AN ECONOMIC REVIEW OF THE PAST DECADE IN DIAMONDS

By William E. Boyajian

The diamond industry was buffeted by extreme price volatility during the last decade, unlike any encountered since the Great Depression of the 1930s. Although the industry is currently enjoying a resurgence of activity worldwide, particularly in the Far East, today's market differs significantly from what it was 10 years ago. This article reviews the factors that led to the enormous demand for diamonds in the late 1970s, examines the causes of recession in the early 1980s, and provides an analysis of the comeback of diamond in 1986. Inasmuch as events during this period ushered many changes into the diamond trade, an understanding of how economic forces affect the supply, demand, and value of diamond is critical to all gemologists. Factors such as inflation, recession, interest rates, and disposable income, as well as fluctuations in worldwide exchange rates, had, and undoubtedly will continue to have, an impact on the health of the diamond market.

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Although the market for gem diamonds has long enjoyed stability and gradual appreciation, it can nevertheless be sensitive to a variety of economic forces. At no time has this been more evident than in the period that spanned the late 1970s to the mid-1980s, when market demand and prices climbed to incredible highs—before falling precipitously to equally stunning lows.

In November 1973, the American economy entered its sixth post–World War II recession. In 1974 and 1975, De Beers's rough diamond sales declined by 5% and 15%, respectively. Consumer confidence and consumer spending in the United States bottomed out. The second half of the 1970s, however, heralded a period of rapid inflation, during which many investors sought tangible assets as a hedge. Diamonds, with a tradition of steady, rising value, became an obvious target for speculators. The diamond boom of 1976–1979 was followed by a collapse in 1980: The most durable of all gems (figure 1) became a victim of economic chaos.

During the first half of the 1980s, the diamond trade suffered one of its worst recessions in modern history. Although worldwide retail diamond sales increased during most of this period, prices at all levels dropped as the market sought to absorb the excess inventories built up during the late 1970s. By 1986, however, the diamond market had rebounded. The weakness of the U.S. dollar, and the consequent strength of other currencies, has accelerated demand for diamonds during the past three years, particularly in the Far East.

The diamond market has changed drastically since the mid-1970s. To prepare for future developments, every contemporary gemologist should understand the economic factors that altered the supply, demand, and value of diamond during this turbulent period. It is especially critical to know the forces that have influenced diamond's revival in the latter half of the 1980s. First among these is De Beers.

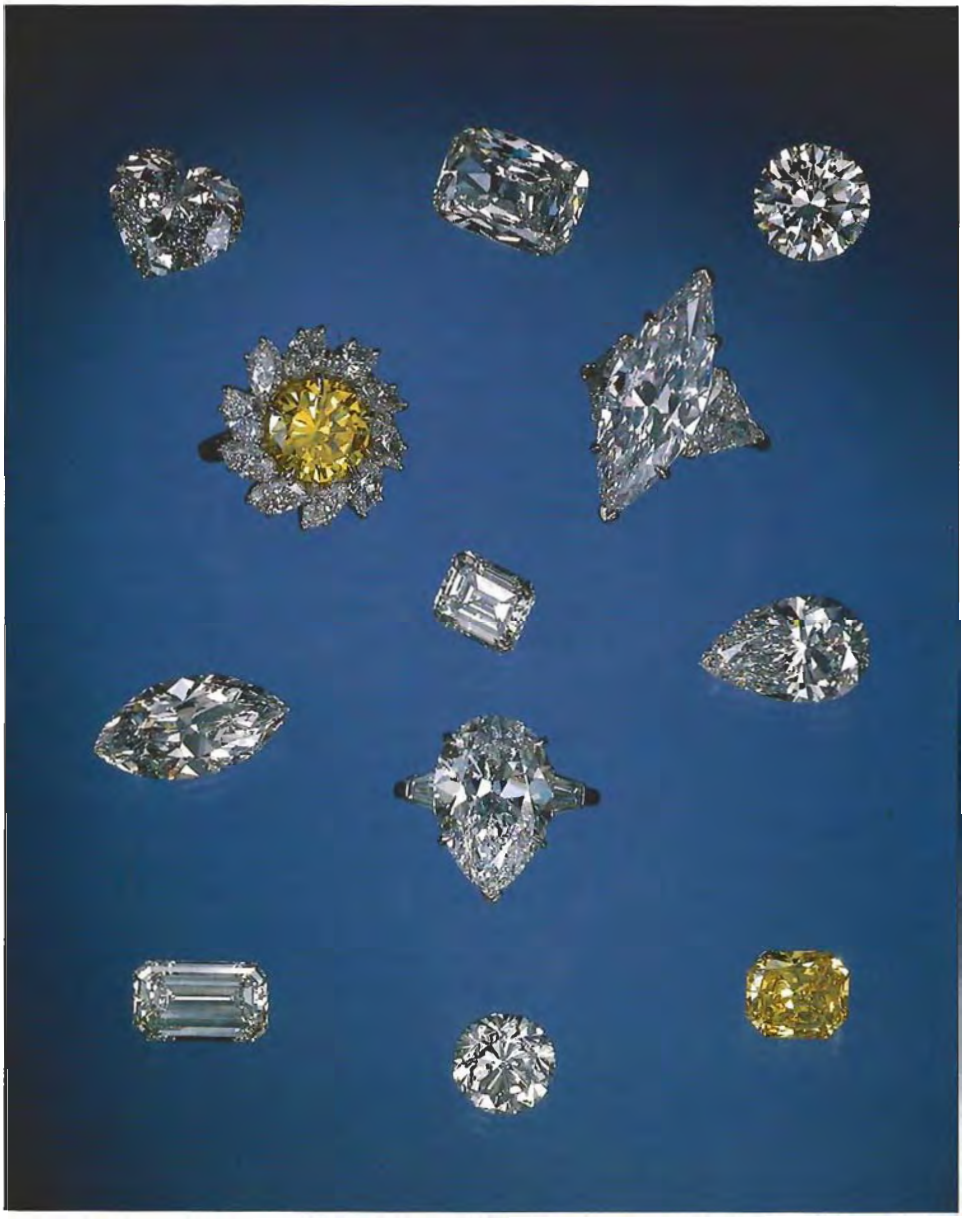


Figure 1. Diamond is the hardest substance known to man, which allows it to take the best polish among common gems. This, combined with its superb transparency and high refractive index, yields an adamantine luster. Although it can cleave, its toughness (resistance to chipping, breaking, and cracking) is good, while the exceptional hardness (resistance to scratching) and stability (resistance to dissolution by chemicals) also make it one of the most durable and eminently wearable gemstones. Physically, it is the best known conductor of heat. Optically, it is potentially the most transparent and the most brilliant gem. The robust dispersion it displays adds even more allure. The three rings, containing an 8.56-ct marquise, a 7.47-ct pear shape, and a 3.49-ct fancy yellow round brilliant, are courtesy of Harry Winston, Inc. Photo by Shane McClure and Robert E. Kane.

DE BEERS: HOW IT FUNCTIONS

The events of the past decade were capped in 1988 by the 100th anniversary of De Beers. Consider Chairman Julian Ogilvie Thompson's opening statement in the 1987 De Beers Annual Report: "It must be unique for a company which on its formation became the leader of an international business, indisputably still to hold that position at its centenary."

De Beers Consolidated Mines Limited is essentially a multinational financial, industrial, engineering, and mining conglomerate, governed by a board of directors headed by Chairman Ogilvie Thompson, who succeeded Harry Oppenheimer in 1984. De Beers owns diamond mines in South Africa and works in partnership with the independent state of Botswana. It also has close relationships with other governments and mining companies, in addition to owning an alluvial diamond producer, Consolidated Diamond Mines, in Namibia.

De Beers was founded in 1888, more than two decades after the discovery of diamonds in South Africa marked the birth of a new diamond era. Previously limited to depleting Indian and Brazilian sources, diamonds were too expensive for any but royalty or the very wealthy. Not so ironically, the large new diamond discovery of the 19th century coincided with the emergence of the modern middle class.

Figure 2. At No. 2 Charterhouse Street, London, the CSO markets about 80% of the world's diamond production. Photo courtesy of the CSO.

Today, De Beers no longer mines the lion's share of world diamond production. In particular, South Africa contributed only about 10% of the total quantity of diamonds mined in 1987. The four top diamond-producing countries (by production weight) in 1988 are Australia, Zaire, Botswana, and the USSR (table 1). Although De Beers continues to support extensive prospecting activities worldwide, it has maintained its position as the leading diamond organization through, among other efforts, the distribution, marketing, and research activities of the Central Selling Organisation (CSO), its London-based arm (figure 2).

The CSO functions as a quasi-producers' cooperative, selling to the world markets diamonds from the De Beers mines and from joint-venture partnerships, as well as those it obtains from other producers through contractual agreements and those it buys on the open market. The CSO purchases those quantities of rough diamonds necessary to balance the supply of diamonds with world demand; it is capitalized to the extent that it can hold such diamonds, in stock, for indefinite periods of time, thus fulfilling an important reserve function.

