

M# METALS FOCUS

Indian Silver Market Study

Prepared for The Silver Institute



September 2017



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Chapter 1

- India is one of the world's largest silver markets and is heavily dependent on imported metal to satisfy these requirements.
- Indian silver demand can be categorized into two broad areas: personal consumption and industrial offtake.
- Jewelry and silverware fabrication account for more than 50% of total Indian silver demand.

Introduction & Executive Summary

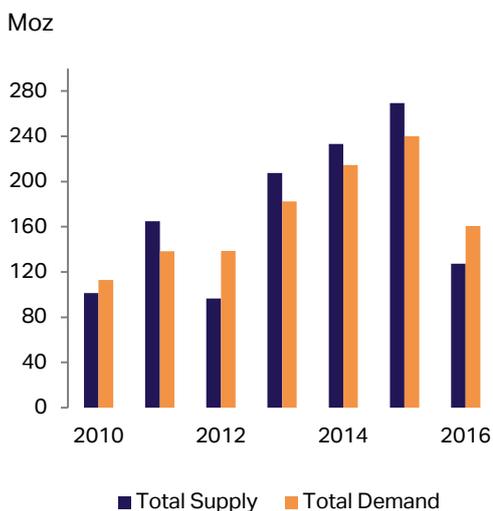
Introduction

India is one of the world's largest silver markets, with a very traditional core in a diverse market. To put this into perspective, India consumed 160.6Moz (4,996t) last year, which accounted for a noteworthy 16% of global silver demand. It is not only the scale of Indian demand that matters; the country's dependence on imported metal means that changes in Indian offtake can impact those countries that supply bullion to India.

The sheer scale of the Indian silver market resonates across much of the country, from physical investment, through to day-to-day activities. It is also integral to India's cultural and belief systems. It is therefore not surprising that silver is an important part of Indian festivities and weddings. For example, it is considered auspicious to gift silver during weddings or for the birth of a child. All this means that silver's appeal extends across most income groups. Even so, the silver market in recent years has evolved considerably in line with the growth in the Indian economy and the rise in incomes.

With this in mind, the Silver Institute has commissioned Metals Focus to carry out an in-depth study of the Indian market. The report has two broad aims. First, the report examines the main drivers that impact each area of silver supply and demand. Second, the report looks at recent trends and also the prospects for future offtake.

Indian Silver Supply and Demand



Source: Metals Focus

Note: Supply equals the sum of net bullion imports, recycling and domestic mine production. Demand equals the sum of all forms of fabrication and net investment in bars and coins

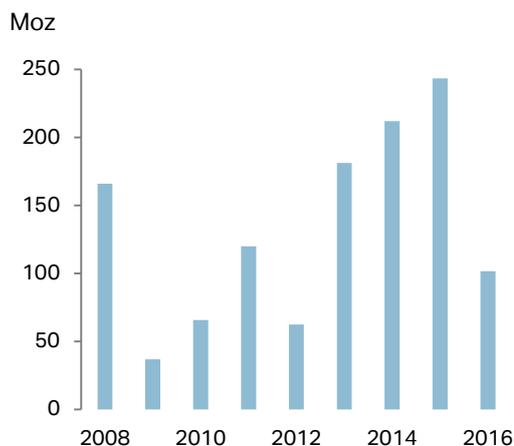
Executive Summary

Indian silver demand can be categorized into two broad areas: personal consumption and industrial offtake. The first covers jewelry, silverware and physical investment, of which jewelry is the largest sector. Together, these three account for around three-quarters of Indian silver demand. The key drivers across all three segments of personal consumption are the rupee silver price and income growth. As such, it is not surprising to see that the fall in silver prices between 2012 and 2015 saw a massive expansion of local demand. Turning to industrial offtake, this accounts for some 20-25% of the total market and its volumes are sensitive to levels of economic activity.

Bullion Imports

India is the world's fourteenth largest producer of silver (source: Silver Focus 2017). However, at 14.0Moz (436t), this falls considerably short of the total required to satisfy Indian silver demand. In addition to this, the Indian scrap market is also limited to around 3Moz (100t) per annum, which reinforces a dependence on imported metal. As Indian demand expanded at a rapid pace over the last 5-6 years, total bullion imports therefore posted a series of record highs, culminating in a 2015 peak of 243Moz (7,570t). Including 2016's inflows, this meant that India imported some 990Moz (30,700t) of silver since the start of 2010.

Silver Bullion Imports (Gross)



Source: Indian Customs

In terms of the key sources of this bullion, China is the largest supplier, with a 25% share, followed closely by the UK. Some other notable suppliers include Switzerland, Russia, Taiwan and South Korea. Together, these six countries have been responsible for some two-thirds of Indian bullion imports.

Unsurprisingly, sea transport is the preferred route, although perhaps unexpectedly air freight can account for as much as 25-30% of the inbound silver trade. This reflects the urgency of some shipments and, related to this, the impact of local premiums/discounts.

As for the composition of these imports, the largest share is in the form of LBMA (London Bullion Market Association) or non-LBMA bars. The latter can be 5kg, 15kg or 30kg depending on the buyer's needs. The pricing difference between good delivery and non-good delivery bars typically varies from 3-8 US\$/oz. Looking at the key players, silver importers can be classified into four categories: banks, nominated agencies/trading houses, industrial consumers and re-exporters. Banks tend to prefer large bars, whereas trading houses and industrial silver users favor smaller bars, grain or alloys.

Mining and Recycling

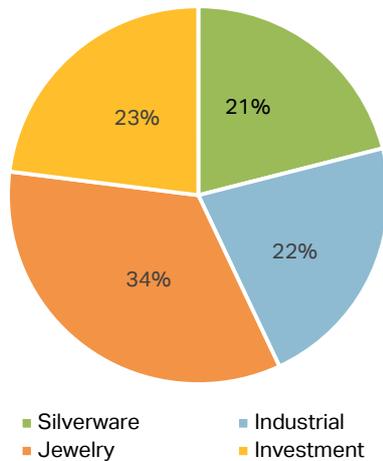
Indian mines produced 14.0Moz (436t) of silver in 2016, making the country the fourteenth largest silver producer globally. The majority of the silver produced in India is a by-product of zinc mining in northern India. In addition to domestic mine production, silver in India is also extracted from the processing of imported materials, such as copper concentrate, lead-zinc concentrates and doré (at India's numerous gold refineries).

Turning to the scrap market, Indian recycling has seen a steady fall this decade. In 2016, scrap supply was 3.4Moz (106t), and so well below the 16.4Moz (510t) generated back in 2010. The sharp fall has been due to the limited availability of secondary supplies from both silver jewelry and silverware, chiefly as the steady fall in silver prices discouraged consumers from selling silver back into the market. This cut silver jewelry and silverware's share of recycling from 40% in 2010 to a meager 9% in 2016. The majority of the scrap now emerges in the form of industrial scrap, which is often treated by the country's unorganized sector. We believe that Indian silver recycling will grow over the next few years due to the forecast rise in prices to over \$24, although volumes are unlikely to increase significantly.

Silver Jewelry and Silverware

Silver jewelry and silverware fabrication account for more than 50% of Indian silver demand. These are extremely traditional markets, although the demand drivers and the consumer profile vary considerably between each segment. Typically, silver jewelry is purchased by most income groups in India, whereas silverware is typically bought by the middle and affluent classes. Since the start of the decade, we have seen a massive expansion of demand in both markets. From around 39Moz (1,200t) in 2010, combined offtake more than doubled to 88Moz (2,700t) in 2016 due to such factors as lower silver prices and government restrictions on gold. By the end of this decade, we believe the market will expand further to around 109Moz (3,400t), driven largely by healthy economic growth.

Composition of Demand, 2016



Source: Metals Focus, Silver Focus 2017

The largest segment, silver jewelry, consists of three main categories. First, there are traditional, daily wear items, such as payals (leg chains), and toe and nose rings. This is followed by modern silver jewelry, which includes necklaces, chains and bracelets. The last segment covers fashion jewelry which, although a relatively new phenomenon, has seen tremendous growth in recent years. Overall, the Indian silver jewelry market has more than doubled in the last six years to 53.9Moz (1,677t) in 2016. The fall in silver prices has been a key reason for this outcome.

The trend in rupee silver prices also plays an extremely important role in driving silverware demand. This helps explain why this market has grown sharply, up from 19.0Moz (590t) in 2010 to 34.1Moz (1,061t) in 2016. However, during the last six years, it underperformed the domestic silver jewelry segment, growing by “only” 12% per annum compared with 17% for silver jewelry demand over the same period. Structurally, the Indian silverware market can be divided into two main categories, silver utensils and silver articles.

