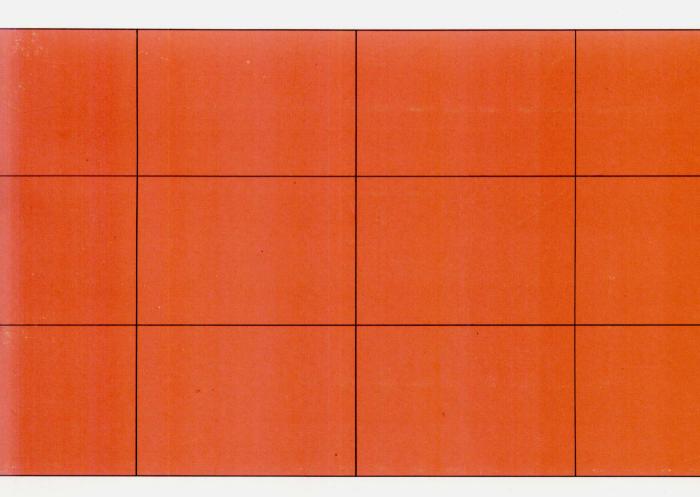
Gold Bullion Market in Thailand: A Case for Liberalisation



Thailand Development Research Institute Foundation

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Introduction

Gold ornaments have always been a part of the Thai tradition. Approximately 35 billion baht (US\$ 1.4 billion) is spent on gold ornament each year. The primary motives for gold holdings have been savings and security. Gold ornaments are a rather liquid asset in Thailand as they can be easily exchanged for cash at a reasonable resale value. With the added utility of adornment, gold jewelleries have been a popular source of savings.

The size of the ornamental gold market in Thailand is estimated roughly at 30 to 40 billion baht per annum. Very little is known of this industry, however, as a large part of it operates through illegal and informal channels. Gold smuggling is rampant. Anecdotal evidence suggests that smuggled gold represents approximately 70-75 per cent of the total annual gold import into the Kingdom. As gold is acquired through illicit channels, its fabrication is obscure. At the retail level, there is hardly any data with regard to sales, costs and profits. Most retail gold stores in Thailand are registered as "antique (or second hand)stores" so that smuggled bullion can be disguise with recycled gold. Thus, little is known of the fabrication process. Moreover, about 80 per cent of gold stores filed "small business" status for tax purpose. With such a a status, the VAT and income tax collections are applied only on "estimated" income and sales figures. As there is not a clear method of estimation, the process is subject to arbitrariness and prone to corruption. Consequently, figures from the revenues department reveal that the industry is overwhelmingly undertaxed as we shall see later on.

The strive to remain nontransparent and stay aloof from the tax authorities has deprived the gold industry of modern technology and sophisticate marketing techniques and the government of billions of baht of tax revenues each year. In the last few years (1988 - 1995) this shady industry managed to sustain a healthy rate of growth each year riding on the waves of the country's rapid economic expansion. But now those heydays are over. With the economy teetering on the brink of a recession, gold retailers have to

look for vast opportunities in overseas market. The industry is now at a crossroad; it suddenly finds itself needing of becoming competitive internationally. After many years spent evading tax by remaining informal and obscure, the gold Thai gold industry is in serious need of modern designing, fabricating and marketing techniques. Yet, producers who are used to not charging VAT tax and paying minimal corporate tax find it hard to charge buyers the 7% VAT and to pay 30% corporate tax. At this junction, it is necessary for the government to take necessary steps to stop smuggling and to crack down on tax evasion as well as re-examine the existing tax regime in order to divert bullion trades from the illicit channel.

The objective of this paper is to investigate ways in which the illegal activities can be abated or eliminated and to propose steps or measures that must be taken. This requires an understanding of the structure and conduct of this rather opaque industry as well as the laws and regulations governing it.

