that is, most of the 20th century—business historians need to recover those strategic options in between markets and hierarchies. If one takes the perspective that joining cartels is a form of *competitive* strategy, or at least a cooperative waystation on the road towards future competition, one can explain why cartels have not damaged economic growth as much as some might expect.

Third, if one reframes cartels as private self-management of an industry, cartel research can fruitfully intersect with studies of government regulation and the burgeoning discussion about business self-regulation. Rightly or wrongly, people conceived cartels for over a century as a legitimate form of market governance and national industrial policy. Cartels represented at least one way in which contemporaries debated capitalism and attempted to manage its excesses. The cartel question raised important issues about benefits and risks of competition—and for whom.

To be clear, these cooperative arrangements were by no means benign, mostly second-best forms of competition, and were largely but not exclusively in producers' interests. They were, however, sometimes more congruent with the public interest than Smith's claim that they were only an "absurd tax" created by an "order of men…who have generally an interest to deceive and even to oppress the public" (Smith [1776] 1976: 278). We need to broaden the discussion of cartels beyond conspiracy.

*A Typology of Interfirm Cooperation*

The classic cartel study by Great Britain's Board of Trade (1944: vi) noted "the variety of arrangements is very striking and attests to the ingenuity of industrialists, or at least that of the accountants and lawyers who advise them." It is difficult to generalize about cartels because they come in such a variety of forms, objectives, and effectiveness. What constitutes a cartel is by no means an easy question.

Economists have established a plausible but stylized baseline of theories where cartels are most likely to appear and endure. George Stigler (1964) famously argued that the acute desire to limit competition was not sufficient to explain when and why collusion occurs; collusion was more difficult than many assumed. Since cartels created an incentive to cheat, they were inherently instable. The great virtue of this economics literature, reviewed in Levenstein and Suslow (in Grossman 2004) and (2006) more fully, is that it frames questions about inner-cartel behavior more precisely unlike the older literature that relied on individual case studies.

This literature tends to find all sorts of ways in which cartels fail, which, when pushed to the extreme, ironically obviates the need for antitrust policy and cannot explain how or why many cartels succeed. Levenstein and Suslow found it difficult to generalize about cartel sustainability at all. In their sample, a good number of cartels lasted longer than ten years; others collapsed quickly. One wheat cartel lasted just one year, but another wheat cartel managed to last 29 years. Japan's cartel movement practically begins with the cotton textile industry after 1880, where the great number of players should have destroyed it; Europeans never developed stable ones. Considering that most capital-intensive firms attempted to form cartels, the automobile industry never generated one. Innumerable "idiosyncratic and history-dependent determinants" on top of well-understood structural factors contributed to cartel success, defined as durability.

External shocks or demand instability destabilized cartels as much as cheating. Debora Spar's (1994) analysis of diamond, gold, uranium, and silver cartels concluded that: "At best, structural variables are the necessary but still insufficient precursors of cooperation (p. 218)."

Although the term cooperation connotes a warm and fuzzy comportment, durable cartels depended upon constant bargaining, the ability to react flexibly over time, and harsh retaliation. Having a robust collective organization or a dominant player acting as a "hegemon" (Spar) enhanced cartels' effectiveness, such as in aluminum (Alcoa), electric lamps (General Electric), diamonds (De Beers), or oil (Saudi Arabia). The perils of price wars often helped cartels cohere.

Siegfried Tschierschky (1903), the longtime editor of Germany's leading cartel journal and a cartel director himself, differentiated firms' desire to form cartels (motivation), industry conditions (structure), from their capacity to do so (competence), but "practical cartel policies have found numerous ways to confront these difficulties in one or another manner" (p. 68). He stressed the "psychological willingness," or the "ethnological" and "personal moment." Cartel sustainability depended on their ability to regard customers, not disregard them, and their ability to lower prices at times to secure higher, long-run profitability (pp. 58-68). German coal, iron, and steel prices actually fell relative to British domestic prices after the formation of cartels around the turn of the 20th century (Kinghorn and Nielsen in Grossman 2004).

Given that "idiosyncratic" elements are so important and that some cartels were major business organizations in their own right, business historians informed by economic theory would excel here. The model German cartel, the Rhenisch-Westphalian Coal Syndicate, formed in 1893, employed over five hundred people, consisted of over 67 firms in 1912, was an independent joint-stock company with its own headquarters, and managed about 1400 different prices for varying coal qualities (Peters 1989). Since cartels had to act like businesses to maintain their effectiveness and participants had to learn to work with one another to build more sophisticated structures over time, the lens of organizational capabilities or theories of organizational learning, rather than just analyzing the dynamics of cheating, would prove useful (Levenstein 2006). Harm Schröter (1996: 133) has argued that Germany's first-mover advantages in forming cartels provided a crucial learning experience that they leveraged when building international cartels. Rather than viewing cartels as inherently dysfunctional, researchers might examine how some cartels provide valuable services. DeBeers invented an ingenious marketing and distribution strategy to associate diamonds with weddings. American fire insurers learned how to develop stable local cartels to prevent rate-cutting that permitted them to build up reserves that staved off disaster after the San Francisco earthquake of 1906 and the Baltimore fire of 1904, unlike the disastrous municipal fires of the 1870s (Baranoff 2003).

The following chart classifies cartels along their objectives, rather than industry, which might promote more systematic comparisons.