The CSO conducts rough diamond sales 10 times a year, every fifth Monday, in London, Lucerne, and Kimberley. The sales, called "sights," are handled through the Diamond Trading Company (DTC), an integral part of the CSO. The DTC currently has about 150 sightholders, half that of 1979, who comprise a carefully selected group of diamantaires (diamond manufacturers and dealers) that cover a wide spectrum of the world market for rough. Some own cutting and polishing factories;

TABLE 1. World rough diamond production, by country, for the years 1977–1987 (in millions of carats).[a]

Country	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Australia	—	—	—	0.480	0.205	0.457	6.200	5.692	7.070	29.211	30.333
Zaire	11.214	11.243	8.734	10.235	7.161	6.164	11.982	18.459	19.617	23.304	23.350
Botswana	2.691	2.799	4.394	5.101	4.961	7.769	10.731	12.914	12.635	13.110	13.207
USSR	10.300	10.550	10.700	10.850	10.600	10.600	10.700	10.700	10.800	10.800	12.000
S. Africa	7.643	7.727	8.384	8.520	9.526	9.154	10.311	10.143	10.202	10.300	9.053
Namibia	2.001	1.898	1.653	1.560	1.248	1.014	0.963	0.930	0.910	0.950	1.020
Brazil	0.620	0.620	0.620	0.667	1.089	0.530	0.530	0.750	0.450	0.550	0.645
Ghana	1.947	1.423	1.253	1.258	0.836	0.684	0.340	0.346	0.650	0.600	0.600
CAR	0.297	0.284	0.315	0.342	0.312	0.277	0.295	0.337	0.352	0.350	0.350
Indonesia	0.150	0.150	0.150	0.150	0.150	0.150	0.270	0.270	0.270	0.270	0.300
Sierra Leone	0.961	0.779	0.855	0.592	0.305	0.290	0.345	0.345	0.349	0.315	0.300
Liberia	0.326	0.308	0.302	0.298	0.336	0.433	0.330	0.240	0.138	0.252	0.250
Venezuela	0.687	0.820	0.803	0.721	0.490	0.493	0.279	0.272	0.215	0.235	0.250
Ivory Coast	0.390	0.450	0.480	—	—	—	—	—	—	0.100	0.200
Angola	0.353	0.650	0.841	1.480	1.400	1.225	1.034	0.902	0.714	0.250	0.190
Tanzania	0.408	0.282	0.314	0.274	0.217	0.220	0.261	0.277	0.296	0.300	0.190
Guinea	0.800	0.800	0.850	0.380	0.380	0.400	0.400	0.470	0.132	0.204	0.175
India	0.180	0.160	0.160	0.140	0.160	0.130	0.140	0.150	0.160	0.160	0.150
Guyana	0.170	0.170	0.160	0.100	0.100	0.110	0.100	0.140	0.110	0.900	0.110
Lesotho	0.420	0.670	0.520	0.540	0.530	0.420	—	—	—	—	—
TOTAL	41.558	41.783	41.488	44.688	40.006	40.520	55.211	63.337	65.070	92.161	92.673

[a]Source: U.S. Department of the Interior (1977–1987).

some supply other, smaller manufacturers. These buyers represent about 14 countries and/or cutting centers, although the vast majority have operations in the four major centers of New York, Antwerp, Tel Aviv, and Bombay. Purchases from the DTC are in cash and in U.S. dollars only. Transactions for sightholder boxes can range from hundreds of thousands of dollars to tens of millions and must be paid within seven days. Each sight box represents a "series," a selection of sizes and shapes that are tailored, as closely as possible, to the wishes, needs, and expertise of the individual sightholder (figure 3). CSO clients work through one of four brokerage firms that, for a commission, negotiate with the CSO on their behalf. Although rough diamonds are graded into some 5,000 categories within the CSO channel (figure 4), they are ultimately packaged into about 60 different types of series. Sightholders are free to question the grading or price of the goods in their allotment, but changes are seldom made. Prices on large rough (approximately 11 ct or more) may be negotiated individually.

De Beers is also heavily involved in the marketing and promotion of diamonds. For 1988 alone, De Beers stated that it would spend some $120 million to promote diamonds worldwide, nearly triple the expenditure it reported in 1980. Another $25 million will likely be spent in cooperative advertising with retailers.

In addition, De Beers has a major research facility in Johannesburg, South Africa, that investigates new techniques in diamond mining and recovery as well as develops new technical applications for diamond in science and industry. The CSO has a separate research facility in Maidenhead, England, which concentrates on improving techniques for sorting and cutting diamonds. Indeed, the new diamond cuts by Gabi Tolkowsky (Shor, 1988), which help maximize brilliance, color, and yield in rough that was previously difficult to manufacture, are a result of this research effort. De Beers also has subsidiaries devoted to the manufacture of synthetic diamond for industrial purposes.

The Marketing Liaison Department, formed in 1986, helps the CSO communicate with every level of the diamond pipeline: cutting, distribution of polished goods, jewelry manufacturing, and, ultimately, retailing. Through these and other activities within the industry, De Beers has played, and will undoubtedly continue to play, a major role in supporting the diamond trade.

Figure 3. Here, CSO clients examine part of their sight. Photo courtesy of the CSO.

THE DIAMOND BOOM: 1976–1979

For 30 years following World War II, the diamond industry enjoyed relative calm. Almost always stable, and usually growing, the market performed in an orderly manner, with goods supplied on the

Figure 4. Before they are sold, rough diamonds are sorted into some 5,000 categories. Photo courtesy of the CSO.

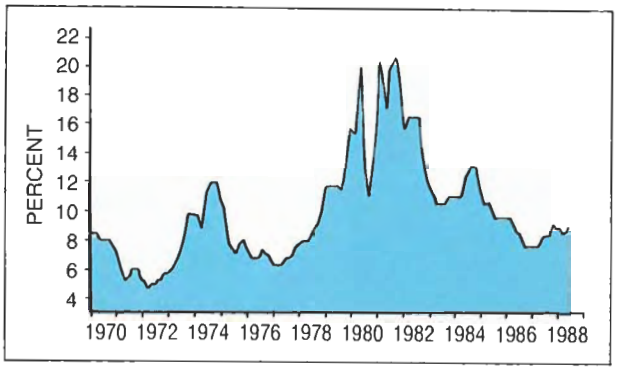


Figure 5. Prime interest rates in the U.S. from 1970 to mid-1988. Courtesy of Moody's Investors Service; artwork by Peter Johnston.

basis of global demand. Prices rose steadily, except for minor downturns during periods of recession.

By mid-1976, however, most world economies began to experience rising inflation with relatively low real interest rates (figure 5). While this should have boded well for diamonds, certain practices that started in Israel eventually led to a debacle that threatened the very core of the industry.

The Israeli Factor. In 1976, Israel was a relatively young but rapidly growing diamond center. The Israeli government was anxious to promote the diamond trade because of its contribution—both proven and potential—to the country's overall gross national product. To make things move even more quickly, the government supplied several Israeli banks with huge amounts of money at very low interest rates to be passed on to diamond manufacturers and dealers so they could build their inventories. The government also set up a system whereby the dollars that were brought into the country through the sale of diamonds received a more favorable exchange rate, which made speculating in rough diamonds even more lucrative. With Israel suffering from runaway inflation (400% at the peak), it is easy to see why many Israelis found diamonds, and this opportunity to speculate, too profitable to ignore (Green, 1981; Nord, 1982).

Typically, a diamantaire with a certain amount of rough diamonds would deposit his rough in a bank as collateral at a declared value, and get a loan from the bank for a similar amount at a very low interest rate. He would then buy more diamonds, deposit them in the bank, and, in turn, get another low-interest loan. In addition, according to Nord (1982), "at this same time there existed in Israel a unique system that allowed people with no money to enter the business. This system was referred to as the trust receipt. This would permit the bank to advance money to people to buy diamonds, which were then to be put up as collateral in the bank. But of course, the cutter had to have the goods to polish and manufacture. The bank would then issue a trust receipt, which, in turn, allowed the purchaser to take the goods out of the bank for a specified period of time for either sale or manufacture. In fact, the system was so liberal that the dealer was even able to ship the goods out of the country on approval to a foreign client. There was no question that this was one of the vehicles that kept the diamond industry moving in Israel. But it was another of the excesses that led to the speculative boom. . . ."

The easy money in Israel allowed manufacturers to obtain more and more rough from the CSO, which not only had to draw heavily on its stocks but also was compelled to increase production. In many cases, it was far more profitable for diamantaires to hold their rough, or sell it for a huge premium, rather than cut and polish it. In effect, manufacturers and dealers began to work totally on the bank's money, creating an apparent demand for diamonds that really did not exist, since many of the goods were not being cut and were not entering the market; it was not a true consumer demand. It is not surprising, then, that the price of rough rose much faster than the price of polished goods (Nord, 1982). And the banks were loaning money based on the value of the rough, rather than on the value of the polished. According to Rothschild (1982), unopened boxes of rough were being traded on the secondary markets for premiums up to, in extreme cases, double the cost of the rough from the CSO. In the end, the hoarding of boxes of rough created a shortage of goods in the marketplace, which drove speculation, and prices, higher and higher. By 1978, there was serious question whether control of the market would be wrested by the industry in Israel, where banks were holding hundreds of millions of dollars in overvalued rough diamonds. Soon, the speculative fever had spread to two other centers as well, New York and Antwerp.

