THE GLOBAL DIAMOND INDUSTRY 2016

The enduring allure of timeless gems

BAIN & COMPANY

AWDC
ANTWERP WORLD DIAMOND CENTRE

Contents

Note to readers

Welcome to the sixth annual report on the global diamond jewelry prepared by the Antwerp World Diamond Centre (AWDC) and Bain & Company. This year's edition covers industry developments in 2015 and early 2016 and takes a close look at the millennial generation (roughly speaking, people born between 1980 and the early 2000s) as a new category of diamond buyers. We begin with key developments along the value chain. In subsequent sections, we review factors that influenced rough-diamond production and sales, midstream performance and global diamond jewelry demand in major markets.

We then share diamond jewelry consumer insights from our proprietary research across China, India and the US, highlighting the attitudes and behaviors of millennials. We also provide an update on the long-term outlook for the diamond industry through 2030. The 2030 supply-demand forecast considers recent changes in mining operations and expected global macroeconomic effects.

Readers looking for a brief overview of the key takeaways from this report can find them below:

- **Following a period of growth from 2012 through 2014, diamond jewelry consumption has entered a moderation phase.** In 2015, retail sales of diamond jewelry grew 3% at constant exchange rates but declined about 2% in US dollar terms. The US remained the sales growth engine of the global diamond jewelry market, as the same-store revenues of mainstream US jewelry retailers improved, reflecting strong middle-class consumption. Greater China is still rebalancing as slowing tourist flows to Hong Kong and Macao offset otherwise positive dynamics in mainland China. Europe and Japan in 2015 benefited from the shift of spending by Chinese consumers from Hong Kong and Macao. This shift was reflected in positive consumption growth in euro and yen terms. Strong macro-demographic trends powered positive consumption dynamics in India. The strong US dollar nonetheless pushed growth in those markets into negative territory in dollar terms.

- **Midstream US dollar revenues tracked the retail sector's performance in 2015, declining 2%.** Slowing demand and a drop in polished prices resulted in some of the lowest profit margins in years, as well as high inventory levels, accumulated since 2013. As the year came to a close, cutters and polishers significantly reduced rough-diamond purchases and off-loaded about $5 billion of inventories to improve cash flows.

- **Major rough-diamond producers in 2015 reacted to the challenging circumstances of their customers** by reducing output, increasing their own inventory levels and providing more flexible purchasing terms while cutting rough-diamond prices. As a result, rough-diamond sales fell 24% in 2015.

- **The industry is rebounding in 2016.** Restocking by midstream players, following their inventory sell-off in late 2015, produced growth of around 20% in rough-diamond sales during the first half of 2016. However, strong rough-diamond sales in 2016 may again lead to swollen midstream inventories if retail demand does not strengthen proportionately. Declining sales at major jewelry retailers in the first half of 2016 indicate a possible demand slowdown in the US and China. The final growth trajectory for 2016 and the strength of midstream and rough-diamond sales in the beginning of 2017 will be determined by the performance of the diamond jewelry retail segment during the year-end holiday season.

- **A new generation of consumers — the millennials — represents a compelling opportunity for the diamond industry.** The population of millennials in China, India and the US totaled roughly 900 million in 2015, and their combined gross income amounted to approximately $8 trillion. Millennials appear to resemble other age groups in their preferences for diamond jewelry but not in their shopping behaviors. To fully capture millennials' demand over the longer term, industry players need to invest in both category marketing and brand-building efforts and redefine the customer experience in the retail environment.

- **The key challenges facing the diamond industry remain the same as in previous years.** The midstream sector still needs to secure access to financing and continue to improve its business model to sustain profitability amid potential price volatility. Over the longer term, consumption may continue to slow in China, and there is a risk of a cyclical recession in the US. Synthetic diamonds as an emerging competing category to diamonds remain a risk, but diamond industry participants are determined to reduce the threat from synthetics by marketing the emotional attributes of natural stones. The recently formed Diamond Producers Association (DPA) is reviving industry-wide generic marketing efforts.

- **The long-term outlook for the diamond market remains positive.** For the next three years, the supply of rough diamonds is expected to maintain a tight balance with demand. We expect demand for rough diamonds to recover from the recent downturn and return to a long-term growth trajectory of about 2% to 5% per year on average, relying on strong fundamentals in the US and the continued growth of the middle class in China and India. The supply of rough diamonds is expected to decline annually by 1% to 2% in value terms through 2030.

1.

Recent developments in the diamond industry

- The year 2015 was a challenging one for the diamond industry. A decline in consumer demand for diamond jewelry that started in 2014 in Greater China had a ripple effect throughout the diamond industry that lasted into 2015. Weaker-than-expected consumer demand affected polished-diamond sales as retailers reduced purchases of polished diamonds. The slowdown extended to midstream companies as they built up inventories and reduced purchases of rough diamonds.

- Rough-diamond revenues declined by 24% in 2015 as the midstream segment sold down accumulated inventories. Manufacturers reacted to softening demand by reducing production, increasing inventories and cutting rough-diamond prices. ALROSA, which increased production in 2015 by 6%, saw its inventory levels rise when rough-diamond sales fell in the second half of 2015. De Beers curtailed production by 12% throughout 2015. Rough-diamond prices fell by 15% in late 2015 and remained largely static in 2016's first half.

- Cutting and polishing revenues declined by 2% in 2015. Slowing demand forced midstream players to reduce rough-diamond purchases and unload inventory accumulated in 2013 and 2014. Polished-diamond prices declined by 10% in 2015, and the operating margins of many cutting and polishing manufacturers were at or below breakeven. Midstream players report margin improvements in 2016 due to reduced rough and polished diamond prices.

- Global diamond jewelry demand grew 3% in local currencies in 2015 but declined 2% in US dollar terms. Sluggish demand in China offset positive trends in the US. Currency depreciation drove revenue declines in Europe, India and Japan despite sales growth in local currency terms. The industry is stepping up its marketing efforts in generic and targeted programs to boost consumer demand for diamond jewelry.

- The diamond industry in 2016 is on the road to a recovery. Rough-diamond suppliers posted strong sales in the first half of 2016, mostly due to restocking by cutters and polishers following their inventory sell-off at the end of 2015. Despite the positive indicators, the 2016 outlook for global diamond jewelry demand remains uncertain, with retailers reporting minimal sales growth in key markets.

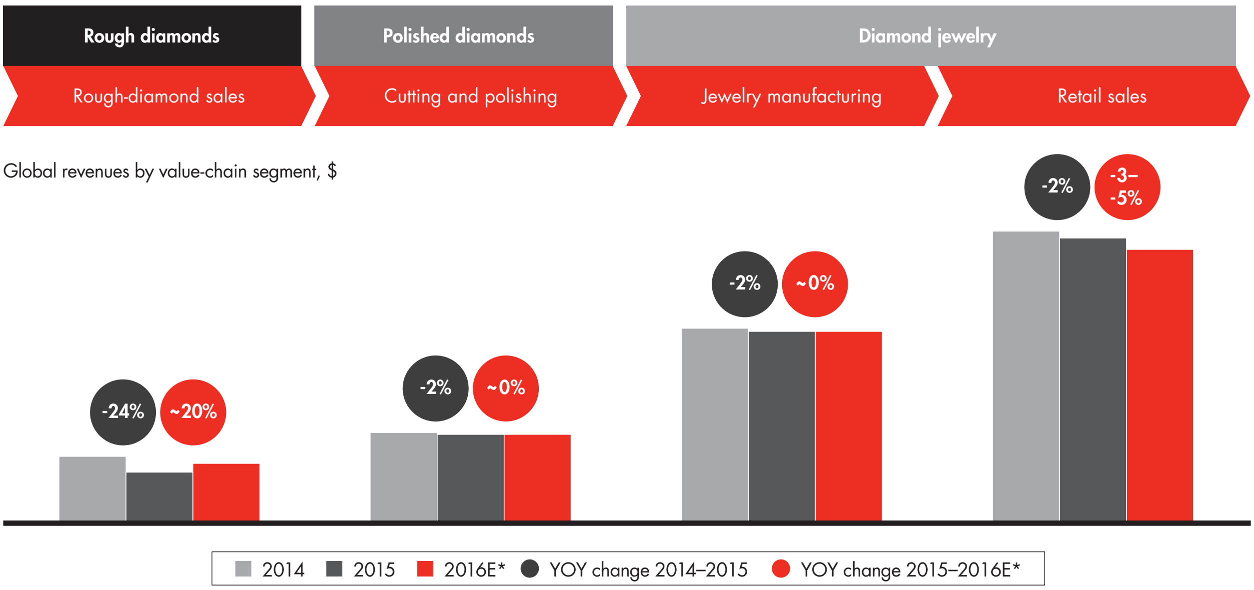
- The medium-term outlook remains challenging, as new supply is expected to come online and uncertainties cloud the social, political and economic environments in key markets. In the long run, the positive macroeconomic outlook is expected to work in the industry's favor — as long as diamond producers behave responsibly and industry players sustain marketing efforts to support diamond jewelry demand, especially among millennials.

Figure 1: Rough-diamond production segment has the highest entry barriers and the strongest bargaining power

	Rough diamonds		Polished diamonds		Diamond jewelry	
	Production	Sales	Cutting and polishing	Sales	Jewelry manufacturing	Retail sales
	• Exploration for diamond resources • Development of new mines • Rough-diamond production, processing and sorting	• Sale of rough diamonds from producers • Rough-diamond trading	• Cutting and polishing of rough diamonds to produce polished diamonds	• Wholesale sales of polished diamonds • Polished-diamond trading	• Jewelry design and manufacturing	• Retail sales of jewelry and watches
# of players:	Top 5 players control 70%	~100 players	~5,000 players		>10,000 players	Large retailers control ~35% of the market
Entry barriers:	High	High	Low	Low	Medium	Medium
Bargaining power:	High	Medium	Low	Low	Low	Medium

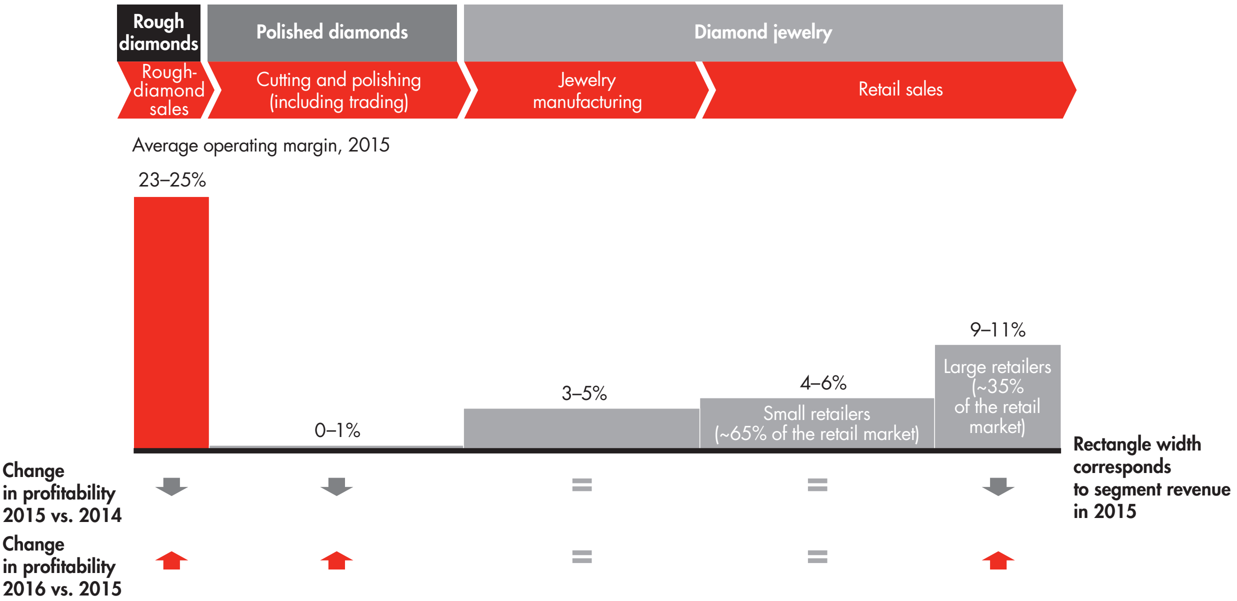
Source: Bain analysis

Figure 2: Revenues across the diamond value chain slipped in 2015; rough sales rebounded in early 2016



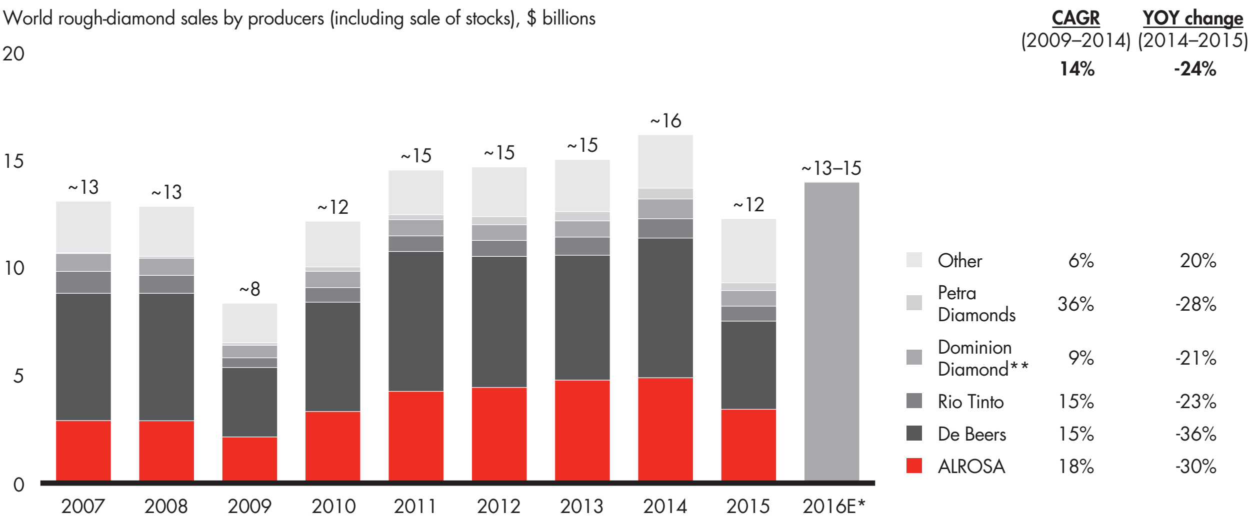
*Based on H1 2016 results
Note: Jewelry manufacturing value is estimated at approximately 65% of retail sales based on the historic average
Sources: Company data; Kimberley Process; Euromonitor; Bain analysis

