



SPOTLIGHT ON GOLD RECYCLING

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Chapter 1

- Old scrap accounted for a substantial 28% of total gold supply in the period 2010-21.
- While large in scale, scrap is very much the dependent variable and exerts little impact on the international gold price, although it can notably affect local prices.
- Old jewellery accounts for well over 90% of total scrap, with emerging markets in turn accounting for around 70% of that.

Introduction & Summary

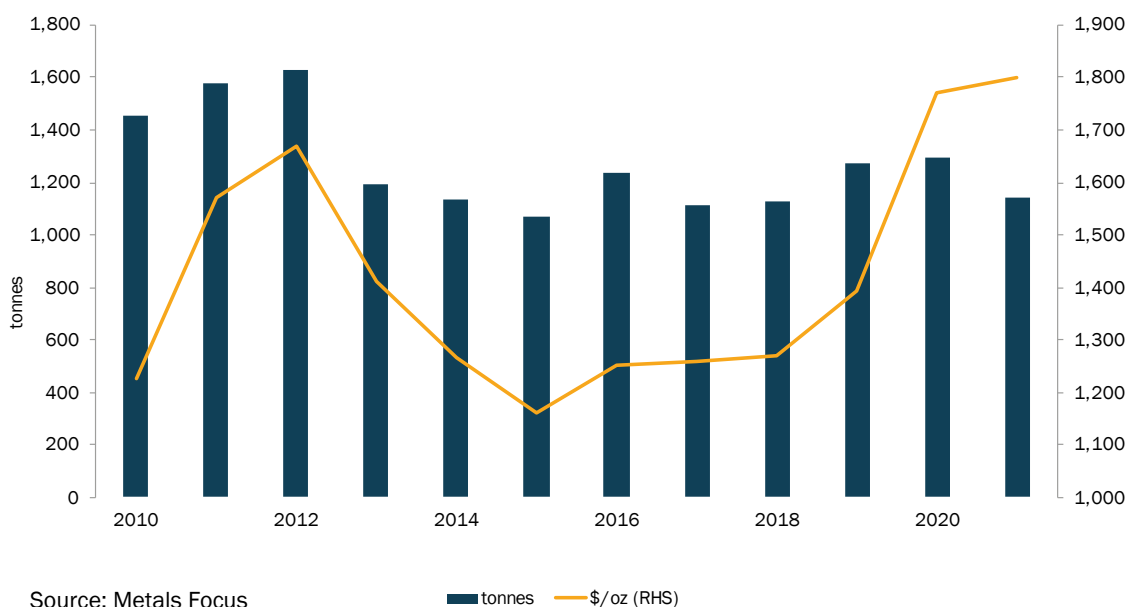
Gold is unusual as a commodity in that it has very little true consumption; the vast bulk of what has been mined sits above ground in various forms with the potential to return to the market.

Disinvestment is one such avenue, but this article covers the often-larger area of recycling (or scrap). This has been done to assess the importance of recycling to the broader bullion market (which necessitates a tight definition of scrap - see chapter 2) and to shine a light on to what can be one of the more opaque areas of the supply/demand balance.

Recycling should have the potential to exert a notable impact on the gold market in that, since 2010, it has accounted for 28% of total gold supply on average. However, analysis points to scrap being very strongly influenced by the gold price and is very much the dependent variable. For scrap to turn the table and actively impact the international gold price, economic distress would have to be severe and global but not trigger a countervailing boom in safe-haven-motivated investment demand. That said, surging scrap can often push local markets to a discount to the world price, although that typically also requires demand within a country at the same time to be very weak.

A key reason why price is important is that the vast majority (well over 90%) of recycling is from jewellery and of this, around 70% comes from the price sensitive jewellery markets of emerging economies. Within this latter group, India and China generate the most recycling unsurprisingly, but there are another five of historical significance (over 60t in one year) – namely Turkey, Iran, Iraq, Egypt and Thailand. That said, the industrialised world used to be more important, contributing 43% of the total during the period 2010-13, when the cash-for-gold business was at its peak.

Gold Recycling and the Gold Price

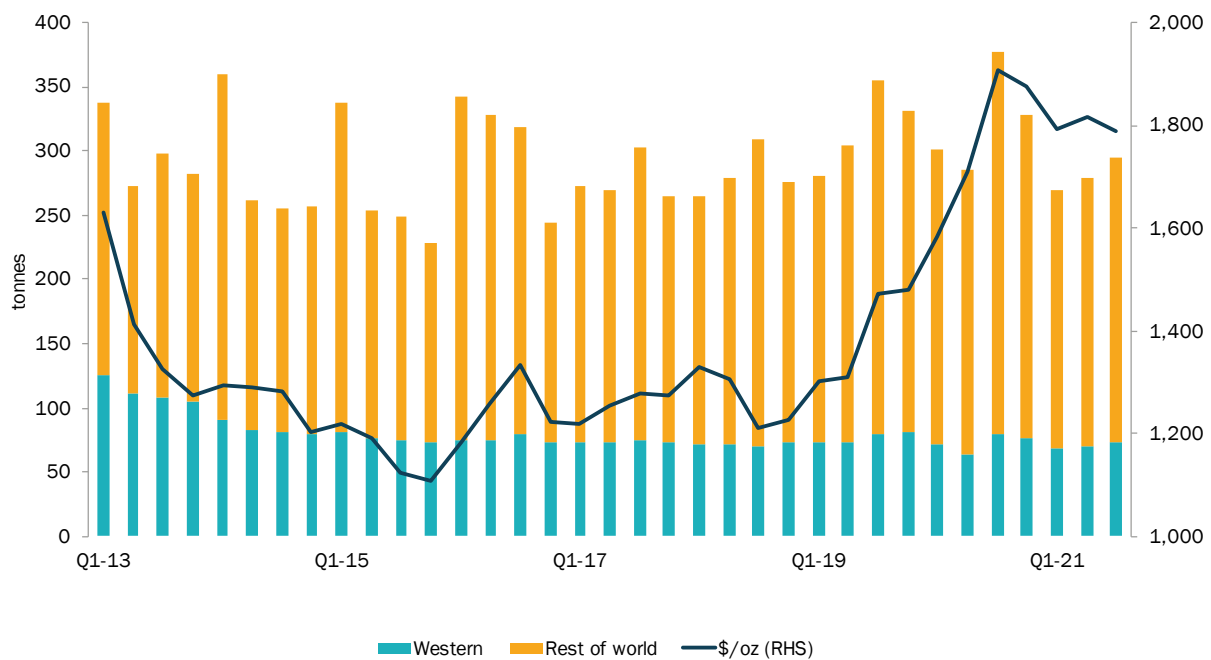




A key determinant of each country's importance is the pool of jewellery, a volume equal to a country's cumulative jewellery consumption less its scrap (globally, this stock is estimated at around 90,000t). Western countries' share of this pool is higher than their share of consumption today due to the bloc's demand being higher relatively in previous decades. However, emerging markets 'fight back' in that their dominant low margin, high carat jewellery has a far greater propensity to be scrapped than high margin, gemset and branded items. The pool derived from other areas of fabrication (such as dental) is more theoretical in nature as little is properly available to the bullion market.

There are two main flows for the recycling of gold. The first concerns high grade – material that is at least 40% gold (often much higher) and overwhelmingly sourced from jewellery. As a relatively simple material to refine, and as finance and security matter, much of this is refined in the country of generation and, if not, the metal is often air freighted. The second concerns low grade – material that might only be 1-2% gold (if not much lower, and is sourced from all areas of fabrication, which means other precious metals may well be present). As security and financing are less of a concern here and the material is much more complex to refine, the recovery of metal from this source occurs in smaller number of countries, many of whom receive their feed as ship-freighted imports.

Recycling: Quarterly Volumes & the Gold Price



Source: Metals Focus

Chapter 2

- Statistics on recycling only refer to old scrap, and not process scrap nor the reformatting of bullion bars.
- Old scrap is dominated by jewellery, with emerging markets accounting for the bulk of these flows.
- Other areas of recycling are small, and lower than their share of fabrication due to recovery being uneconomical or impractical.