Diamond "Investment" and "Certificate" Goods. During this same 1976–1979 period, a new dimension developed that also fueled the rise in prices. Almost overnight, diamonds (like other tangibles, such as gold and silver) became a fashionable

"investment," and so-called diamond investment firms sprang up throughout the U.S. and Europe. These firms created high-powered promotional packages and presented cleverly designed seminars to tout the excellence of diamond as an investment vehicle, a hedge against inflation. They specialized in promoting one carat and larger diamonds, often with worthless buy-back agreements. Another lure was the premise that the diamond industry was controlled by an "omnipotent" cartel that never dropped its prices. Since credibility was a key to marketing such diamonds, these firms (typically managed by people from outside the industry who had little or no diamond experience) placed themselves in respectable positions by using diamond-grading reports issued by gemological laboratories (figure 6). Demand for "certificate" goods swelled as dealers, and the public, insisted that stones of large sizes and fine qualities have documentation by third parties (who may or may not have been impartial).

TABLE 2. Price increases and surcharges[a] levied by the CSO from November 1971 to May 1988.[b]

Year	Month	Overall price increase (%)	Surcharge (%)
1971	November	5.0	
1972	January	5.4	
	September	6.0	
1973	February	11.0	
	March	7.0	
	May	10.0	
	August	10.2	
1974	December	1.5	
1976	January	3.0	
	September	5.75	
1977	March	15.0	
	December	17.0	
1978	March		40.0
	May		25.0
	June		15.0
	July		10.0
	August	30.0	
1979	September	13.0	
1980	February	12.0[c]	
1982	September	2.5	
1983	April	3.5	
1986	April	7.5	
	November	7.0	
1987	October	10.0	
1988	May	13.5	

[a]*Surcharges are one-time premiums charged by the CSO to offset "premiums" offered by the trade.*
[b]*Source:* Jewelers' Circular-Keystone Directory *(1988) and Rothschild (1982).*
[c]*On 1 ct and above.*

Figure 6. During the "diamond investment era," diamond grading reports assumed a new level of importance that continues to the present day. Photo courtesy of Robert Lombardi Advertising.

Diamonds had long been viewed as portable wealth and a store of value, with a history of more than keeping pace with inflation, but never before had they been marketed on a broad scale as a truly "liquid investment." Too, seldom had the general public acquired them from other than the traditional retail jeweler, a situation that also changed. When price charts began to spring up, and publications like the *Wall Street Journal* started listing diamond prices on a weekly basis, public speculation escalated. The traditional retail jeweler, who had spent a lifetime building a reputation of integrity as a diamond merchant, saw much of his business for better-quality stones slip away.

De Beers Reacts. In the spring of 1978, in an attempt to bring order to an exploding market, the CSO began to impose huge surcharges on sightholder boxes (table 2). This, in effect, told the banks that they would be financing diamonds at greatly inflated values; it also told speculators that they could no longer broker sightboxes at huge premiums, without sharing these profits with the producing countries and De Beers. The first surcharge was 40% in March 1978, followed by 25% in May, 15% in June, and 10% in July. Over the same period, the CSO carefully reevaluated their existing sightholders and ultimately eliminated those who were taking premiums on unopened boxes or those who were no longer financially stable. The CSO then imposed an enormous overall price increase of 30% in August 1978, followed by 13% in September 1979.

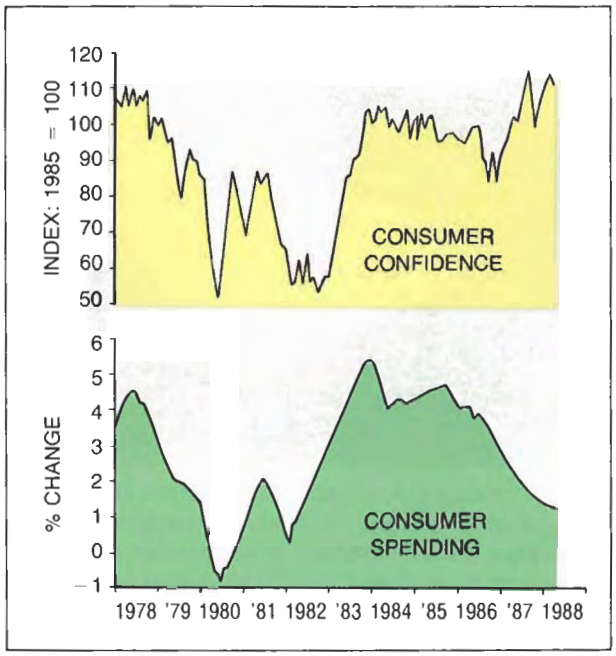


Figure 7. Both consumer confidence and consumer spending in the U.S. reached their lowest point for the past decade in 1980. The top graph covers consumer confidence (using 1985 as a benchmark, i.e., 100). The bottom graph covers variations in real consumer spending (year-to-year percentage change with a six-month moving average). Courtesy of the Consumer Research Center, The Conference Board (an independent, nonprofit economic and business research organization); artwork by Peter Johnston.

THE MARKET COLLAPSES: 1980

Crippling at the Dealer Level. After the huge surcharges of 1978 and the price increases of 1978 and 1979, the Israeli diamond market began to crumble. According to Green (1981), "for the first time in thirty years the value of Israel's diamond exports fell in 1979, and employment [in diamond manufacturing] declined by one-third. . . ." De Beers levied an additional 12% price hike in February 1980, which helped strike the final blow. All of these actions, together with rising interest rates (again, see figure 5), pushed up the cost of diamonds at every purchasing level. By the spring of 1980, prices had reached heights that exceeded consumer demand. At the same time, consumer confidence was dropping and, by June 1980, real consumer spending in the United States had fallen to near-record lows (figure 7). According to Rothschild (1982), retailers sold from stock, but were not restocking to the same levels. Suppliers weren't selling and therefore weren't buying. This affected the manufacturer's market which, in turn, affected the market for rough.

In a matter of several months, from March to September of 1980, the average sale price of the benchmark D-flawless, 1-ct diamond dropped dramatically (table 3). According to Ogilvie Thompson (1982, p. 10), "the price of a top-colour one carat flawless brilliant, which had risen steadily from $1,650 in 1971 to $16,000 in 1978, rose by 1980 to about $65,000—even if very few genuine trades took place at that level—but has since fallen back and has even been traded at below $20,000." When the world recession hit by the second half of 1980, a great number of diamantaires were overextended at the banks. Manufacturers and dealers who had heavily invested in inventory at peak prices (often at huge—20% + in the U.S.—interest rates), suddenly found themselves absorbing tremendous paper losses in their stock of goods. Forced to declare bankruptcy, many forfeited their

TABLE 3. Sample dealer prices for a D-flawless, 1-ct diamond (D–internally flawless after March 1978).[a]

Year	Month	Price/ct (US$)
1977	March	7,200
	September	7,925
1978	March	15,000
	September	20,000
1979	March	22,500
	September	32,000
1980	March	60,000
	September	54,000
1981	March	43,000
	September	30,000
1982	March	20,500
	September	18,200
1983	March	19,500
	September	18,500
1984	March	15,000
	September	14,700
1985	March	14,000
	September	12,600
1986	March	12,600
	September	15,500
1987	March	16,000
	September	17,000
1988	March	17,000
	September	17,800

[a]*Sources: March 1977–March 1978,* JC-K 1982 Directory; *September 1978–September 1988,* Rapaport Diamond Report, *for the last week of each month cited. Shaded areas represent the highs and lows for this period.*

diamond stockpiles to the banks, who were left holding enormous quantities of goods in a plummeting market. The glut of stones in dealer inventories, in private hands, and in the banks was so large that prices fell much faster than they had risen during the boom years. Instead of the CSO managing the world's stockpile (their stocks of larger, better-quality stones now essentially depleted), excess goods were spread into so many hands that the stability of the market, and that of diamond prices, was temporarily lost.

Diamond Investments Plummet. The same forces that were inflicting such heavy damage at the dealer level likewise wounded the diamond investment sector. On the one hand, the high interest rates made borrowing money to purchase diamonds almost prohibitive. On the other hand, the opportunity to invest money at these interest rates made speculating in tangibles such as diamond less attractive. The onset of the world recession ultimately killed diamond investment. From this investment activity, however, two important factors emerged that continue to influence the diamond industry: (1) the intrinsic value of diamond information and grading reports provided by gemological laboratories (although the GIA Gem Trade Laboratory actually began issuing diamond grading reports in 1955); and (2) the regular publication of diamond price lists, available to the public as well as the trade.

The Retailer Survives, even Thrives. Although the diamond industry at the supplier level was severely hurt by the fall of diamond in 1980 (and the slowdown through 1985), the effects in the retail sector in the U.S. were far less dramatic (figure 8). When prices escalated in the late 1970s, goods in the so-called investment qualities attained such artificially high prices that few, if any, legitimate retailers could market them. In addition, while the prices of better-quality diamonds rose astronomically, those of commercial goods—that is, stones of average quality under a carat—moved up, but less significantly.