# A Spectrum of Interfirm Cooperation

**Low Internalization**

**Markets**

- Spot Markets
- Oligopolistic Competition (Implicit Collusion)
- Trade/Industry Associations

**Private Self-Regulation (Associations)**

*Procedural*

- Contractual or Condition Cartels
- Type or Standards Cartels
  - Environmental Safety
  - Product Quality Processes
- Patent or Patent-Licensing Cartels
- Calculation Cartels
- Discounting Cartels
- Tender Cartels

**Cartels**

*Illegal Hard-Core*

- Customer Cartels
- Specialization Cartels
- Territorial Cartels
- Quota Cartels
- Conventions or Gentleman's Agreements
- Price Cartels
- Syndicates

**Hierarchies**

*Industrial/ Social Policy*

- Import/Export Cartels
- Rationalization Cartels
- Recession Cartels
  - Emergency or Structural Crisis
- Cooperative Marketing/Purchasing Arrangements

- Long-Term Contracts
- Networks
  - Enterprise Groups
  - Subcontractors
- (Non-equity) Strategic Alliances
- (Equity-based) Joint Ventures
- Firms

**High Internalization, Regulation**

Adapted from Wolfgang Korndörfer, *Allgemeine Betriebswirtschaftslehre* (Wiesbaden, 1988), pp. 128-132; Wilfried Feldenkirchen, "Concentration Process," pp. 113-115.

Cartels are a subset of inter-firm cooperation, which ranges from highly, fluid spot markets with no individual market power to fully integrated enterprise hierarchies. The range describes the degree to which a formal organization wields authority over market transactions, but one cannot judge actual market power from the graphic. Long-term contracts between businesses or tacit oligopolistic collusion might wield more market power than a cartel if it has important outside competitors or is wracked by internal competition.

In general, cartels were voluntary, private contractual arrangements among independent enterprises to regulate the market. State-managed cartels or forced cartelization during wartime are important exceptions to this rule. Both Robert Liefmann (1932: 16-24) and Harm Schröter (1988) stressed cartels' fundamental orientation toward security and stabilization, a sort of risk management strategy. Some definitions of cartels include the *intent* to monopolize markets, but the motivations to form cartels were so varied, so few cartels actually achieved monopolies, and many were established with the implicit aim to *preserve* competitors rather than competition, that this assumption is unnecessary (Barjot 1994: 39-40, 67-69). Early German cartel theorists viewed cartels as an anti-merger policy, contrasting dangerous American-style trusts with responsible cartels (Fear 2005). Empirical studies have confirmed that prohibiting cartels sped concentration (Freyer 1992; Symeonidis 2002). Antitrust policy is a misnomer; it is more accurately an anti-cartel policy.

For the most part, cartels oriented themselves to controlling *similar* product markets in *horizontal* fashion, classically to avoid ruinous competition. While long-term contracts with suppliers, subcontractors, wholesalers, or retailers or enterprise groups might be anticompetitive, they are not cartels. One might conceive such arrangements as "vertical cartels," but they are better described as networks of firms, strategic alliances, enterprise groups, or joint ventures.

A fine line exists between legitimate associations and cartels. In Exhibit 1, the types of *procedural* cartels shade into the realm of desirable private self-regulation and associational life. Regulators have made *hard-core* types of cartels illegal. Antitrust regulations often exempt four types of *industrial or social policy* cartels because of their alleged benefits. The most problematic types of cartels occur at either end of this spectrum.

Contractual condition cartels might establish desirable procedures for transacting on markets. Standards cartels can set quality standards, or codes of behavior, or minimum environmental, labor, or safety regulations. The vast majority of industry standards originated as voluntary standards, which later became public regulations (Salter and Spar in Cutler, Haufler, and Porter 1999). Such arrangements might not be cartels at all, but one firm's standard might be another firm's barrier to entry.

Patent or patent-licensing cartels might clarify patent rights and often did lead to technological diffusion. Popular in the 1920s, patent cartels commonly guaranteed spheres of interests (territorial cartels) or restricted the use of related, unpatented articles or processes (for instance, GE and Krupp, or ICI and DuPont, or Standard Oil and IG Farben in Reader 1975: 435-444 and Mason 1946). Highly specialized, startup companies in technology and knowledge-based sectors today frequently pool patent rights.

Customer cartels allocate customers or suppliers to certain producers; they often acted as incentives for firms to join broader cartels. Specialization cartels assign lines of commerce, product lines, or production techniques to firms—a non-price oriented strategy, which clarified the division of labor to promote the industry. In contrast with other cartels, which tended to manage common products, specialization cartels divided the market differentially. Gary Herrigel (1996: 166-177) found these types of cartels critical throughout the twentieth century as a governance mechanism for governing German small and medium-sized manufacturing businesses; Germany's 1957 anti-cartel law therefore exempted them from its proscriptions.

The middle four types of "hard-core" cartels are the most familiar (OECD 2000), yet the distinctions have great implications for understanding cartel behavior and durability. For instance, quota cartels limited the output of members, but they often could not control price fluctuations and suffered greatly from cheating because they often had few monitoring or enforcement measures. Price cartels usually created an independent agency to monitor production to hold members accountable. For these reasons, many industrialists preferred syndicates because they restricted access to customers. Syndicates could also pose a more united front against outsiders and punish wayward firms.

Export cartels played crucial roles in national economic development and continue to be one of the most popular types of cartels, exempted even in a cartel-hostile U.S. after 1918 (Dick 1996; Dick in Grossman 2004). Rather than raising prices, they often lowered them through common marketing arrangements or by cooperating at home, while competing abroad as with the Japanese television cartel (Schwartzmann 1993). Export cartels blend into the last set of industrial or social policy cartels, which are frequently condoned. Such cartels' social benefits allegedly outweigh price increases or permit long-term production efficiencies to form that will offset short-term allocation losses. Here national interest is not necessarily congruent with the consuming public; this distinction underlies Japanese competition policy (Matsushita in Graham and Richardson 1997: 170-173).

Finally, cooperative marketing, purchasing, R&D, or credit arrangements blur lines between legitimate cooperation and collusion. The Japanese Association of Cotton Spinners, for instance, acted as a collective bargaining agent in negotiations with shipping companies for freight-rate rebates. Allied with the main Japanese shipping company, the NYK, it paved the way to establish service to India and acted as a countervailing power to Japan's powerful *zaibatsu* trading companies (Wray 1984: 285, 289).