Figure 3: Industry profits declined in 2015 in every segment of the value chain; 2016 is on a positive trajectory



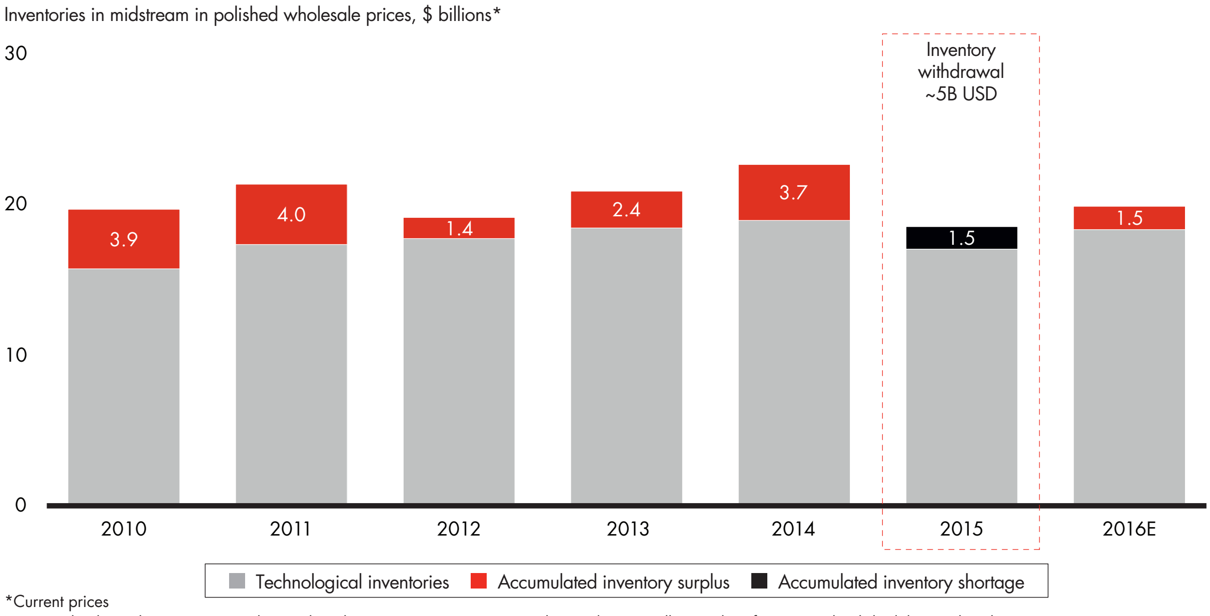
Note: Analysis of exploration and production is based on data for ALROSA, De Beers, Rio Tinto, Dominion Diamond, Petra Diamonds; analysis of large chains is based on data for Blue Nile, Chow Sang Sang, Chow Tai Fook, Gitanjali Jewels, Lukfook, Signet Jewelers, Tiffany & Co., Titan Company
Sources: Publication analysis; company data; expert interviews; Bain analysis

Figure 4: Rough sales declined in 2015 but are expected to bounce back in 2016



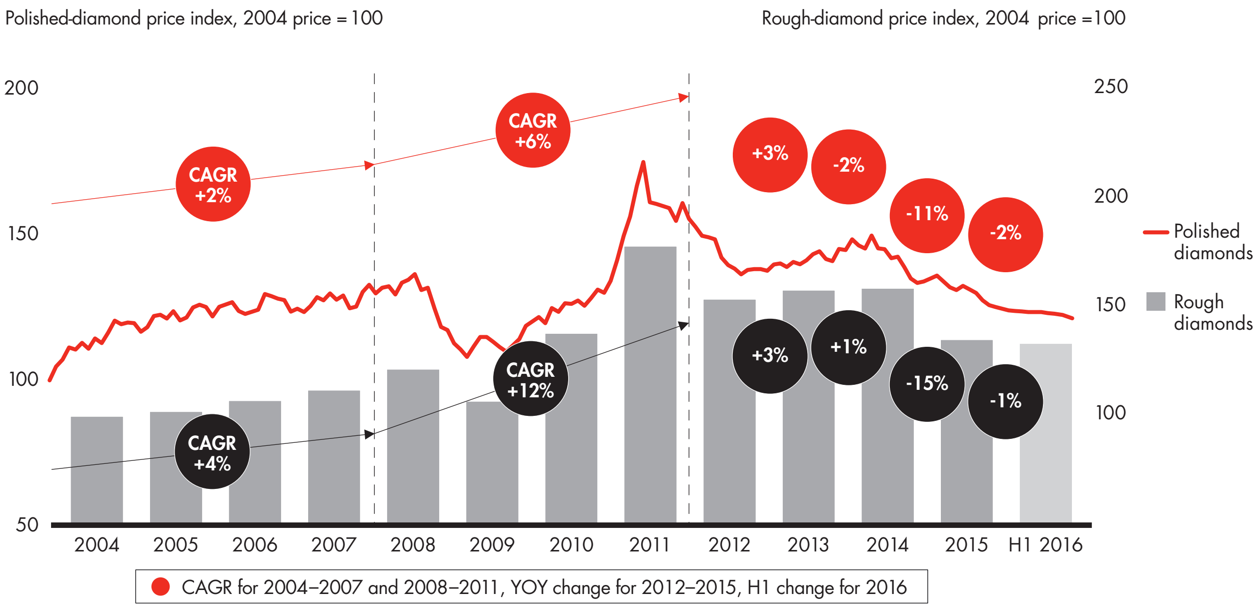
*Estimated based on Q1–Q3 2016 results of top rough producers and expert interviews for smaller mining companies
**Combined figures for BHP Billiton and Dominion Diamond in 2006–2012; fiscal year ends January 31; year 2006 represents FY 2007, and so on
Note: ALROSA revenues represent diamond sales only; BHP Billiton sold its diamond business to Dominion Diamond in 2012; Rio Tinto, BHP Billiton and Dominion Diamond revenues include diamond mining only; BHP Billiton and Petra Diamonds data converted from year ending in June to year ending in December, based on company reports for full year ending in June and reports for half year ending in December; only diamonds tracked by Kimberley Process are included; "Other" estimated assuming no price change for the players of this segment
Sources: Company data; Bain analysis

Figure 5: In addition to regular production, in 2015 midstream unloaded about $5 billion of inventory accumulated in 2013 and 2014



*Current prices
Note: Technological inventories are diamond stocks necessary to maintain regular production, selling cycles of cutters and polished-diamond traders (around nine months of total stock coverage)
Sources: Company data; Kimberley Process; expert interviews; Bain analysis

Figure 6: The historical long-term price trend is positive; short-term prices are stabilizing after a recent drop



Note: The CAGR for polished-diamond prices is calculated as the growth rate for year-end or period-end prices;
CAGR for rough-diamond prices is calculated as the growth rate for annual weighted average prices; H1 2016 CAGR for rough is shown vs. H2 2015
Sources: General polished-diamond price index (PolishedPrices.com); Kimberley Process; company data; Bain analysis

2.

Rough-diamond production

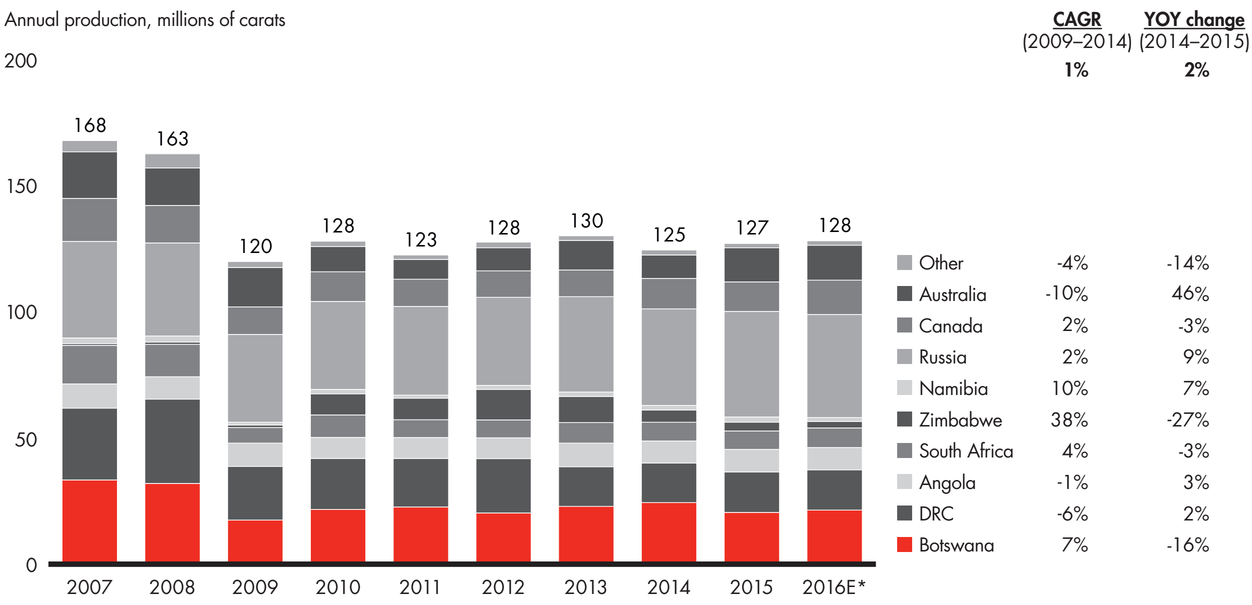
- Continuing the trend from the past eight years, global rough-diamond production volume remained relatively stable, increasing by 2% in 2015 to 127 million carats. The largest production increases occurred in Australia and Russia as Rio Tinto's Argyle mine increased output, ALROSA moderately increased production, in line with previously announced plans, and the Grib mine accounted for new supply. The largest drop occurred in Africa, as De Beers cut mining output in Botswana several times throughout the year in response to changing market dynamics.

- Rough-diamond sales declined 24% in 2015 as midstream players reacted to sluggish demand for polished stones and high prices for rough diamonds by cutting orders and selling down their inventories in the second half of 2015. The combined market share of ALROSA and De Beers fell from about 70% in 2014 to about 60% in 2015 due to considered efforts to decrease supply. Smaller players held production steady and increased their shares.

- After a decline of about 15% in late 2015, rough prices remained at the same lower level throughout most of 2016. Although both ALROSA and De Beers have reduced production, global year-over-year sales for rough diamonds have grown more than 20% in 2016 because of increased sales volumes — including accumulated inventories. The revenue outlook for full-year 2016 is very positive, based on strong sales by major producers at recent Sights in preparation for the holiday season.

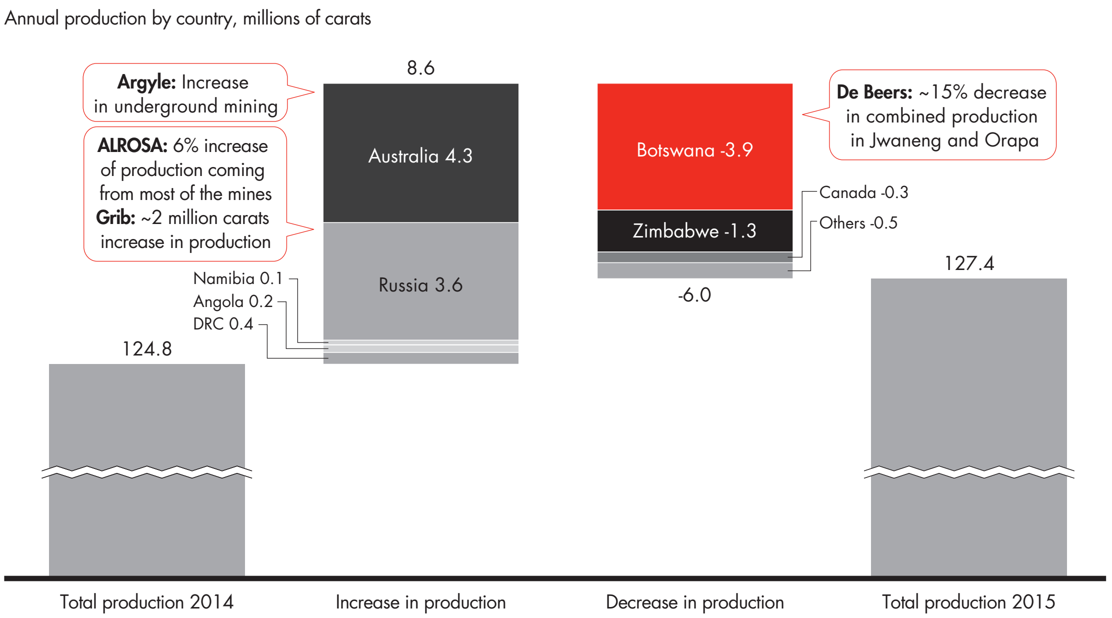
- Operating margins were mixed in 2015. ALROSA posted the largest improvement in 2015 earnings before interest and taxes (EBIT) margin, from 36% to 43%, on the back of a devalued Russian currency. In the first half of 2016, ALROSA, De Beers and Petra Diamonds posted improved EBIT margins, while other manufacturers reported margin declines.