Investment Demand

Indian investment demand for silver saw an unprecedented rise earlier this decade; in a period of five years from 2010 to 2015, this surged from 25.7Moz (800t) to 110Moz (3,400t). This in part reflected bullish price expectations which led to a large section of physical precious metals investors parking their funds in silver. Adding to these bullish expectations was the government’s clamp down on unaccounted money and restrictive policies on gold imports. However, the previous rise in investment demand came to an abrupt halt in 2016 as investors used the rise in silver prices to book profits and as an even tougher clampdown on unaccounted money and the parallel economy hurt demand, which fell by around 70%.

Industrial Demand

The industrial demand for silver contributes to some 20% of overall demand in the country. Within this segment, brazing alloys and solders, and electronics and electrical offtake make up around 50% of the total. The rest is consumed in a wide range of end-uses that collectively we term “other industrial” fabrication. The demand for metal for industrial purposes is highly sensitive to economic and industrial activity. As a result, it was not surprising that, early this decade, demand fell in line with a slowdown in the Indian economy along with policy paralysis (which hit infrastructure spending). This saw Indian demand fall from 45.7Moz (1,421t) in 2010 to 35.9Moz (1,115t) in 2015. However, with the economy improving over the last two years (GDP growth is back over 7%), we expect industrial demand to continue to rise in the coming years.

Chapter 2

- With over 1.3 billion people, India is the second most populated country in the world.
- The country is rapidly urbanizing, although some two-thirds still live in rural areas.
- With GDP growth forecast at 7.2% in 2017, India has one of the world's fastest growing economies, which is helping to reduce India's poverty levels.

Macroeconomic Background

Introduction

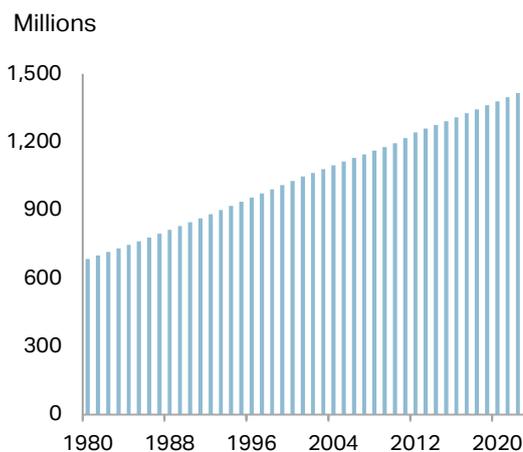
India has 29 states, six Union Territories (UTs) and Delhi as its National Capital Territory (NCT). India borders six countries: Pakistan, Nepal, China, Bangladesh, Bhutan and Myanmar. The mainland also shares a maritime border with Sri Lanka, while India's Andaman & Nicobar Islands have a maritime border with Thailand and Indonesia. With a population of more than 1.3 billion, India is the second most populous country in the world and the largest democracy. More than 45% of its population are under the age of 25, making it one of the youngest democracies. Even so, the population remains skewed towards rural India, where almost 70% of the population are based.

The country has witnessed almost unprecedented economic growth over the last decade, which has helped improve living standards and raise literacy levels. As per the 2011 census, the literacy rate stood at 74%, a marked improvement from the 65% recorded in the 2001 census. Access to basic infrastructure and education has helped rural literacy rate grow much faster than in urban India. As a result, the rural-urban literacy divide has fallen to 16% from the 21% recorded in the previous census.

Population Profile

India has also experienced tremendous population growth. In 1900, this stood at just 238 million. However, this has surged by more than four times to 1,320 million in 2016. Having said that, population growth has slowed over the last decade. As compared to the last census, when the growth was 21.5% (1991-2001), the 2011 census recorded growth of 17.6% (2002-2011). Uttar Pradesh remains India's most populous state, with close to 200 million people. The combined population of Uttar Pradesh and Maharashtra (the second most populous state), at 312 million, is similar to that of the US.

Indian Population



Source: Bloomberg, World Bank

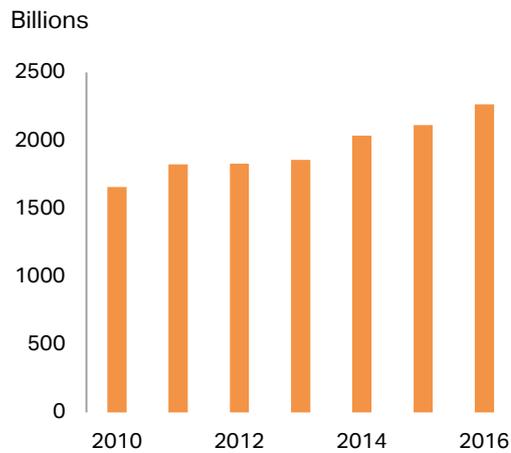
Shift Between Rural and Urban Centers

For the first time since independence, the absolute rise in the urban population has exceeded that of rural areas. This is largely due to government efforts in educating rural communities on family planning and the effects of urbanization. As a result, the rural-urban distribution (as per the 2011 census) was 68-32%, compared with 72-28% ten years before. According to the latest census, Kerala, Goa, Nagaland and Sikkim have witnessed some of the sharpest drops in rural populations.

Indian Economy

India's economic story can be divided into two distinct phases: pre and post-liberalization. The former covers 1947-1991, when government policies targeted a mixed economy (a balance between socialism and capitalism), with largely inward looking policies. As a result, this period saw India maintain average GDP growth of 3-3.5% per annum and a capital growth rate of only around 1.3% per annum.

India GDP in current USD



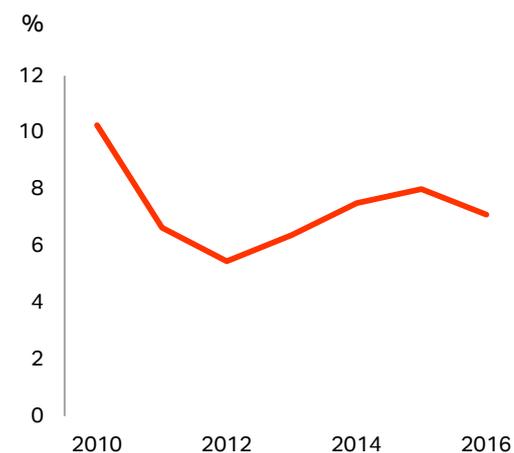
Source: Bloomberg, World Bank

In this pre-liberalization phase, India followed a centralized economic planning model (inspired by the Soviet Union). One outcome of this was extensive bureaucracy and trade barriers. The economic planning of this "Licence Raj" also translated into a failure to open up the country's markets to foreign investment. This situation was exacerbated by a series of droughts and famines, which led to a greater burden being placed on the treasury. The government was thus forced to borrow to finance the deficit. In addition to budget deficits, India suffered from persistent trade deficits, which led to a balance of payment crisis, with the country becoming unable to pay for essential imports. Against such a backdrop, the government was forced by the IMF and World Bank in 1991 to undertake policy measures which led to the liberalization of the Indian economy.

Following reforms during the 1990s (the post-liberalization phase), the Indian economy has enjoyed strong growth (averaging 7% for 1992-2016). This has helped lift per capita income growth from around 3% in the 1980s to 5%, taking the absolute figure to around \$1,709. It has also greatly reduced poverty levels, which fell from 37% in 2004 to 22% in 2016 (source: World Bank). Economic growth has also remained robust, with this year's increase in GDP expected by the World Bank to reach 7.2%.

Today, India is the seventh largest economy in the world by nominal GDP and the third largest in PPP (purchasing power parity) terms. This growth has benefited from the strong rise in the Indian service sector, led by the IT and financial segments. The share of services in total GDP rose from 43% in 1990-91 to 58% in 2010-11, whereas agriculture's contribution fell from 28% to 14%; the contribution from manufacturing has remained little changed.

Annual India GDP Growth



Source: Bloomberg, World Bank

The Indian economy, as mentioned above, has seen strong growth post-liberalization. However, strong economic growth and higher domestic taxes also meant that India's parallel or shadow economy has also seen strong growth. As per a recent paper released by Ambit Capital Research, India's parallel economy is estimated at 20% of GDP, which translates into US\$460 billion, a figure much bigger than the GDP of emerging economies like Thailand or Argentina. The majority of this unaccounted money (economic activity outside domestic banking channels) is parked in physical assets (such as cash or gold), real estate or in bank accounts in tax haven countries.

Over the years, Indian governments have worked towards reducing the flow of unaccounted money in the system. As part of this strategy, last November, the government demonetized high value currency notes (in other words the Rs.500 and Rs.1,000, which make up 86% of the money in circulation). According to the latest data from the Reserve Bank of India (RBI), 99% of all currency notes have been returned to the banking system. However, the RBI has identified some 470,000 suspicious transactions.

Other measures introduced by the government to help curtail the parallel economy include a restriction on cash transactions above Rs.200,000 (roughly \$3,200) and mandated the declaration of Permanent Account Number (PAN) cards on transactions above Rs.200,000. These steps,

together with the recent announcement of an income tax reduction, have led to a surge in individuals filing income tax returns.