Profile of Recycling

Categories of Recycling

It is important to remember that these recycling statistics cover what is frequently termed old scrap, which is just a portion of what a refinery might recycle. This approach has been adopted as it is only old scrap that has the potential to impact the gold price through its effect on the bullion market. This segment and the two other main categories are explained below.

Old Scrap

This is material that has been sourced from a previously fabricated product and is returning to the market as bullion. This covers the entirety of gold that has gone into jewellery, electronics, dentistry, decorative applications, miscellaneous industrial and medical uses, and potentially coins.

It need not be a fully fabricated product though; fabrication is typically measured at the point of first transformation from bullion and so a semi-manufactured product that returns to a refiner for conversion back to bullion will get classified as old scrap. For example, if a jewellery manufacturer producing chains went bankrupt with a stock of alloyed wire and this material was returned to a refiner, the flow would be classified as gold scrap.

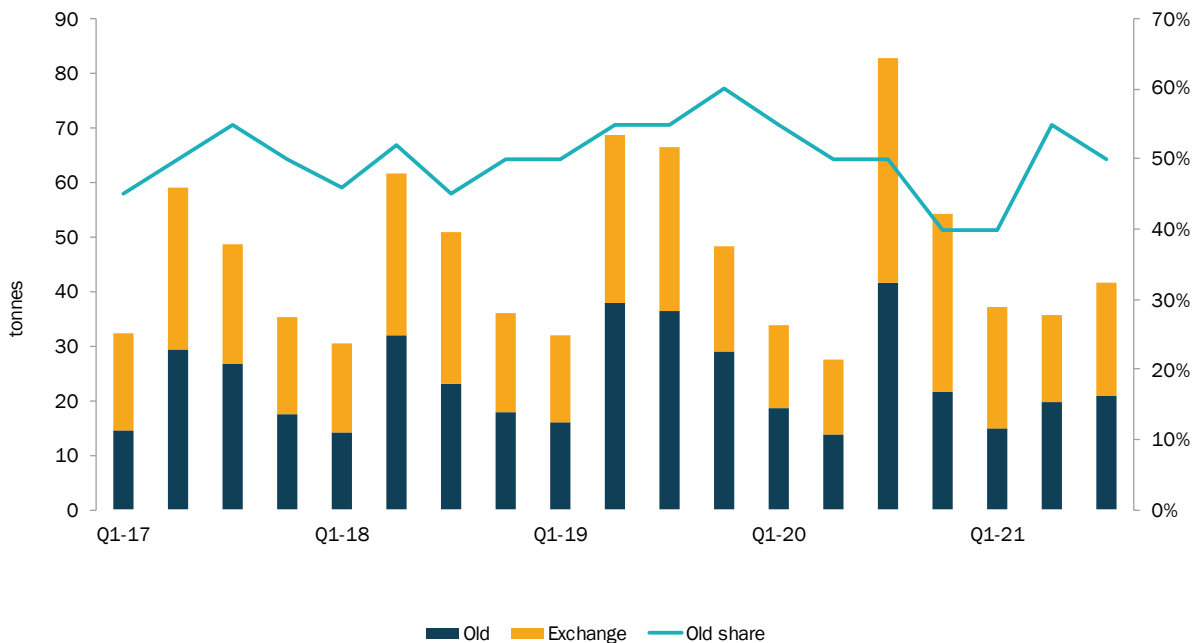
It may be a surprise that coins feature here. However, this is necessary for two reasons. Firstly, if a coin is fabricated but never sold, there has never been investment and so the metal's return to bullion cannot be classified as disinvestment. In practice, this almost never occurs, especially for the regular bullion coins. It has occurred for commemorative coins and medals, however, but even then only rarely (although it is a small, regular component of silver recycling). As a reminder, bars (whether minted or cast) can never become part of scrap as by definition they have remained in bullion form and have never become a fabricated product.

A final issue to cover is the sale of old jewellery for cash versus exchange. In the latter, one piece of gold jewellery is handed over to a retailer in return for a new item with the consumer only paying for the markup on the new piece, plus or minus any difference in the fine weight of gold. For our statistics, we do not include the remelt of old jewellery that has been exchanged for new as the net impact on the bullion market is in theory zero.

Estimating the shares of scrap covered by cash and by exchange is obviously difficult but there is at least a high degree of geographical concentration. These distinctions are material in India, important in the Middle East and notable in China, but rarely of consequence elsewhere.



Indian gold jewellery scrap: Sale for Cash vs Exchange



Source: Metals Focus

Process scrap

Process (or production) scrap covers the material that forms part of the circular flows between a refiner and a fabricator. One of the easiest illustrations of this is a sheet of gold destined to become coins. Its next stage in transformation is for the coin blanks to be stamped out. This understandably will leave a considerable volume of gold in the gaps between the round edges of the coins.

This material will return straight back to the refiner for melting down and so never ends up in a fabricated product, nor ends up as an element of the bullion market. It is for this reason that process scrap is never counted in with the old scrap.

The lines between old and process can easily become blurred. For example, gold coming back from a dental practice could readily include a now unwanted filling (which we would classify as old scrap) as well as process scrap in its myriad forms. This blurring also commonly features in low grade scrap – a drum of this could easily include pre-processed electronic scrap at a purity of say 1% (which should get treated as old scrap), the same as jewellery sweeps (the material recovered from such practices as the filing and polishing of gold jewellery, and which should get classified as process scrap). Thankfully, the volumes involved in these blurred areas are comparatively small and so errors are unlikely to greatly distort statistics.

Bullion re-formatting

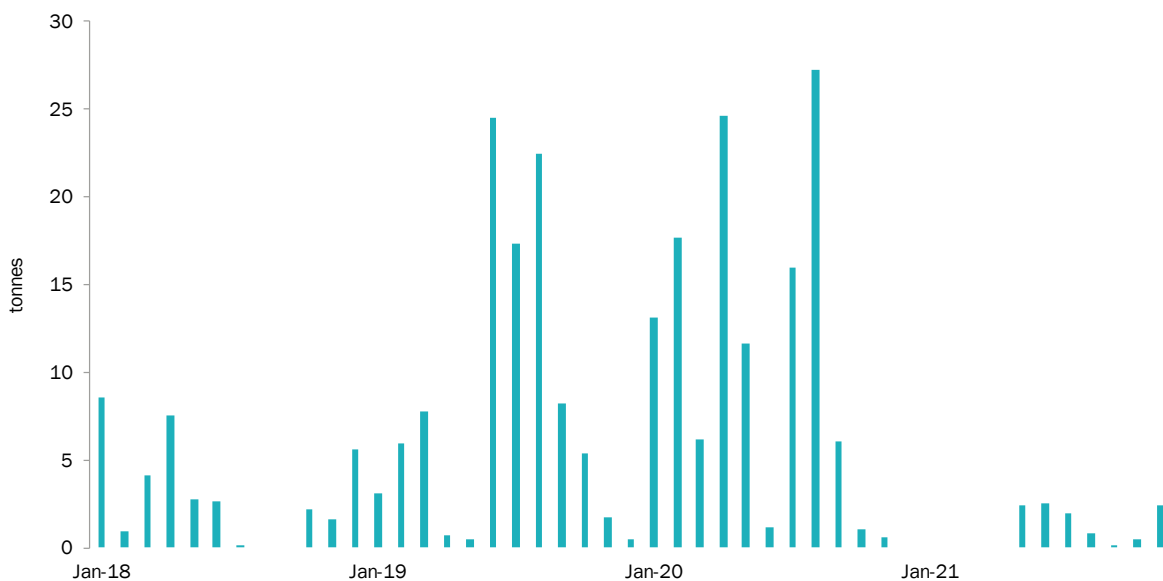
This area covers any transformation of existing forms of bullion into new forms of bullion. This therefore includes such activities as:

- the upgrading of non-good delivery bars into good delivery form or transformation of a bar into a form suitable for delivery onto an exchange
- the re-casting or re-minting of so-called grandfathered bullion into bars now more commonly accepted by investors
- the re-casting or re-minting of bars whose level of damage and consequential harm to the piece's value makes the processing economically worthwhile

A final point to consider is mixed material, a flow frequently seen coming out of Thailand. Outflows from there are often referred to as 'scrap' but in fact are a mix of disinvested bars and old jewellery that has been melted down and at times mixed in with bars that were destined to be re-melted.