Figure 7: Annual rough-diamond production has been stable since 2010 at some 130 million carats



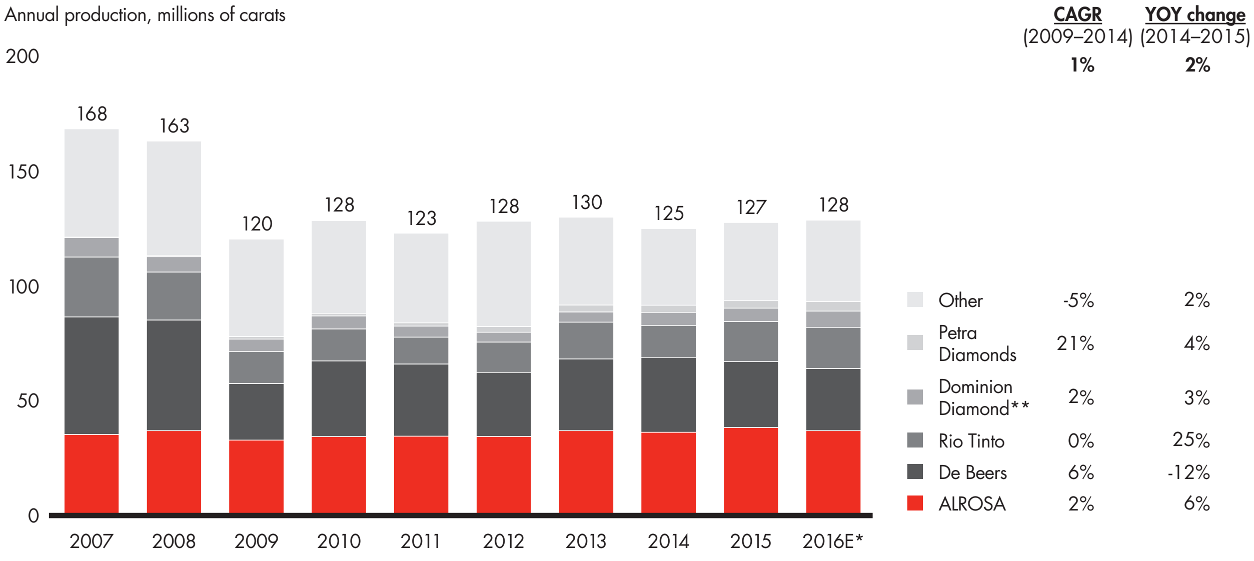
*Estimated based on company production plans
Note: Only diamonds tracked by Kimberley Process are included
Sources: Company data; Kimberley Process; expert interviews; Bain analysis

Figure 8: New supply coming online in Russia and Australia offset production declines in Zimbabwe and Botswana



Note: Only diamonds tracked by Kimberley Process are included
Sources: Kimberley Process; company data

Figure 9: The combined output of the top five producers held steady



*Estimated based on company production plans
**Combined figures for BHP Billiton and Dominion Diamond in 2006–2012; fiscal year ends January 31; year 2006 represents fiscal year 2007, and so on
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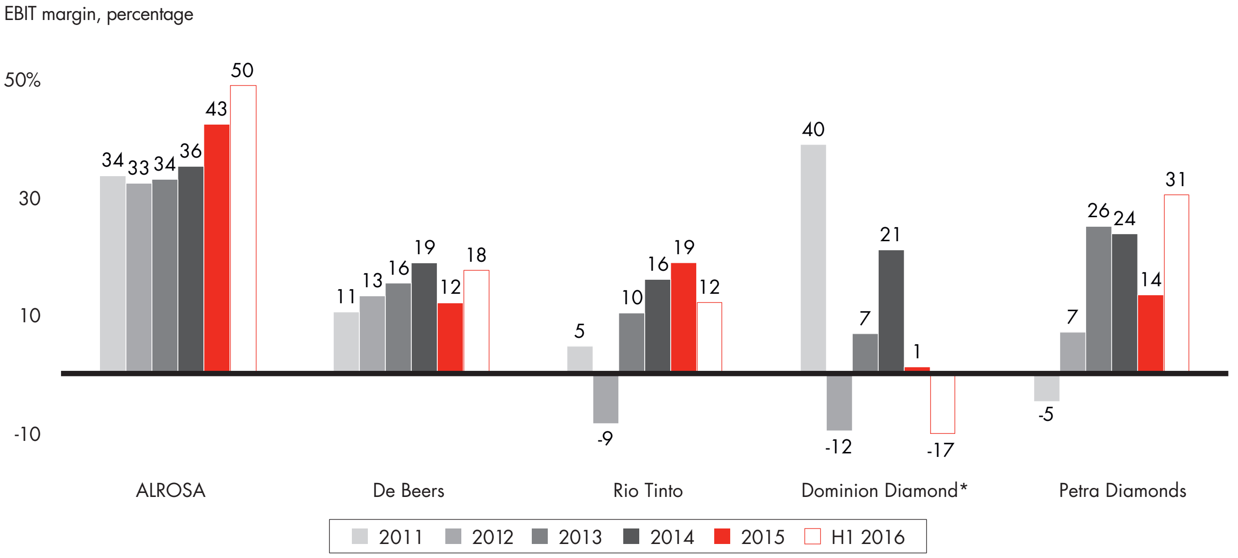
Sources: Company data; Kimberley Process; expert interviews; Bain analysis

Figure 10: The profit margins of the top rough-diamond producers were mixed in 2015 and early 2016



*Combined with BHP Billiton for 2011–2012; BHP Billiton sold its diamond business to Dominion Diamond in 2012
Note: Rio Tinto, BHP Billiton and Dominion Diamond revenues and EBIT include diamond mining only; Petra Diamonds data converted from year ending in June to year ending in December, based on company reports for full year ending in June and reports for half year ending in December
Sources: Company data; Bain analysis

3.

Cutting and polishing

- Revenues in the cutting and polishing segment declined by about 2% in 2015 because the slowdown in global diamond jewelry demand increased retailers' inventories. The combined midstream market share of India and China grew to roughly 90% due to their midstream segments' low cost structures.

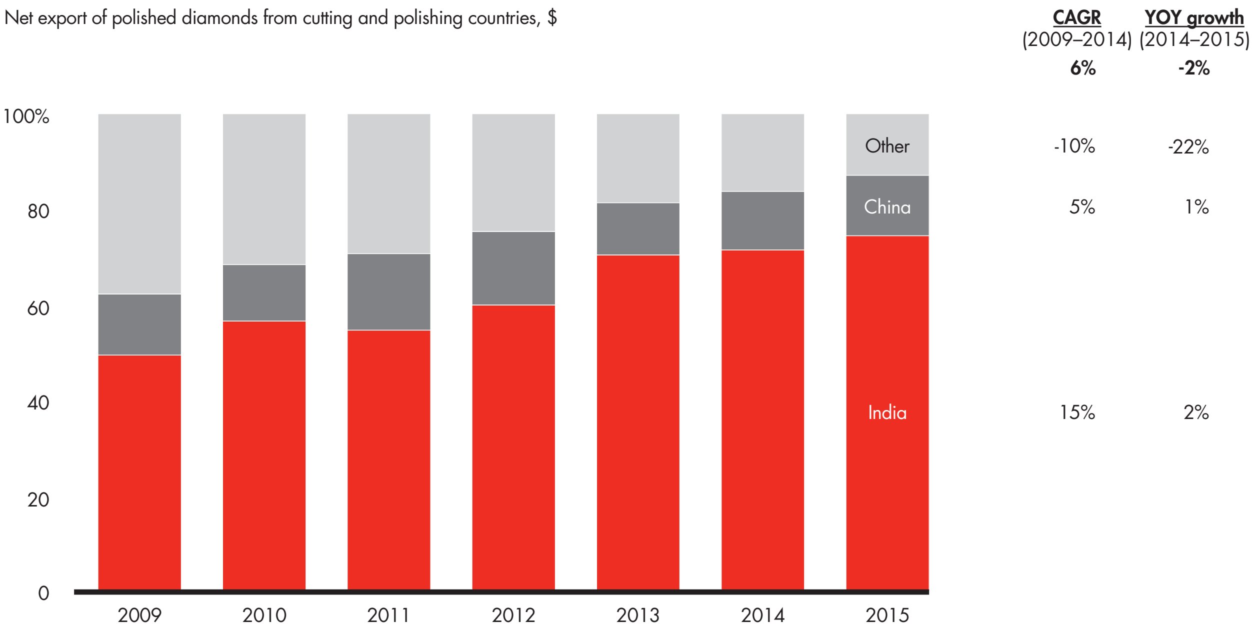
- The slowdown in diamond jewelry demand tightened midstream players' margins to near breakeven levels and swelled excess inventories in their pipelines. In addition to regular production, in late 2015 midstream unloaded about $5 billion of inventory accumulated in 2013 and 2014 into downstream markets. Combined with the demand slowdown, the move contributed to a decline in polished-stone prices of about 10% in 2015.

- The first half of 2016 began with strong gains in rough-diamond sales as midstream players tapped their underused credit lines to restore inventories to their historical operating levels. Lower rough-diamond prices should translate to margin improvements in 2016. The final results for 2016 and early 2017 will depend largely on manufacturers' ability to carefully balance inventory levels against year-end demand.

- In the short to medium term, the cutting and polishing segment will likely continue to work at tight profit margins, because the segment is highly sensitive to pricing volatility and the supply-demand balance of rough and polished diamonds. Moreover, players can exert only limited leverage over suppliers and retailers. In the long run, data-driven inventory management, more flexible sales terms from rough-diamond producers and major traders, and improved compliance with bank reporting policies by midstream manufacturers may help improve the segment's risk profile and sustainable profitability.

Figure 11: India and China gained additional market share in 2015

Net export of polished diamonds from cutting and polishing countries, $



Sources: Gem & Jewellery Export Promotion Council; Antwerp World Diamond Centre; China Customs Statistics; Israeli Central Bureau of Statistics; Bain analysis

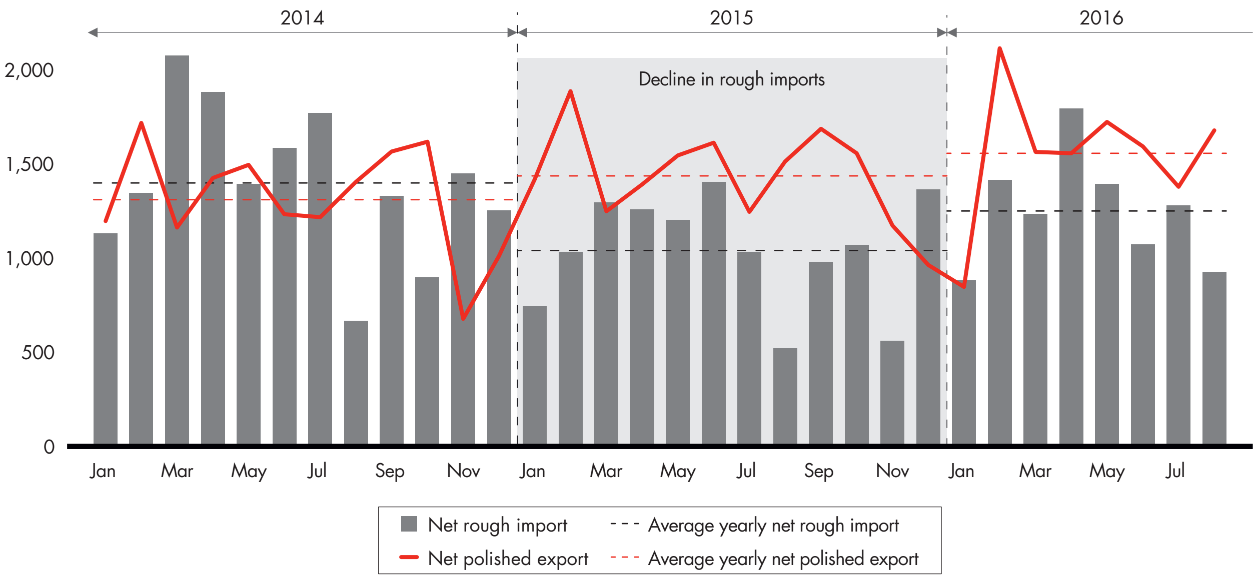
Figure 12: Differences in cost efficiency accounted for regional market-share changes in the cutting and polishing segment

Region		Explanation
	**India**	• **Cost leadership kept attracting volumes**, particularly of large stones, from Africa and developed countries • Relatively more developed **diamond industry financing infrastructure** contributed positively to Indian growth • Accumulated **stock surplus unloaded** into the downstream increased market share
	**China and Southeast Asia**	• **Solid cost position** (China is the No. 2 country by cost efficiency) • **Higher specialization** on particular stone size and shapes • **Consignment model** appeared to be more resistant to volatility of rough and polished prices
	**Africa**	• Decline in the market mostly due to pressure to **migrate to lower-cost regions** • Effect of beneficiation policies weakened with volatile prices
	**Other**	• Decline in the market mostly due to pressure to **migrate to lower-cost regions** • Developed countries still have strong position in **large stones** but volumes were lost to India even in these niches • **Reduced financing** available to the cutting and polishing sector in selected countries (Israel, US)

Sources: Expert interviews; Bain analysis

Figure 13: India's polished exports increased in 2015 and 2016, as midstream players sold previously accumulated inventory

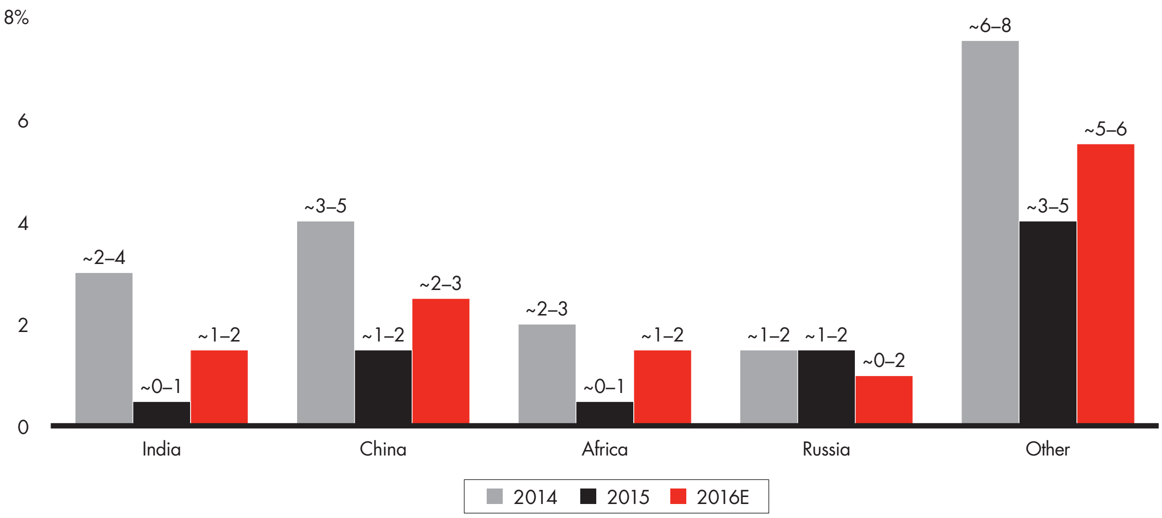
Diamonds foreign trade in India, $ millions



Source: Gem & Jewellery Export Promotion Council

Figure 14: The cutting and polishing segment's operating margins fell in 2015, but modest improvement is expected in 2016

Average operating margin of middle-market companies, percentage



Sources: Expert interviews; Bain analysis

4.

Diamond jewelry retail

- Global diamond jewelry retail sales in 2015 increased about 3% at constant exchange rates, in line with positive trends in the global personal luxury goods market. Currency depreciation in 2015 contributed to a decline in global revenue of about 2% in US dollar terms.

- Strong demand by middle-class buyers spurred growth in the mainstream jewelry retail segment and was the main contributor to an increase in US diamond jewelry sales. High-end jewelry retailers did not see similar growth in demand from more affluent buyers.