A more relevant problem to emerge for precious metals concerns the balance of payments, with the trade deficit surging from \$8.1bn in 2007 to over \$90bn in 2012. Gold was often the second largest item on the import bill (after energy). It was this that led to the imposition of import duties on gold and silver bullion. The situation has since improved (the latest World Bank number for calendar 2015 shows a deficit of "just" \$22.5bn) and, should this improve further, the possibility of import duties on bullion being lowered could well grow.

Chapter 3

- India produced 14.0Moz (436t) of silver in 2016, or 2% of global production, chiefly from Hindustan Zinc’s mines in Rajasthan.
- Recycling generated 3.4Moz (106t) of additional supply in 2016, or 2% of the global total.

Mine Production & Recycling

Mine Production

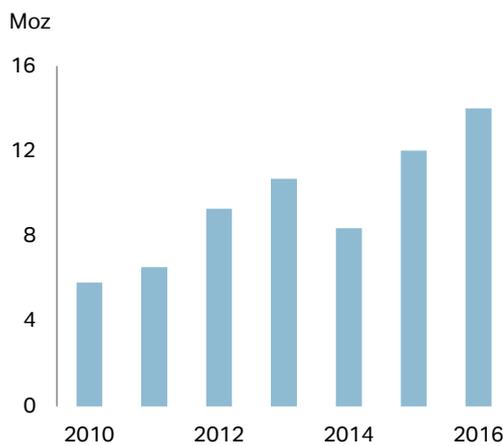
Indian mines produced 14.0Moz (436t) of silver in 2016, making the country the fourteenth largest silver producer globally. The majority of Indian silver is produced as a by-product of zinc mining, from Hindustan Zinc’s operations within the state of Rajasthan in the north of the country (Hindustan Zinc is a Vedanta Group company).

Hindustan Zinc has five operating mines: Rampura Agucha (the world’s largest zinc producer), Rajpura Dariba, Zawar, Kayad and Sindesar Kurd, which is the company’s most silver-rich (and lead-rich) mine and is responsible for the majority of Hindustan’s silver out turn. In addition, the ongoing expansion of Sindesar Kurd (originally commissioned in 2006) has driven the country’s mine production higher in recent years.

Looking at India’s silver reserves and resources, Hindustan Zinc’s mineral reserves as of March 2016 totaled 300Moz (10,250t) of silver (in addition to zinc and lead), with a further 680Moz (21,150t) of silver in the resource category (a defined concentration of mineralized material which is yet to have the detailed analysis required to prove its economic viability and upgrade it to reserve status). Looking at the breakdown of Hindustan’s silver reserves and resources, the Sindesar Khurd mine hosts half the company’s silver, with the remainder largely spread between the Rampura Agucha, Rajpura Dariba and Zawar deposits.

In addition to domestic mine production, silver is also produced in India from the processing of imported materials, such as copper concentrate (at Hindalco’s copper smelter in Gujarat), lead-zinc concentrates (at Hindustan’s smelters) and doré (at India’s numerous gold refineries). As of early-2017, Hindustan Zinc’s silver refining capacity was 16.7Moz (518t) per annum.

Indian Silver Mine Production



Source: Metals Focus, Silver Focus 2017

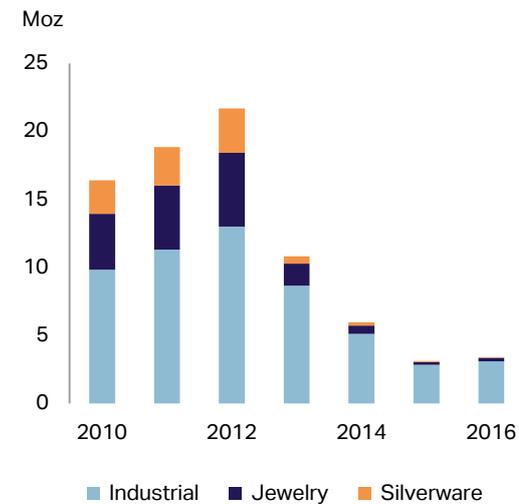
Location of India’s Main Silver Producing Mines



¹Sindesar Khurd, although classified as a primary lead/zinc mine produces significant volumes of silver.

Source: Metals Focus

Indian Silver Recycling



Source: Metals Focus, Silver Focus 2017

Recycling

Indian recycling of silver saw a steady fall over the last six years, with volumes down by almost 80% from around 16Moz (500t) in 2010 to little more than 3Moz (100t) in 2016. The contribution from industrial scrap was affected by the slowdown in economic activity; Indian GDP, which had been growing at around 10% a year in 2010-11, slowed down to 4% in a matter of a few years. This slowdown in growth prompted industrial suppliers to curtail their spending, which fed through to the drop in scrap supply. In contrast, supplies from consumer scrap (sourced from jewelry and silverware) was affected by the sharp fall in domestic silver prices from highs of Rs.65,000-70,000/kg in 2011-12 to below Rs.35,000/kg in 2015.

Of all the sources, silverware scrap is the most price sensitive due to the fact that silver accounts for a relatively high portion of the final product's price and the high value per piece. While the price of the metal also accounts for a sizable part of finished jewelry, the far lower unit value means that the incentive for individuals to sell back old pieces is limited. Indeed, the bulk of jewelry scrap tends to come from the supply chain, namely manufacturers, wholesalers and retailers, as they liquidate old or unsold inventory.

Scrap supply is also a function of the pool of product and, if the amount of silver contained in finished products increases over the years, the pool of material that is available to be recycled also increases and, by implication, so does potential supply. It is therefore of note that consumer scrap has fallen despite a growing pool of product and this highlights the importance of prices as the key driver for silverware and jewelry scrap. Also at current price levels, we are seeing more silverware coming in for refurbishing rather than for sale. The fall in prices therefore explains why silverware and jewelry's share of total scrap has tumbled from around 40% in 2010 to a meager 9% in 2016, leaving the vast bulk of the market in the hands of industrial suppliers.

The impact of prices on industrial scrap in total is less pronounced. Having said this, changing silver prices do heavily affect the economics of recovery from certain low yield niches within waste material. Currently, most of the industrial scrap that is coming into the market is from segments such as electrical contacts and catalysts. Within this, a large portion of the scrap recovered is in closed loop processes. ("Closed loop" recycling is a production process in which waste is collected, recycled and turned back into new products within a tight circle of industrial companies.) However, it is worth pointing out that a large slice of overall industrial scrap recovery is in the informal sector where collection is largely unorganized.

Over the next few years, we believe there will be an increase in scrap supply in India. We base this forecast on three key forces: the projected rise in silver prices; ongoing gains in the Indian economy and industrial activity, and the government's efforts towards curbing pollution.

Chapter 4

- Indian silver jewelry fabrication is the highest in the world, and nearly twice the size of its nearest competitor, China.
- Traditional jewelry, with its links to Indian culture, has a dominant market share, of around 65%.
- Indian silver jewelry exports surpassed \$3bn in 2016.

Jewelry

Introduction

The Indian silver market is one of the most traditional in the world, having its roots in the country's medieval and imperial history. During the early period of independence, gold was banned due to the large outflow of foreign exchange reserves; this had a tremendous impact on the livelihood of artisans and traders. This saw many switch to silver jewelry, which proved a savior for much of the industry. In fact, it was not long before silver jewelry exports also emerged, bringing in much needed foreign exchange.

This helps explain why India has grown to become the largest silver jewelry fabricator in the world, with offtake in 2016 of 53.9Moz (1,677t). However, the level of offtake can be very sensitive to the price and so the decline from the price peak in 2011 was an important driver behind the rapid growth in demand since 2013. In keeping with gold, it is rural India that drives the associated changes in silver jewelry consumption. Even so, the rationale for buying silver jewelry is completely different to gold (which is explored later in this chapter). These consumers are supplied by producers who are fairly concentrated, being largely restricted to 4-5 locations across the country, such as Agra and Jaipur.

Profile of Silver Jewelry Products & Consumption

The Indian silver jewelry industry can be divided into three broad categories: traditional silver jewelry, daily wear and fashion jewelry. Traditional jewelry, which is inextricably linked to Indian culture, has a dominant market share, of around 65%. Much of this jewelry is mass produced, which helps to explain the low price points across much of the traditional segment. This in turn is why it is so popular across lower income groups. Within this sector, a staggering 70% of the total is accounted for by just one product range, known as a payal (covering leg chains and ankle chains). The next most important segment is daily wear, accounting for 30% of the market. The remaining 5% is occupied by fashion wear. Although modest in size, this is one of the fastest growing segments in India.