1. The nature of the gold market in Thailand

The gold market can be divided in to the bullion gold market and the ornamental gold market. Thailand is not a producer of gold and thus imports her gold entirely. The imported or smuggled bullion gold is channelled almost entirely into the jewellery industry. With the prohibitive 7 per cent value-added tax applied to bullion gold transactions and the current law barring individuals from purchasing bullion gold, an investment market for bullion gold has not yet been developed in Thailand. Given that bullion gold is subject to the same VAT as does ornamental gold, investment in gold ornaments -- with the added utility from adornment -- . is preferred.

There is a clear distinction between gold ornaments sold in the investmentoriented market and those sold in the consumption-oriented market. In the former market the gold ornaments are usually mass-produced to minimize the cost of fabrication1

¹ The cost of fabrication is estimated at only 4-5% of the price of this type of gold ornaments.

Consequently, the selection of styles of gold jewellery in this market is often limited, which makes the gold products in this market somewhat homogenous. Gold pieces in the investment-oriented market also come in small denominations to accommodate small investors2. Resale or exchange of gold pieces in this market is as simple as exchanging foreign currencies. The selling and buying prices are quoted daily and posted in front of every retail gold store. Thus, gold ornaments in the investment-oriented represent a rather liquid asset.

The gold jewellery in the consumption market is markedly different from those in the investment counterpart. In such a market, products display an expansive range of styles and designs with sophisticated and intricate craftsmanship such as those marketed by Master Gold or Prima Gold. The purity of gold in this market is at 99.5 and up. The price of these gold ornaments may range anywhere from 8,000 to 10,000 baht per baht weight, while those in Yaowarat area would fluctuate around 4500-5500 baht. Also, because of the high gold content, the minimum weight of the pieces is normally 2-baht weight, fetching a price of approximately 16,000 baht.

Undoubtedly, this type of gold jewellery is targeted at the upper-level market. Resale of brought products are rare. There are no resale price quotations nor facilities in such stores or outlets. Full refunds of such products are only available during a very limited time period. There is no doubt that there is a clear distinction between the investment and the consumption jewellery gold market in Thailand. Let us now examine the structure-- i.e., the size of the market and its industrial organization -- of the bullion, the consumption and the investment gold markets in details.

1.1 The bullion gold market

As Thailand is not a country which produces gold, the stock of bullion gold in Thailand consists of imported gold through either legal or illegal and recycled gold from

² The smallest denomination is 25 satang or 0.25 baht weight of gold costing approximately 1500 baht.

repurchased gold jewelleries. The demand for gold in Thailand (including illegal sources but not recycled gold) estimated by the World Gold Council stood at 116 tons in 1995 as can be seen in table 1. Looking at the time-series data, it can be seen that the demand for gold began to rise in 1993. This can be a lagged result of the liberalization in bullion gold imports in 1991 and the boom in both the export market as local producers become internationally competitive and also in the domestic market due to increased prosperity generated by a sustained period of economic growth.

It can also be seen in Table 2 that the proportion of gold demanded by the precious stones and jewellery industry is large and has been rising continuously from 73.91% in 1990 to 95.71% (expected) in 1995. In contrast, the demand for gold bars and coins for investment purposes fell throughout this period. Such a trend is not surprising. Rapid economic growth surely offered more attractive investment alternatives to gold.

Recycled gold also contributes to the local supply of gold. The sell-back rate of gold ornaments in Thailand is approximately 15%3. At the moment, gold purifying activity is done mainly through back-of-the-store process. There has been an attempt to establish large-scale gold-purifying factories that will employ more cost-efficient technology and more environmentally friendly. However, due to insufficient scale and lack of quality(purity of gold) control, such a venture has not yet been realized. According to a business person who is interested in setting up a large-scale gold refinery in Thailand, an investment in the vicinity of 70 million baht (approximately US\$ 2.8 million) will be required to set up the facility. And to make the refinery cost-efficient, approximately 120 kg. of ornamental gold will be required. Although, the actual aggregate amount of gold pieces to be refined each day is unknown, it is estimated at under 120 kg. Moreover, the amount of to-be-refined gold also fluctuates widely, depending on the business cycle of the economy. Lumpy input volumes do not bode well for efficiency. During economic slumps, reselling of gold jewelries tends to be high.