Knowing the split in these, at times, substantial flows is therefore important in assessing the nature of this supply, even if classification does not impact the total scale of supply.

Switzerland: gold bullion imports from Thailand



Source: Metals Focus

Composition of Old Scrap

Having established what is being included in these statistics on recycling, there is value in setting out some of the detail behind its composition and how these elements are treated.

Jewellery scrap

This forms the clear majority of old scrap, with well over 90% globally coming from this source. This is particularly true in emerging markets, especially in India. The percentage is much lower in the industrialised world as both its gold jewellery sector is smaller and the importance of the other segments is that much greater.

The vast majority of this jewellery is in turn coming back from individuals, with this supply reaching a refiner via intermediary collectors, the larger of whom may well melt items and supply the refiner with a crude bar. In emerging markets, it is also common for retailers, wholesalers and, at times, fabricators, to return slow selling products to a refiner, typically to clear shelf space or provide the financing for higher margin / faster selling products. It is rare that this occurs in the industrialised world as the margins on items, even at the stage of a wholesaler, usually make this practice uneconomic and would only occur in times of crisis. It was fairly common for example to see some western retailers liquidating old stock during the depths of the COVID-19 crisis in 2020.

Importantly, the figures on jewellery recycling are shown on the basis of where the material is generated, which may not be where the gold is refined. For example, old jewellery coming out of Iraq that is refined in Dubai would be classified as Iraqi scrap and would not be included in figures for the UAE.

Electronic scrap (e-scrap)

This forms the second largest component of total gold recycling but is still small in scale. It may be equal to 10-15% of jewellery in terms of fabrication, but various factors (such as products going to landfill or consumers holding on to old mobile phones) mean the amount of gold coming back from this source is small. Assessing the scale of this contribution is further complicated by key unknowns such as the scale of unofficial recycling in emerging markets and the scale of component re-use when end-of-life products from the industrialised world are shipped to emerging markets. As such, electronic scrap is not thought likely to account for more than 5% of total scrap, with a figure closer to 3% perhaps more likely.

As noted earlier, e-scrap's contribution also varies widely, being lowest in countries such as India and perhaps highest in Germany. Part of the reason for this is that e-scrap is accounted for on a different basis. Volumes are allocated in the country or region where the material is refined – not where it is generated. This is due to the geographical concentration of e-scrap refining (certainly in the formal sector), with Japan and the EU accounting for much of this, although the volumes being recovered in China are also growing fast.

Dental scrap

This forms the next largest area of old scrap, although in scale it is tiny – accounting for easily less than 1% of the total. Volumes globally are small due to the limited pool of above-ground stocks of old fabricated material and recent years' heavy structural fabrication losses. Even in those countries where flows are measurable, dental scrap's contribution would be unlikely to exceed 1% of total scrap.

The countries that we track are those where cumulative historic fabrication is material, which essentially restricts coverage to western Europe, Japan and North America. Recycling here is allocated to the country of origin, which should overlap with the location of refining with the slight exception of western Europe.

Other areas

Of the remaining areas of fabrication (outside of coins), decorative uses are the only one where historic fabrication is material. However, while this sector will yield measurable volumes of process scrap (a spent plating bath for example), there is essentially no old scrap. This is the result of the massive dispersion in weight and ownership of the material, which makes refining impractical and/or uneconomic.

For example, the gold plate on costume jewellery or on a pair of sunglasses will never come back for refining. The only potential exception here is the gold used in jari (a decorative thread in traditional Indian clothing) but the volumes recovered here are best viewed as immaterial. The remaining areas of industrial and medical uses are either too small or the recovery of end-of-life products so low that old scrap is similarly best treated as non-existent.

Another important feature of the above areas of old scrap is their division into two main areas - high grade and low grade. These have different characteristics and sources, and the standard flows of material in these two categories are also different.

High grade

This scrap typically only contains metal (of varying types) and should have a precious metal purity of at least 40%, although most should have a much higher fine metal content. Almost all of this is sourced from old jewellery.

A high proportion of this material gets refined in the country where it is generated (country of origin) as the number of refineries capable of handling this is large, and finance, air transportation and insurance charges make it hard for a refinery in one region to compete with another in a different region.

That said, an open border means refiners in neighbouring countries can more easily compete. This is common for example in the EU, with Italy importing substantial volumes of scrap from the rest of Europe. There are also flows out of countries lacking a refinery. An obvious beneficiary of the latter is Dubai, which – on top of mine output – handles large volumes of recycling from elsewhere in the Middle East, such as Iraq, and from Africa.

Another is Switzerland, which, in addition to processing large volumes of mine production, also imports considerable volumes of scrap. Detailed statistics are only available in the form of bullion imports and so it is difficult to be categorical as to their exact composition. That said, it is highly likely that when volumes peak from non-mining origins, a substantial element will be jewellery scrap, as well as disinvestment. As illustrated in the example of Thailand, these flows can be very volatile.

Low grade

This material tends to divide into two broad groups. The first is the pre-prepared ash derived from such areas as e-scrap, jewellery sweeps, non-auto catalysts or burnt cleaning rags, and this might only have a precious metal content of around 1%, if not lower. The second is (untreated) electronic scrap, which could have a gold content of say 100 ppm. In both, the precious metal content often extends to PGMs and/or silver.

The number of refineries that can process this material is much lower and its transportation is less risky and time sensitive. This means that sea freight is viable and so refineries in one region can compete with another. As a result, it is estimated that the bulk of this material flows from the country of generation to a different one for refining, with Japan being an important destination for such flows.



Chapter 3

- Gold recycling forms a major part of total supply, accounting for 24-27% of the total since 2013.
- Despite its scale, scrap is much more of a price taker and rarely impacts the international price and then only at the margin.
- Strong recycling, in conjunction with weak demand, can easily push local markets to a discount to the world gold price.

Recycling's Contribution to Supply and Importance as a Price Driver

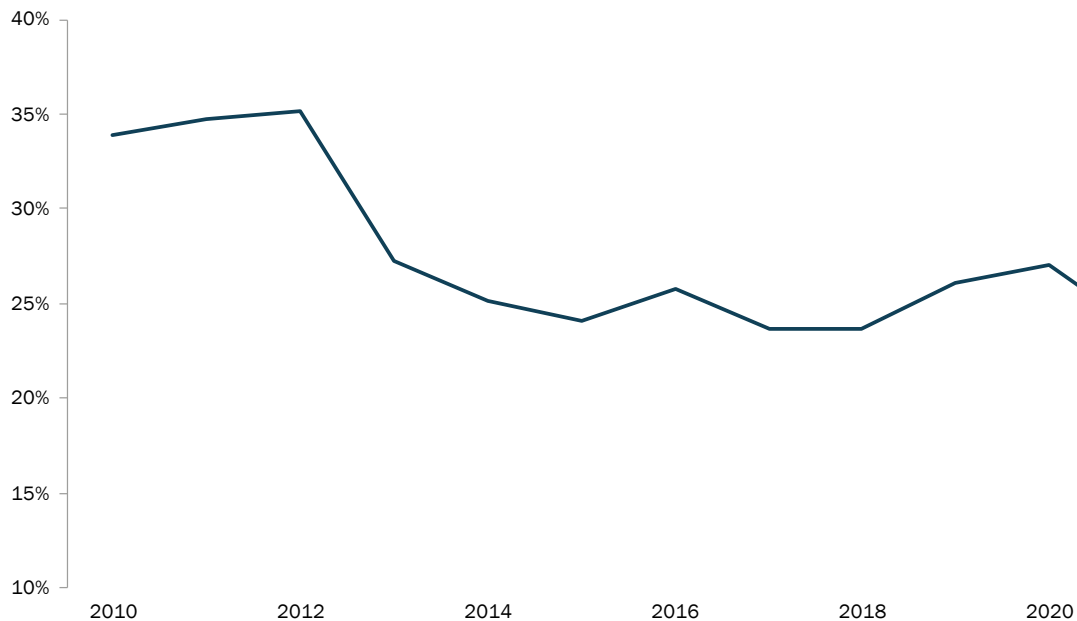
The recycling of gold is a major contributor to supply, averaging 28% of the total in the period 2010-21. This share has fluctuated widely over the last decade or so; on an annual basis, it peaked at just over 35% in 2012, while the lowest share was in 2018 at just under 24%. However, it is worth noting that those early years were anomalous and scrap's share during 2013-21 held in a narrow range of 24-27%. This story of a steady contribution still holds broadly true if one switches to quarterly data, with recycling's share of total supply since the start of 2013 in a relatively narrow range of 20-32%.