U.S. Department of Commerce figures for rough and polished diamond imports from 1979 through 1983 clearly show how little the impact of the inflationary bubble for large, high-end goods was on sales volume at retail. According to Richard T. Liddicoat (pers. comm., 1988), the bulk of the rough (in value) imported into the United States consists of large, high-end stones that are cut in New York, generally finishing a carat or more in

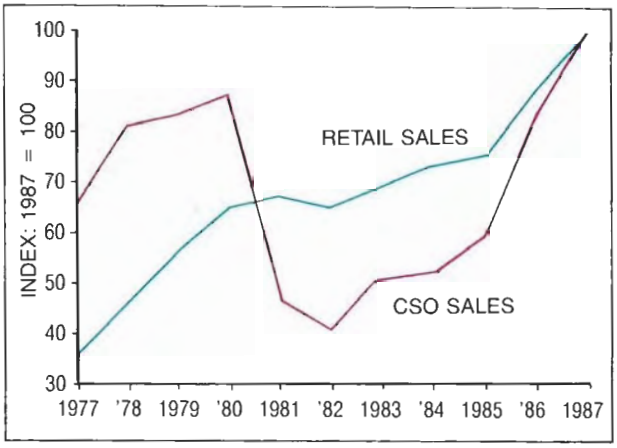


Figure 8. Using 1987 as a benchmark, this chart compares diamond sales by the CSO with sales at U.S. retail for the period 1977–1987. Although the 1980–1981 fall in prices dramatically affected the CSO, it had relatively little impact on the retail sector. Courtesy of the CSO, June 1988; artwork by Peter Johnston.

weight. Many of these are sold overseas. Most U.S. imports of polished diamonds, on the other hand, are less than a carat and are marketed in the U.S. While imports of rough dropped from $956 million in 1979 to $292 million in 1983, imports of polished diamonds during this same period rose from $903 million to $1.983 billion.

At this same time, retailers began to carry inventories that were often just high enough to service their customers, and began to operate on much stricter budgets. Although diamond sales are roughly half of most jewelry retailers' total business, retailers are able to diversify their product line to meet changes in the marketplace. Suppliers are not, and neither is the CSO.

SURVIVAL OF THE FITTEST: 1981–1985

For at least a year after the initial fall in diamond prices in mid-1980, the industry was in a state of confusion. The CSO's response was to reduce supplies of specific types of rough available in the markets by removing certain categories from the sights—in particular, the larger, higher quality stones (Rothschild, 1982)—and by cutting back on others. According to Rothschild (p. XXXII), "The range of rough diamonds sold to buyers was made more selective, and a completely new assortment with new categories, with prices reflecting these new categories, was presented in the November 1981 sight. . . . Sales [by the CSO] dropped to a

figure of $1.472 billion – a decrease of 46% over the previous year."

A glance at the CSO's rough diamond sales for the years 1981–1985 (table 4) illustrates just how slow this period was. According to Miller (1987, p. 13), during "the diamond destocking process, which started in late 1980, . . . dealers, cutters and speculators disposed of around $5 billion worth of diamonds (often at very substantial financial losses). . . . To put this destocking by suppliers into perspective, by value it represented at least 30–40% of the annual global sales figures for uncut gem diamonds during the years of 1981–84."

With excess stock essentially disposed of by the second quarter of 1985 (Miller, 1987), many began to feel that a low point in diamond prices had been reached and that demand would start to build. Even before this, in late February 1985, a significant new economic factor entered the picture: The value of the U.S. dollar (the currency used by the CSO in the sale of all of its sights) began to slip against many other currencies, most notably the Japanese yen (see table 5). In addition, the resilient Israeli diamantaires, who were the first and perhaps the hardest hit by the rapid downturn, had successfully restructured their industry into smaller, more efficient manufacturing units. Their ability to respond immediately to changes in the marketplace would eventually help lead the industry out of recession.

TABLE 4. Annual sales of rough diamonds (gem and industrial) by the CSO from 1970 through June 1988.

Year	Total sales in millions of US$[a]	%Increase/ decrease over previous year	Total sales in millions of 1986 US$[b]
1970	529	−23	1,506.3
1971	625	+18	1,706.7
1972	849	+36	2,244.3
1973	1,322	+56	3,314.3
1974	1,254	− 5	2,811.7
1975	1,066	−15	2,190.3
1976	1,555	+46	3,020.6
1977	2,073	+33	3,782.8
1978	2,552	+23	4,325.4
1979	2,598	+ 2	3,960.4
1980	2,723	+ 5	3,654.1
1981	1,472	−46	1,788.7
1982	1,257	−15	1,440.2
1983	1,599	+27	1,774.9
1984	1,613	− 1	1,717.2
1985	1,823	+13	1,874.0
1986	2,557	+40	2,557.0
1987	3,075	+20	—
1988	2,201[c]	+41[d]	—

[a]*Sources: "Diamonds and Gemstones" (1988); De Beers Consolidated Mines, Ltd. (1977–1987).*
[b]*Source: Miller (1987).*
[c]*For January–June. Source: CSO press release, July 1988.*
[d]*Over January–June 1987.*

TABLE 5. Currency exchange rates for Japan, the United Kingdom, France, and Germany as compared to the U.S. dollar, 1977–September 1988.[a]

Year	Japan (¥/$)	United Kingdom ($/£)	France (FF/$)	Germany (DM/$)
1977	240.00	1.9060	4.7050	2.1050
1978	194.60	2.0345	4.1800	1.8280
1979	239.70	2.2240	4.0200	1.7315
1980	203.00	2.3850	4.5160	1.9590
1981	220.00	1.9150	5.7250	2.2480
1982	234.80	1.6180	6.7300	2.3750
1983	231.59	1.4515	8.3250	2.7220
1984	251.70	1.1587	9.6550	3.1530
1985	200.00	1.4455	7.5000	2.4400
1986	158.50	1.4815	6.4350	1.9255
1987	120.80	1.8860	5.3150	1.5695
1988[b]	134.40	1.6810	6.4065	1.8830

[a]*These figures represent the exchange rates applicable at the close of each year. Source for 1977–1987: Bank of America.*
[b]*Rates on September 29, 1988. Source:* Los Angeles Times, *September 30, 1988.*

Certainly, by late 1985, there was no doubt that the tide was turning. Demand for diamonds had risen markedly. Total sales for the CSO in 1985 rose 13.0% over those of 1984 (see again, table 4), and the number of GIA GTL diamond grading reports issued in the last quarter of 1985 increased by 8.3% over the same period in 1984.

DIAMONDS REBOUND WITH THE JAPANESE MARKET: 1986

With the declining strength of the U.S. dollar, Japan and other consuming nations with strong currencies began acquiring diamonds at, in effect, tremendous discounts. For example, 1986 diamond imports to Japan were up over those of 1985 by more than 50% in quantity (or dollars), but only 10% in yen (Jeremy Richdale, CSO, pers. comm., 1987). The CSO increased prices twice in 1986 – 7.5% in April and 7% in November – in response to heightened demand (in effect, an adjustment of the price in dollars to reflect the rising value of the yen and other currencies). Overall, rough diamond sales by the CSO were up 40% in 1986 over the previous year (see again, table 2).

Japan is De Beers's big success story in the past two decades. To illustrate, De Beers reports that only 6% of all Japanese brides in 1966 received

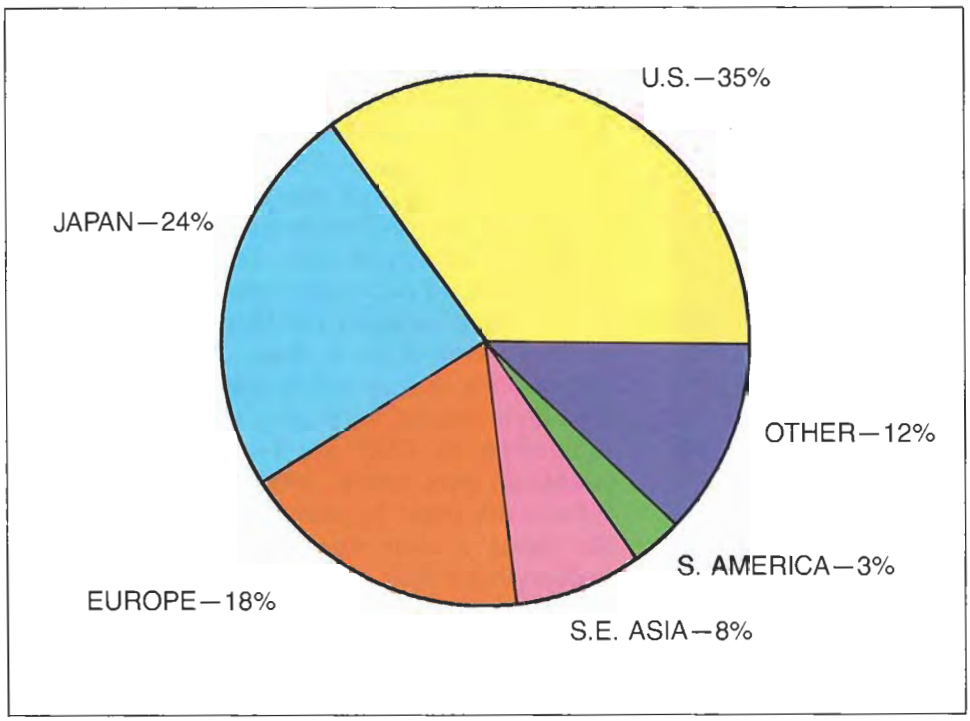


Figure 9. As this chart of worldwide retail sales of diamonds illustrates, Japan consumed almost one-quarter (by value) of the polished diamonds sold in 1987. The U.S. figure of 35% is down from 38% in 1986. The CSO expects Japan's share of the market to continue to expand, while that of the U.S. will get smaller. Courtesy of the CSO, June 1988; artwork by Peter Johnston.