³ Enloe, David (1996) "The Real World of Gold: A Consumer Perspective", *Speaker's Papers*, <u>Annual World Gold Council Meeting</u> 20 June 1996, New York, New York.

Table 1: Gold import and demand

| | Gold Imports* | Gold Demand** | % imported through |
|--------------|---------------|---------------|--------------------|
| | | | official channel |
| 1005 | 4.24 | | |
| 1985 | 4.36 | 26.5 | 16.45 |
| 1986 | 4.06 | 17.0 | 23.88 |
| 1987 | 6.65 | 26.5 | 25 |
| 1988 | 3.57 | 56 | 6.4 |
| 1989 | 8.39 | 121 | 6.9 |
| 1990 | 18.44 | 115 | 16 |
| 1991 | 19.75 | 95 | 20 |
| 1992 | 18.95 | 87 | 21.7 |
| 1993 | 24.47 | 96 | 25.5 |
| 1994 | 34.27 | 124 | 27.6 |
| 1995 | 181.0*** | 116 | |
| 1996(Jan-Sep | ot) 25.09 | 81 | 31 |

^{*} Foreign Trade Statistics, Thailand

Table 2: Gold use in Thailand

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 |
|----------------------|-------|-------|------|-------|-------|--------|
| Total use(tons) | 115 | 95 | 87 | 96 | 124 | 116 |
| jewellery | 85 | 81 | 81 | 92 | 118 | 110e |
| bar/coin | 30 | 14 | 6 | 4 | 6 | 6e |
| Ratio of gold use in | 73.91 | 85.26 | 93.1 | 95.83 | 95.16 | 94.82e |
| jewellery (%) | | | | | | |

e = estimated

Source: The World Gold Council

^{**} World Gold Council

^{***} Surge in imported figure result from import of gold wire.

However, in the case of a prolonged recession, the volume would normally drop as the stock of gold jewellery that is to be recycled would have already been depleted.

At present, there are approximately 12 companies which are registered to import bullion gold, most of which represent an overseas bullion gold distributors. The list includes companies such as Gold Corps from Australia, Helper Group from Switzerland, Gold Master and Prima Gold, etc. Except for Prima Gold and Gold Master, importers of bullion gold are not involved in the gold jewellery business. Bullion gold can be bought at 3\$ per ounce above the spot-market price of gold at the time of purchase.

As there is a minimum size of orders for bullion gold, only large jewellery stores have direct access to imported gold. For smaller retailers-- especially those in the provinces -- have to acquire gold from local distributors. These distributors are mainly large gold jewellery stores in the Yaowarat area all of which belong to the Gold Trader Association4. The local distributors do not sell bullion gold (99.99% purity), rather gold of 96.5% purity for manufacturing. This small group of dominant retail gold jewellery firms also sets the daily price of 96.5% gold bars for the whole country.. As gold importers normally carry large stocks of the metal, gold deliveries are expeditious. Thus, wholesalers and retailers need not keep an inventory of gold.

1.2 The investment-oriented ornamental gold market

The investment-oriented gold ornament market is known locally as the "red cabinet" gold market, depicting the fact that gold stores normally display their products in rows of red cabinets aligned along the walls. As sales in the gold jewellery market are mostly unrecorded, it is difficult to estimate the size of the market through tax data. However, from our interviews with several major gold jewellers, the size of the market is

⁴ The Gold Trader Associations consists of approximately 10 representatives from the largest gold shops in Bangkok. They are both the retailers of ornamental gold and wholesalers of 96.5% gold at the same time. The Association has a committee responsible for determining the local price of gold daily. See section 4.2 for more details on the price-setting method.

estimated at 30,000-35,000 million baht (US\$ 1200-1400) in 1996. Approximately 60% of the volume of business is in the Chinese district known as the Yaowarat area in Bangkok. During the past three years, the industry have been experiencing negative growth rates resulting from slower economic expansion. area. In 1994 when the market peaked at the height of economic expansion, the volume was estimated at 40,000 million baht (US\$ 1600-2000 million).