There is little seasonality to scrap (at a global level), but the seasonality inherent in mine output means recycling's importance is higher in the first quarter of each year; in the period 2013-21, recycling equalled 38% of mine production in the first quarter on average (and peaked at 48% in quarter 1, 2014).

Its scale and variability therefore mean that recycling has the potential to be a significant driver of the gold price. However, as noted in Chapter 4, the key driver of scrap volumes is the gold price. Recycling therefore is much more likely to be a price taker, rather than a price maker. Even when scrap has responded to other drivers and has become visible to the broader bullion market, it is still best seen as only having a modest impact on the price and quite often only through its impact on investor sentiment.

It is also worth noting that other elements of gold's fundamentals can play a much greater role in shaping price moves (again quite commonly, indirectly through their role in shaping sentiment), such as a surge in Indian bullion imports or news of official sector buying/selling.

Recycling's Share of Total Supply %



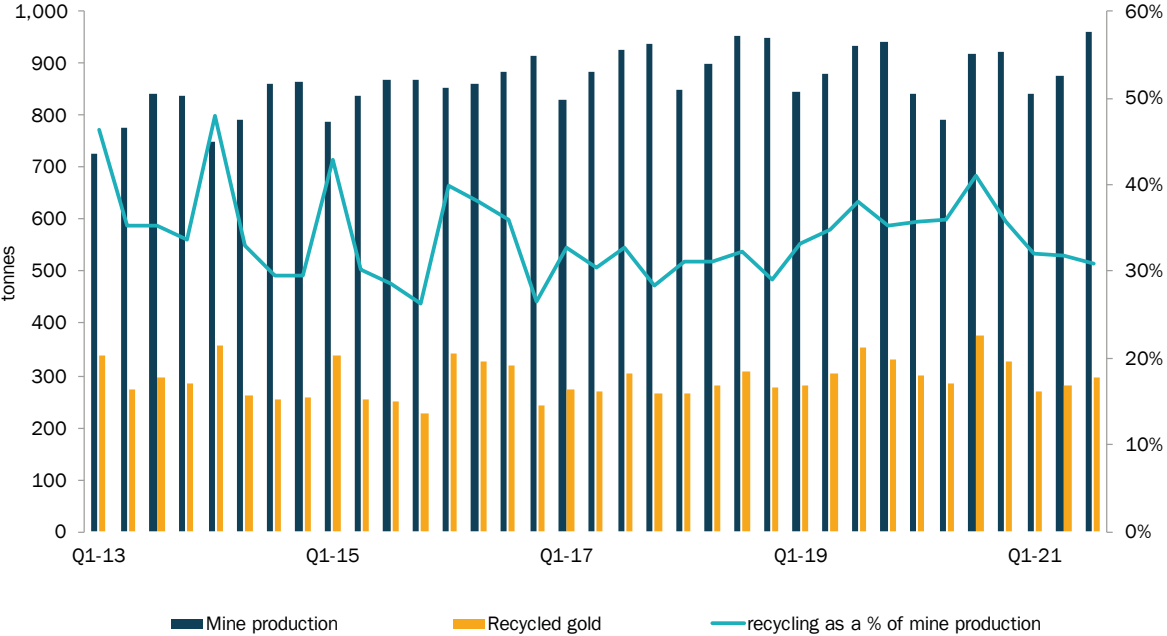
Source: Metals Focus

While recycling may only have a limited impact on the global market, it can contribute more forcefully to local markets, helping drive these at times to discounts to the world price. That said, it is more often that swings in jewellery demand or retail investment that cause these country-level price differentials.

Those times when the Shanghai Gold Exchange has swung to a discount have been at times of weak Chinese demand, rather than burgeoning scrap. Similarly, and by way of illustration, the largest quarter-on-quarter change in Indian recycling was 28t, whereas this stood at 112t for jewellery fabrication. It is also quite common for scrap growth to be comprised of many small, well distributed pockets and so the impact on what could be seen as a national price is muted. For scrap to truly impact differentials, demand needs to be sufficiently weak that it can no longer absorb the supply being generated by recycling. This was very much the case in Egypt when a collapse in fabrication on top of a surge in scrap during the 2016 currency crisis drove the internal market to a discount that peaked at around \$40/oz.



Quarterly Supply: Mine Production vs Recycling



Source: Metals Focus



Chapter 4

- The four largest regions for recycling in the period 2010-21 were East Asia (26% of the global total), the Middle East (23%), Europe (18%) and North America (12%).
- This differs to the division of jewellery consumption, chiefly on account of the West's large (if now depleted) pool of jewellery and Indian consumers' preference for exchange.

Regional Division of Recycling

It is widely known that India and China dominate gold jewellery consumption (in the period 2010-21, these two on average accounted for 56% of each year's global total). However, their share of total recycling is much lower at 19% over the same period, even though, as noted earlier in this report, old jewellery is the dominant source of scrap.

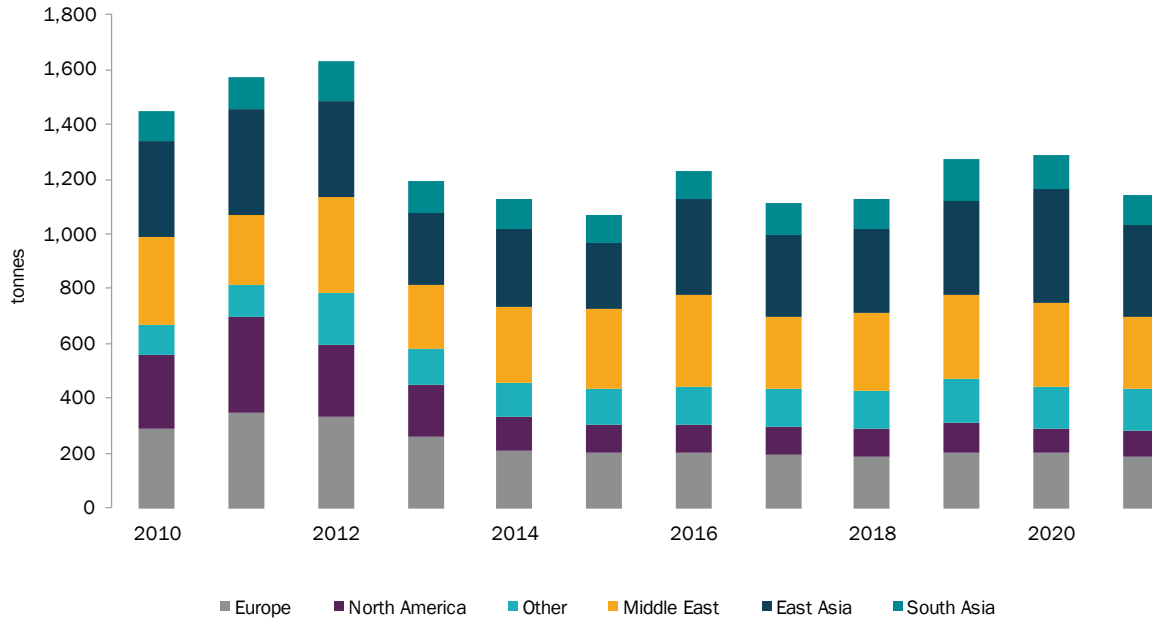
In contrast, western recycling accounted for 30% of the total for 2010-21 in comparison to just 12% on average for its jewellery consumption.