Such cooperative forms also proved immensely attractive to small and medium-sized businesses because they provide crucial services (rather than rate hikes). Such small business cartels are severely understudied; antitrust regulation often exempts them. The Tsukiji Market in Tokyo is the world's largest marketplace for seafood, yet cartelized, family businesses run it (Bestor in Fruin 1998). It appears that hairdressers, fishmongers, and innkeepers are among the most prone to cartelization (Liefmann 1932: 29-31).

This spectrum of possibilities raises a number of issues. First, cartels did not only aim to fix prices or restrain trade. Alice Teichova (1974, 1988) stressed the need to discover what exactly cartels agree upon. Second, the most problematic areas are those cooperative arrangements that fall in the grey zone of desirable associational freedom versus attempts to restrain trade (collusion). Yet free association and liberty of contract, on which cartels rest, is an integral part of a liberal market economy. The cartel question proved a conundrum for British, French, German, American, and Japanese courts. They always involved particular assumptions about appropriate business behavior, reputation, credibility, trust, and social order. Finally, economists wrestled with the implications of industries weighed down by fixed costs and new forms of competitive behavior by debating cartels and trusts, whose formation raised central corporate governance issues such as the separation of ownership and control, risk, as well as the social impact of big business. We need richer comparative studies of contemporaries' judgments about cartels, which would necessarily connect politics, culture, and law with business history (Blaich 1973; Freyer 1992; Peritz 1996; Iyori, Uesugi, Heath 1994).

*Scale and Scope of Cartels (Periodization)*

Business historians have generated a broad narrative pattern about the rise and fall of cartels over the last century. However, the reasons for this pattern are still debatable, the exact scale and scope of cartels is still surprisingly fuzzy, and major exceptions to the rule exist. Some "pools" appeared early in the nineteenth century, but the first modern cartels materialized after the 1870s as a reaction to the downturn (Fischer and Wagenführ 1929: 101-2; Schröter 1996: 132). Cartels appeared most strongly in those industries defined by scale and scope economies in industries saddled with high fixed costs (Mirow and Maurer 1982: 11-35). Therefore, their weight lay in wealthy countries with big businesses. Cartels also tended to appear among domestic firms first, before going international (excepting early zinc, rail, and shipping cartels). Cartels boomed in the 1920s, peaked in the 1930s, reappeared strongly after 1945 before they gradually faded away, especially after the 1970s. This broad periodization, however, disguises fascinating subcurrents.

Surprisingly, we have few systematic, comparative studies about cartels, although the general trend is clear.

*Table 1:*
*Number of Domestic Cartels*

| Year | Germany | Austria | Czech. | Hungary | Switzerland | France | Britain | Japan |
|---|---|---|---|---|---|---|---|---|
| 1865 | 4 | | | | | | | |
| 1887 | 70 | | | | | | | |
| 1890/1 | 117 | | | 8 | | | | |
| | | | | | | | | |
| 1900/2 | 300 | 50 | | | | | | |
| 1905/6 | 385 | 100 | | 50 | | | 40 [93] | |
| 1911/2 | 550-660 | 120 | | | | | | |
| 1921 | | | | | | | 446 | 8 |
| 1929/30 | 2100 | 40-50, 70-80 | 100+ | | 90+ | 80+ | | 30+ |

*Source: Fischer and Wagenführ (1929); Wagenführ (1931); Hadley (1970).

Certain industries (steel, aluminum, chemicals, potash, explosives, salt, cement, paper, fertilizer) and certain economies (Germany, Austria, Czechoslovakia, Switzerland) appeared near synonymous with cartelization. Even the more wary British saw a burgeoning cartel movement before WWI, but their cartels remained looser and not contractually enforceable. Once British courts became more accepting of their "reasonable" provisions, their number exploded after 1920 (Freyer 1992).

Japan's cartels emerged in 1880 with the formation of the Japan Paper Manufacturers Federation and in 1882 with the Japanese Cotton Spinning Federation. The cotton spinning cartel endured as a national cartel for over fifty years although it assembled over eighty producers. Government ministries encouraged both of them as quality control cartels and to limit excessive competition. Unlike many European businesses, Japanese business tended to welcome government involvement. Yet, given its cooperative reputation Japan had a small cartel movement until the 1920s. Horizontal agreements remained rare (only three before 1920), although it created other forms of cooperation (Tilton 1996: 27-29; Hadley 1970: 358-370).

After WWI, the nature, number, and aims of cartels shifted dramatically. Based in part on the experience of managing war economies, governments increasingly found cartels useful instruments of public policy. The Japanese government passed two export promotion laws, which sanctioned privately initiated cartels in bleaching powder, wool, cement, coal, copper, and canned crabmeat. Trading companies' and commodity producers' cartels received legal protection. In 1931, another Japanese law empowered the government to forcibly cartelize critical industries as Japan prepared for war (Hadley 1970: 363-370).

In Europe, between 1926 and 1929 Spain required cartelization of coal, lead mines, paper, resin, sugar, rice, and wine industries as a form of industry promotion (Fischer and Wagenführ: 217-230). During the depression, most European countries followed suit with their own cartel enforcement laws. Germany, which had had entertained few state-sponsored cartels (potash, certain coal agreements), forced outsiders into existing cartels as a means of extending direct control over prices and production (Schröter 1997: 189-196). The French government tightened its administrative connections to national cartels and the British government encouraged industry to join major international cartels. Even the U.S. permitted Webb-Pomerene export cartels after 1918 and established the National Industrial Recovery Act in the early 1930s (Pohl 1985; Wurm 1993).

The 1920s and 1930s were the heyday of international cartels. A few international cartels appeared by the 1880s and 1890s in steel rails, aluminum, zinc, electric lamp, explosives, synthetic alkali, and shipping sectors. The conferences in liner (but not tramp) shipping were among the most robust cartels. Shipping conferences helped spawn other forms of countervailing cooperation as well as competition. Tea growers, for instance, established the Indian Tea Association to negotiate collectively with shipowners. Having failed, they sponsored a rival independent line and encourage defectors (Davies in Yui Nakagawa 1985; Sjostrom in Grossman 2004). Despite major challenges from American, German, and Japanese companies, these conferences proved surprisingly "resilient" until 1939 and were by no means "highly monopolistic, inflexible institutions" (Deakin and Seward 1973: 43). The conference system actually helped to restore German shipping after WWI (Scholl 1985). Shipping conferences demonstrated the paramount importance of government backing behind these national champions (Miwa in Yui and Nakagawa 1985).