This market consists of both wholesalers and retailers of gold ornaments. There are approximately 10 wholesalers of ornamental gold and 7000-8000 retail gold stores nation-wide. Wholesalers mass-produce gold chains and other gold ornaments and sell them to small retail shops, in particular those in the provinces. Most wholesalers do not assume a parallel retail business. The retail market is dominated by approximately 10 large gold stores all in the Yaowarat area, which includes names such as Tang To Kang, Seng Heng Lee, Jin Hua Heng, etc. Most of these large gold stores have branches in Bangkok, but not so in the provinces. Problems associated with distribution and supervision of distant gold stores were quoted as the major reason why gold shops in Bangkok have not ventured outside the metropolitan area.

1.3 Luxurious ornamental gold market

At this upper end of the market, the purity of gold sold is at least 99.5%. According to a manager of one of the largest retailers in the market, the size of this market is estimated at 2000 million baht in 1996, which represents a mere 5% of that of the "red-cabinet" gold market.

The luxury gold ornament market was pioneered by Gold Master, a local company which branched off from a local retail clothes chain in 1992. Shortly after, Prima Gold, a subsidiary of Pranda Gems and Jewellery Co. Ltd -- a giant in the gems and jewellery industry -- marked its entrance into this nascent industry. At present, there are six companies, but the first two dominate the market with roughly 70 % share of the market.

Unlike companies in the lower-end gold market, the upper-end counterparts boast overseas market as its source of rapid expansion in recent years. Although these companies were set out initially to cater only to the domestic market, they have found overseas markets more lucrative. Importers of these luxurious ornamental gold pieces include Malaysia, Indonesia, the Philippines, Taiwan, Egypt and few countries in the Middle East. There is little competition in this market niche at the moment. This is because local producers have a strong comparative advantage over potential competitors such as India, Vietnam and China. Crafting of these gold pieces require artistic skills and patience that are unique to Thai workers. Relatively inexpensive labour in Thailand help to contain production cost of these highly labour-intensive industry.

The luxury gold-ornament market is more transparent than the quasi-investment gold market. Both Gold Masters and Prima Gold are also importers of bullion gold. Their distribution channels include counters at department stores or own gold shops in prestigious hotels or shopping malls. All sales are well documented and returns are rare (less than I percent of sales). The return policy of these companies may differ from one to another. For example, in a particular case, there is a limited time period for a full-refund(may be one week); thereafter a 30 percent discount is applied. In another case, all returned pieces will be priced according to the spot price of the gold content of the gold jewellery plus a 10 % per cent mark up to a part of the manufacturing cost. Since the cost of fabrication and design of this type of gold ornaments normally contributes to anywhere between 30-40% of the price tag, the 10% mark-up constitutes a rather small cost recovery for those who decide to sell back their gold pieces. With such low resale values, it is apparent that gold pieces bought in this market are for pure consumption and not investment

2. Laws and regulations governing trade in bullion gold

During the heydays of the gold-standard, trade in bullion gold was tightly controlled by the government. As gold was the sole determinant of a country's money supply (since all currencies must be fully backed by gold) and also the only source of international reserve, it is no surprise that its flows came under strict supervision of the state. When the gold standard collapsed in 1973(the US abandoned its policy to guarantee purchase of gold at 35\$/ounce), however, the metal's role in the global monetary system subsided. Nevertheless, gold remains one of the key components of a country's international reserves and a popular hedge against inflation.

While its prominence in the macroeconomy may have faded with the collapse of the gold standard, gold's role in the microeconomy remains. In the investment market, gold loans, gold hedging, gold derivatives etc, are just few of the financial instruments with gold intermediaries. In production, gold is an important input in the jewellery and electrical industries. The relative shift in the role of gold from macropolicy to manufacturing requires a corresponding shift in laws and regulations governing trade in gold. As movements of gold is now more a private rather than a national concern, restrictions on its flow is unnecessary. Thus, many governments have moved to lift restrictions on gold trades.