This apparent discrepancy is chiefly due to two factors. Firstly, a long history of sizeable jewellery consumption in Europe and North America means that the pool of product in those regions is proportionately much larger than is the case for jewellery consumption today. Secondly, India's scrap is comparatively low due to the large volume covered by exchange (which is not included in our statistics, see chapter 2 for more detail). There is also a strong cultural reluctance in the country to sell these quasi-investment assets unless absolutely necessary. Lastly, a well-developed gold loan sector means that it is easy to pledge jewellery for loans in India and this is the preferred route to tide a household through lean times.

The reader will have noticed that this anomaly is less pronounced in more recent years (western scrap accounted for 25% of the global total during 2017-21). This reflects the extent to which the boom in western recycling that occurred in 2010-12 drew out a high share of near-market stocks (those pieces that a household is happy to sell). Historically high consumption and a consequentially large pool of mostly 18-carat product also largely explains why, within the West, Italy is so important, being the largest source in Europe and on occasions exceeding the US.



Regional scrap supply



Source: Metals Focus

The Middle East also punches above its weight for recycling (in 2010-21, it accounted for 23% of global recycling compared to just 14% of jewellery consumption). Unlike the West, this is not a pool of product story, but more a reflection of the various crises that have undermined economies and thus boosted scrap (such as currency devaluation in Egypt and Turkey and sanctions against Iran).

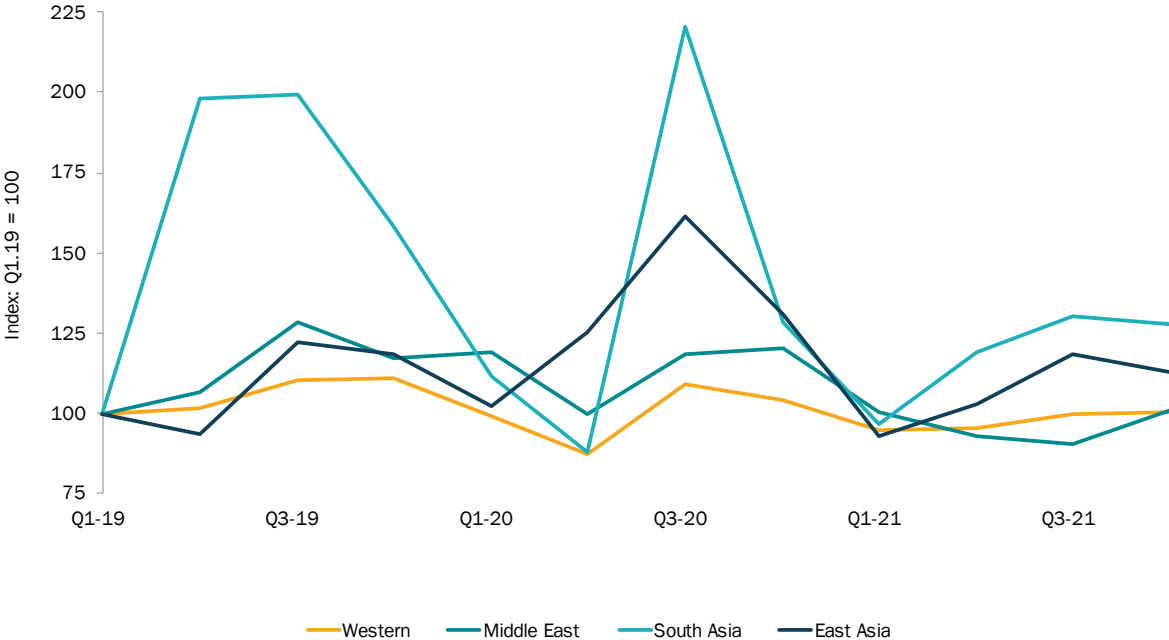
On the subject of crises, this report would not be complete without mention of the regional impact of COVID-19. Of note here was the economic damage done in Thailand, which in conjunction with a long tradition of two-way trading in jewellery made the country the fourth largest supplier of scrap in 2020. There were also marked differences between countries according to whether the boost from economic damage was sufficient to counter the negative of disrupted logistics.

In the West for example, consumer reluctance to visit scrap collectors and a slump in the need to visit pawnbrokers due to government support meant that US scrap in 2020 fell by 14%, whereas in Europe it rose by 2%.

A final point to consider in the distribution of scrap concerns the scale of each country’s jewellery fabrication. As noted earlier, the vast majority of recycling comes from individuals and it is typically only in a crisis that sizable volumes are received from fabricators. However, that still means those countries that are proportionately more important in terms of fabrication such as Thailand and Italy can move up the recycling rankings should jewellery producers be obliged to melt stocks.



Regional scrap volatility comparison



Source: Metals Focus

Chapter 5

- Gold price moves in local currency terms dominate changes in recycling, but the link is unstable due to factors such as expectations.
- The pool of product is also important in determining the scale of recycling in each country.
- Other factors include economic distress, margin structure, investor sentiment and, in some countries, seasonality.

Drivers Impacting Recycling

As noted earlier, the chief driver of changes in the volume of recycling is the gold price, but this factor is much more nuanced than might be first thought. In addition, there are several other factors that can significantly impact volumes. These are set out below.

The gold price

This is undoubtedly the most important factor in determining changes in recycling volumes. As shown in the accompanying charts, this is most apparent in emerging markets, especially on a short-term basis. That said, it was for example no coincidence that the run-up in western scrap during 2010-12 occurred in tandem with gold surging to a then all-time high of \$1,921.

The link between the price and recycling is, however, volatile. One key factor behind that is price thresholds and their psychological impact. This can prove particularly strong if the price sets a new record (such as last year's breach of \$2,000) and/or this breach of a price threshold is widely reported by the press.

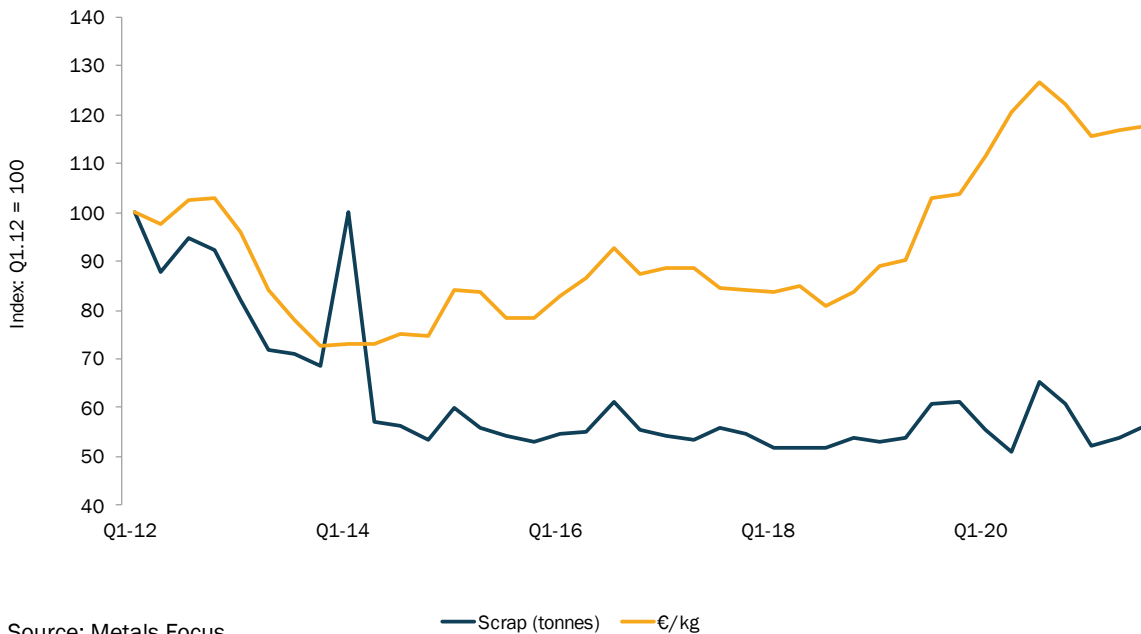
Another factor that can make the response of scrap to the price non-linear is expectations. If, for example, there is a widespread belief that the price will continue to rise, recycling can initially weaken as consumers hold off from selling back. Similarly, if there is a general view that prices could fall substantially in the short to medium-term, there can be a rush to sell into a falling market to secure decent returns before they weaken further. This expectational factor is greatest where knowledge of the gold price is strong, and this is commonly cited across much of the Middle East and South Asia as a driver of unusual responses in scrap to immediate price moves.