diamond engagement rings, in contrast to 74% in 1987. In addition, according to the CSO's magazine *In-Sight* ("Consumer Market Trends," 1988), Japanese consumption of diamonds one carat and larger has tripled since the yen's most recent low in 1985. By the end of 1987, the Japanese market consumed 24% of all polished diamonds (in value terms) sold at retail (figure 9), up from 22% in 1986; in comparison, the U.S. share of the retail market dropped to 35% in 1987 from 38% the previous year (a long way from the 80% share it represented shortly after World War II). By the end of 1988, Japan is expected to be acquiring 27% annually of the world's total polished diamonds in dollar terms, with the U.S. share decreasing below 35% (Keith Ives, CSO, pers. comm., 1988). Considering that Japan has a lower per capita income than the U.S. and roughly half the population, these figures are even more astounding.

According to Ogilvie Thompson (1988), the diamond market was firm for the first eight sights of 1987, particularly in the larger sizes. The CSO's policy by early autumn of that year appeared to be one of cautious optimism. They knew that demand was up largely due to the strength of the yen. They also must have felt an element of worldwide speculation in the air, with a modest interest in tangible assets re-emerging. Nevertheless, the CSO raised prices again in October, at that time the single biggest sight in its history. Few could imagine what would happen next.

THE STOCK MARKET CRASHES: OCTOBER 19, 1987

Events on Wall Street. The Dow Jones Industrial Average rose to an all-time high of 2,722 on August 25, 1987, before dipping over the next seven weeks to 2,246 on Friday, October 16. Then the crash of Monday, October 19, rocked the world. Many stocks had been selling for far more than their earnings' value. Alternative investments were becoming, in effect, better (and safer) buys. As a number of investors began to get out of the market, modern computer trading, with automatic "sell" signals at specified price points, threw the U.S. stock exchanges into a selling frenzy on October 19th. Dubbed "Black Monday," this date saw the Dow Jones Industrial Average drop over 500 points, to 1,738, and the U.S. stock market incur a paper loss of some $1 trillion. Repercussions were quickly felt throughout the United States and on the Tokyo, Hong Kong, and London stock exchanges, which all experienced similar precipitous declines.

Following the CSO's October sight, just two weeks before the crash, some diamantaires speculated that De Beers had planned an even larger one for November. Instead, they cut it in half to tighten worldwide supply and firm up prices, undoubtedly in response to the uncertainty generated by events on the stock exchanges. By reacting quickly, the CSO maintained the confidence of their clients and the industry. Gradually, stocks began to re-

Figure 10. Current consumer interest in major diamonds is evidenced by this superb brooch designed and set by Tiffany & Co. in New York this past summer. The fancy yellow diamond weighs 128 ct; the largest pear shape, crowning the yellow stone, weighs approximately 20 ct. The additional 23 pear-shaped and marquise diamonds total approximately 160 ct. Photo by Josh Haskin; courtesy of Tiffany & Co.

bound as other economic indicators remained good. Consequently, the December sight was larger than that of November. Despite the crash, 1987 CSO sales of gem and industrial rough diamonds were $3.075 billion, the biggest year ever.

Renewed Demand by 1988. Worldwide demand for rough was so strong by early 1988 that the CSO's January sight was larger still. With reports of a good 1987 Christmas selling season, optimism abounded, and the February and March sights followed at even greater sizes. In response to continued strong demand, the then-record May sight was accompanied by an overall price hike of 13.5%. According to the *Rapaport Diamond Report* (April 29, 1988), because Japan is the power behind diamond buying today, this latest increase (in dollars) is really another attempt to stabilize diamond prices in yen. More important, prior to the price increase, premiums of 10%–15% had been offered in dealer-to-dealer trading for unopened boxes of rough from the CSO. Consequently, the May increase can also be thought of as an attempt by the CSO to ensure that they and the producing countries also benefited from the greater demand and higher prices.

De Beers followed the May 1988 sight with another record sight in June. Generally, a sight lasts a week, during which sightholders may discuss their "series" with the CSO at their option. According to CSO market liaison Michael Grantham (pers. comm., 1988), the June sight was "practically over" by Tuesday (the second day of the sight), a clear sign that sightholders were anxious to get their rough and manufacture or sell it right away. The July sight was a little smaller in comparison to June; whether this reflects a slowdown in Far East buying, due to a slightly stronger dollar and building inventories, is uncertain. The market for rough diamonds in late 1988, however, is still strong.

The period following the October 1987 stock market crash saw De Beers fulfilling its traditional role in the marketplace, balancing the supply of rough with demand in order to stabilize prices. According to the *Economist* ("Diamonds 1988," p. 25), "Indeed, during the week following 'Black Monday' on Wall Street, when prices in securities and commodities markets were gyrating wildly, diamond prices scarcely moved at all." De Beers's tightening of supplies after the October 1987 crash worked principally because there were few loose goods in dealer inventories. Although CSO officials felt that there had been some hoarding during the preceding year, it was nothing near the magnitude of the late 1970s.

RECENT EVENTS IN THE DIAMOND INDUSTRY

The May 1988 price increase was the CSO's biggest in nearly a decade. The pace set in 1988 indicates another record year for the CSO, with diamond sales in the first six months totaling $2.201 billion, up 41% over the same period in 1987 (see table 4).

In his April 26, 1988, address to the American Gem Society at their Toronto Conclave, the CSO's Michael Grantham claimed that the diamond industry is in better condition today than at perhaps any other time in history. The prodigious Far East demand stimulated by a weakened U.S. dollar is key. Moderate dealer inventories are also a

Figure 11. In 1988, sales at auction for diamonds and other gemstones have reached record levels. For example, sales at the April 1988 Christie's auction in New York—at which this ring and necklace were offered—totaled $24 million. As of September 1988, jewelry sales at Christie's had reached $77 million, more than 12 times the $5.3 million in jewelry they auctioned in all of 1977. The 18.56-ct pear-shaped diamond ring sold for $198,000; the garland necklace, with a 3.59-ct pear shape as the largest stone, sold for $143,000. Photo by Tino Hammid; courtesy of Christie's New York.

plus. After the stock market crash, the psychology of the diamond market shifted. Concerns about the possibility of a recession (or worse) and uncertainty about the stability of financial markets made dealers wary—not enough to curtail buying, but certainly enough to discourage excessive hoarding. At the same time, many wealthy people, who saw the volatility of the stock markets in October 1987, along with the rise (and firming) of diamond prices soon afterward, shifted some assets to major diamonds (figure 10). This contributed to an even stronger diamond market by mid-1988.

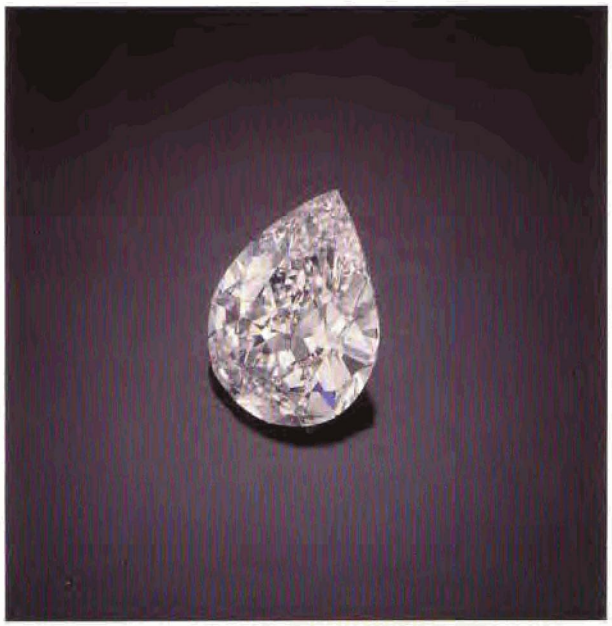
The renewed interest in large, fine-quality diamonds in the last few years is most evident in the increased activity at the auction houses (figure 11). During the diamond recession of 1981–1984, and through most of 1985, auction house activity was slow. Prices did not show signs of strengthening until the end of 1985. According to Moyersoen (1987, p. 111), "Generally auction prices are about 10% less than those prevailing on the wholesale market. Nevertheless, when the market starts to recover, precursory signs can be visible at auction houses where diamonds can command prices much higher than those prevailing on the wholesale market. For instance in December 1985, the beginning of the market recovery, we were able to observe much higher prices in New York auction houses than on the wholesale market."