- China's diamond jewelry sales in 2015 dropped slightly at constant exchange rates because of significant market contraction in Hong Kong and Macao. Diamond jewelry growth in mainland China remained positive, with major retailers — both brick-and-mortar and online — posting same-store sales growth. At the same time, the yuan's rise against the euro and the yen, stricter travel requirements and tighter control over gambling redirected Chinese tourists' spend away from Hong Kong and Macao to other international destinations.

- Europe, India and Japan delivered revenue gains, measured in local currencies, in 2015. The weaker euro and yen lured tourists to Europe and Japan, and growth in the middle class and disposable incomes supported market gains in India. However, the devaluation of national currencies against the US dollar in 2015 pushed dollar-denominated revenues into negative territory.

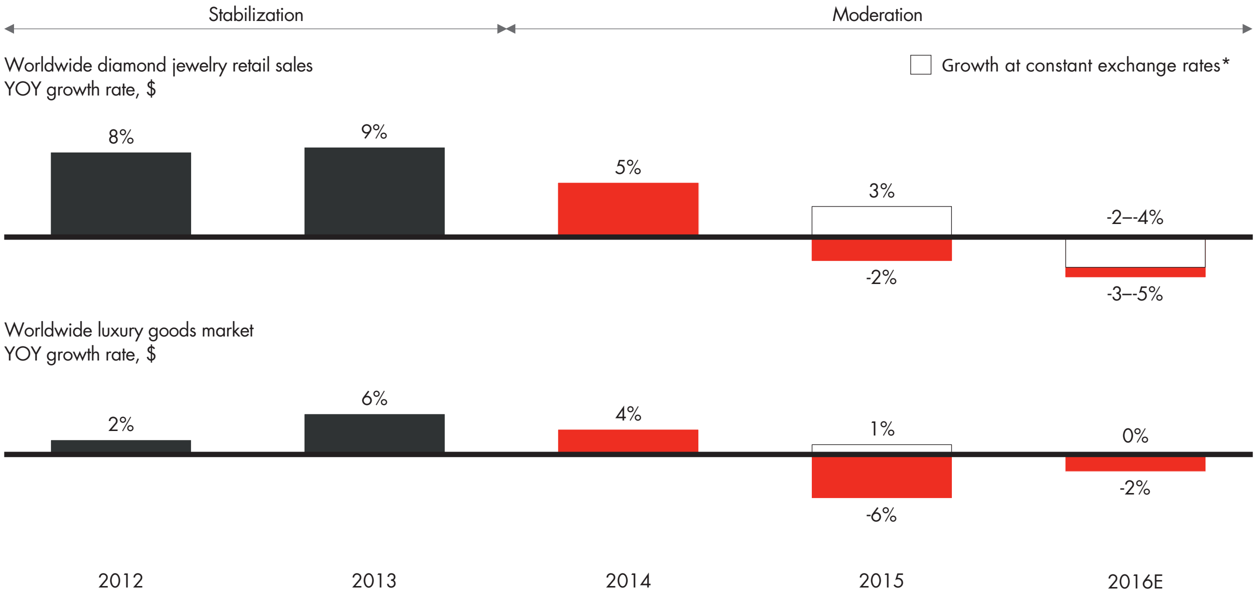
- Overall global diamond jewelry sales are expected to decline slightly in 2016.

- In the first half of 2016, major US jewelry retail chains posted flat to negative sales growth. The culprits were an economic slowdown in energy-producing states and a temporary reduction in overall consumer spending, as baby boomers begin to move beyond their peak spending years before millennials reach theirs.

- The search for a new set point in the Chinese diamond jewelry market, which started in 2014–2015, continues in 2016. Growth in the Chinese market will likely contract, with weakening fundamentals in mainland China compounded by continuing declines in Hong Kong and Macao.

- Market growth in Europe and Japan is expected to slow in 2016, in local currency terms, as the euro and yen strengthen, leading to a decline in inbound international spending. In India, new government anti–tax evasion initiatives could offset positive macroeconomic trends, while further rupee devaluation is likely to offset demand growth in local currency terms.

Figure 15: Global diamond jewelry sales grew in 2015, measured at constant exchange rates



*Compared to previous year
Sources: Euromonitor; Bain & Company "Global Luxury Goods Worldwide Market Study," 2009–2015

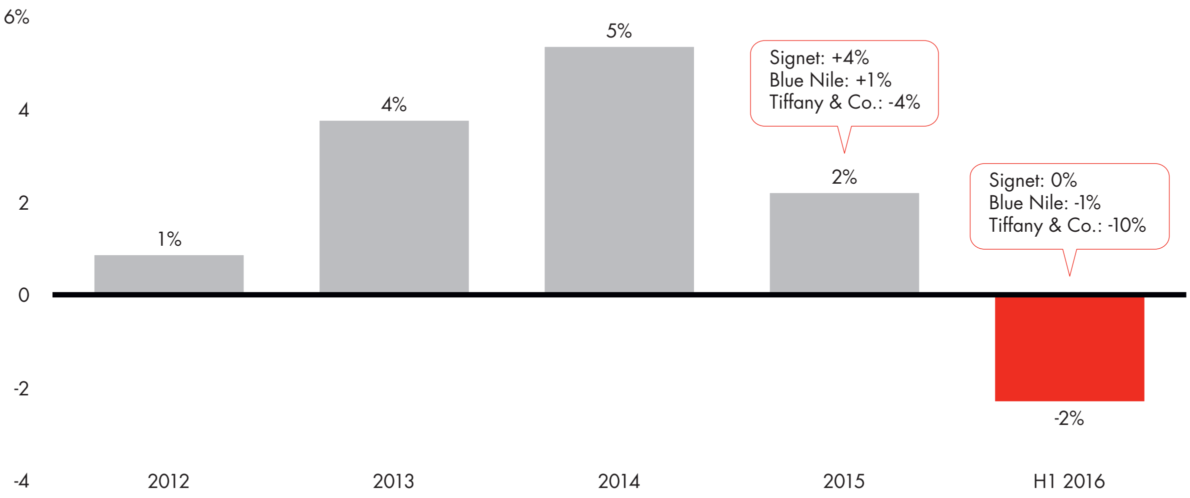
Figure 16: Multiple factors influenced country retail sales dynamics in 2015 and early 2016

Region	Diamond jewelry market growth, 2015		Explanation
	Local currency	USD	
Global	2–4%	-3–-1%	● In 2015 positive market growth at constant exchange rates was driven by positive macroeconomic fundamentals in key markets; the US remained key growth driver, also positive dynamics in Europe, Japan and India; Chinese market in single-digit negatives largely driven by decline in tourist flow in Hong Kong and Macao ● Strong US dollar offset positive dynamics in Europe, Japan and India and caused 1–3% decline in USD terms globally
US	2–3%	2–3%	● Steady growth in 2015 fueled by positive dynamics of real GDP growth and following PDI growth ● Strong dollar and subsequent decrease in inbound tourist traffic mostly affected upscale jewelry segment and did not significantly impact the overall market as the internal consumption is strong ● In 2016, as GDP growth slows down, major jewelry retailers—both mainstream and high-end—post flat to negative same-store sales; uncertainty leading up to presidential election also negatively affected consumer confidence
China	-2–-1%	-3–-2%	● Overall economic slowdown with GDP growth rate decreasing below 7% had limited impact on consumption in mainland China to date, where retail revenue dynamics remained positive ● In 2015 strengthening of yuan (18% vs. euro; 13% vs. yen) led to increased outbound international travel drawing spending away from Hong Kong and Macao to Europe and Japan amplified by stricter travel requirements to Hong Kong and tighter control of gambling activities in Macao; re-basing effect in Hong Kong and Macao continues in 2016
Europe	7–10%	-13–-10%	● Positive effect of overall luxury market growth due to higher influx of tourists offset by weakening of euro against dollar ● In 2016 strengthening of euro against yuan, tightening of visa rules and terrorist attacks caused the decline in the inbound spend starting in Q4 2015; domestic consumption unlikely to surge mid-term given modest economic growth outlook
Japan	2–3%	-15–-12%	● Positive effect of overall luxury market growth due to higher influx of tourists offset by weakening of yen against dollar ● 2016 demand in yen is likely to remain positive with modest growth in 2016 driven by inbound touristic spend given yen appreciation vs. yuan; however, strong yen vs. dollar likely to drive market growth in dollar terms as well
India	4–6%	-1–1%	● Continued economic upturn with accelerating GDP and disposable income growth rates (7.5% and 9% in 2015 vs. 7.2% and 6% in 2014) drives local demand ● Sharp rupee devaluation against dollar in 2015 (-5%) causes single-digit decline in revenues in dollars; the tendency is likely to continue into 2016 as rupee slides further

Sources: Euromonitor; expert interviews; Bain analysis

Figure 17: Sustained growth in US diamond jewelry retailers' same-store sales from 2013 through 2015 gave way to a decline in 2016

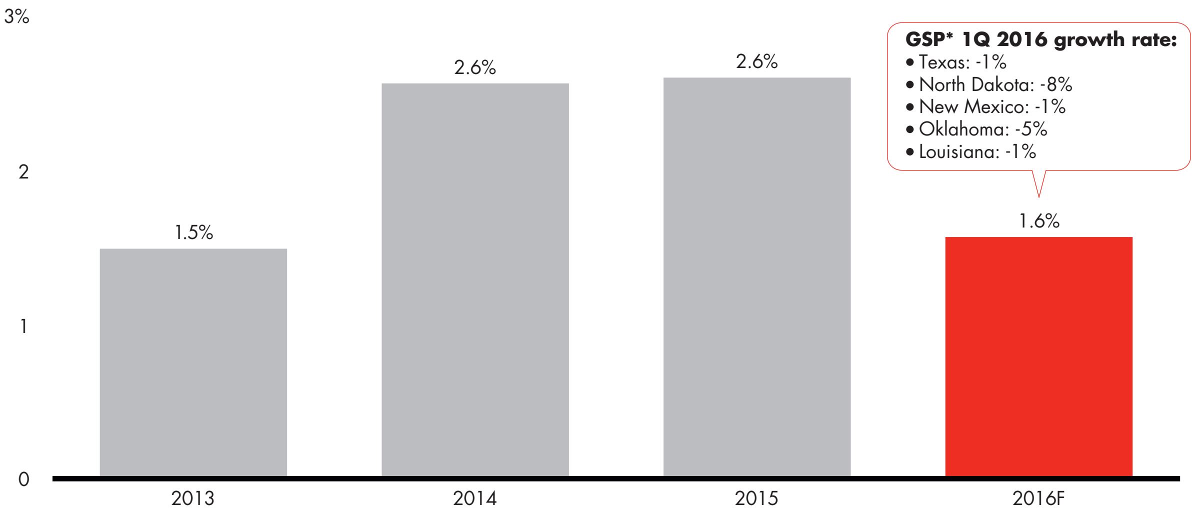
Same-store sales growth of large US diamond jewelry retailers*, $



*Estimated based on selected companies accounting for >30% US diamond jewelry retail sales
Source: Company data

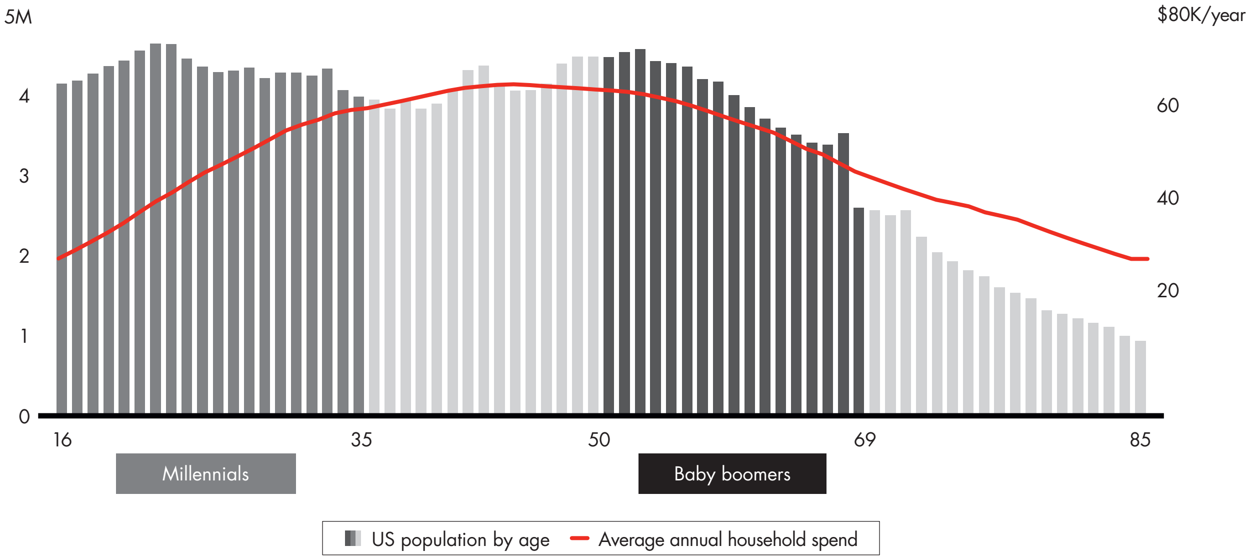
Figure 18: Negative growth in energy-producing states has slowed US economic growth in 2016