For industrial manufacturing, George Stocking and Myron Watkins (1946) marked the beginning of a robust international cartel movement with the 1896 bilateral agreement between the Aluminium Industrie AG (Swiss-German) and Alcoa (U.S.). By 1905, General Electric created a world-spanning cartel through equity holdings, the exchange of patent rights, and territorial agreements (Reich in Kudō and Hara 1992). That American firms helped kick off the international cartel movement in manufacturing indicates that the propensity to form cartels knew few national boundaries. Research has demonstrated that it was generally easier to form stable international agreements if the global industry was highly concentrated among a few key players or if national producers formed a coherent national cartel to represent their joint interests. The International Steel Cartel (Hexner 1943; Barbezat 1989; Nocken 1989), the nitrogen cartel of 1929 (Chadeau in Kudō and Hara 1992), the world oil cartel (Yergin 1992; Sampson 1991), the International Potash Syndicate (Schröter 1994), and the British cotton and steel cartels in relation to its foreign policy (Wurm 1993) provide some of the best researched examples of this complicated interplay among domestic interest group politics, manufacturers' objectives, international industrial rivalry, and geopolitical diplomacy during the interwar period.

Raw materials and foodstuffs cartels also involved complicated economic diplomacy, but colonial relations mediated their formation. Here poorer countries participated in the international cartel movement (United Nations 1947: Table 1). World-spanning cartels could be found in copper, lead, zinc, tin, aluminum, mercury, potash, petroleum, rubber, and diamonds. With over an 80% market share in mercury, for instance, Spain and Italy (with Mexico receiving a cut) ran an especially robust cartel between 1928 and 1972 (McKie-Mason and Pindyck 1987). Foodstuff cartels could also be found in products such as cocoa, coffee, sugar, tea, bananas, or wheat (Hexner 1946). The rubber cartel is an especially good example of the complex bargaining relations among national states, between empire and colonies, between home government and multinational corporations, among corporations involving automobile, chemical, and rubber tire manufacturers, and among plantation owners (Stocking and Watkins 1946: 56-117).

Governments turned international cartels into steering wheels of domestic government policy navigating highly protected, tense global markets. A number of historians have highlighted the inverse relationship between multinationalization prior to 1914, which presumes relatively welcoming (even if risky) home country operations, and international cartelization between 1918 and 1945, which closed off home markets to foreign competition. The British and German examples offer contrasting perspectives. While the British, the leading foreign direct investor and home base for multinationals, reluctantly entered cartel agreements until there was little other choice, the Germans willingly entered into international agreements to protect against potential expropriation as had occurred after WWI, to secure access to raw materials or markets, and to influence host country domestic policy. In both cases, defense and security rather than expansion proved the overriding objective (Schröter 1988; Casson 1985; Glimstedt 2001). Although regrettable, international cartels helped ease national fears by avoiding trade wars that might have fed national rivalries even more. Clemens Wurm (1993: 291) called them an "exercise in damage limitation," a second-best solution to the end of globalization.

Although it is tempting to conclude that the rise of international cartels was *directly* related to hypernationalized power politics, the relationship between business and national interests was often oblique. The International Steel Cartel or the International Potash Syndicate also represented seeds of Franco-German cooperation; the signatories of the International Steel Cartel formed the core of the future European Coal and Steel Community (Kipping 1996). The International Potash Syndicate with its French-German axis milked the rest of the world (Herbert Hoover's words) in spite of poor relations between the two countries.

The big three major European industrial powers formed the core of the international cartel movement with the U.S. and Japan acting as outliers (Hara and Kudō 1992: 3). American firms had to watch their backs for fear of homegrown antitrust actions; if they participated they did so through cover organizations or by abiding informally to others' agreement and shadowing prices (Devos in Barjot 1994: 149). Japan's participation in international cartels involved a complicated balancing act among different objectives. Japan essentially traded access to their home market for technological know-how or protection of market share for infant domestic industries (Hasegawa in Barjot 1994). Japanese dyestuffs firms, for instance, gained leverage through cartels against more powerful intruders such as the IG Farben-led, international dyestuffs cartel, or against ICI in soda ash (Kudō in Barjot 1994; Miyajima in Barjot 1994).

Schröter (1996) differentiated four groups of countries: those with overwhelmingly positive assessments of cartels (Austria, Belgium, Czechoslovakia, Finland, France, Germany, the Netherlands, Norway, Sweden, and Switzerland); those with largely positive views but who developed supervisory agencies (Hungary, Italy, Japan, Poland and Spain); those with ambivalent stances (Bulgaria, Canada, Denmark, South Africa, and the UK); and those with outright negative stances (Argentina, Australia, New Zealand, U.S., and Yugoslavia). We have no synthetic, scholarly work that can explain this pattern. In spite of greatly different legal traditions and political attitudes toward cartels, British, German, and French involved themselves in cartel formation in roughly equal numbers. For example, the French had legislation that could punish restraint of trade in theory, yet the French were more than equal in practice to the Germans, the most notorious colluders. Both British (common law) and French cartel legislation (civil law) stressed the primacy of freedom of competition, but their acceptance of cartels at home differed greatly (Fischer and Wagenführ 1929: 116-119, 157-162). We need a study that tackles the intellectual, legal, and economic issues raised by cartels in a comparative fashion; literature on finance and capital markets have begun to analyze these differences.