Examples of these new price levels include the 0.95-ct fancy purplish red diamond that Christie's sold at their April 28, 1987, auction for a record-breaking $926,000 per carat. Two days after the stock market collapse, a 64.83-ct D–internally flawless stone sold at Christie's in New York for

nearly $6.4 million (almost $100,000 per carat); just six months later, a 52.59-ct D–internally flawless emerald cut sold at Christie's for $7,480,000—a record $142,000 per carat for a colorless diamond sold at auction (Moyersoen, 1988). Most recently, on October 19, 1988, a 59.00-ct D–internally flawless diamond (figure 12) sold at Christie's for $5,560,500. It is interesting to note that the second largest diamond in the world—a 407.48-ct fancy brownish yellow internally flawless "shield" cut (figure 13)—was offered at the same auction but was withdrawn when bidding ended at $12,000,000.

Another key factor in the stability of the market today is the more conservative distribution policy of the Soviets (Maillard, 1988). During the down times between 1982 and 1985, the USSR periodically flooded goods onto the market at depressed prices, presumably to raise foreign capital. According to Moyersoen (1988), an understanding between De Beers and the Soviets was reached in September 1985 whereby the USSR would cease "dumping" and would not increase its overall sales of diamonds, while De Beers would purchase Soviet polished goods over 0.25 ct as well as larger quantities of rough.

Figure 12. Several important colorless diamonds have come to auction in the last few years. This 59.00-ct D–internally flawless pear shape (shown here at actual size) was sold by Christie's New York on October 19, 1988. Photo by Tino Hammid; courtesy of Christie's New York.



WHERE DO WE GO FROM HERE?: PERSPECTIVES ON A CHANGING DIAMOND WORLD

The diamond industry has faced—and overcome—challenges throughout its history. There are, however, a number of key issues that can drastically affect the future economics of this industry. These include not only the traditional factors of supply and demand, but also an important, relatively recent variable: the impact of new technology.

On the Supply Side. Diamonds were originally discovered in India as early as the 3rd century B.C., with the next major discovery in Brazil in the 1700s. Just at the time of diminishing supplies worldwide, diamonds were found in South Africa in 1866. This discovery changed the diamond industry as the world then knew it. In the modern diamond era, major developments such as those in the USSR in the 1960s, Botswana in the 1970s, and Australia in the 1980s, have led to continued changes in the industry (see box on "World Diamond Production").

In his controversial 1982 book, *The Rise and Fall of Diamonds*, Epstein concluded that, "By the mid-1980s the avalanche of Australian diamonds will be pouring onto the market and unless the resourceful managers of De Beers can find a way in the interim to bring this plethora of diamonds under control, it will probably signal the final collapse of world diamond prices. Under these circumstances, the diamond invention will disintegrate and be remembered only as a historical curiosity, as brilliant in its way as the glittering, brittle, little stones it once made so valuable." Obviously, Epstein's scenario never took place.

To be sure, responsible members of the trade were concerned during the recession of the early 1980s about the market impact of the Australian finds and of Botswana's prolific Jwaneng mine (figure 14) on an already depressed market. The CSO, however, maintained a position from the outset that the Australian production would not adversely affect the market, and Botswana's production was already being marketed through CSO channels. Since then, the industry has seen this new production absorbed at a steady, increasing rate. Although worldwide exploration continues, there have been no reports of economically significant new mining sources on the horizon. Supply appears to be adequate, yet not excessive.

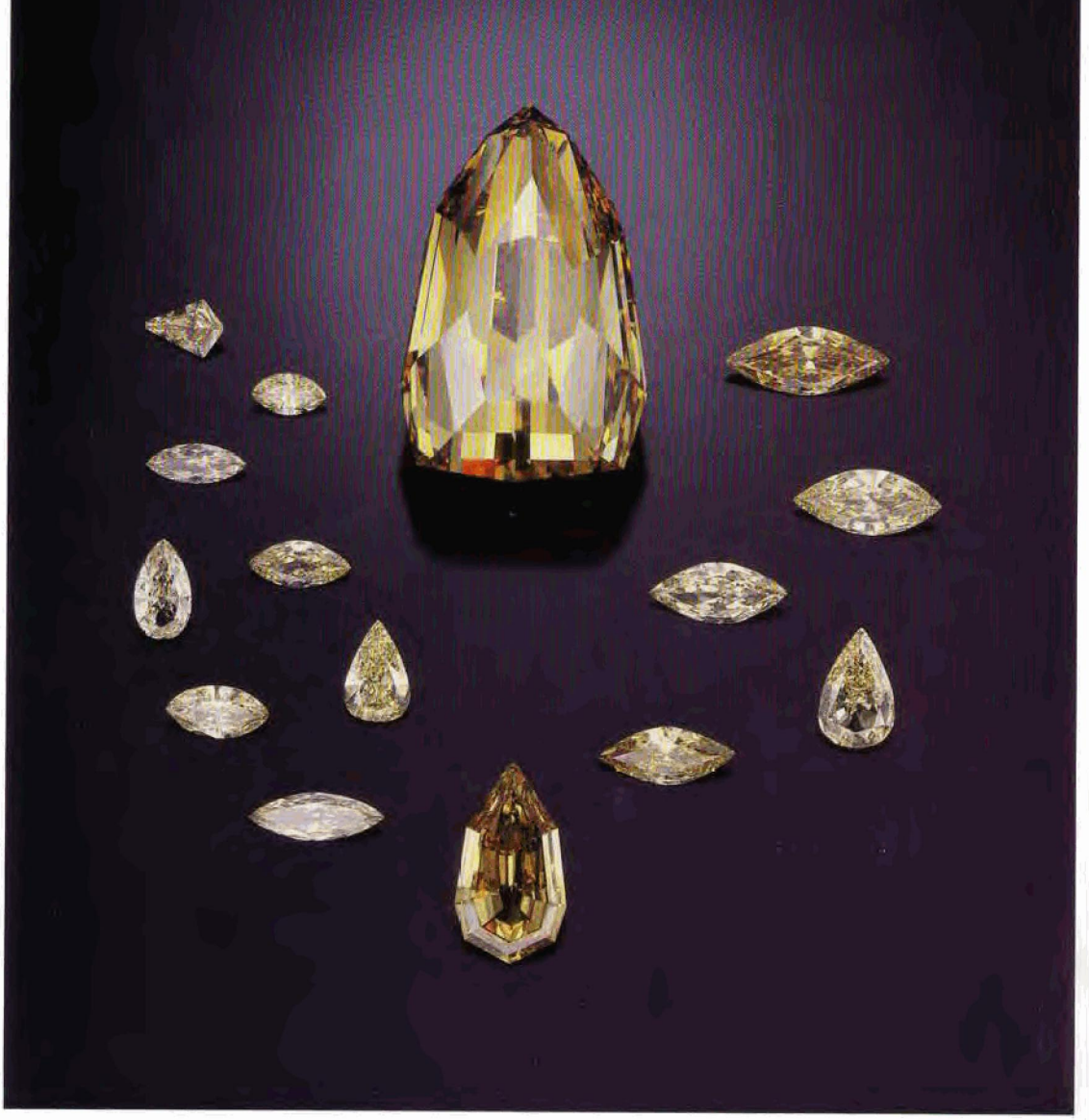


Figure 13. This 407.48-ct internally flawless diamond, the second largest diamond in the world (after the 530.20-ct Cullinan I), was offered at auction by Christie's New York on October 19, 1988—ironically, one year to the day after the stock market crash of 1987. Even though the bidding reached $12,000,000, the stone was withdrawn. This and the satellite stones, which range from 1.33 ct to 15.66 ct, were faceted from an 890-ct piece of rough jointly owned by Marvin Samuels, Louis Glick, and the Zale Corp. Photo by Tino Hammid; courtesy of Christie's New York.

At the time that the Australian discoveries were made, India was developing as a major diamond-cutting center. The low labor costs in India and the specialization in small stones fit perfectly with the type of production Australia is offering the marketplace in the 1980s (figure 15). Concurrently, there has been a great expansion of retailing formats in mass merchandising throughout the world that has provided a broad market outlet for inexpensive, mass-produced diamond jewelry. Near-gem quality diamonds can now be affordably cut by labor-intensive India and developing Far East cutting operations, and sold at prices that attract a wider range of consumers.

Possible sanctions in the U.S. on the importation and sale of diamonds from South Africa (Comprehensive Anti-Apartheid Act of October 2, 1986) pose yet another apparent threat to the diamond industry. Because South Africa now contributes just about 10% of the world's total supply of rough diamonds by weight (though a higher percentage in gem qualities and in value terms) and the U.S. now accounts for only a little more than a third of world diamond consumption, it is doubtful that such sanctions would have a crippling effect on the diamond industry as a whole; they would, however, inevitably have an impact on the U.S. market and on U.S. sightholders in particular. Ironically, diamonds now contribute less than 3% of South Africa's total earnings from minerals, whereas Botswana, for example, earns 78% of its foreign exchange from diamonds (Oppenheimer, 1988).