US real GDP annual growth rate, $



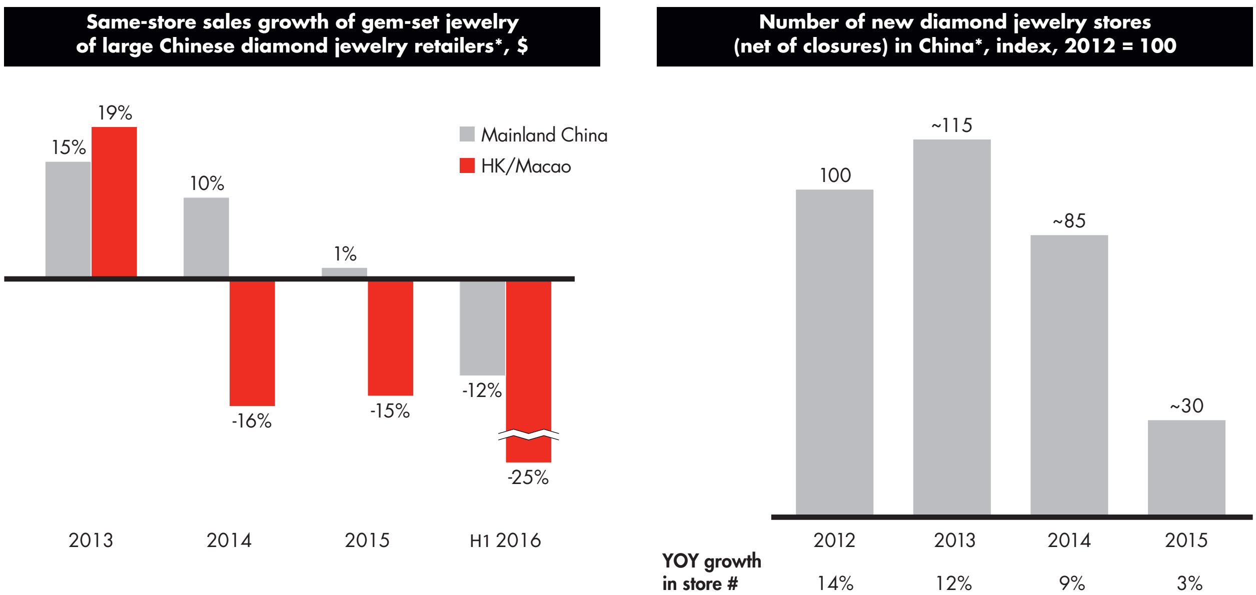
*GSP—gross state product
Sources: EIU; Euromonitor; Bureau of Economic Analysis

Figure 19: Millennials have not yet reached their peak spending years, while baby boomers have moved beyond theirs



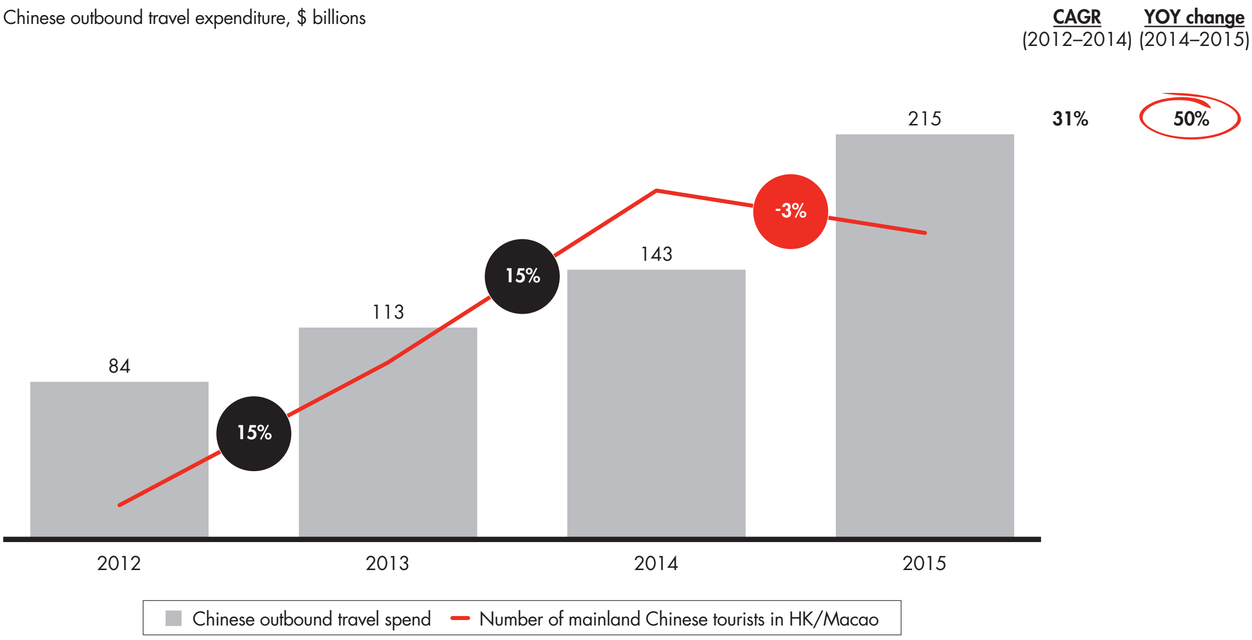
Sources: US Census Bureau, monthly post-censual estimate; Bain analysis; Bureau of Labor Statistics, Consumer Expenditure Survey

Figure 20: Growth in mainland China slowed, and diamond jewelry sales in Hong Kong and Macao declined



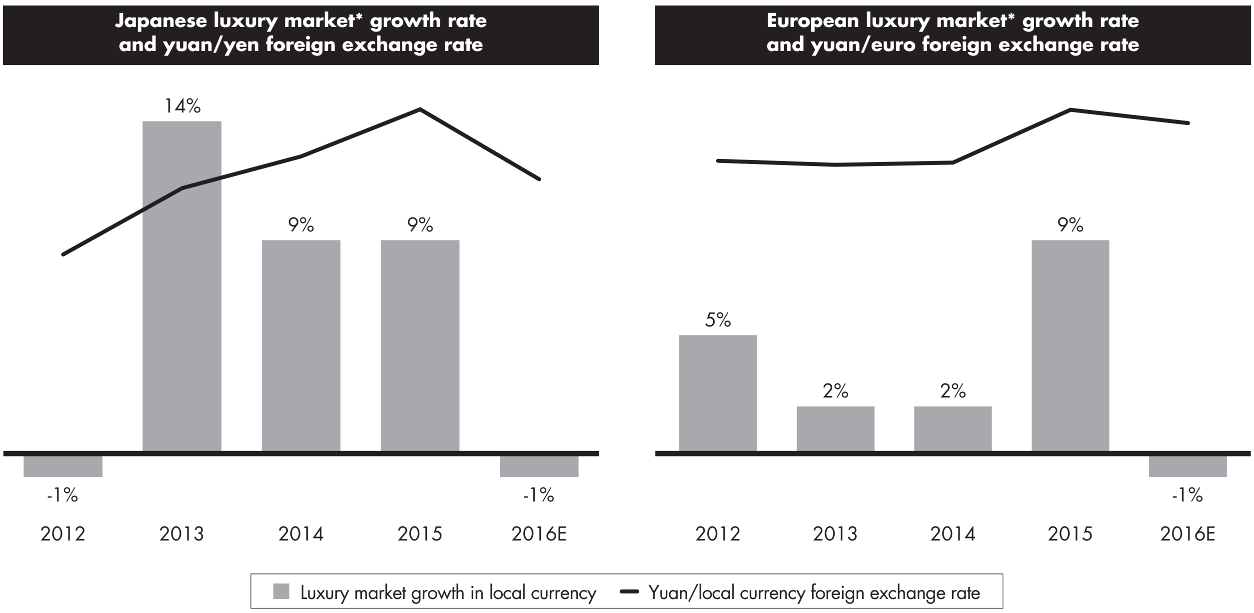
*Estimated based on selected companies accounting for >30% Chinese diamond jewelry retail sales
Note: China includes Hong Kong and Macao
Sources: Company data; Bain analysis

Figure 21: In 2015 tourists from mainland China shifted their spending from Hong Kong and Macao to other travel destinations



Sources: EIU; China Outbound Tourism Research Institute; China Tourism Academy; China Luxury Advisors; World Tourism Organization; HSBC

Figure 22: Growth in outbound travel from China benefited Japanese and European luxury markets, including the diamond jewelry market



*Includes luxury diamond jewelry
Sources: Euromonitor; Bain & Company "Global Luxury Goods Worldwide Market Study," 2009–2015

5.

Diamonds: The view from the millennial generation

- For this year's report we conducted a survey of diamond-related consumer preferences, with a specific focus on millennials in China, India and the US.

- Jewelry remains one of the top three preferences among all consumers when it comes to giving or receiving gifts, ranking third in the US and first in China and India.

- Millennials represent a significant opportunity for the diamond industry. The age group is similar to previous generations in terms of size, current and future spending levels and positive attitudes toward diamond jewelry. However, differences in shopping behavior suggest that dedicated marketing efforts and targeted customer acquisition strategies are needed to reach this group of customers effectively.

- The population of millennials in China, India and the US totaled roughly 900 million in 2015, or 27% to 35% of the three countries' total population. The millennials' combined gross income amounted to approximately $8 trillion, which, if they were a nation, would make them the world's fourth-largest economy, behind the US, the EU and China. Millennials' combined gross income will likely double to some $16 trillion, or 38% of total gross income, by 2030.

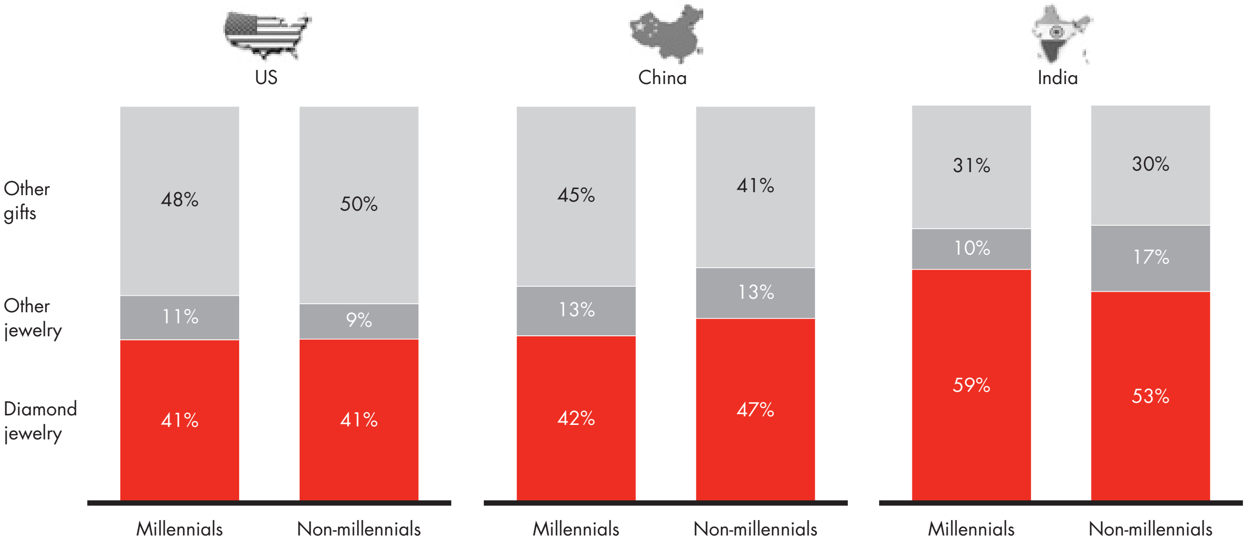
- Millennials in China and India rank jewelry as their No. 1 gifting category; non-millennials ranked it second. US millennials place jewelry as their No. 3 choice, after money and electronics.

- Millennials tend to spend as much of their incomes on jewelry as other age groups. Millennials in the US are more active than millennials elsewhere in their use of the internet for jewelry purchases; in India, millennials tend to prefer department stores. In both India and the US, millennials are likely to seek family advice before buying. Chinese millennials, like other age cohorts in China, prefer to shop at specialized jewelry retailers and tend to make their purchase decisions in-store.

- Millennials in China and the US who are considering synthetics as an alternative to diamonds cite synthetics' lower prices as their key decision driver. Millennials in India cite their perception of a more favorable ratio of price to quality. In China and India, millennials cite the advanced technology that goes into synthetics production as their No. 2 decision driver. When asked about the feelings that synthetic diamonds evoke, millennials report several negative associations, such as "fake," "not real" and "cheap," as well as neutral ones such as "less expensive," "technology" and "affordable."

Figure 23: Diamond jewelry's share of overall consumer gifting expenditures is consistently high across the key markets

What share of your spend on gifts was allocated to jewelry and diamond jewelry, respectively?



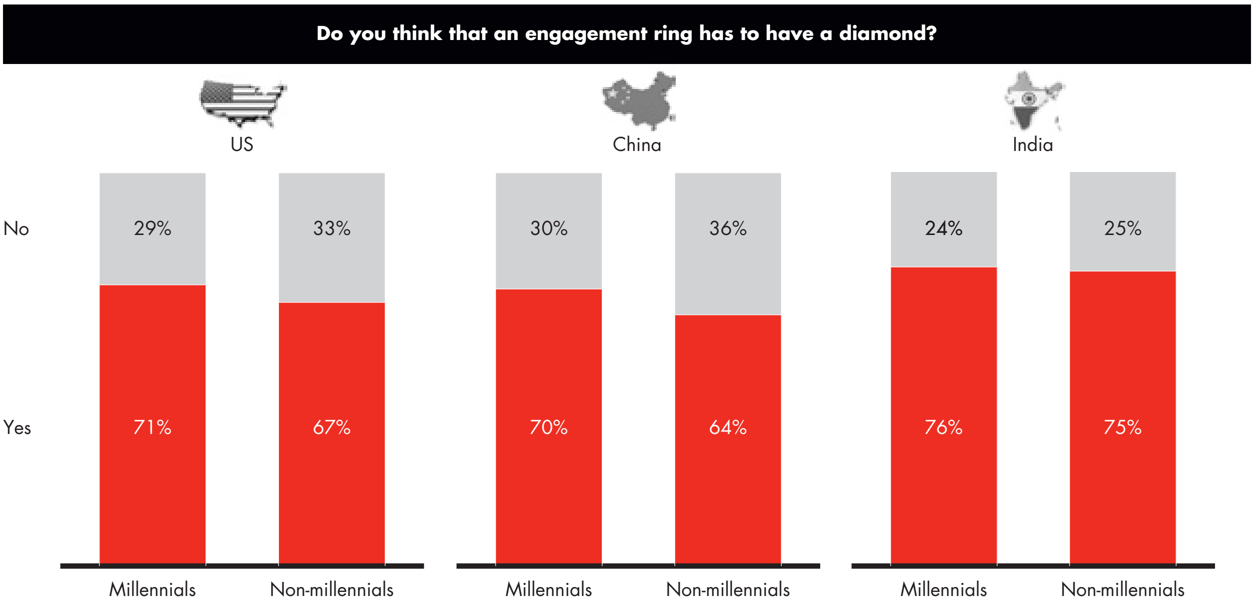
Note: Prompted question; 80% of panel bought/received diamond jewelry within last 12 months
Source: Online consumer surveys in US (N=515), India (N=510), China (N=511) in September 2016

Figure 24: Diamonds evoke positive associations in China, India and the US

What comes to mind when you think of diamonds?