The bullion-gold trade in Thailand came under tight government's control as part of the wartime measures. The Exchange Control Act 1942 empowered the Finance Minister to issue laws and rules regulating the flow of international currency or gold across the border. In the same year, the Ministry issued the Royal Decree on Export Control outside the Kingdom in some products (version 8) which prohibited exports of gold, platinum, gems and precious stones outside the Kingdom without a special permission from the Finance Minister or the person assigned by the Finance Minister. At the close of the second World War in 1945, the demand for bullion gold sky-rocketed. Amid post-war inflationary pressures, confidence in the stability of the value of the local

currency was shaken. Gold was perceived to be the safest asset at the time. In order to curtail the dumping of local currency for gold, bullion import was prohibited through the Royal Decree on Import Control into the Kingdom in some products (version 4) 1951. Thereafter, trade in gold was under complete control of the Finance Ministry. In 1952 the government granted an import monopoly to "Saha Tanakit Company" spearheaded by the founder of the Bangkok Bank, Mr Chin Soponpanich. Large retail gold stores in the Yaowarat then formed a company called "Sahakarn Tanakit Thai" to act as a wholesaler and distributor of bullion to smaller retails shops. The government later allowed gold import on the basis of auctioning. That is, whichever company can provide the government with most monetary returns collected in the form of "specific tax", would be chosen as the sole importer of bullion gold. No bidding was received, however. The 35% duty placed on imported bullion have pushed gold trade underground. Even if gold were to be imported through the official channel, bureaucracies and inherent inefficiencies within state organizations have made applications for special permission to import gold an arduous process. Consequently, smuggling of gold from neighbouring countries became rampant.

Recognizing the stranglehold import restrictions had placed on the local jewellery industry, on 9 March 1989 the Ministry of Finance signed a one-year contract with a private company, namely the Mocatta & Goldsmid, to take on the responsibility of importing and exporting gold bullion into the country. Although a private monopoly may be more efficient in managing gold trade than the Ministry of Finance, smuggling persisted. As can be seen in table 1 that the share of bullion gold import through the official channel as a percentage of total gold demand as estimated by The World Gold Council increased only slightly from 6.3% to 6.9% in 1989. In terms of volume, however, bullion import increased from 3.57 tons in 1988 to 8.39 tons in 1989. But the surge in import is a result of an increase in the overall demand for bullion gold rather than a diversion of gold trade from illicit channels. Some 97 tons of gold, representing 93% of total gold demand, continued to be smuggled across the border. The reason is twofold. First, according to the condition imposed on the Ministry of Finance, Mocatta had to sell

bullion gold at US\$ 6.00 per troy ounce above the international price, which translates into a 1.6% mark up. Local jewellers were thus discouraged by such a high price. Secondly, producers are obligated to pay the 5% import duty and the 3.3% sales tax if gold bought is declared. With such a difference in the cost, demand for gold through the official channel was sparse. Consequently,

Mocatta & Goldsmid decided not to renew its license after two years after it managed to sell only 2 tons of gold during its operation. The failure to divert the underground gold trade into the open clearly indicates that the root cause of smuggling is not the limited access to imported gold, rather the 35% import duty. Consequently, in 1990 the Ministry of Finance cut the import duty from 35% to a mere 5%. Also, to ensure local producers access to imported bullion, the Ministry allowed three gold importers, including a government importer known as the "Gold Union". The company was established for the sole purpose of importing gold. The Ministry, along with all major gold stores in the Yaowarat area, are shareholders. Imported gold was distributed proportionately to the size of the shareholding. One of the two private importer was operated by the Association of Diamonds and Gems Merchant which catered only to members of the Association. The third importer was a private operation which catered to small retailers that do not belong to the Association.