It is important to note that local prices are key here – few consumers outside of the US will pay attention to the US\$ price of gold and it is the price at which you can sell in your own country that is critical. Gold crossing the Rs 4,000/g threshold in India or €50/g in the Eurozone last April, for example, generated press attention and consumer interest, outside of any moves in the US\$ price.

Currency crises can be of particular importance and it is no surprise that, for example, Egyptian scrap shot up from 6t in Q4.15 to 27t in Q2.16 and then remained elevated as the Egyptian pound saw an initial devaluation in March 2016 and then a free float slump in November that year. Similar performances were also seen in Iran (the rial almost halved intra-year in 2020) and more recently in Turkey as the lira has slumped, causing scrap in the fourth quarter of 2021 to almost triple q/q.



Europe: Gold Scrap vs Prices

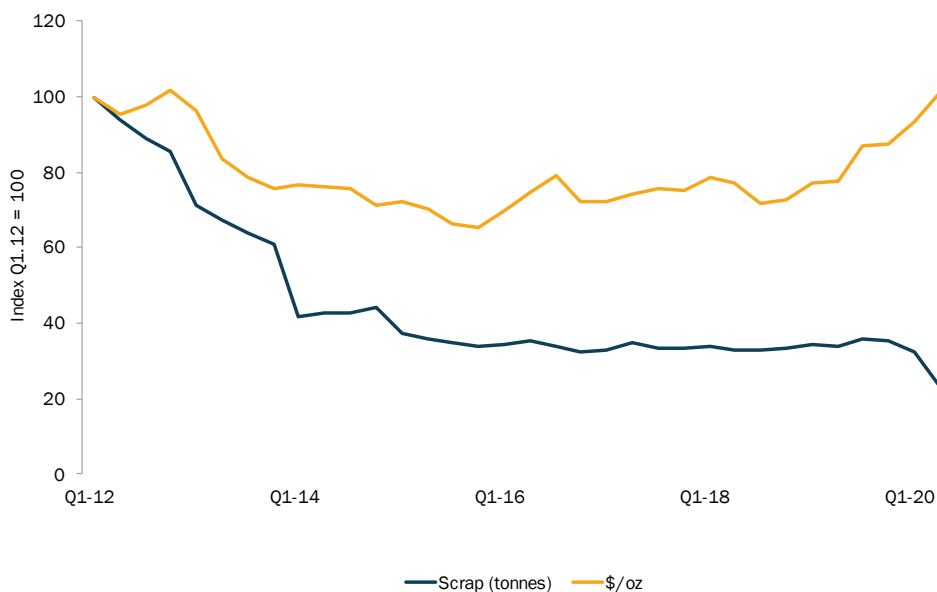


Source: Metals Focus

A simple link between the price and recycling also presupposes consumer knowledge of the price, but this is often low in the West. Instead, much of the transmission mechanism for this during the peak years was the heavy advertising by scrap collectors, which they could afford thanks to the healthy margins available. This in turn stemmed from a high gold price and limited knowledge of both the gold price and the fine gold content of items a consumer might own.

A final point that can weaken the link between the price and recycling is the issue of exchange in India. It is quite common there to see a higher gold price boost exchange as the lower affordability of the gold jewellery obliges more consumers to fund the purchase of new jewellery through the sale of old items. Any gold traded in this way does not count in these statistics, as that only includes jewellery sold back for cash.

US: Gold Scrap vs Prices



Source: Metals Focus



Economic distress

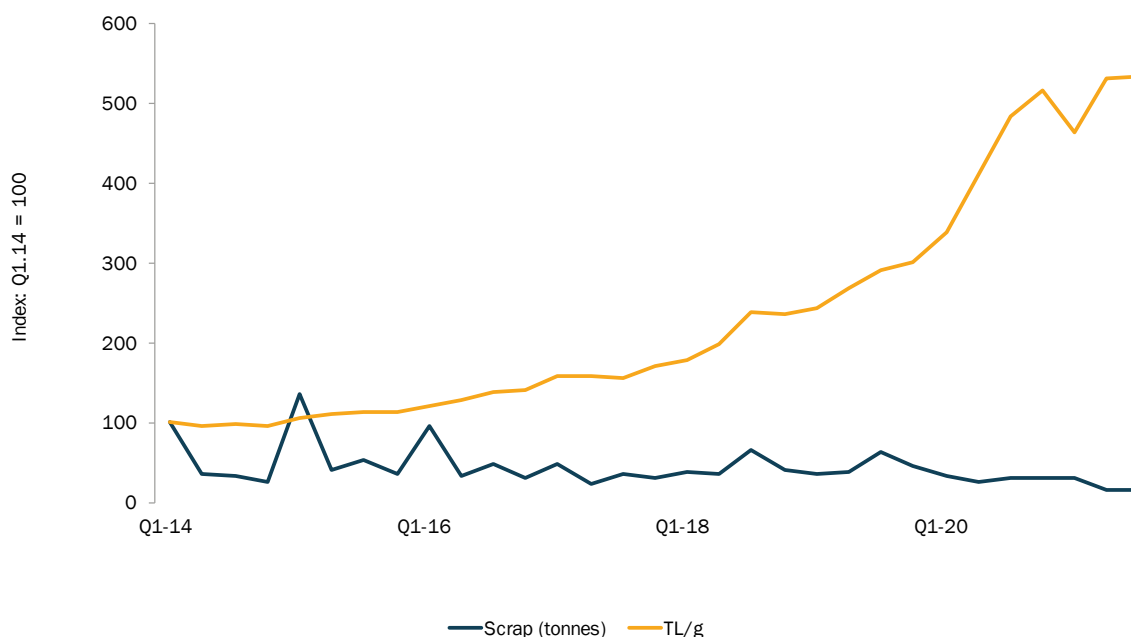
It is perfectly possible for scrap to boom with a flat gold price should this occur in conjunction with an economic crisis, and equally recycling could prove surprisingly quiet in the face of a rally, should a local economy start to perform well. For instance, the damage to rural India’s economy from the mid-2021 COVID-19 wave did much to boost that country’s scrap.

On the flip side, the surprising strength of the US economy in quarter 3 of 2021 and the government support given to lower income groups meant a drop in recycling, reflected in a very quiet period for that country’s pawnbrokers. Economic distress can also hit fabricators, as well as consumers, with some Italian jewellery manufacturers for example often being obliged to melt during the depths of the 2020 COVID-19 crisis.

Consumer/investor sentiment

It is fairly common that countries suffering political turmoil see low levels of scrap, even in times of high prices, should uncertainty make consumers reluctant to sell safe-haven assets. This is most apparent in those countries whose markets are dominated by low margin, high carat jewellery that is purchased with some form of investment motive. A good example is Turkey in quarter three of 2021; the price may have reached a record average high of TL493/g, but a desire to hold on to gold meant scrap was roughly half the levels seen in quarter one, 2021. This stance has since been vindicated as political damage to the lira has seen the local price approach TL1,000/g.