Traditional Jewelry

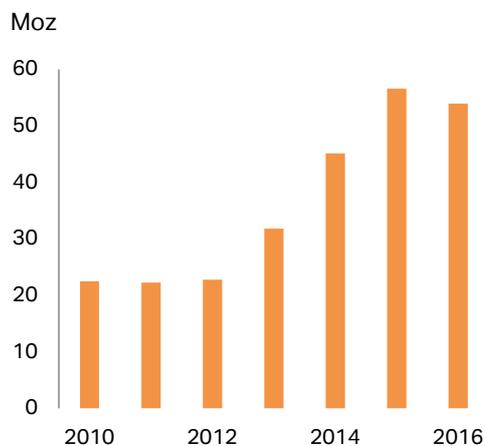
As mentioned above, traditional silver jewelry is dominated by payals, with other notable products including toe and nose rings. This

type of jewelry, which is indigenous to India, varies by design and weight on a regional basis. The size of a payal varies considerably between 30g and 200g, with typical average retail values of Rs.2,000-3,000 (roughly \$30-\$50). A single karigar (an Indian artisan) can make 5-10kg of payals in a single



Traditional silver necklace & earrings

Indian Jewelry Demand



Source: Metals Focus, Silver Focus 2017

batch (which may take up to two days to do). The average purity of a payal is around 60-65%, which has increased from 40-45% some 5-6 years ago, the result of greater consumer awareness of purity levels. Recently, we have also seen a growing awareness and availability of payals in sterling silver (92.5% pure). However, these payals have been largely restricted to urban centers due to a lack of awareness in rural India. The other two main types of traditional jewelry sold in India are toe and nose rings. A typical toe ring varies between 2g-5g, compared with around one gram for a nose ring. Both are usually sold on a fixed retail price basis rather than being dependent on the daily price of silver.

Daily & Fashion Wear

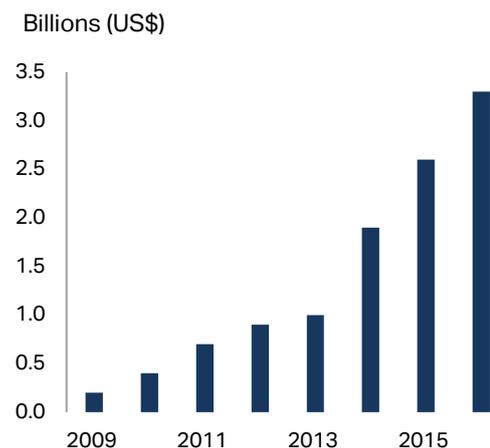
The daily wear segment caters to both men and women, covering necklaces, chains, bracelets, and rings. Aside from necklaces, most jewelry is worn by men, especially bracelets and chains. The average ticket size for daily wear jewelry, especially chains and bracelets, ranges between Rs.5,000-15,000 (around \$80-\$240), whereas necklaces are more



Men's silver bracelet

expensive, depending on design and purity. Despite this, most silver jewelry is fabricated with 70-75% pure silver. However, in keeping with other jewelry segments, awareness of sterling silver is rising, reflected in the growth in both retailers and manufacturers offering this product range.

Indian Silver Jewelry Exports



Source: Metals Focus

Aside from the domestic market, a large part of daily wear jewelry manufactured in India is exported, principally to Hong Kong, the UAE, the US, the UK and Thailand. These shipments have increased rapidly over the last few years as some Indian companies have start working more closely with overseas retailers. In fact, in 2016 Indian exports surpassed \$3bn, a more than six-fold increase compared to 2011. This largely reflects market share gains, especially in Hong Kong, the UAE and the US.

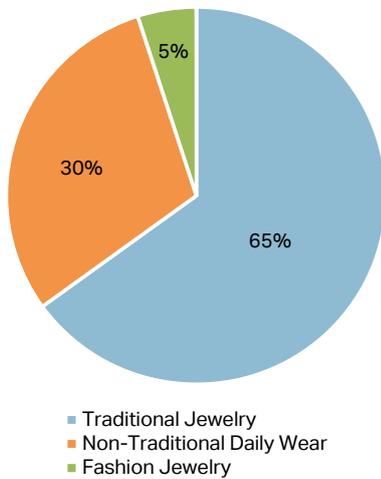
Moving to the final product segment, fashion jewelry, this has only featured (in a meaningful way) over the last 5-6 years. Its introduction occurred for two main reasons, first, as a less expensive alternative to gold jewelry and, second,



Silver Bridal Jewelry

from a security standpoint (the perception being that its lower price makes it less risky to wear outside the home). However, today fashion jewelry is not just an alternative to gold in the daily wear segment, but also in the bridal market, where it is gaining a stronger foothold.

Composition of Jewelry Consumption



Source: Metals Focus

What is interesting is that, when it was first introduced, fashion silver jewelry was often restricted to small outlets offering imitation jewelry. In sharp contrast, today large retailers have started to embrace this category as they look to add newer customers and look to add newer product offerings. These pieces tend to retail for between Rs. 6,000-30,000 (roughly \$95-\$470). We have also seen a greater availability of intricate designer pieces which can sell for Rs.50,000-75,000 (around \$800-\$1,200). It is of note that most fashion jewelry buyers are young and affluent Indians who are more concerned about the design than the contained metal.



Payal (Leg/Ankle Chain)

Consumption Trends and Drivers

The Indian jewelry market has experienced a rapid expansion in recent years; from 22.5Moz (700t) in 2010, this rose to an impressive 53.9Moz (1,677t) in 2016. We forecast this to surpass 65Moz (2,000t) during the next 4-5 years. The jump in demand for silver reflects several themes. First, the government's restrictions on gold saw consumers shift towards silver jewelry. Secondly, the drop in silver prices led to a jump in demand. During the run-up in prices in 2011, when prices in India surpassed Rs.65,000/kg, a large section of lower income consumers temporary exited the market. In contrast, lower silver prices since then have allowed for a return of these consumers. Finally, the increase in purity levels has also helped to boost average fine weights.

In summary, some of the key drivers of silver jewelry demand in India are as follows:

- Tradition:** It is considered auspicious in many different communities in India for silver jewelry to be worn by brides (payals & toe rings) and by newborns (bracelets).
- Price:** The relatively low price of silver jewelry compared to gold, affords consumers from lower income sections of society an opportunity to buy silver.
- Alternative to gold:** With an increase in gold prices, there is a need for a less expensive alternative in the daily wear segment, which is fulfilled by silver.



Payal (Leg/Ankle Chains)

- **Security:** Wearing silver jewelry is considered far less risky than gold.
- **Impact of younger consumers:** Around half of the Indian population is below the age of 35. These consumers tend to prefer modern designs at affordable prices.

Key Manufacturing Centers

While consumption centers are spread across the country, manufacturing is broadly limited to 4-5 key cities in northern India. This explains why the majority of bullion imports land at northern airports, notably Delhi, Agra and Jaipur. Delhi and Agra largely focus on the domestic market, while Jaipur is known for its focus on export markets. Outside of the north, other key centers include Mumbai and Rajkot in the west and Salem in the south.

Chapter 5

- Indian silverware fabrication is comfortably the largest in the world, consuming 34.1Moz (1,060t) in 2016.
- Price is a key driver of trends in silverware demand in India, as is the health of the country's economy.
- Silver utensils dominate the sector, accounting for around 60% of the total.

Silverware

Introduction

The Indian silverware market is the largest in the world and its importance is growing; since the start of the decade, most other silverware markets have seen a downturn in demand, whereas Indian offtake has virtually doubled to reach 34.1Moz (1,060t) last year. As a result, India's share of global fabrication jumped to 70% in 2016 (source: Silver Focus 2017). This divergence is largely down to the fact that the gifting of silverware remains extremely popular in India, whereas elsewhere in the world the choice of gift (say at a child's birth) has shifted to other categories. This helps explain why the key determinants of India's silverware consumption this decade have been the trend in the silver price and the general economic backdrop.

The Indian market has also remained extremely traditional from a product standpoint. Although the last few years may have seen some large manufacturers streamline their operations, becoming more organized (larger, less cash driven), their market share remains extremely small. As a result, fabrication remains highly fragmented.

Profile of Silverware Consumption

The domestic silverware market is dominated by products with a strong cultural and religious connections, which can be divided into two categories, silver utensils and silver articles. Unlike silver jewelry (where consumers are spread across a wide range of income groups), silverware consumers are largely found in the middle and affluent classes.

Silverware is widely sold across the country. For instance, it is not uncommon for gold jewelry retailers to sell silverware. However, demand is much higher in urban centers, especially in the metro cities. Over the years, the suite of silverware products, especially covering articles, has changed dramatically. In the past, the market was often restricted to traditional products focusing on gods and goddesses. However, today manufacturers offer modern silver artifacts in line with the changing tastes of Indian consumer (see examples below).