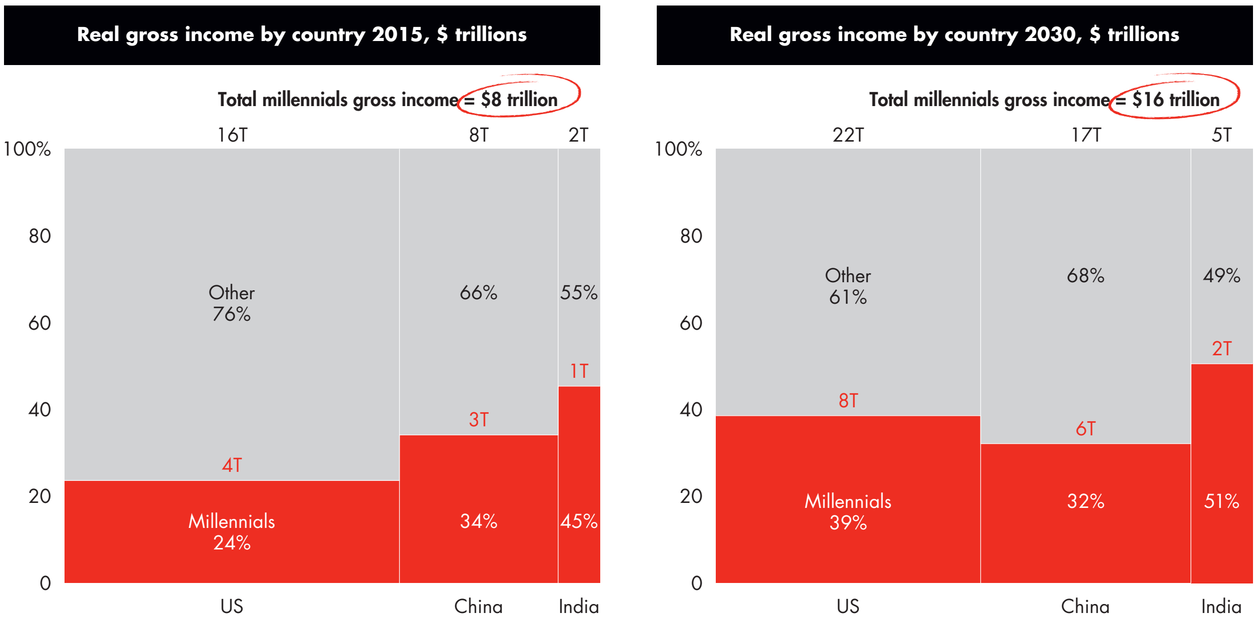
Note: Unprompted question
Source: Online consumer surveys in US (N=515), India (N=510), China (N=511) in September 2016

Figure 25: Compared with non-millennials, millennials have a slightly more positive attitude toward diamond engagement rings



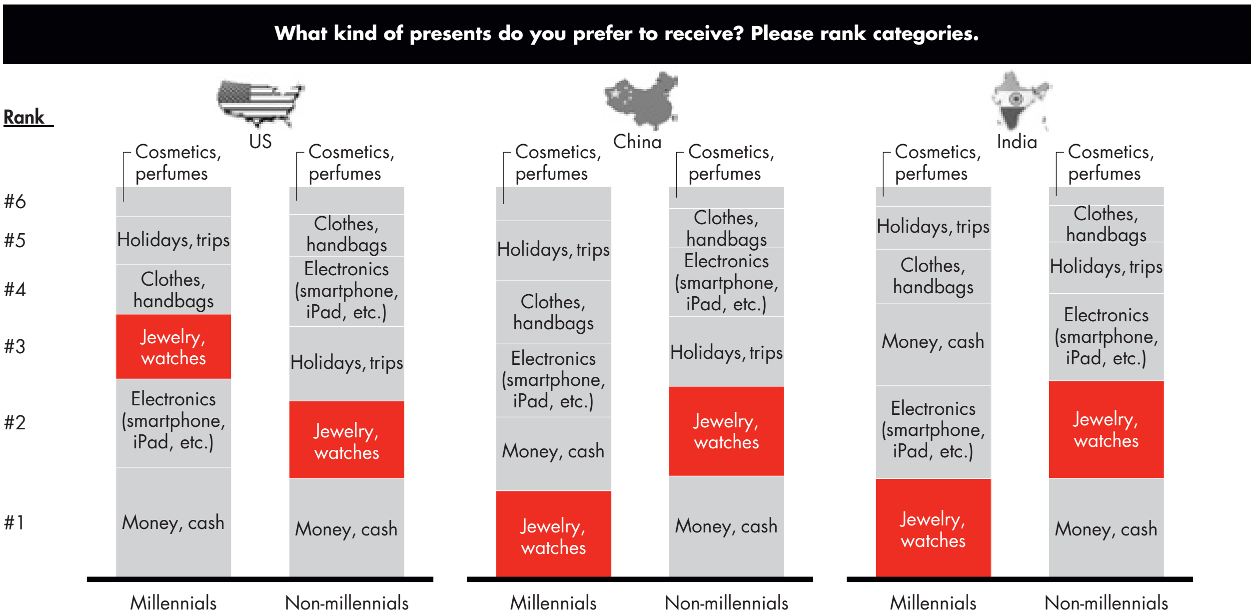
Note: Prompted question; 80% of panel bought/received diamond jewelry within last 12 months; represents respondents who believe that an engagement ring is a necessary attribute of a marriage
Source: Online consumer surveys in US (N=515), India (N=510), China (N=511) in September 2016

Figure 26: The combined real gross income of millennials in China, India and the US will double to $16 trillion by 2030



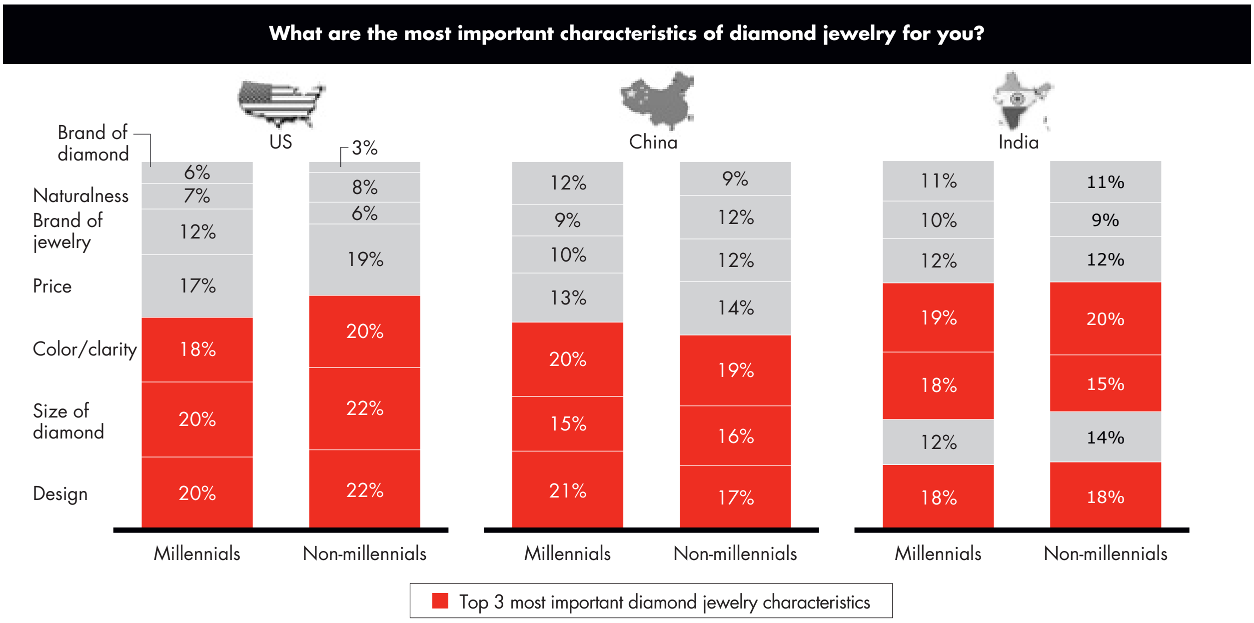
Note: Millennials are people born in 1980–2000; income is represented in real terms
Source: Euromonitor

Figure 27: Like previous generations, millennials rank jewelry as one of the top three gifts they would like to receive



Note: Prompted question; 80% of panel bought/received diamond jewelry within last 12 months; represents number of responses with ranks #1 or #2
Source: Online consumer surveys in US (N=515), India (N=510), China (N=511) in September 2016

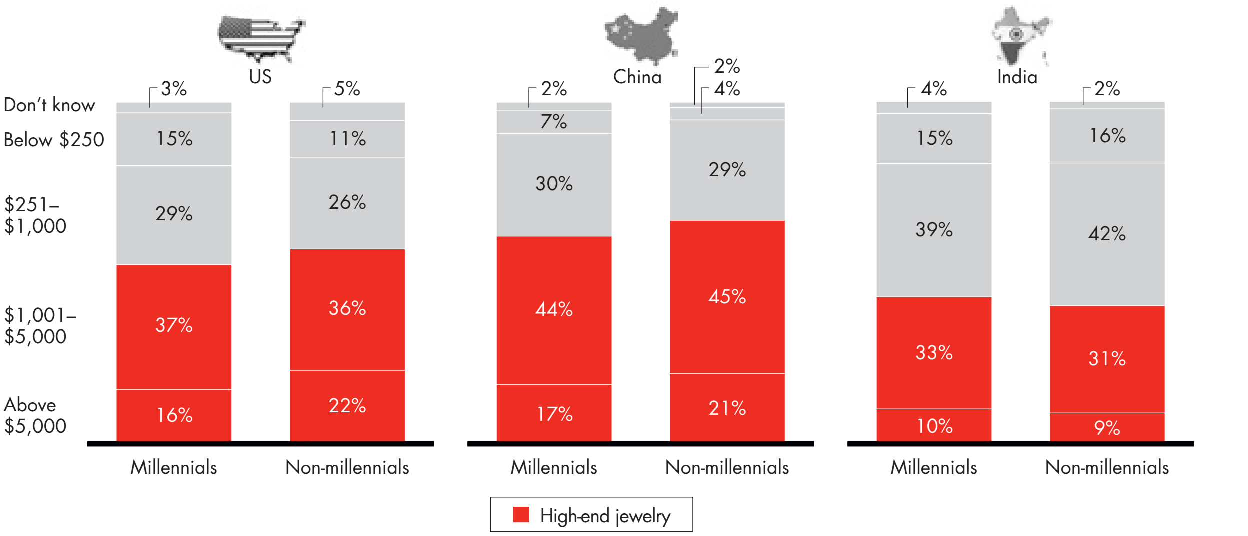
Figure 28: Design, size, color and clarity are important characteristics of diamond jewelry in all countries; price is more important in India than elsewhere



Note: Prompted question; 80% of panel bought/received diamond jewelry within last 12 months; includes responses with ranks #1, #2 and #3
Source: Online consumer surveys in US (N=515), India (N=510), China (N=511) in September 2016

Figure 29: Compared with non-millennials, millennials tend to buy similarly priced or slightly less expensive diamond jewelry

What was the purchase price of your most expensive diamond jewelry?



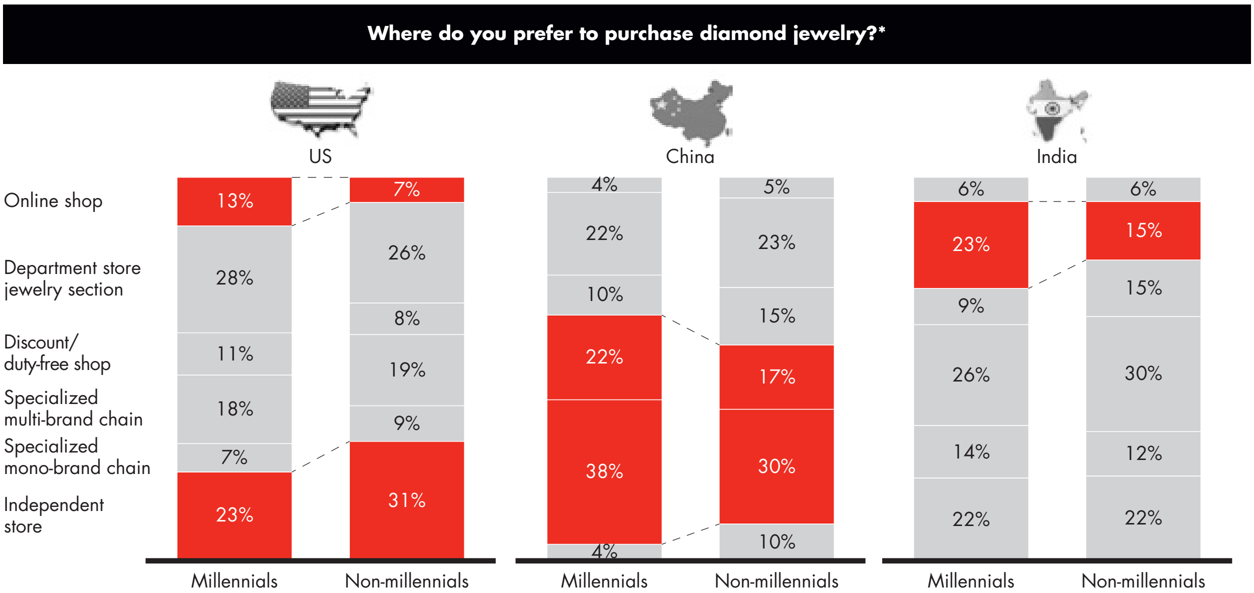
Note: Prompted question; 80% of panel bought/received diamond jewelry within last 12 months; responses in China and India were converted into USD; "Don't have diamond jewelry" responses are excluded
Source: Online consumer surveys in US (N=515), India (N=510), China (N=511) in September 2016

Figure 30: Synthetic diamonds evoke mixed associations

What associations do you make with synthetic or lab-grown diamonds?