By the advent of WWII, cartels governed about 40% of world trade at the apex of the cartel movement (United Nations 1947: 2; Great Britain Board of Trade 1944: xxiii). Cartelization became equated with defending domestic economic security, as an instrument of economic warfare, and then war planning. Not surprisingly, our knowledge about international cartels stems from a dramatic sea change in thinking around 1945 when the classic works on international cartels appeared. By the 1940s and 1950s cartels appeared exactly the *opposite* of competition and liberalism, let alone part and parcel of the German war effort: “The cartels made Hitler and Hitler made war” (quoted in Mason 1946: 280). Hexner (1946: vii) claimed, “cartels are by nature enemies of democracy.” The earlier meaning of cartels as an expression of private industrial self-regulation through voluntary associations became lost. American cartel busters portrayed the shocking extent of cartel-controlled world markets, setting the agenda for postwar liberalization.

However, as Harm Schröter (1996: 153) states: “It took 60 years and two generations to thoroughly cartelize Europe up to the 1930s, and another 60 years for a complete change in policy in favour of intense decartelization.” In 1957 Germany went furthest by prohibiting most cartels. In Britain, a good portion of businesses actually welcomed the 1956 Restrictive Trade

Practices Act in the hopes that judicial reviews would provide more clarity about the limits of cartel-building. As they eagerly registered their collusive agreements rather than dropped them, the Act unexpectedly provided a legal sword that cut down most cartels there (Symeonidis 2002: 21-44). In France, legislation outlawed abuse and price-fixing, but not necessarily cartels until the mid-1980s; the state registered cartels and monitored prices to prevent abuse. Most of Europe tended to follow the French example in varying degrees and varying degrees of speed. Switzerland trailed everyone, favoring cartels as a "school for consideration of the big for the small" (quoted in Schröter 1996: p. 149). The European Economic Community officially prohibited cartels, but did not receive strong antitrust powers until the 1980s (Graham and Richardson 1997).

In contrast to this European pattern of gradual retreat, the heyday for cartels in Japan came after 1945 and before the oil shocks of the 1970s. Industries enthusiastically rejoined cartels sanctioned by the Ministry of International Trade and Industry (MITI). At its peak in the mid-1960s, about one thousand authorized cartels existed, most of which (ca. 60%) consisted of small and medium-sized businesses. In 1962 about 42% of Japan's export trade was cartelized. Japanese cartels appeared in almost every major industry, especially in textiles, apparel, publishing, ceramics, steel, non-ferrous metals, and shipping (Hadley 1970: 380-389; Iyori, Uesugi, and Heath 1994).

Only inflation stoked by rising oil prices delegitimized cartels. In 1973 the Fair Trade Commission launched its first criminal investigation against Japanese oil companies (Schwartzmann 1993: 26-31). Thereafter, the number of cartels declined steadily. However, recession or rationalization cartels remained a significant tool of industrial policy in sectors such as in steel, shipbuilding, glass, ceramics, cement, petrochemicals, and aluminum (Tilton 1996). Political connections in the construction industry kept cement cartels strong. At the beginning of the 1990s, the government still explicitly exempted small and medium-sized businesses in textiles, to improve sanitary conditions in hairdressing salons, to support restructuring initiatives for fisheries or canned fish industries, and in general to promote exports.

Major international cartels reasserted themselves after 1945 in key strategic sectors, the most visible of which was OPEC, the first time developing countries found significant leverage over wealthy countries. The 1973 oil crisis sparked a plethora of studies about cartels to assess their threat and potential longevity (Eckbo 1976). But even before the OPEC, raw materials cartels found a subtle revalorization in the developing world. Since the 1960s G-77 developing nations argued for stronger commodity cartels to improve the terms of trade for bananas, coffee, cocoa, rubber, tin, or sugar. Cartels became part of the decolonization and development process. Many developing countries began working through the United Nations Conference on Trade and Development (UNCTAD). Unlike OPEC, which managed to maintain some forms of price control into the mid-1980s, most of these cartels "accomplish[ed] far less than their signatories set out to achieve" (LeClair 2000: 81). After a wave of nationalizations, a complicated geopolitical interplay between the economics of the industry, multinationals, and national governments reconstructed commodity cartels. Such cartels needed tacit approval of major multinationals in the developed world and tacit acquiescence by former colonial states. Collusion among aluminum MNCs and governments in a "profit-sharing cartel" created a fairly solid cartel for bauxite (Holloway 1988). Mix in the Cold War, populist-democratic revolts against neo-colonial rule, and control over key strategic minerals such as uranium or copper or titanium, and one quickly found more than enough room for controversy.

Commodity cartels had to overcome slightly different challenges. Potential colluders had to find a way to collectively manage buffer stocks, made more difficult for such perishable goods such as bananas. Most agricultural commodities that could be storied such as cocoa, coffee, sugar, or natural rubber had easy substitutes. Minerals proved easier to control, but still did not ensure success as natural resource commodities could not usually be branded. Finally, most commodity cartels had to manage the great disparity of interests across the North-South divide, let alone neo-colonial discord.

Excepting OPEC, international cartels largely remained a provenance of wealthier countries and their big businesses, although evidence has become scantier as they have been driven underground. Kurt Mirow and Harry Maurer (1982: 33) argued that cartels were hardly "endangered species" and accused the International Electrical Association (IEA), consisting of 55 members from twelve countries in 1977, of arranging predatory price wars against new Brazilian competitors. Developing countries then had to pay higher prices than customers in wealthy countries. In one remarkable case of the pot calling the kettle black, the Saudis accused eight IEA members of rigging "bids to share in illegal profit" (p. 53).

Backed by the notion of national champions, international cartels reasserted themselves strongly in shipping and airline industries. Deakin and Seward (1973: 13, 23, 47-69) estimated that at the beginning of the 1970s about 360 shipping conferences still existed. The resiliency of shipping cartels is astonishing, especially after the advent of new competitors and the challenge of container services. Until the 1970s, a "sky club" better known as the International Air Transport Association (IATA) comprehensively managed the world airline industry. Not surprisingly, it had its home base in cartel-friendly Geneva, Switzerland. The IATA acted not only as a "fare-fixer," but also as a standards and conditions cartel that "provided the central machinery" of global coordination (Sampson 1984).