Despite record sales for the CSO in 1987 and in the first half of 1988, stocks of uncut diamonds outside CSO control are still at moderate levels, although rising. In addition, prices of polished diamonds are relatively stable and increasing at a realistic pace. Supply appears to be in balance with demand. Japan's thirst for diamonds, however, has

WORLD DIAMOND PRODUCTION

Over 90 million carats of rough diamonds (gem and industrial) were mined worldwide in 1987 (see table 1); almost 90 years ago—in 1901—world diamond production was only about 1 million carats. Total production (in carats) has doubled over the last decade alone. About 40% of the rough yields cuttable qualities, half of which is considered gem, the other half near gem. In terms of total rough mined, the top four countries today are Australia, Zaire, Botswana, and the USSR. Each now surpasses the leader of decades past, South Africa. Several other areas are also active (see map).

Although the Argyle mine has given Australia the lead in total rough production today, for the most part the stones are small, with only about 5% of gem quality and 40%–45% considered near gem. Of the gem-quality crystals, many are browns and most are very difficult to cut because of the typically serrated and knotted nature of the rough. The first Australian production, in the early 1980s, was alluvial. The AK-1 pipe became fully operational in December 1985, and production since then has leaped from about 7 million carats in 1985 to 30 million carats in 1987, where projections indicate that annual output should level off. Australia is currently the world's major source of pink diamonds.

Zaire produces about 20 million carats of rough each year, mostly of industrial quality. For over 30 years, until 1986, Zaire was the world's largest producer of diamonds. Like Australia, only about 5% of Zaire's production is gem quality; 20%–25% is considered near gem. Zaire discontinued its 14-year exclusive selling contract with the CSO in 1981, only to negotiate a new one in 1983; this agreement has since been extended.

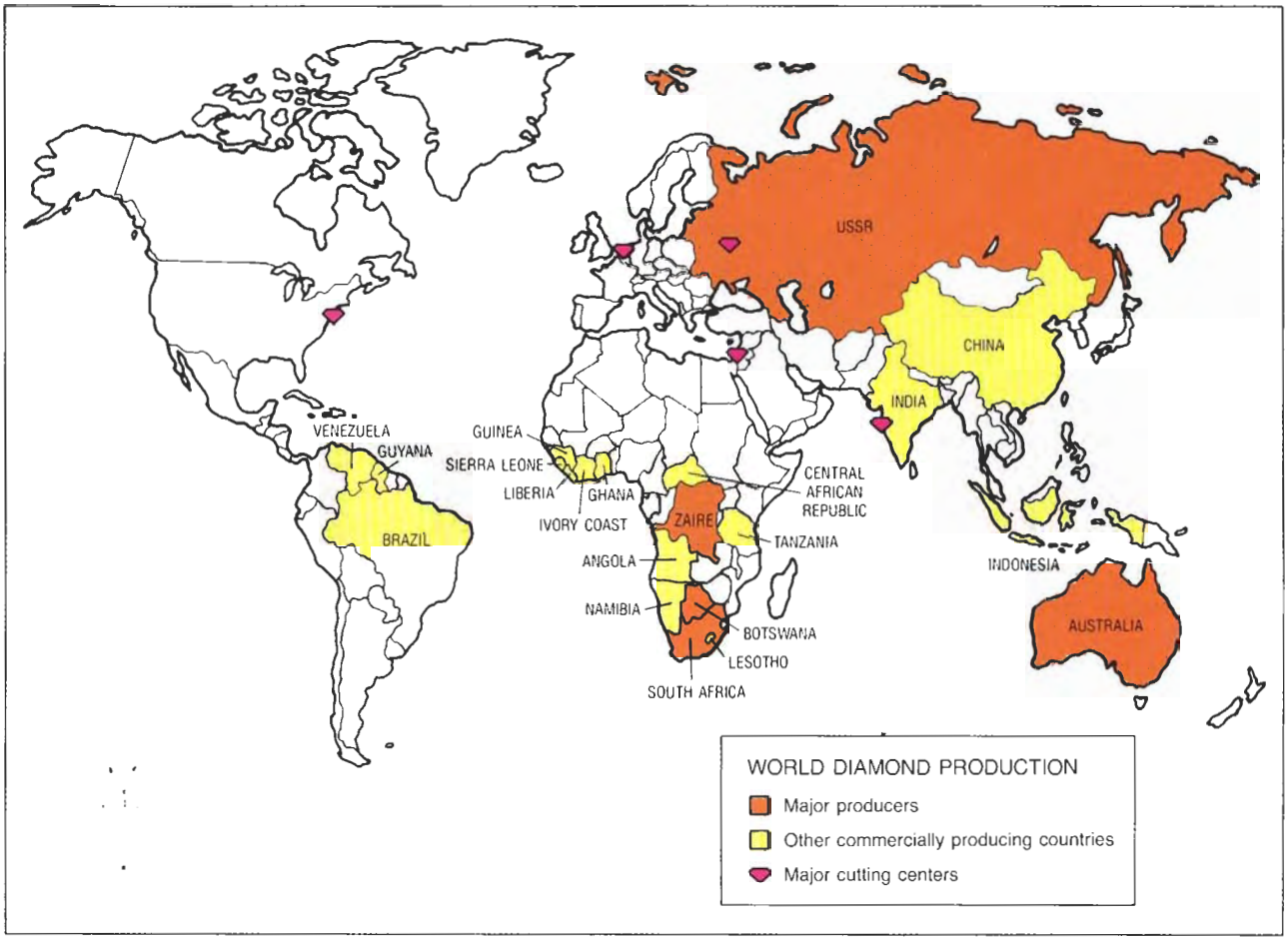
According to a July 2, 1987, press release issued by De Beers, Botswana—with its three mines of Orapa, Letlhakane, and Jwaneng—has, over the past decade, become one of the most significant diamond producers in value terms. More than half of the over 13 million carats of rough mined in Botswana in 1987 is cuttable. Jwaneng alone, which came into full production in 1982, yields over 7 million carats of rough per year. In terms of quantity, quality, and value, it is the most important mine to have gone into production in the past 100 years (Prins, 1987). To put the quality of Botswana's yield into perspective, this tiny country produces some $700 million of diamond rough per year—about three times more than the income earned by Argyle (Gibson, 1988).

Production is handled through a partnership between the Botswana government and De Beers known as Debswana. This 1987 agreement was a major achievement for both parties. According to the press release mentioned above, De Beers acquired the balance of Botswana's stockpile of diamonds, which accumulated during the 1981–1985 recessionary period, in exchange for 20 million newly issued ordinary shares of stock holdings in De Beers (which makes Botswana the company's third largest shareholder), an undisclosed cash payment, and two seats on the De Beers board. The Debswana agreement gave De Beers the supplies of rough necessary to meet rising diamond demand in the late 1980s (bringing De Beers's current diamond reserves to a total value of $2.3 billion), and gave Botswana an important interest in De Beers.

The major source of Soviet diamonds is in Siberia, where an estimated 12 million carats of rough was mined in 1987. The Soviet Union also has a substantial cutting industry that has become increasingly important during the past 15 years because of the quantity, quality, and uniformity of their polished goods.

Although most people probably believe that South Africa is the major source of diamonds today, it is now only fifth in total production by weight. However, nearly half of the 10 million carats South Africa produces annually are cuttable. Having selectively closed some mines in South Africa during the 1981–1985 recession, De Beers recently reactivated Annex Kleinzee ("Diamonds 1988") and Koffiefontein (Moyersoen, 1987), in response to improved market conditions and, in particular, the strong recovery of demand for large, fine-quality stones.

The Consolidated Diamond Mines (CDM) in Namibia once produced close to 2 million carats of rough diamonds annually, 95% of which were gem quality. This production has been dwindling over the last decade, to about 1 million carats in 1987.



Diamonds are found on virtually every continent, yet five countries contribute over 90% of the total production: Australia, Zaire, Botswana, the USSR, and South Africa (indicated in orange). Several other countries (indicated in yellow) produce small amounts of diamonds, totaling only 10% of world production. Each of the five major countries in which cutting centers are located—the U.S., Belgium, Israel, India, and the USSR—is indicated by a red diamond. Artwork by Robin Teraoka.

Mining is accomplished on raised beach terraces (in effect, ancient alluvial deposits) through the use of heavy earth-moving equipment and dredges. According to Ogilvie Thompson (1988), CDM No. 3 plant was recently reopened and modifications to the CDM No. 1 plant, for improved recovery, are well advanced.

Diamonds are also mined in smaller quantities in Brazil, Ghana, the Central African Republic, Indonesia, Sierra Leone, Liberia, Venezuela, the Ivory Coast, Angola, Tanzania, Guinea, India, Guyana, Lesotho, as well as China. Although production statistics for China are not available, the total production from these countries does not contribute even 10% of the total world rough mined each year.