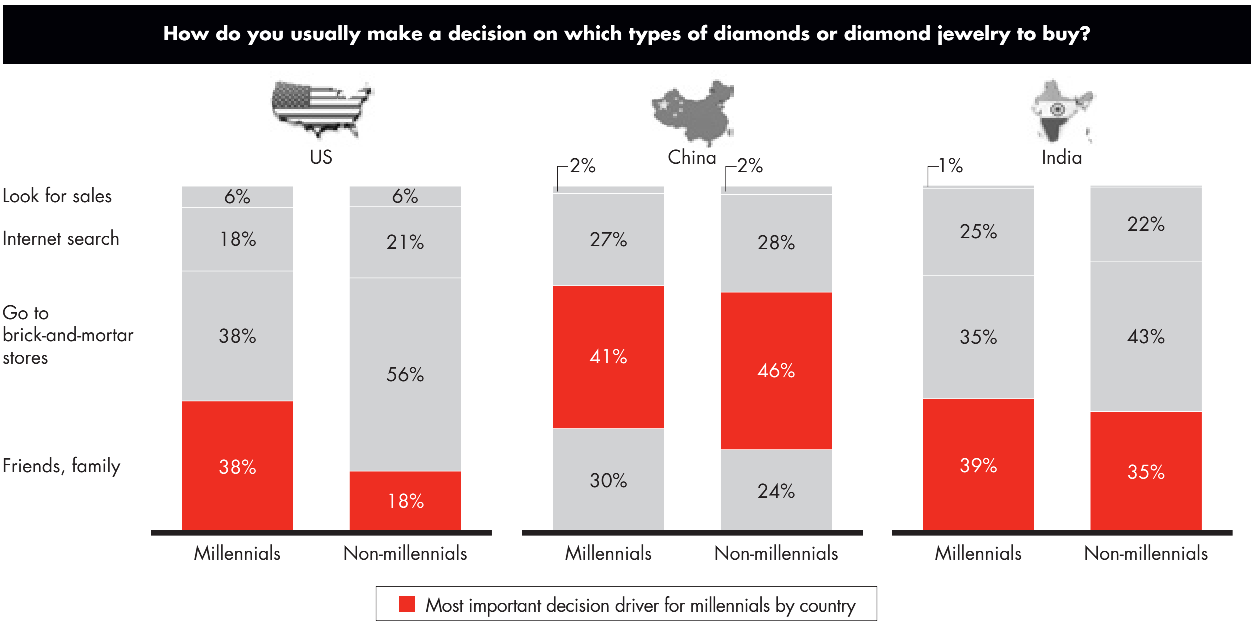
Note: Unprompted question
Source: Online consumer surveys in US (N=515), India (N=510), China (N=511) in September 2016

Figure 31: Many US millennials use the internet for diamond jewelry shopping, Chinese millennials prefer specialized retailers and Indian millennials favor department stores



*Key purchase channel differences between millennials and non-millennials are marked with red
Note: Prompted question; 80% of panel bought/received diamond jewelry within last 12 months; "Other" isn't included (less than 2.5%)
Source: Online consumer surveys in US (N=515), India (N=510), China (N=511) in September 2016

Figure 32: Family advice and store visits influence the purchase decisions of millennials in the US and India; Chinese millennials make their decisions in-store



Note: Prompted question; 80% of panel bought/received diamond jewelry within last 12 months; includes responses with rank #1
Source: Online consumer surveys in US (N=515), India (N=510), China (N=511) in September 2016

6.

Key industry challenges

- Despite the continued importance of diamond jewelry to consumers and the fundamental attractiveness of the industry for investors, there are challenges that can be either a threat or an opportunity for the industry to emerge stronger in the long term.

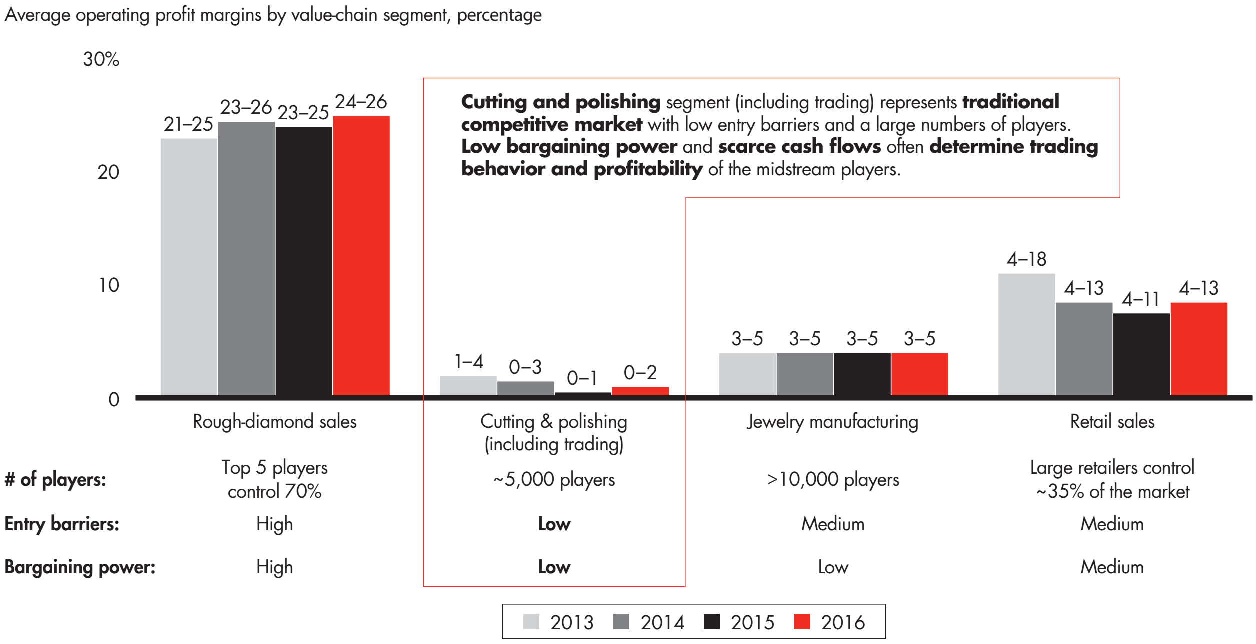
- During the past few years, volatile diamond prices and stagnant diamond jewelry sales have continued to squeeze the profitability of midstream players. These companies must continue to redefine their business models to emphasize demand-driven inventory and production planning. Another constraint on the midstream is the reduction in financing available from traditional diamond banks. The financing squeeze will likely lead to a shakeout of less-efficient midstream companies. The surviving players, however, will have greater access to financing from large traders, and larger midstream companies can also tap traditional corporate financing mechanisms, provided their operations are demonstrably lean and transparent. All of these factors should continue to motivate the midstream to become leaner and more effective.

- A continued source of both concern and opportunity is the question of long-term demand for natural diamonds. As a new generation of consumers — the millennials — heads toward its prime spending years, the industry needs to find ways to effectively engage with them. Millennials are similar to previous generations of consumers in their attitudes toward diamond jewelry but differ in their decision-making and shopping patterns. To fully capture long-term demand from millennials, industry players need to invest in both category marketing and brand-building efforts and redefine the shopping experience. Efforts to sustain customer demand for natural diamonds can also soften the potential impact of a possible cyclical recession in the US within the next three to five years and the continuing GDP slowdown in China.

- Investment demand for diamonds could provide an additional source of demand growth. Investment can be facilitated either through the creation of trading platforms that offer price transparency or direct investment mechanisms that enable the physical accumulation of rough and polished diamonds. Various players continue to push in this direction, but their efforts have not yet produced meaningful results.

- Low profit margins in the cutting and polishing segment have heightened midstream players' interest in synthetic diamonds, but synthetics have to date gained only limited acceptance among jewelry retailers and end consumers. To increase the attractiveness of natural diamonds, key industry players have formed the Diamond Producers Association, which focuses on marketing efforts to highlight the emotional appeal of natural stones. The industry is well equipped to detect and disclose counterfeit synthetics and continues to invest in R&D.

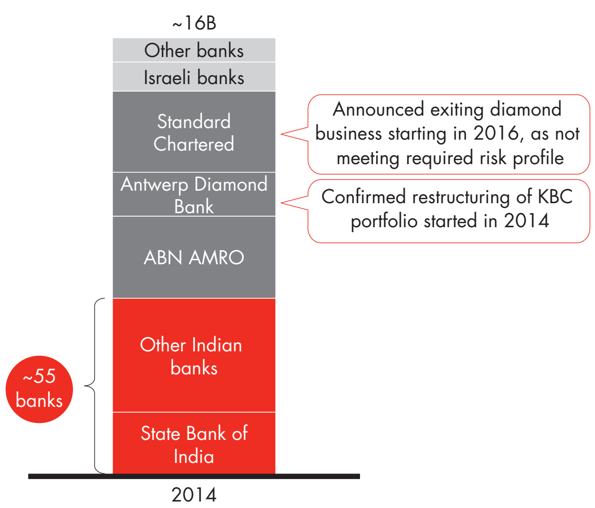
Figure 33: The midstream is the diamond value chain's least profitable segment, and margins are eroding



Sources: Company data; Bain analysis

Figure 34: As ADB and Standard Chartered phase out midstream lending, other banks and rough-diamond traders are starting to fill the gap

Global diamond financing share by bank*, $ billions



Mid-term diamond industry financing perspective

- Indian banks continue to provide financing as government supports cutting and polishing
- Cutters and polishers complying with banks' accounting policies have easy access to debt
- Several diamond banks increase their exposure to the diamond industry
- Large rough-diamond traders intensify financing to midstream companies

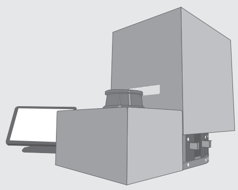
*Includes rough-diamond sales, cutting and polishing, polished-diamond sales
Sources: Expert interviews; Bain analysis

Figure 35: Transparent diamond pricing may foster the development of alternative financial instruments in the diamond industry

	Exchange-traded fund	Futures	Options
Description	Create **exchange-traded fund** backed by physical diamond stock in order to **sell public shares** in the fund with claim on physical goods	**Sell futures (obligation** to buy diamonds at a point in the future at a predetermined price) **to mid-segment players and/or major retailers** that need access to diamonds	**Sell options (option** to buy diamonds at a point in the future at a predetermined price) **to mid-segment players and/or major retailers** that need access to diamonds
Inhibitors	**Frequent valuation of the underlying asset is not possible** as the pricing of the underlying asset (diamond) is nonuniform	**Unlikely to find buyers** as the price fluctuation risk is too high	**Unlikely to find buyers** as the price fluctuation risk is too high
Enabler	**Transparent and uniform polished-diamond pricing**		

Sources: Expert interviews; Bain analysis

Figure 36: Diamond industry participants are working to inform consumer choice through detection capabilities and clear terminology

Challenges posed by synthetics	Steps being taken to counter synthetics
• **Mixing of undisclosed synthetics** with natural stones, especially in melee sizes.	**Synthetic-diamond detection device** • Key industry players have developed **devices** that allow for quick, **automated synthetic-melee detection**: M-Screen (HRD Antwerp), AMD device (De Beers), ALROSA Diamond inspector, GIA Melee Analysis Service. 
• **Growing interest in synthetics from midstream and retail sector.**	**Industry efforts** • The Diamond Producers Association (est. in 2015) is launching a **global marketing campaign**—the slogan: "Real is rare. Real is a diamond."—with the objective of promoting natural diamonds among millennials. • Natural Diamond Quality Assurance was created in Hong Kong to **protect consumers** from undisclosed synthetics.
• **Potential growth of marketing efforts** to promote synthetics facilitated by the International Grown Diamond Association (est. in 2016).	**Regulation** • International Organization for Standardization issued a new standard that defines nomenclature that must be used in the buying and selling of natural and synthetic diamonds.

Sources: Expert interviews; Bain analysis

7.

Updated supply and demand model

- Global rough-diamond demand through 2030 is projected to grow at an average annual rate of about 2% to 5%, and supply is projected to decline by 1% to 2% per year. This forecast reflects fundamental supply and demand factors rather than short-term fluctuations or unforeseeable long-term macroeconomic shifts. The lower range of the outlook for demand growth incorporates a possible partial substitution of demand for natural diamonds by synthetic diamonds. The short-term supply-demand balance will depend heavily on the behavior of major producers and market pipeline efficiency.

- China and the US are expected to remain the leading diamond jewelry markets and largely determine rough-diamond demand. India will likely become the third-largest market, ahead of Europe and Japan, by around 2020.

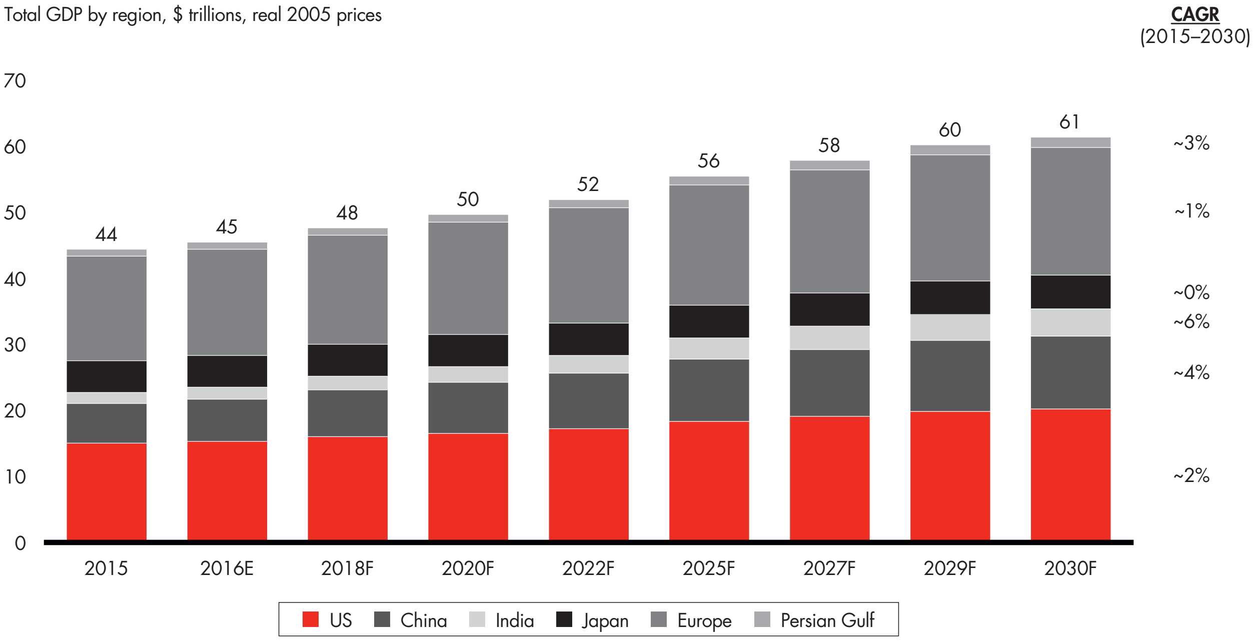
- Real disposable income growth of 1.5% to 2.5% per year in the US should stimulate diamond jewelry consumption, consistent with historical trends. Demand growth in the Chinese market is expected to resume a modest upward path in 2017, assuming positive underlying macroeconomic fundamentals. We expect a gradual return to positive growth trajectories beginning in 2018, with mid-single digit annual growth through 2030.