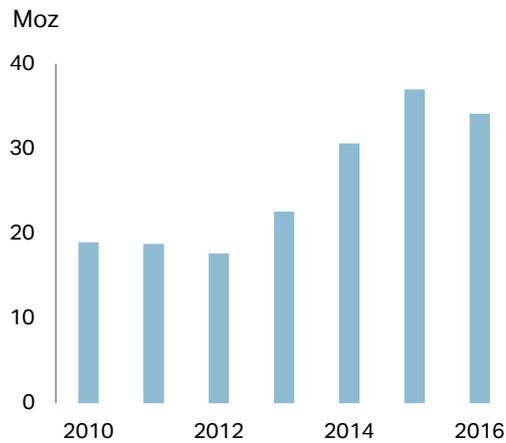
Silver Utensils

The silver utensils market is one of the most traditional in India. In fact, our field research revealed that the sector is much older than the silver jewelry market, with its origins in medieval India. At that time, it was not uncommon for the wealthy to use silver utensils for their food and drink. Although less common today, this still remains true. What is interesting is that, over the centuries, the silver utensils market has not changed that dramatically. This



Silver Utensils

Indian Silverware Fabrication



Source: Metals Focus, Silver Focus 2017

can be attributed to their importance in Indian traditions. For example, it is considered auspicious to both self-purchase and gift silver utensils for the birth of a child or during a marriage. As a result, we often see strong demand for utensils during the second half of the year, which corresponds to the Indian wedding season. Silver utensils are also used on religious occasions, as part of offerings to gods and goddesses, making them an integral part of Indian culture.

The most popular silver utensils are plates, bowls and glasses. Other products include spoons, cups and dishes. Typical retail prices range between Rs.3,000 and 15,000.

Silver Articles

The Indian silver articles market consists of traditional and non-traditional items. Idols of Indian gods and goddesses and articles used for rituals and prayers are considered traditional products; together these dominate this category. Non-traditional items include stands, boxes, photo frames and swings (silver is used to clad



Ganesh Idol



Silver Kalash

the poles and the seat; see photo below).

This is because every middle income house owns a few traditional items, whereas non-traditional pieces are more discretionary, purchased either by the affluent classes, typically for gifting or as a showpiece for the home.

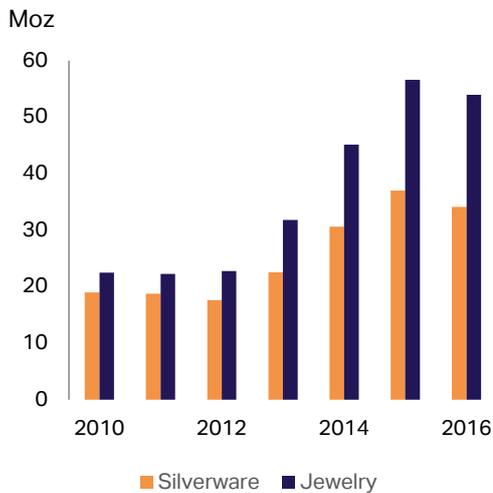
Drilling down further, there are two interesting and emerging trends in the Indian market. The first relates to new

product offerings and, second, the change in purity. Taking each in turn, demand for antique-looking silver pieces has grown over the last few years, with consumers attracted by the distinctive look they tend to offer. Second, there has been a rise in the average purity, which reflects growing awareness among consumers. That in turn has been the result of a strong marketing drive by retailers and manufacturers. From a price standpoint, our discussions with retailers reveal that the price of these silver articles range hugely, from Rs.10,000 to 200,000, depending on the size and weight of the article in question.

Consumption Trends and Drivers

In line with the Indian jewelry market, silverware demand has expanded rapidly over the last few years, surging from 19.0Moz (590t) in 2010 to 34.1Moz (1,061t) in 2016. This reflects two trends, among which the most important was the drop in rupee silver prices. However, the government's clampdown on gold imports between 2013 and 2015 saw many hoarders

Indian Silverware vs Silver Jewelry Fabrication



Source: Metals Focus, Silver Focus 2017

move cash into silverware as it enjoyed a much lower profile than gold jewelry.

Looking ahead, we expect the rapid growth in Indian silverware demand to slow due to the forecast increase in silver prices, the government's clampdown on unaccounted money and its growing vigilance towards cash transactions. Despite that, Indian silverware demand is expected to surpass 38.5Moz (1,200t) by 2021 as ongoing robust GDP growth and silverware's undiminished appeal lift offtake.

To summarize, some of the key drivers of silverware demand in India include:

Price: The trend in the rupee silver price remains the biggest factor impacting silverware demand. This is particularly true as many purchases are a wedding gift or for other key occasions. Consumers often visit stores with a fixed budget and so purchases will suffer as prices rise.

Tradition: Gifting silver ornaments for weddings and important festivals is considered auspicious.

Alternative: Over the last few years the scrutiny of gold transactions by the authorities has increased noticeably, which has led to many consumers shifting their money into silverware (as well as silver bars).

Status Symbol: Rapid economic growth in India over the last decade has benefited disposable incomes. The country now has one of the largest middle classes in the world and owning silverware is one way to display one's wealth.



Silver Swings

Chapter 6

- The slowdown in the Indian economy led to a steady fall in Indian industrial silver fabrication through to 2015.
- The "other industrial" segment is the largest consumer of silver for industrial use.
- Demand for silver from the PV industry and the defense industry will help drive future demand in India.

Industrial Demand

Introduction

Indian industrial silver fabrication fell steadily earlier this decade from 45.7Moz (1,421t) in 2010 to 36.0Moz (1,115t) in 2015. A key reason was the slowdown in the Indian economy, as growth almost halved from 10.3% in 2010 to 5.3% in 2012. Other drivers were policy paralysis and a downturn in infrastructure spending. In addition, the rise in the silver price during the early part of the decade led to notable thrifting. However, with this winding down as silver prices eased, industrial demand has begun to feel the benefit of an improving economy (GDP growth has held above 7% since 2014) and higher government spending on infrastructure.

Indian industrial demand can be divided into three broad categories: brazing alloys and solders, electrical and electronics applications, and other industrial demand (the largest segment). Within the latter and unique to India is the quasi-industrial demand for silver in the form of foil (food coating) and jari (or zari) thread.

It is worth noting that Indian industrial fabrication demand tends to underperform consumption as many industrial components are imported. However, the government's "Make in India" initiative of attracting foreign manufacturing, defense and infrastructure companies to set up factories in India could help to eventually reduce this gap.

Other Industrial

The other industrial segment is the largest consumer of silver for industrial uses, contributing more than 50% of the overall total. Within this, some key segments are pharmaceuticals, chemicals, foils, plating and jari. This composition makes India unusual as several of these are only found in India. Our research reveals some contrasting trends in this segment; manufacturers of pharmaceutical products, hygiene products and jari have seen an increase in demand, whereas recently we have seen a slowdown from the foils segment that is largely used for food coating in India.

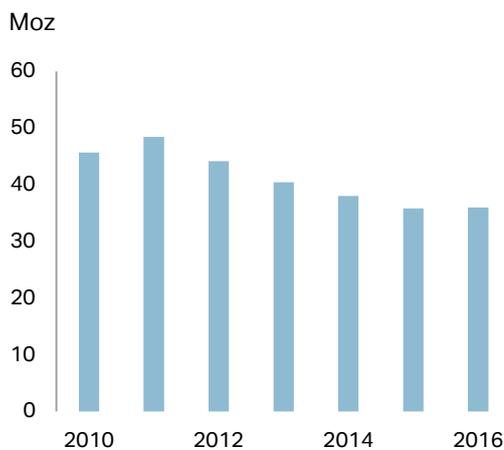
Looking first at the pharmaceutical industry, this has enjoyed a period of rapid growth due to the rise in the manufacture of generic medicines, which are exported to the likes of Europe and the US. However, the bulk of the increased use of silver in this field has been in hygiene products and in herbal medicines whose sales focus more on the domestic market.

Jari is an even thread usually made of fine gold or silver that is used in traditional Indian garments, especially as brocade embroidery in saris, sherwanis (long, coat-like garments worn by men) and so forth. This thread



Traditional dress with jari work

Indian Industrial Demand



Source: Metals Focus, Silver Focus 2017

is woven into fabrics, primarily made of silk, to create intricate patterns. Over the years, the rise in gold prices has led to a shift towards greater silver offtake. The other segment which has seen a modest increase in silver demand is the chemical industry. This is largely due to capacity expansions by specialist chemical manufacturers, which appear to have gained market share, especially from the likes of China.



Silver cardamom pearls

In contrast, the food and tobacco industries have witnessed a slowdown in demand, especially in 2016 and so far this year. Much of this is down to the fact that rupee silver prices are still perceived as high, which has encouraged processed food producers, sweet shops and beetle nut manufacturers to reduce the use of silver in their products.



Barfi sweets

Finally, demand for silver in the plating industry has been fairly steady. In India, this is largely used for decorative uses. Traditionally, silver plating has been used to provide a finish to jewelry, articles or even idols of gods and goddesses, which tend to be made with base metals.