Today, information about cartels increasingly derives from prosecution data, which depends entirely on whether firms get caught. The OECD (2003: 8-15) found sixteen international cartels harmed trade by an estimated $55 billion. Competition authorities exposed important international cartels in graphite electrodes (for mini-mills), lysine (an additive for chemical feed), vitamins, and carbonless paper. They fined domestic German power cable and road marking firms, Danish electric wiring contractors, Slovakian breweries, Japanese ductile iron pipe-making firms, Spanish and British sugar enterprises, to name just a few. No country managed to avoid sugar, cement, or asphalt cartels.

Thus in spite of strong antitrust winds blowing from the U.S. since 1945, business historians cannot discount the continuing, even if declining, role of cartels in rich countries (except Japan) at least into the 1970s. Most of the cartel literature focuses on the pre-1945 period, rather than the post-1945 period. The general narrative about cartels may not be a story of rise and fall, but rise, boom, collapse, revitalization, gradual decline, and then criminalization.

The most significant dilemma is that cartels appeared in the most dynamic sectors and played a significant role during the fastest period of European and Japanese economic growth, which begs the question what economic effects did they actually have? The Japanese have tended to view cartels as contributing to capitalist growth rather than corrupting it (Tilton 1996: 27; Matsushita in Graham and Richardson 1997: 171-177). Would growth have been still faster without cartels? Why did they not lead to stagnation? Business historians must tell a century of economic and business development in conjunction with cartels rather than without them.

*Cartels, Strategy, and Corporate Organization*

The strategy of most major business firms had to take into consideration cartels. We have many excellent discussions of how firms can expect to behave inside cartels (firms as unitary actors), but we have far fewer discussions about how cartels altered corporate strategy and organizational development (decision-making and internal processes). What difference did it make to permit or prohibit cartels, or to join or not to join one? Deciding to join a cartel, negotiating the specifics of the cartel contract and its quotas, was a major entrepreneurial act. Alfred D. Chandler made Germany the home of cooperative managerial capitalism, but did not theorize the relationship between cartels and German corporate development. Tony Freyer (1992), on the other hand, claimed that British tolerance of cartels permitted family capitalism to survive longer at the cost of national competitiveness. Yet German industrial firms worked within a much denser web of cartels than did British firms and often remained in the family, yet became highly competitive. A few contrasts highlight the need to understand the relationship between cartels and firms more closely.

Neil Fligstein (1990) created a sort of unified field theory of corporate development constructed around antitrust. He argued that changes in U.S. antitrust legislation were the main driver behind shifts in corporate strategy. After prohibiting pools, antitrust legislation forced the leading firm to become a price setter in the industry based on its large market share or a small number of large firms (oligopolies) tacitly cooperated to set prices in the interests of avoiding a full-scale price war. In both cases, vertical integration in unitary functional organizations became the accepted form for large-scale enterprises. Once the "manufacturing conception of control" or strategy played itself out by the 1920s and 1930s, a "sales conception of control" spread that was predicated upon product and marketing segmentation. Diversification of products in turn placed new pressures on internal organization that led to the multidivisional structure.

However, if we examine the development of German heavy industry, we would expect little drive toward a "manufacturing conception of control" (that is: vertical and horizontal integration, unitary functional organizations, plus a dominant price-setting firm or set of firms) because German firms could collude. Cartels have "the effect of providing a market for everyone and made even the smallest firms viable" (Fligstein 1990: 23). Indeed, German heavy industry had three of Germany's strongest cartels in coal, pig iron, steel and steel products. By 1925, they managed to control over 100% of coal production, and roughly 90% of crude steel production. Yet Germany managed to field some of the premier steel firms in the world with a high degree of vertical integration (cartels encouraged it) and diversification (coal to machine engineering), which also led to differentiated organizational structures—sometimes quite close to multidivisional structures, so-called *Konzerne*. After the 1926 formation of the Vereinigte Stahlwerke, modeled on U.S. Steel, German steel had a remarkably similar market structure to the U.S. although it simultaneously strengthened its cartels. It even developed a multidivisional form without being sales-oriented at all.

Where German and American steel firms did differ was in the speed of the concentration process, their development trajectories, their strategy, and their organizational forms. Cartels helped drive these differences. As desired, cartels slowed but did not halt mergers and acquisitions. (German firms often purchased smaller firms just for their quotas.) German heavy industrial firms integrated vertically to avoid cartel distortions, while American steel firms extended horizontally first, then vertically. Because of cartels, German industrialists had to learn how to manage a firm with a high degree of vertical integration, highly diversified product lines, and small-batch production in capital-intensive industries. They initially faced different organizational dilemmas than those faced by most American firms (Fear 2005).

This contrast drives a wedge into some commonsense notions about cartels. Why did these cartels not lead to stagnation or a lack of innovation? Cartels did not eliminate competition, but rechanneled it. *Competition* remained within the cartels through a number of mechanisms, which go beyond the standard story that cartels attract new competitors or encourage chiseling. Since participants knew that they would renegotiate quotas in the near future (every two to five years), industrialists put themselves in the best possible position for the next round. Cartels encouraged capacity growth for negotiating leverage rather than estimated market demand, which made next-round negotiations more difficult and eventually created dysfunctional market competition; in turn this dysfunction might lead to collapse but also possible reconstitution. Executives might be content to let the cartel work for them, but this was not an effective long-term strategy.