Turkey: Gold Scrap vs Prices

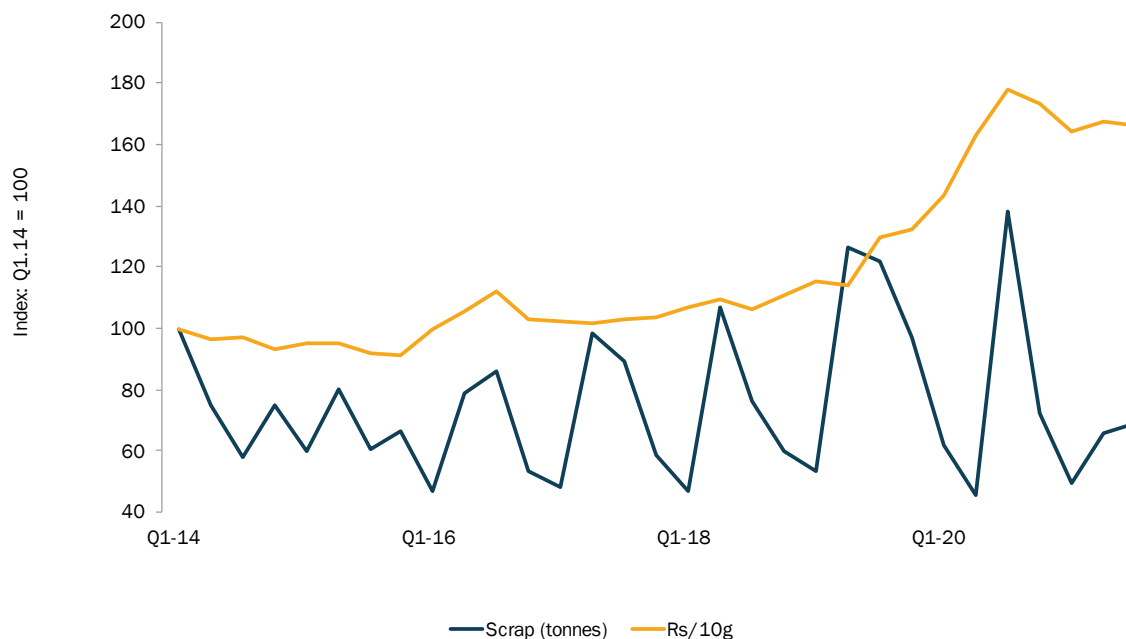


Source: Metals Focus

Seasonality

As noted earlier, seasonality for recycling is generally weak. There is, for example, no discernible pattern of people selling old jewellery to fund periods of high expenditure, such as the run-up to Diwali or Christmas.

India: Gold Scrap vs Prices



Source: Metals Focus

One obvious exception here is China, although this relates to the behaviour of the trade and not consumers. In that country, it is common to see retailers/wholesalers liquidate slow selling and low margin jewellery in the run-up to peak consumption periods (most obviously Chinese New Year) and/or the key jewellery shows.

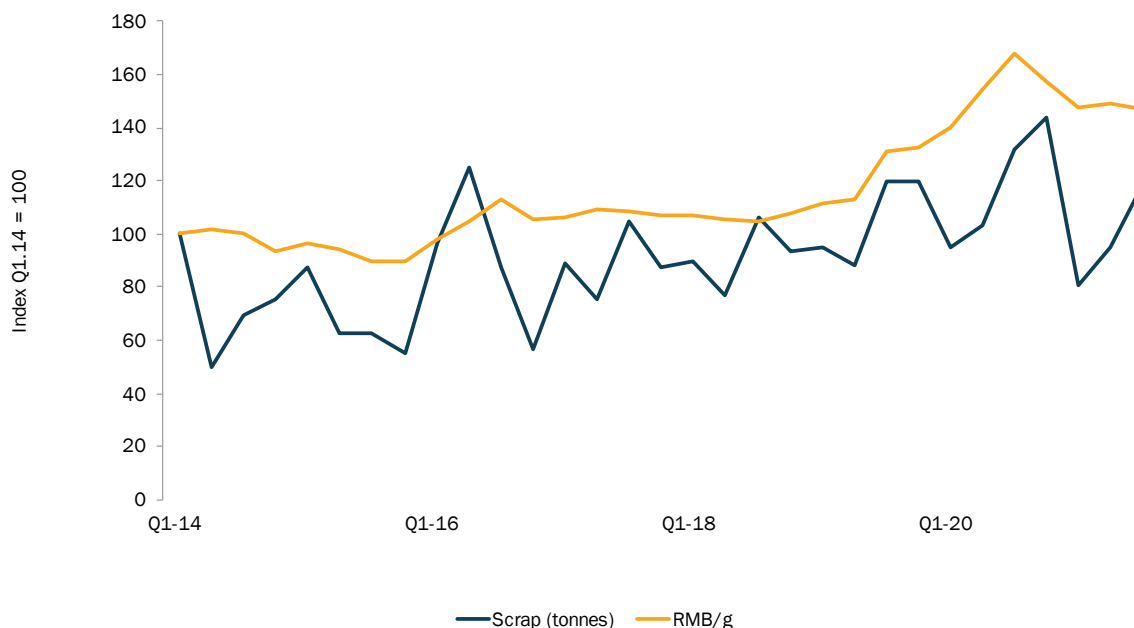
Margin structure

One reason that the above-noted flow of old jewellery in China exists is that its jewellery market is evolving at a fairly rapid pace from lower margin, simple designs to higher margin more complex products. In a sense, this is mirroring post-war structural change in Western markets, although the Chinese pieces are mostly staying as 24-carat and not shifting to western norms of 18-carat or lower. Each year therefore tends to see packets of low margin items being melted down and, with the capital freed up, their replacement with higher margin items.

It will be interesting to see how this shift affects the propensity to scrap, as the rule of thumb is that the higher the initial margin the lower the likelihood that an item will get sold back for its gold content. This is due to high margin pieces needing a much greater rally in the gold price for the consumer to recoup the lost margin. This helps explain why low margin simple heavy pieces in 21-, 22- and 24-carat gold are much more likely to be sold back than lower carat, high margin gemset designs.

In some ways, the internet has lowered the propensity to scrap as it has made the selling of old jewellery to another consumer a more viable option, thereby enabling the original owner to retain a portion of the piece's added value. The growth in sales of the high-end branded watch and jewellery sector is also lowering the propensity to scrap; it is hard to imagine a world in which it is more remunerative to liberate the gold in a Rolex watch than sell the item intact.

China: Gold Scrap vs Prices



Source: Metals Focus

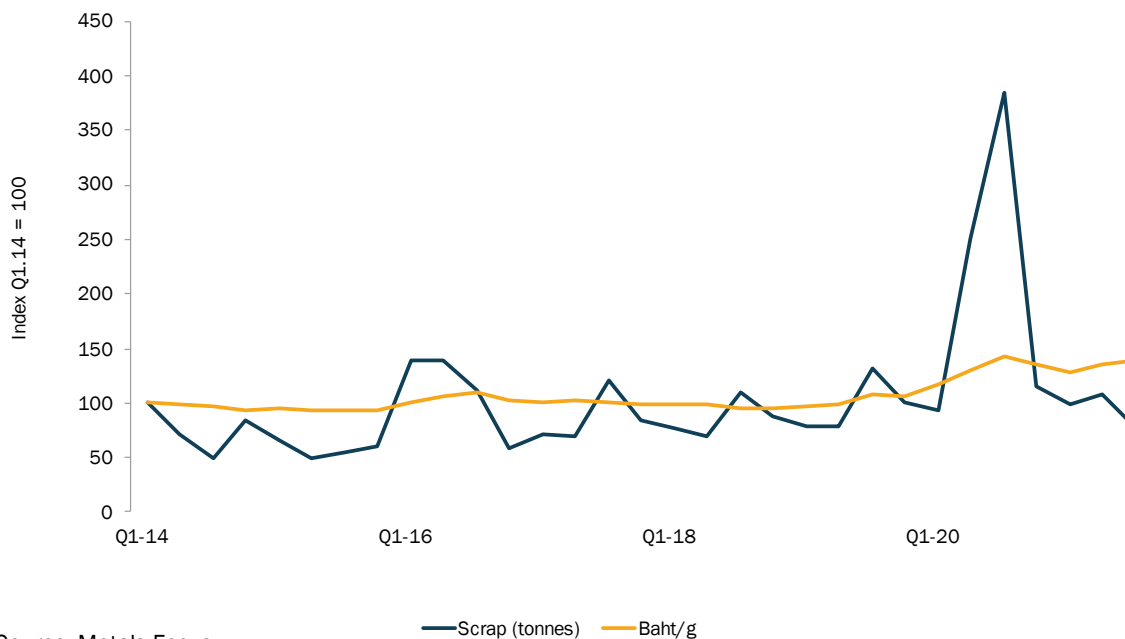
Pool of product

Another background feature to consider on top of margin is the scale of the pool of product; it is all too easy to forget that recycled gold is sourced from cumulative historic consumption and not this year's demand. This means that a country that has been wealthy for a long time and has a long-standing tradition of buying gold jewellery will have a much larger pool of product compared to a newly wealthy country with only recent access to these items. This helps explain why Western scrap is proportionately larger than its share of consumption today, and why China's is low (the latter is estimated to have accounted for 33% of global jewellery consumption in 2021 but only 14% of scrap).