- We believe that India has a potential to be the fastest-growing diamond jewelry market in coming years on the strength of increasing urbanization, middle-class expansion and engagement ring penetration. Continued devaluation of the rupee, however, could negatively affect market growth rates in US dollar terms over the short to medium term.

- We have based our forecast of the rough-diamond supply on an analysis of existing mines, publicly announced plans and anticipated production at every expected new mine. We foresee that the global supply of rough diamonds will decline by an average of 1% to 2% per year from 2016 to 2030 because of the aging and depletion of existing mines. New supply from the Luaxe mine in Angola will be partly offset by likely delays in the start of operations at the Bunder mine in India and the shutdown of the Snap Lake mine in Canada.

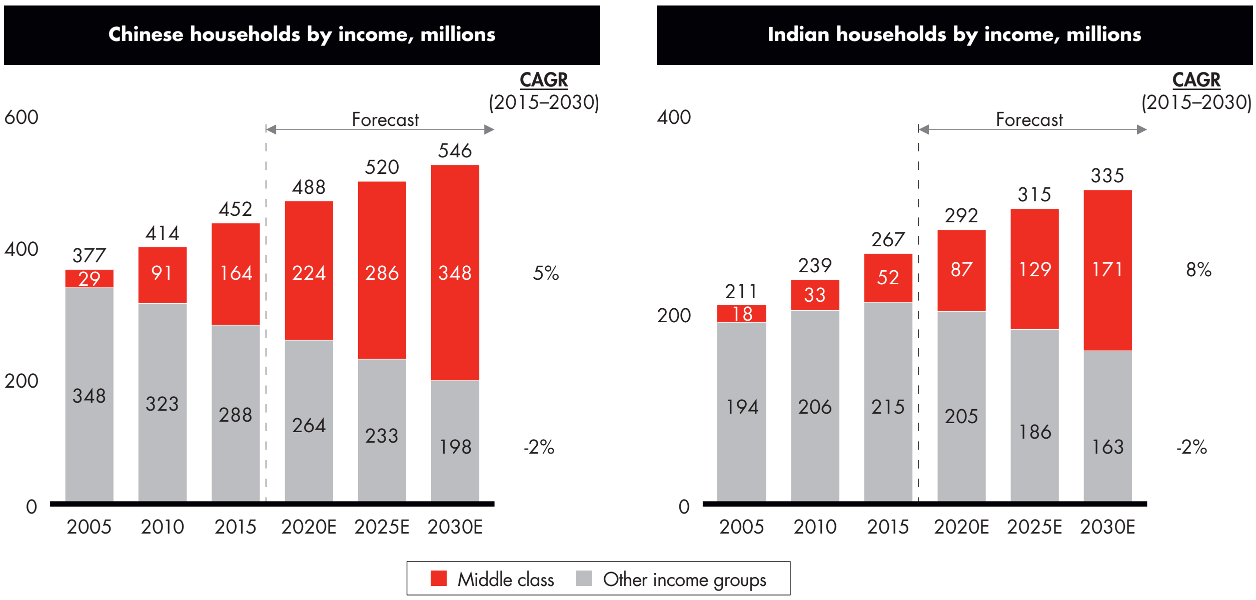
- This forecast does not consider several factors that could disrupt the diamond supply-demand balance. In particular, the possibility of a cyclical recession in the US, uncertainties about the future of the EU following the Brexit referendum and slowing economic growth in China and India could erode demand for diamonds. Technical supply disruptions, the impact of commodity prices on major producing countries and potential new sources of supply could affect global rough-diamond production.

Figure 37: Projections of real GDP drive personal disposable income growth and form the basis for the diamond demand forecast



Sources: EIU; Bain analysis

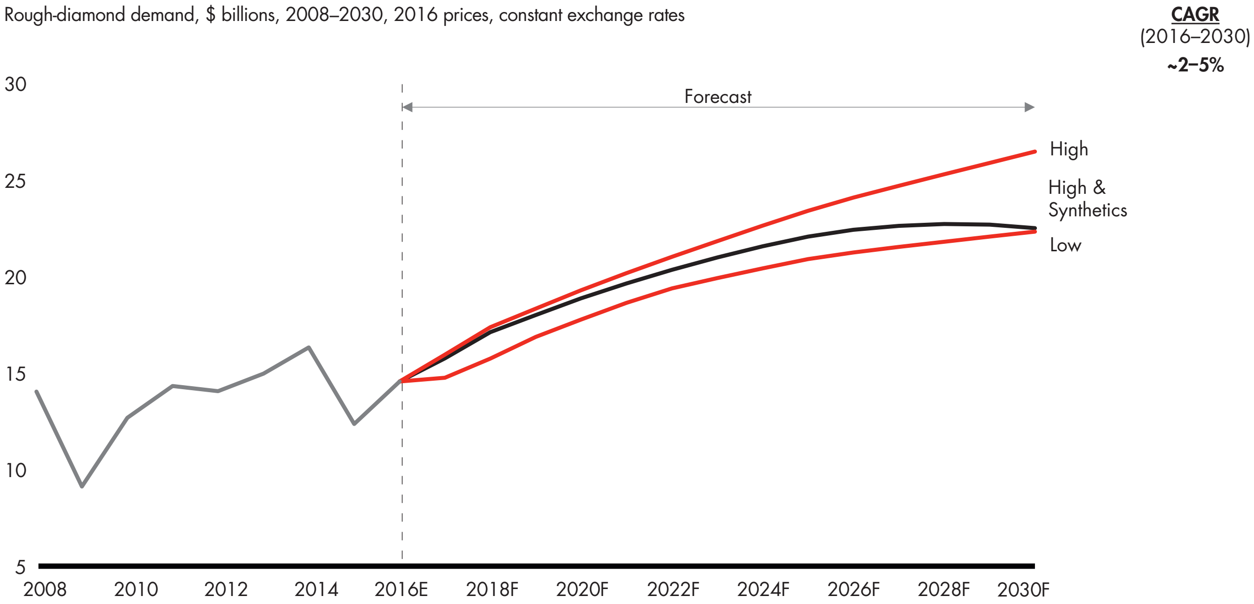
Figure 38: Middle-class households in China will number about 350 million by 2030; in India, about 170 million



Note: The middle class in India includes households with an annual disposable real income of more than $10,000, constant exchange rate; the middle class in China (including Hong Kong) includes households with an annual disposable real income exceeding $15,000, constant exchange rate
Sources: Euromonitor; Bain analysis

Figure 39: Global demand is expected to grow 2% to 5% per year

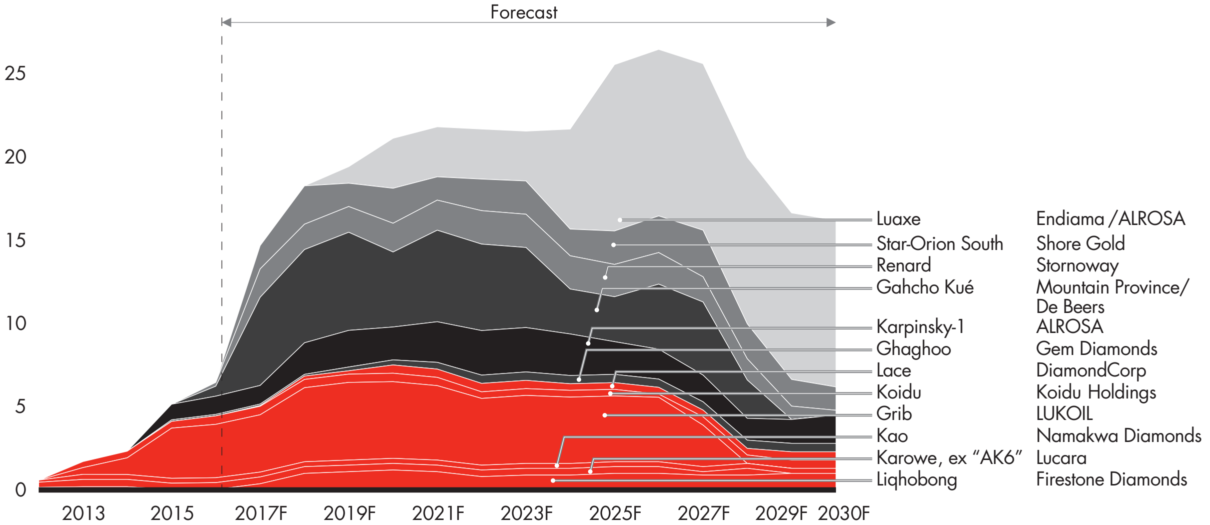
Rough-diamond demand, $ billions, 2008–2030, 2016 prices, constant exchange rates



Note: Rough-diamond demand has been converted from polished-diamond demand using historical ratio of rough-diamond values to polished-diamond values
Sources: Euromonitor; EIU; expert interviews; De Beers; Bain analysis

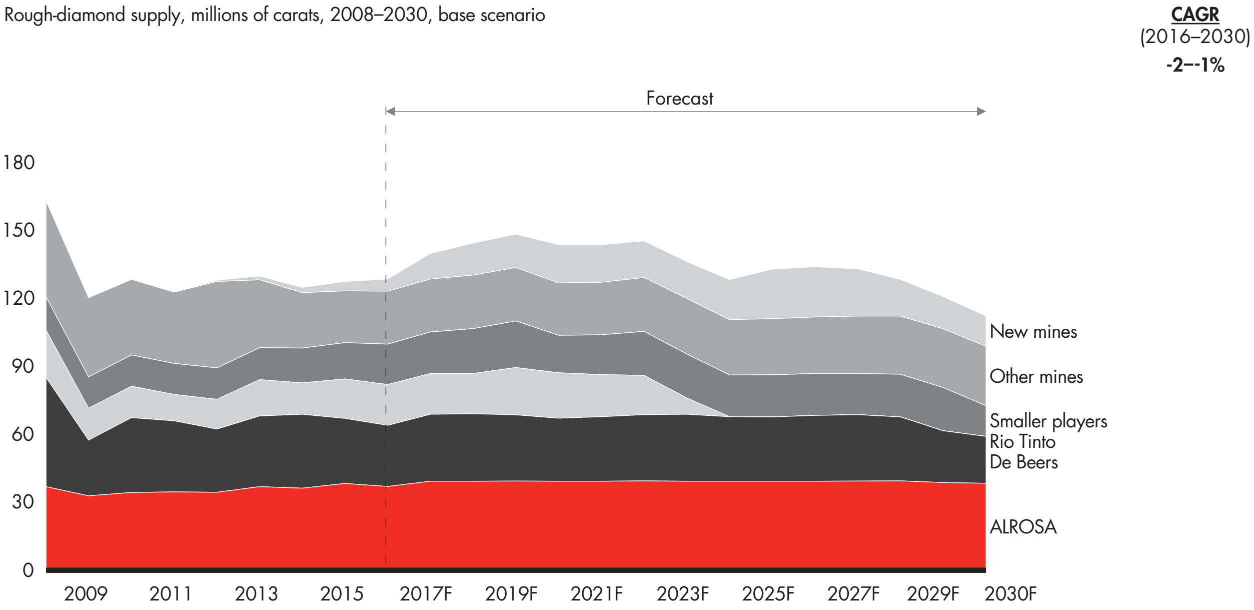
Figure 40: New mines are likely to add as much as 26 million carats a year until 2026, then decrease output to around 16 million carats by 2030

Forecasted rough-diamond production of new mines, millions of carats, base scenario



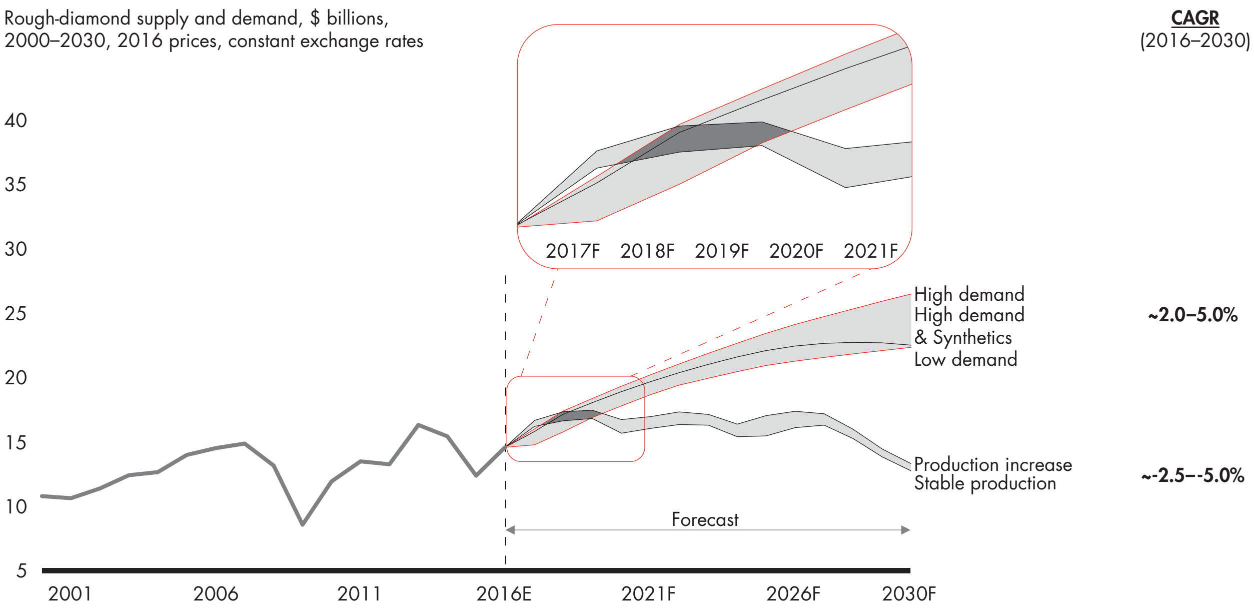
Sources: Company data; expert interviews; Bain analysis

Figure 41: Diamond producers' plans call for an increase of rough production to about 150 million carats by 2019, then a retracing to 110 million carats in 2030



Note: Smaller players are Dominion Diamond, BHP Billiton for 2008–2012, Petra Diamonds, Gem Diamonds and Catoca
Sources: Company data; Kimberley Process; expert interviews; Bain analysis

Figure 42: The supply-demand balance is expected to remain tight in the medium term



Note: Stable production assumes delayed start of production for new mines and earlier end of production for several existing mines; rough-diamond demand has been converted from polished-diamond demand using historical ratio of rough diamonds and polished diamonds values
Sources: Kimberley Process; Euromonitor; EIU; expert interviews; Bain analysis

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