Horizontal cartelization encouraged vertical integration. Not only did industrialists feel the necessity to control input prices upstream, but also they could sell excess production downstream to permit intermediate materials to maintain steady volume. Integrated combines then had a cost advantage over independents because they had a cheaper supply of input materials. Cartels might even speed the drive to find cost efficiencies. Inside cartels, firms could still increase the differential between the cartel-set price and the production cost through greater scale or scope economies, or higher technical efficiencies, or vertical integration, or all three. Cartels could subsidize a type of niche strategy into new or higher value-added product lines exempted from cartel jurisdiction or encourage exports by dumping off excess production (Webb 1980). The post-WWII Japanese television industry competed at home through product differentiation or new models, rather than price, but abroad they competed viciously on price, which kept them on their innovative toes (Schwartzman 1993: 75-89).

Because of vertical integration and product differentiation (scope), industrialists competed across a broad array of cartelized and non-cartelized goods. On the surface, the Steel Works Association was one of Germany's most impressive cartels, but vicious price wars broke out in finished steel products such as pipes at the same time they successfully syndicated intermediate products (Peters 1984). International chemical cartels or domestic agreements between AEG or

Siemens provide other examples of such complicated cooperative competition in scope economies (Reader 1975; Feldenkirchen 1999). Expansion into other products or greater geographical expansion into unregulated territories could enhance bargaining clout in cartels. In short, all these examples imply that a powerful incentive to innovate, reinvest profits, or engage in R & D still existed even under highly cartelized regimes. How and whether individual firms take advantage of cartels and how competitive market conditions might change firm strategy is an empirical question.

Arguably the most important but most inconclusive area of cartel research is the link between cartels and investment, technological innovation/diffiusion, and productivity (Levenstein 2006). Edward Mason (1946: 114) dramatically reminded Americans that one secret cartel between Germans and Americans brought plexiglass to the U.S., which enhanced its ability to fight WWII. Harm Schröter (1988) identified the importance of sharing patents and know-how through cartels. After examining the IG Farben-Standard Oil cartel, Rolf Petri (in Barjot 1994) found that the cartel actually "speeded up geographical diffusion of new technologies [among cartel members], while it slowed down diffusion of know-how among external actors." Gary Saxonhouse (1976) argued that the Japanese Cotton Spinners Association sped the adoption of best practices throughout the industry. Another group of historians, however, ended more ambivalently whether international cartels promoted technology transfers and economic development for Japan (Kudo and Hara 1992: 238-240).

A number of authors have shown how cartels positively contributed to technological innovation by stabilizing volatile markets, permitting firms to invest and engage in R&D. In the 1920s, radio and telephone manufacturers formed associations to limit excess capacity, encourage large-scale production, pool research costs, set standard prices, and design interchangeable product standards. Despite such collusion, British telephone density and automation accelerated greatly up through the war. However, with the advent of antitrust laws and competitive pricing in the 1950s, which hindered industry coordination but promoted mergers and squeezed profit margins through price competition, the industry lost the incentive to expand capacity, enhance product quality, and fund crucial innovations that moved telephony into the electronic age (Lipartito 2000). George Symeonidis (2002) also found that intensified price competition and greater concentration had no significant effect on firms' innovative output. Others have shown the devastating effect of decartelization on innovation and market share for the post-war British electrical engineering industry (excepting the cable industry where a dominant firm could create price lists) relative to the prewar cooperative regime (compare Reindl 1997; Glimstedt 2001; Zeitlin 2002). Another study using quantitative methods, found that cartels did not particularly encourage or discourage patenting, which appeared dependent on other variables (Cantwell and Barrerra in Barjot 1994). Recent debates reproduce another inconclusive debate in the 1920s about cartels and productivity (compare Hoppmann 1971; Reich 1992). Many held Japan as a model for managing sunset industries using cartels, but Mark Tilton (1996) views this claim more skeptically. Whether cartels can positively rationalize industries and enhance productivity remains an open question.

The bottom line paradox is that competition may stimulate innovation but effectively hinder firms from carrying it out, while cartels may stabilize markets to permit firms to engage in innovation but may effectively discourage it through complacency. Whether firms use cartel rents to innovate or become complacent is a question of firm strategy and entrepreneurship. Cartels altered strategic incentives, but hardly ensured tranquility. Setting quotas or market shares involved highly mysterious rounds of negotiations, more equivalent to late-night poker games than rational worksheet calculations. Somewhat appropriately, the "conspirators" in the Japanese television cartel used Igo (English: Go) stones to vote on quotas (Schwartzmann 1993: 86). In practice cartels were a motley collection of compromises that fundamentally restructured the nature of competition depending on the provisions of the individual cartel agreement. They undoubtedly caused perverse results. In the U.S. salt industry, some contracts provided "lease-back" arrangements to firms, paying them not to mine their salt (Levenstein 1995: 583). In the 1893 German coal contract, it stipulated that sinking new shafts would raise the production quota of any company. Suddenly a boom of new shafts occurred, many with no intention of ever mining a single piece of coal. Determining these dysfunctions depends on the specifics of the cartel and the agency of its members—in short: history.

Yet they also enabled breakthroughs. William Wray's study of Mitsubishi and the NYK (1984) offers one of the more comprehensive views of the interaction between the government, cartels, and corporate strategy, which also demonstrates how cartels collaborated and competed with one another. NYK gained entry into the lucrative Indian shipping business through alliances with the Cotton Spinners Association and the Indian firm of Tata & Sons. After entering the new conference, the NYK helped redefine the division of labor and setting new rates. The NYK then managed to "tap discontent" with another conference to break into British ports *before* the Japanese government guaranteed its additional subsidies, which only strengthened its negotiating position. A strong relationship between Mitsui Bussan and NYK, which generated rebates for Mitsui imports of crucial machinery such as locomotive machinery, rails, and spinning equipment, then helped load NYK's ships, lower Mitsui's costs, and spur Japanese industrialization (pp. 289-340). Wray demonstrates how company strategy formed out of the vagaries of specific cartel agreements, alliances with cartels and firms, and then how NYK's strategy altered subsequent cartel agreements. Cartels and alliances *enabled* greater competition and NYK's strategic breakthrough.