Just as world diamond production has changed markedly over the past decade, so, too, have the centers that manufacture rough around the globe. Today, stones are cut in over 30 different countries, although the U.S. (New York City), Belgium (Antwerp), Israel (Tel Aviv), India (Bombay), and the USSR (Kiev, Moscow, Sverdlovsk, and Mirny) support the bulk of the business. Other noteworthy cutting centers are located in South Africa, Brazil, China, Sri Lanka, North and East Africa, Thailand, and elsewhere throughout Southeast Asia and the Far East (Prins, 1987).

Figure 14. The Jwaneng mine in Botswana is the most important diamond mine—in terms of quality and value—to have been brought into production during the last 100 years. This aerial view shows the vast open pit. Photo courtesy of the CSO.

created larger inventories of cut stones in that country than ever before. Although CSO officials attempt to closely monitor these stocks, there is some industry concern that excess inventories could be "dumped" on the market in the event of a downturn in the Japanese economy.

The concept of a futures market for diamond has been resurrected in the second half of the 1980s. Previously attempted by the Pacific Stock Exchange in the 1970s, and considered by the Chicago Mercantile Exchange, the London Commodity Exchange, and, most recently, by the New York Commodity Exchange (Comex), the development of a commodities market for diamond is another of the variables that could greatly affect the supply of fine-quality goods in the marketplace. Most in the trade are skeptical that a diamond futures market could succeed. Moreover, it would inevitably alter the traditional perception of diamond purely as an item of adornment and an expression of love, to one possessing the additional factors of hedging, speculation, and investment.

Demand and the Marketplace: A Case for Confidence. It is clear that world economic forces strongly influence the demand for diamond, since demand closely follows the worldwide business cycle. Among the more important factors to watch in the near future are the levels of disposable income and the real interest rates in the two major consuming markets, the United States and Japan. However, a number of other factors contribute to a case for optimism in the global diamond markets.

Consumer confidence in the value of diamond is rising again, and consumer demand for diamonds as objects of love and adornment is at an all-time high. With stock market uncertainty, there is also a renewed interest in tangible assets. This is especially strong in Japan, where recent changes in the tax laws provide further momentum for consumer spending. The self-purchase market (big and growing in the U.S.) is already bigger in Japan (Keith Ives, CSO, pers. comm., 1988); as Japanese women play an increasingly important role in the work force, their impact on the diamond market will also grow.

The strength of other currencies against the U.S. dollar, especially in Europe and the Pacific Rim, is also stimulating demand. Market activity in Hong Kong, Taiwan, and Singapore is particularly strong today. Unlike the speculative boom of the late 1970s, however, this latest fever appears to be mostly a product of actual consumer demand.

Retail jewelry markets in the U.S. continue to show overall growth (again, see figure 8), and worldwide demand at retail is rising. According to Ogilvie Thompson (1988), for each of the last five

Figure 15. Only 5% of the diamonds mined at Argyle are gem quality; 40%–45% are near gem. Most are brownish and small. The low labor costs in India and other emerging Far East cutting centers have made manufacturing near-gem material economically feasible. Photo by Brian Stevenson; courtesy of Argyle Mines Pty., Ltd.

years world retail sales of diamond jewelry established new records, principally as a result of increased consumer confidence and spending. Over $30 billion in diamond jewelry was sold in 1987, containing close to 300 million diamonds. Retail diamond sales in the U.S. alone were over $11.3 billion in 1987 (up 15% over 1986 levels), with over 19.8 million pieces of diamond jewelry sold ("Consumer Confidence in Diamonds High," 1988). De Beers's continued heavy promotion to consumers in some 28 countries worldwide further strengthens a view for confidence in diamond in at least the near future. There is consistent growth in the traditional market in the United States, where 66% of married women in the 25–44 age group and the top one-third income group expressed a strong interest in giving/receiving diamond jewelry (Ives, 1988); this is the highest percentage in history. Assuming that disposable incomes will rise in other consuming nations and in developing countries such as South Korea and perhaps even China, and that the diamond industry can attract some of that disposable income, worldwide demand should continue to grow. The diamond trade has had three good years in a row (1986–1988), and most firms are not overextended with the banks (by design) as in years past, which fosters even more confidence.

There are, however, a number of events in the global economy and in that of Japan in particular that could produce either excess supply or reduced demand. The *Rapaport Diamond Report* (April 29, 1988) points to "external economic forces such as a dramatic fall in the Japanese stock market, or a sharp drop in the yen" as possible scenarios that "could cause a collapse [in diamond demand]." A world recession would also undoubtedly reduce demand at all levels. Still, the diamond industry does appear to be in a better position to respond to such forces, if they should occur.

New Technology. Although it may not be obvious how scientific challenges can affect the economics of the diamond industry, the mere mention of synthetic gem diamonds is usually enough to upset any dealer. High technology will surely play a role in the diamond business in the 1990s and beyond.

Three major technological challenges now face the diamond industry: sophisticated color treatments, fracture-filling, and the availability of gem-quality synthetic diamonds. The treatment of diamond by heat and/or irradiation to induce or change color has created detection problems for gemologists worldwide. Identification of these sophisticated color treatments has already inspired extensive research (e.g., Walker, 1979; Collins, 1982) and is the subject of a major project that is now under way at GIA. The "filling" of cleavages and fractures to reduce their visibility in heavily flawed stones poses another challenge for the industry (Koivula, 1987).

Figure 16. Synthetic gem-quality diamonds may represent the most important technological development in the diamond world this century. These two faceted synthetic diamonds (0.30 ct and 0.27 ct) and their 1.03-ct-companion crystal were grown by De Beers for experimental purposes. Photo © Tino Hammid.

The greatest potential technological challenge, however, is that of gem-quality synthetic diamonds (see, e.g., Koivula and Fryer, 1984; Shigley et al., 1986 and 1987). Although not marketed specifically for the jewelry industry, small gem-quality yellow synthetic diamond rough can now be purchased from Sumitomo Corp. of Japan. In the course of its research, and for experimental purposes only, De Beers has grown gem-quality yellow synthetic diamonds as large as 11 ct (figure 16). Although the procedure continues to be expensive,

the rising costs of natural diamonds could make the distribution of synthetic diamonds for jewelry, rather than purely industrial and technological purposes, an attractive option. All types of synthetic diamonds examined to date, however, can be readily identified by standard gemological tests.

The science of gemology must secure the knowledge necessary to insure stability in the marketplace, because public confidence in diamond is the key to its long-term success. The trade also needs more information and more absolute standards, such as the scientific nomenclature for grading fancy color diamonds that is currently a subject of research at GIA. Accurate information with standardized terminology, presented honestly, will help the industry because the consumer will be better equipped to buy diamonds confidently.

CONCLUSION

Economic forces have buffeted the diamond industry for much of the past decade. The unusually high demand generated by Israeli diamantaires (backed by low-interest/low-risk loans from the government-supported banking system) was further escalated by the heightened interest in investing in diamonds as a commodity during the inflationary spiral of 1976–1979. What started in Israel in 1976 ended in the U.S. and Europe in 1980. Higher interest rates from the banks, surcharges and sharp price increases by the CSO, and the onset of a world recession worked together to curb demand at both dealer and consumer levels. The diamond market plunged.

In the early 1980s, many manufacturers and dealers went out of business, as the large quantities of stones hoarded during the upward climb could not be absorbed by an already-saturated market. To help correct this imbalance in supply and demand, the CSO began to restrict the supply of specific categories of new diamonds that entered the system. Gradually, excess goods were absorbed at the consumer level and, by 1985, most of this stock had been disposed of. Despite the problems at the diamantaire level from 1980 to 1985, there were healthy increases in worldwide retail sales during most of this period. By 1986, the industry was feeling the full impact of the attractiveness of diamonds to a growing Japanese market as the U.S. dollar weakened against the yen. The diamond market rebounded.

Today, demand for diamonds is strong and prices are rising. Supplies of rough are healthy, but supply and demand appear to be in balance. The fact that diamond prices have continued to rise following the worldwide plummet in stock prices in October 1987 is further evidence of the strength of diamonds in the late 1980s.

The key to success in the 1990s and beyond, however, will be the ability of the diamond industry—the CSO, diamantaires, and retailers alike—to anticipate, and prepare for, the future. The appeal of diamond as an object of love and adornment continued strong throughout the past decade. The fact that so many Japanese women are now wearing diamond engagement rings indicates that the romance of diamond is still a major demand factor. This is echoed by the continued strength of diamonds at the retail level in the U.S. However, further changes in currency exchange rates, especially a weaker Japanese yen, would undoubtedly have some impact. Too, the economies of the developed nations worldwide have been very healthy in recent years. A recession of any duration, as in the early 1980s, would also affect demand for diamonds. Technology is another factor that undoubtedly will have an impact on the industry, but this will be minimized if the technology of gem identification can keep pace with the technology of treatments and synthesis.

The diamond industry has weathered the radical fluctuations of the past decade well. Every indication is that it will be able to face future challenges even more efficiently and effectively. As standards of living internationally continue to rise, as De Beers continues to promote to old and new markets alike, as supplies continue to be strong, the future for the diamond industry does indeed appear bright.

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