Electrical and Electronics

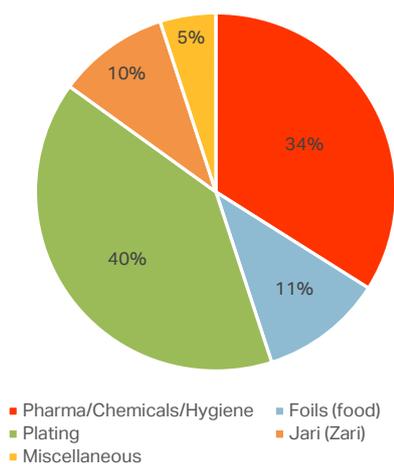
Electrical and electronics end-uses contribute around 40% of industrial demand for silver in India. The sectors that dominate this are automobiles, consumer electronics, housing and the power industry.

Taking each in turn, the Indian automobile sector has enjoyed a massive expansion over the last decade or so. Every year now, some 25 million motor vehicles are manufactured in the country, including passenger vehicles, three wheelers, two wheelers, and commercial vehicles. The use of silver is comparatively high in light and medium commercial vehicles as compared to the other segments. However, our research reveals that the use of silver in vehicles manufactured for domestic sale tends to be lower compared to vehicles manufactured for export markets.

Sales of white goods and consumer electronics in India have enjoyed robust growth, both in urban centers and in many agricultural areas. That said, while many of these are assembled in India, they make use of imported components. Another similar example of this would be the photovoltaic (PV) market, with the cells typically imported from China. Our interaction with some of the global players has also revealed that, over the years, the use of silver has fallen in electronic components as a result of thrifting and substitution.

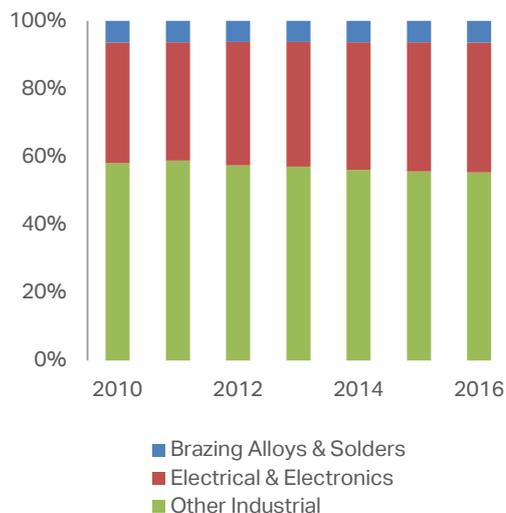
The remaining two key segments of other industrial demand are the housing and power markets. At present, the Indian government is focused on "housing for all" by 2022. As part of its "National Mission for Housing", the government has identified some 2,500 cities and towns where houses can

Breakdown of Other Industrial Demand



Source: Metals Focus

Breakdown of Industrial Demand



Source: Metals Focus

be built. Apart from this, the government is also focusing on electrification for all. As of May 2017, of the 18,000 villages identified by the government as lacking electricity, some 13,000 villages have been electrified. There is also a focus on building new power plants, transmission lines and mobile phone networks. Although these initiatives should benefit Indian silver demand, domestic switch gear and power equipment manufacturers face stiff competition from international suppliers.

Brazing Alloys & Solders

Brazing alloys and solders constitute some 6% of Indian silver industrial demand. As this is largely driven by industrial activity, it is highly sensitive to economic growth. Demand in this area is dominated by two sectors, infrastructure and construction. Within the former, it is used to produce joints with strength, conductivity, and corrosion resistance. The majority of this is used in the construction of bridges, sea links (roads built just offshore) and railways. We anticipate that demand for silver in infrastructure will increase notably in the coming years. For example, Indian Railways has embarked on an ambitious expansion plan and is looking to commission some 16,000km of railway lines by 2020. Apart from this, the government's focus on infrastructure projects, such as the expansion of the general road network and the modernization of ports, will also help demand.

In the construction sector (residential housing, office complexes and factories), silver is used primarily in refrigeration, air conditioning and plumbing. Having said that, over the years, we have silver fabrication undermined as a result of substitution, for example in plumbing where alternatives have become increasingly available.

The Outlook for Industrial Demand

Two industries that we believe could drive silver consumption in India in the future are photovoltaics and defense. Taking each in turn, as mentioned earlier, the government is focused on electrification for all and solar power is an important part of that initiative. India quadrupled its PV capacity from 2.70GW in 2014 to 12.3GW in 2017. By 2022, it is targeting 100GW of installed capacity. The government is also now subsidizing the manufacturing of PV in India (and this process of on-shoring could boost fabrication in other fields too). Furthermore, the Indian government, together with France, has started the International Solar Alliance (ISA). This will focus on promoting and developing solar energy and solar products for countries lying wholly or partially between the Tropic of Cancer and the Tropic of Capricorn.

The "Make in India" is a government initiative designed to incentivize foreign companies to set up manufacturing in India. An important target is the defense industry. Many Indian engineering and defense equipment companies have established joint ventures with overseas companies with the aim of manufacturing in India for domestic and export markets. We believe this could be an important driver for Indian industrial silver demand over the next 5-10 years.

Chapter 7

- Precious metals act as a social security system due to the limited penetration of financial products in rural India.
- In the space of just five years, Indian investment demand grew from 25.7Moz (800t) to 110Moz (3,400t).
- Outside of bar and coins, investment options in silver are limited in India to futures trading.

Investment

Introduction

Since its liberalization in 1991, the Indian economy has experienced a rapid expansion. However, the penetration of banking products and financial services has fallen well short of what might have been expected. This has been exacerbated by a lack of social security system. As a result, physical investment in silver and gold has therefore remained an important savings vehicle, especially in rural India.

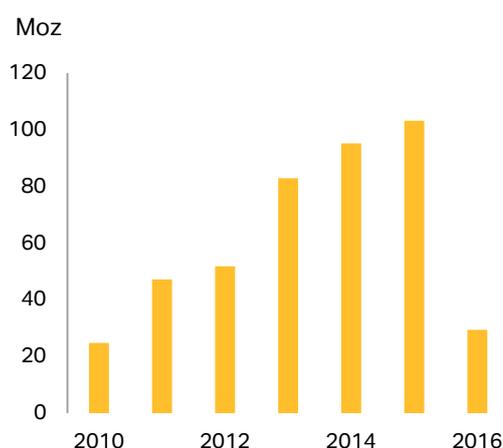
Three other key drivers help explain the popularity of silver as a form of investment. First, physical investment in precious metals can be used as collateral to secure loans from private money lenders. Second, precious metals have offered a means for those with unaccounted money to find a home for their funds. Third, the volatility in silver prices has proved an attractive quality for short-term investors/speculators. Indian silver investment demand has therefore seen a rapid expansion in recent years, although this was brought to an abrupt halt last year when bar and coin demand fell sharply, in part as a result of profit taking.

Market Size and Drivers

From 2010 to 2015, physical investment demand increased sharply, rising from 25.7Moz (800t) in 2010 to in excess of 110Moz (3,400t) in 2015. This was one of the major reasons for Indian silver bullion imports surpassing of 240Moz (7,500t) that year. The jump in investment partly reflected bullish price expectations, which encouraged investors to take advantage of what were then perceived as low silver prices. That said, it might be felt that the increasingly tough stance that the Indian government has taken in the last few years in its fight against unaccounted money would be a negative for silver. However, there has been a much greater focus on gold rather than silver. This scrutiny has therefore benefited silver, which increasingly became an avenue for investors looking for a home for their unaccounted funds. Another important driver was the arbitrage between spot and futures prices (which at times reached 9-12%) that emerged in this period. This arbitrage helped in funding storage and other charges.

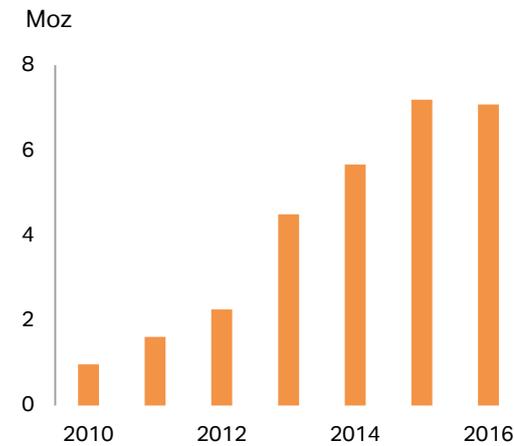
Following uninterrupted growth since the start of this decade, Indian physical bar investment suffered a steep decline in 2016. With a two-thirds drop to 36.5Moz (1,136t), bar and coin sales hit their lowest level in six years. We attribute part of this collapse to the recovery in silver prices in 2016 which saw some investors book profits. It is worth remembering that, within a time frame of just six years, Indian investors had accumulated an extraordinary 460Moz (14,400t) of silver bars and coins. Furthermore, the government's ever tougher clampdown on unaccounted money and increasing vigilance towards high value cash transactions significantly undermined demand from high-net-worth (HNW) investors, who often bought 15kg-30kg bars as a means of "parking" their unaccounted income.