Another important breakthrough in this declaration is that a distinction between bullion gold and gold jewellery is made. Gold ornaments are no longer subject to registration requirement and is therefore, fully liberalized. Although such move did not have a significant on the volume of trade in jewellery gold as import of gold ornaments into the Kingdom has always been trivial and export was practically unconstrained, it reflects a major step in the right direction in recognizing the difference between monetary gold and gold products.

⁵ The difference in the total volume of gold imported as recorded by the Customs Department and the volume imported through Mocatta (which is very little) represents direct import of bullion gold by local exporters of gold jewelleries.

The cut in import duty had an immediate positive impact on the volume of official gold import. As can be seen in table 1, the volume of gold import cleared by the Customs Department jumped from 8.39 tons in 1989 to 18.44 tons in 1990 despite a fall in the overall gold demand from 121 tons to 115 tons. Consequently, the share of official gold import jumped from 6.9% to 16%. However, almost 100 tons of gold continued to be acquired through illicit channels.

Following the decision to lower the import duty, the Ministry of Finance decided to liberalize the importation of gold the Declaration of the Fiscal Policy Office regarding the principle, methodology and the conditions acquiring the registration as being importer or exporter. (7 May 1991). The declaration allows any private company to import bullion gold under the following conditions. First, registration is required. The Fiscal Policy Office approved the Finance Minister's proposed principles, criteria, procedure and conditions for registration. Registered importers and exporters must show registration documents to customs officials each time gold is exported or imported. The registration permit is valid up to 3 years. Second, each importer of gold had to specify the amount of gold it planned to bring into the country. The actual amount imported must not fall below the specified level. That is, there was a floor for gold imports as part of the Ministry's policy to promote an expansion in the gold ornaments industry. Importers must also submit a monthly record which contains the date and volume of all transactions across the border to the Fiscal Policy Office. The Office reserved the right to withdraw the registration if a holder did not abide by the terms and conditions of registration.

The liberalization of gold import was met with limited success. The share of official bullion import increased further from 16 to 20% that year. Greater access to imported bullion gave a boost to gold producers that operate in the legitimate market, most of which are exporters. However, it did not succeed in curbing the smuggling that goes on in the red-cabinet or the investment gold market. With a relatively low duty rate of 5% duty in 1991, which became 0% in 1992, and a liberal import regime, continued

smuggling seemed to suggest that the root cause of such activity goes much deeper than an attempt to evade import duty obligations.

3. Taxes, duties, the VAT and trade in bullion and ornamental gold

Thailand does not distinguish bullion and ornamental gold when it comes to taxation. Both are currently subject to the full VAT rate of 7%. Prior to 1990, a 35 per cent import duty is applied on imported bullion. This rate was cut to 5 per cent in 1991 and 0% in the following year. At the retail level, there was a 3.3% sales tax. Then in 1993 the value-added tax was introduced to replace the sales tax. Thailand adopts a single-rate VAT.

The switch in the tax regime made it easier to import gold. Originally, an importer of gold had to file a request for a permission to import gold from three government units which included the Customs department and the Revenue Department under the Ministry of Finance and the Department of Business Economics under the Ministry of Commerce. With the VAT, importers need to deal only with the revenue department.

In most other countries, bullion gold is taxed like any other commodities, but bullion transactions in the financial market are not subject to the VAT. The EC used to exempt VAT on bullion gold other than manufacturing use, but the exemption was abolished in January 1, 1996. The US does not have the VAT, but has retail sales tax, which varies across states. While trade in bullion or monetary gold is not taxable, sales of gold jewellery are taxed in full. However, there are few countries that provide tax exemptions for bullion gold. These include Malaysia and Indonesia. In Malaysia both gold jewelleries and gold bars are exempted. In Indonesia, bullion gold is zero-rated, meaning that the 10% VAT applies on gold ornaments is calculated only on the value-added portion. Some samples of the tax regime governing gold sales and imports are provided in Table 3 From table 3, it is clear that the import duties on gold bar among Asian countries is generally zero. But those on gold jewellery vary widely Sales of gold

bars are exempted from local sales tax in the case of Malaysia, Taiwan, and Indonesia. In case of Hong Kong, the zero sales tax does not represent an exemption as the Colony does not have a sales tax.