This is reinforced by the issue of fashion. Western or perhaps more appropriately modern jewellery contains an element of fashion that will date over time and so when deemed hopelessly unfashionable it is at risk of being melted down. Such a risk is much less apparent for a simple bangle in Turkey, for example.

The pool of product is also relevant to the other minor areas of recycling, namely electronics and dentistry. For both, there is implicit growth in the amount of metal available for recycling as the scale of fabrication demand each year exceeds the metal being recovered, and by a considerable margin in the case of electronics. This in theory has the potential to bring about long-term growth in recycling, although until other factors change (such as consumers becoming readier to recycle obsolescent mobile phones), actual gains may prove modest.

Thailand: Gold Scrap vs Price



Source: Metals Focus

Non-jewellery drivers

Brief mention is noteworthy for those factors that only apply to the non-jewellery areas of fabrication. In the context of electronic scrap, the most obvious is legislation on recycling and the extent to which this is enforced and/or made easy by governments. For instance, if shipments of end-of-life electronics were more effectively curtailed, e-scrap would rise as recovery rates at refineries in the industrialised world are higher than at informal operations in emerging markets and as component re-use in the latter would fall. For dental uses, one of the key themes is whether burials or cremations are chosen, since burials mean the gold is effectively never recovered. As a result, a shift in favour of cremations (which has been seen in some countries) will tend to boost volumes in this tiny niche.

Logistics

If this report had appeared two years ago, this section might well not have been written as it would have been hard to conceive of how logistical problems could impact scrap volumes. However, this very much proved the case under the various lockdowns that materialised across the globe as the COVID-19 pandemic took hold.

This took various forms, starting with what consumers could do. At its simplest, if all businesses that took old jewellery from consumers were closed, there is no possibility of a consumer selling old jewellery and so scrap plummets. Even if open, restrictions on travel, both international and domestic, also impinged on recycling volumes. This was often made worse by consumers' reactions to the pandemic – in those countries where they feared the disease and/or had no need to sell, scrap was that much weaker.

There was also the layer of logistical problems affecting collectors. This was very apparent in the US for example, largely because the two main hubs for the collection industry, New York and Los Angeles, were among the first and hardest hit areas. Later and ongoing problems with air-freight due to cancelled flights and with road transport, due to a shortage of truck drivers, further hampered recycling across much of the world.

Chapter 6

- Cumulative jewellery demand comes to over 90,000t, of which most has the potential to return to the bullion market.
- Cumulative electronics demand is around 10,000t but the true stock is lower due to factors such as product going to landfill.
- Cumulative offtake for decorative and dental uses each amount to c. 5,000t but little of this can be counted as a true stock.
- The pool of product is expected to continue growing each year.

Pool of Products

Gold is unique as a commodity in that true consumption is trivial and so the vast bulk of historic mine production remains above ground in various forms with the potential to be sold back into the market. Various estimates have been published over the years to quantify this stock and, having reviewed what data is available, it would not be surprising if this stood at around 200,000 tonnes.

In the context of recycling, we need just concern ourselves with fabricated products, which only form a portion of this total. Of this, jewellery is by some margin the largest at over 90,000t. This implies that a little over 1% of the jewellery pool returns to the market each year as scrap. Electronics stands at around 10,000t but we would argue that this is best viewed as a figure representing cumulative fabrication rather than a stock, since so little is properly available to the market and a good portion is in landfill and therefore cannot be classified literally as an above-ground stock.

The same applies to dental uses, whose cumulative fabrication is again of the order of 5,000t. That just leaves decorative and other industrial applications, whose cumulative historic fabrication would be similar to dental, although essentially none of this is available to the bullion market and so it is even harder to call this a stock.

With the jewellery figure, we also need to acknowledge that a slice of the total is effectively unobtainable, being held in such forms as historic artefacts or high margin branded jewellery and watches. The stock figure also fails to take into account manufacturing losses, which trim stocks by around 2%, if not more. Establishing stocks' true scale and composition however has not been attempted, chiefly due to the difficulties involved in doing so and to the fact that the big picture would not change at all; above-ground stocks of jewellery are equal to at least 20 years of mine production, and it is not that relevant if the figure is 25 or 30 years.

That said, there is perhaps something to be gleaned from country-level analysis. Data on country-level stocks of jewellery has never been published but it seems that India has the largest stock, closely followed by the US and China. Collectively, Europe and perhaps the Middle East would have stocks somewhat larger than those latter two countries.

This could matter, as we have already seen how western scrap has retreated from its 2010-12 highs, with the depletion of near-market stocks being cited as the main driver. We should not jump to the conclusion however that other regions will copy the West in terms of low near-market volumes.

Firstly, per capita holdings in the West are far higher than in India and even more so China.

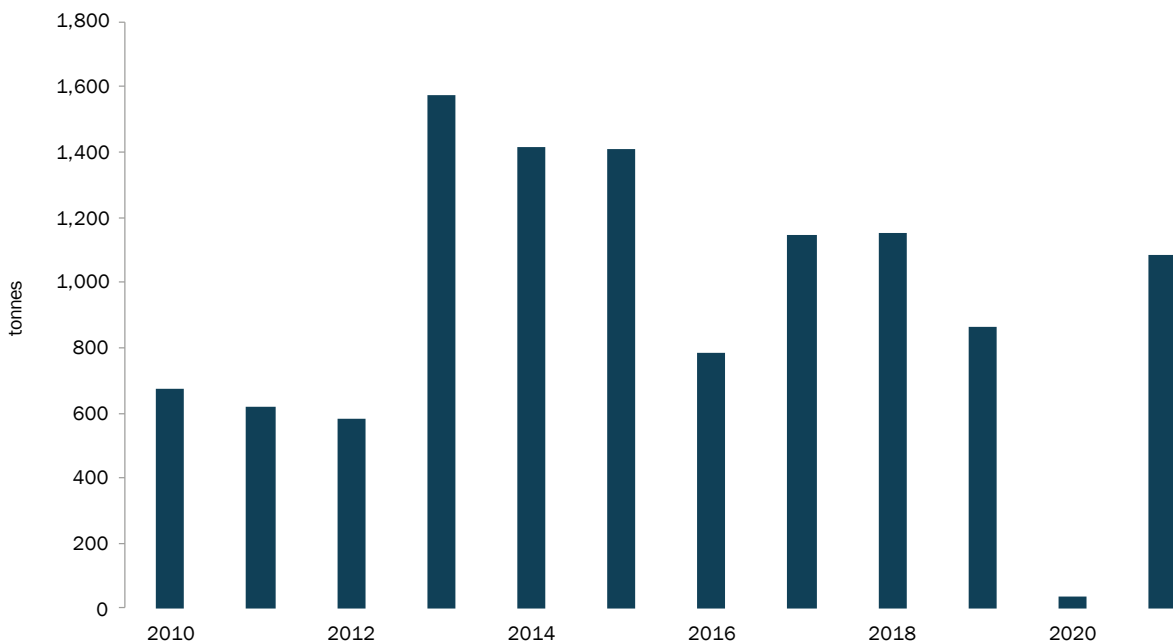
Secondly, stocks outside of the West are dominated by low margin high carat items and their ability to come back to the market is far greater than is the case for the lower carat, higher margin pieces in the industrialised world. It is true that some markets (most obviously China) have started to shift towards higher margin pieces, but this is recent and so such items' share of jewellery stocks is low.



Thirdly, there is considerable disagreement among research contacts over the scale of remaining near-market stocks in the industrialised world. Some may argue that they are indeed low, while others believe that they remain substantial and are just waiting for the right price, true economic distress to emerge and for more recently bought pieces to once again become unfashionable.

Lastly, one must not forget that the stock of jewellery is growing each year – growing by around 1,000t annually over the last decade. Growth will remain similar as long as fabrication is greater than recycling, and it is of note that this even occurred in 2020. As a result, there is clear scope for scrap to continue supplying around a quarter of total supply, with the benefit of this growing pool countering the ongoing but modest change in its structure.

Growth in Above-Ground Stock of Jewellery



Source: Metals Focus