Indian Bar Demand



Source: Metals Focus

Indian Coin Demand



Source: Metals Focus

Within physical investment, bars account for around 90% of the total. Their denomination typically ranges from 100g to 15kg, depending on the type of investor. For a small retail consumer, popular bars are 100g, 500g or a kilobar. However, for large HNW investors, the most popular denomination is the 5kg bar. However, investors who use silver to park their unaccounted funds have often invested in even larger bars weighing 15kg or 30kg.

These bars and coins are available across India and are readily accessible through bullion dealers, jewelers, refiners or even on various online portals. The margins (or making charges) can range between 5%-15%, depending on the size of the bar and the seller. It is quite common that a bar purchased from a branded retailer is more expensive due to the quality and purity guarantee. The majority of bars available in the market are of 999s purity.

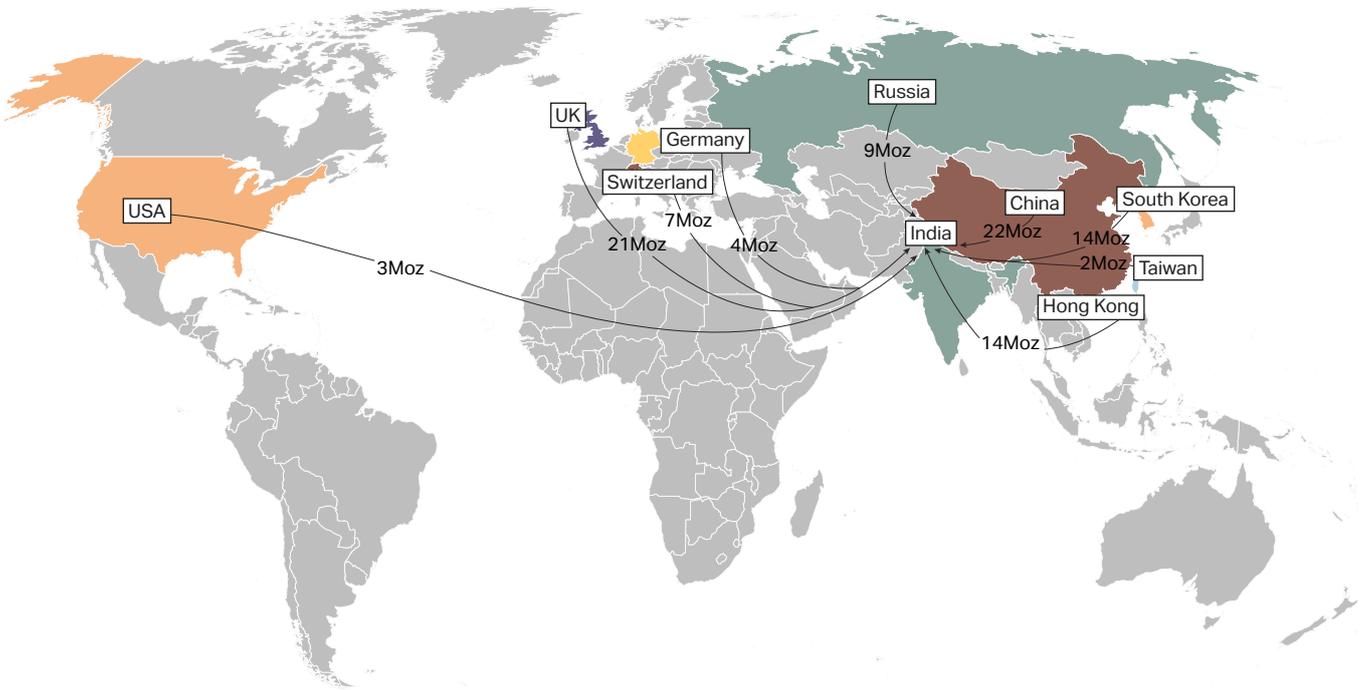
Turning to coins, the size of the market has increased from a paltry 1.0Moz (30t) in 2010 to 7.2Moz (224t) in 2015. The market has been somewhat steadier of late compared to the trend in the bar market, with demand for the former in 2016 only witnessing a small drop to 7.1Moz (220t). Demand for coins in India is driven by three main factors: investment, gifting and religious purposes. With festive and ritual demand the most important segment, it is far more insulated from price fluctuations. The rise in disposable incomes has also helped consumers acquire more coins. The more popular denominations are 25g and 50g.

Futures Market

For gold, the option of buying metal outside of coins and bars is possible through a range of vehicles including four ETPs, digital platforms and sovereign gold bonds. In contrast, the options for silver are restricted to buying the metal on two Indian futures exchanges, the Multi Commodity Exchange (MCX) and the National Commodity Exchange (NCDEX). The former enjoys a dominant market share of more than 95%.

The commodities derivatives market witnessed a steady fall in volumes during 2012-15 due to regulatory changes and a scandal that hit the market. In 2013, the Ministry of Finance introduced the Commodity Transaction Tax of 0.1% on trading of non-agricultural commodities. This move led to an increase in traders' costs, which saw some participants shift to unofficial trading platforms like "Dabba Trading" (otherwise known as bucket shops). Furthermore, in 2013, one of India's largest spot exchanges, NSEL, defaulted on its payment obligations of Rs.56 billion. This was the first such scandal in the long history of the Indian commodities market. Unsurprisingly, this shook investor confidence in the commodities market. As such, daily average futures volumes in the commodities market fell from Rs.500 billion in 2013 to around Rs.200 billion in 2015. The total volume of silver traded on the exchange in 2015 stood at just Rs.8.7 trillion, compared to Rs.43.2 trillion in 2012. However, more recently commodities exchanges, regulators and brokers have worked towards restoring confidence, leading to some improvement in volume.

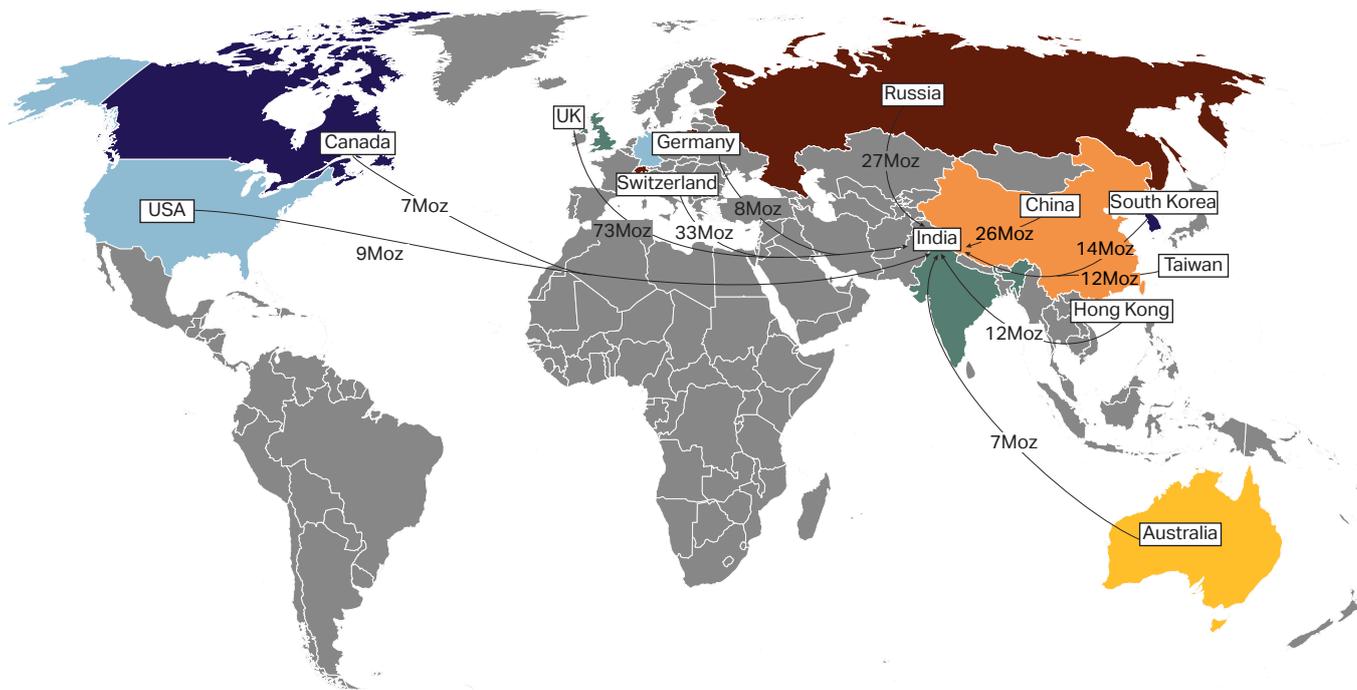
Appendix 1 - Selected India Silver Bullion Imports in 2016