Such strategic considerations have major implications for understanding organizational structure and capabilities. The bromine syndicate offered its "superior distribution services" and brand name to Dow Chemical. Acting as a sort of incubator, the cartel taught Dow how to build and sell with a reputation (Levenstein 1998). It also affected its managerial and accounting system. As long as Dow and Midland operated within the pool, they had less incentive to precisely know their costs. Once they broke with the pool, they had to change their organization and accounting system to track technical efficiency, product costs, quality, and the cost of capital so as to effectively innovate. Yet in the cooperative capitalism of German steel, cartel quotas made it that more important to utilize capacity and know your costs. Cartels sometimes decided where certain products could be produced internal to the firm, if factories in one place could be shut down, with what firm one could trade, or where new plants would be located (Fear 2005).

In short, because cartels regulated industry, they redesigned incentives, barriers, and sanctions for firms—in principle no differently than public policy regulations shaping competitive practices. Multinationals operating in poor countries with weak state regulatory capacity or bridging a world with few global governance mechanisms have frequently developed inter-firm institutional practices of self-regulation. Liberal political theory and neoclassical economics have had a difficult time theorizing such forms of cooperation (Cutler, Haufler, Porter 1999; Haufler 2001). If one reconceptualizes the study of cartels as (self) regulation, then one shifts attention away from cartel success or failure to how enterprises competitively react within given industry constraints over time. Instead of cartels halting competition, cartels recast competition.

This perspective begins to explain why cartels did not damage growth more. Inside this cooperative framework, they still *competed*, especially for quota share. As Sir Harry McGowan of Imperial Chemical Industry argued, "the purpose of these agreements is, in the main, to regulate but not to abolish competition" (Reader 1975: 425). How much can we view cartels as cooperative ventures and not competitive constellations? Given the constant renegotiation, temporary breakdowns even in durable cartels, are we dealing with a single cartel or a series of consecutive ones? What exactly is cartel "success"? (Grossman 2004; Levenstein 2006). What sort of services, efficiencies, or innovations can cartels and other such forms of cooperation create? Can cartels act as an incentive to innovate like networks even if consumers lose in the short-run?

Cartels and networks are interrelated phenomenon. In reality and in concept they reinforce one another. If one conceives of cartels as a subset of networks, a richer set of motivations than just the desire to raise prices would come to the fore. Studies of the networks of social and professional ties that embedded cartels would enhance our understanding of the critical organizational and "idiosyncratic" factors that help cartels endure. Horizontal networks among hundreds of small businesses, laced by a web of kinship, upstream and downstream trading relationships, and mutual interests, created the institutions that made the (literal) marketplace work in the Tsukiji seafood market (Bestor in Fruin 1998). Entrepreneurs and managers commonly stemmed from similar professional, geographic, or cultural milieus, which helped overcome gaming inside cartels. Informal norms are crucial variables. A mutual love of hunting and fishing over two decades enhanced cooperation in the international petroleum cartel of 1928-1938 (Yergin 1992). The U.S. Department of Justice (2000) concluded that golf courses facilitated collusion. Also the constant negotiations and monitoring that allow cartels to work created new social networks. Once one learns to cooperate over time, the socialization process might strengthen further cooperation/collusion. The more one moves from markets to networks, the more social history approaches would prove invaluable and the less effective price considerations alone can gauge the value of those relationships.

*Conclusion*

Cartels are a surprisingly slippery subject. There is no mystery as to cartel dynamics, yet those dynamics are not sufficient to explain any given cartel. So far the weight of research has stressed why cartels fail, rather than why they endure. The internal organizational dynamics of cartels needs more research, embedding it in economic, organizational, and political theory.

Cartel research can provide a portal into questions such as the nature and speed of concentration, strategic behavior, differing ideas about legitimate and illegitimate market behavior (competition policy and regulation), economic thought, comparative law, social policy, economic development, the boundaries between the state and civil society, business diplomacy, and international relations. Cartels stand obliquely in the liberal tradition (rather than in direct opposition to it). Moreover, if contemporaries truly believed that cartels were useful instruments of economic and business policy, this alone would contribute to cartel stabilization, unlike the criminalization of cartels today.

We need better comparative studies about cartels' relationship to politics, political culture, and law for "clearly cartels, directly or indirectly, served different national objectives" (Great Britain's Board of Trade 1944). They provided a form of social policy (employment, sunset industries, regional industrial policy), risk management (an attempt to manage macroeconomic fluctuations during downturns, limit volatility), and development policy (export promotion, technology transfers, knowledge dissemination, infant industry protection). Today, governments or hedge funds have usurped many of these functions, but historically—or in poorer countries with limited state capacity—cartels provided one (biased) means of addressing these issues.

We should place the cartel question into a wider framework of regulation rather than conspiracy, which had major effects on the strategy and structure of firms. As networks, they may help scholars understand more legitimate, softer, more positive forms of cooperation (Mariti and Smiley 1983). Depending on the cartel objectives, they often provided joint services rather than just rate hikes; the more non-price objectives, the more durable they appear to be.

The rise and fall of cartels reminds us that a fluid, international division of labor based on comparative advantage and competition is entirely dependent upon peace and cooperation among nations. This is not a trivial consideration given the history of the 20th century as rising nationalism disfigured world markets, often forcing firms to cooperate to survive. Given the world of intense rivalry that limited the extent of the market, cartels formed a disappointing but perhaps appropriate second-best strategy. International cooperation helped dispel economic cooperation among firms after 1945—slowly.

Finally, studying cartels opens the intriguing question when is competition essential to efficiency and innovation? The cartel question highlights the tradeoffs between costs of stop-go, boom-and-bust volatility under capitalism and the benefits of moderate stability and risk management, between price and quality, between consumer and producers—tradeoffs not easily answered. Graham and Richardson (1997: 6) noted, "while competition is familiar to most, few reflect deeply on cooperation. Almost all market competitors are firms—business organizations (social groupings) that are, for the most part, internally cooperative, not competitive." Cartels provide one forum for reflecting on how and when cooperation can be efficient and innovative.

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