NB: Imports shown account for 93% of total Indian silver bullion imports in 2016

Source: Ministry of Commerce, Metals Focus

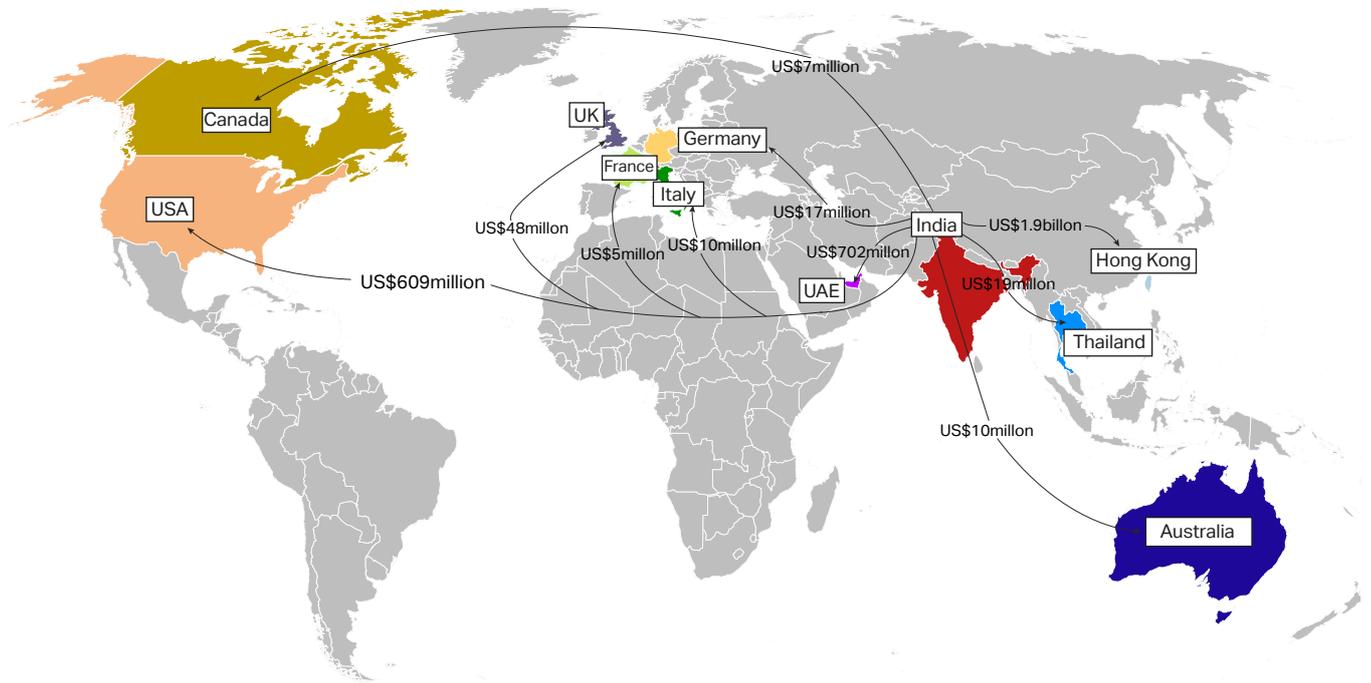
Appendix 2 - Selected India Silver Bullion Imports in 2015 (A Record Year)



NB: Imports shown account for 93% of total Indian silver bullion imports in 2015

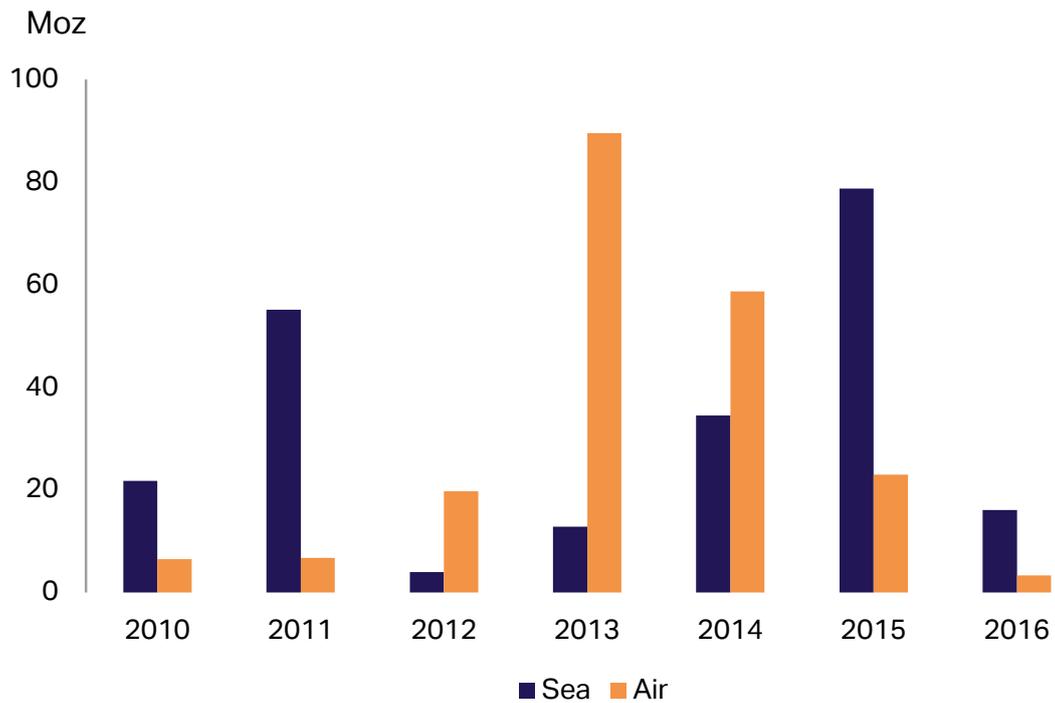
Source: Ministry of Commerce, Metals Focus

Appendix 3 - Selected Indian Silver Jewelry Exports in 2016



Source: Metals Focus, Indian Customs

Appendix 4 - UK Shipments to India (Mode of Transport)



Source: Metals Focus, IHS Markit

Appendix 5: India Silver Supply and Demand

Million ounces	2010	2011	2012	2013	2014	2015	2016
Supply							
Net Silver Imports*	79.3	139.5	65.5	186.0	219.0	254.3	109.8
Recycling	16.4	18.9	21.7	10.8	6.0	3.1	3.4
Mine Supply	5.8	6.5	9.3	10.7	8.4	12.0	14.0
Total Supply	101.5	164.9	96.5	207.5	233.3	269.5	127.3
Demand							
Industrial	45.7	48.5	44.2	40.5	38.0	35.8	36.0
Jewelry	22.5	22.3	22.8	31.8	45.1	56.6	53.9
Silverware	19.0	18.8	17.7	22.6	30.6	37.0	34.1
Investment	24.8	47.2	51.8	82.9	95.2	103.2	29.5
Coins	1.0	1.6	2.3	4.5	5.7	7.2	7.1
Total Demand	112.9	138.3	138.7	182.3	214.6	239.9	160.6
Market Balance	-11.4	26.6	-42.2	25.2	18.7	29.6	-33.4

Source: Metals Focus

*the net sum of bullion imports and the silver in semi-manufactured items

Notes & Definitions

Notes

Throughout the tables, totals may not add up due to independent rounding.

What one country reports as an export to another may be different to the imports reported by the receiving country for a variety of reasons, including conflicting rules of origin, classifications and timing. As a result, similar flows on different maps and/or tables may not be reciprocal due to reporting variations. The tonnage figures shown are fine weights calculated by Metals Focus from the data provided by each origin for exports and by each destination for imports.

Units

Troy ounce (oz)	One troy ounce - 31.103 grams
Ton (t)	One metric tonne - 1,000 kilograms (kg) or 32,151 troy ounces
Dollar (\$)	US dollar unless otherwise stated

Definitions

Fabrication	Captured in the country where the first transformation of silver bullion or grain into semi-finished and/or finished products takes place (such as silver nitrate or silver oxide).
Consumption	The sum of domestic jewelry fabrication plus imports, less exports, adjusted for changes in trade stocks.
Recycling	Covers the recovery of silver from fabricated products, including unused trade stocks. Excludes scrap generated during manufacturing (known as production or process scrap). The recycling is captured in the country where the scrap is generated, which may differ from where it is refined. The one exception to this is ethylene oxide, where the recycling of silver is measured at the point where it is recovered.

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Metals Focus is one of the world's leading precious metals consultancies. We specialize in research into the global gold, silver, platinum and palladium markets, producing regular reports, forecasts, proprietary data and bespoke consultancy.

The quality of Metals Focus' work is underpinned by a combination of top-quality desk-based analysis, coupled with an extensive program of travel to generate 'bottom up' research for our forecasting reports and consultancy services. Our analysts regularly travel to the major markets speaking to contacts throughout the value chain from producers to end-users, to obtain first hand and unique information for our reports.

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