Table 3: Tax Regime Governing Imports of Gold Bars and Sales of Gold Jewellery

| Country | Im | port Tax | Sales/consumption/VAT Tax | |
|-------------|------|-----------|---------------------------|-----------------|
| | Bars | Jewellery | Bars | Jewellery |
| Japan | 0% | 6.6% | 3% | 3% (sales tax) |
| China | 0% | 60% | 17% | 22% (sales tax) |
| Taiwan | 0% | 0% | 0% | 5% |
| Thailand | 0% | 20% | 7% | 7% (VAT) |
| Hong Kong | 0% | 0% | 0% | 0% |
| Singapore | 0% | 0% | 3% | 3% (sales tax) |
| South Korea | 3% | 8% | 10% | 10%# |
| Vietnam | 0.5% | 30% | _ | _ |
| Laos | 1% | 40% | - | _ |
| Malaysia | 0% | 10% | 0% | 0% |
| Indonesia | 0% | 20% | 0% | 10%## (VAT) |

Additional Special Consumption Tax and Education Tax applied to gold jewellery priced over 1 million

(US\$ 1,250)

On the added value only

4. The purity and prices of gold in Thailand

4.1 Purity

Measurement of gold weight in Thailand differs from those quoted internationally. The unit of gold weight in Thailand is called the "baht", as the unit of the local currency. A baht-weight equals to 15.244 gram for bullion gold and 15.16 gram for jewellery gold. The discrepancy is explained by loss of the metal through manufacturing

process. The measurement of purity of gold in Thailand is by percentage of gold, which allows a more exact measurement of purity than the K system6. While the difference between the local and international units of measurement of gold weight and purity may be a nuisance at times, they do not pose a major obstacle to exports as the measurement scales can be easily converted.

The purity of "red-cabinet" gold stands at 96.5%; so it is believed to be. Retail shops in the Yaowarat area certify the purity of their products by an imprint of the store's mark on each gold piece to guarantee the resale value. Gold stores outside the area and in the provinces do not provide such certification, however. It is believed that the gold content of ornaments sold in these stores is significantly lower than 96.5%. Investors who are looking for bargains may be attracted to the lower-end of the market, but they can never be sure of the gold content of the product they bought.

There are several reasons why the gold purity is Thailand is at such a level. First, most gold jewellery pieces sold in Thailand are of relatively small in size with a weight that can be as little as 25 satang or 3.79 gram. For these small and delicate pieces, a lower gold content is required so that the ornament will maintain its shape and form. For larger pieces as those marketed by Prima Gold and Gold Master, 99.99% gold is used. Second, as recycled gold contributes a good part of the local supply, the purity of recycled gold is a major factor determining the purity standard. At the moment, most gold refineries have access to inferior technology that can refine gold only up to 96.5% purity. The only two refineries with advanced technology which uses nitric acid to refine gold into 99.99% gold bars are Greatest Gold and Dekusa. Both provide certificates of guarantee of the purity of their refined gold products. Because of relatively hefty fees, however, few stores choose to use the service. Thirdly, most gold shops are registered as "antique" shops selling used gold pieces. Although most gold pieces are fabricated from newly acquired bullion, they have to conform with the standard of purity of the existing

⁶ A 24K gold is equivalent to 99.99% gold. Thus, 96.5% gold represents a 23.16 K gold.

stock of gold. Fourthly, and most importantly, smuggled 99.99% gold all have a series number imprinted on the bar. In order to destroy the evidence, these bars are immediately melted to become a 96.5 gold content, which are equivalent to the purity of the local recycled gold.

Certification of gold purity poses a major problem for exports of ornamental gold. Unlike Singapore, Thailand does not have a government organization which certifies the purity of gold products. Hence each exporter must seek to establish credibility in overseas markets on their own, which is both costly and time-consuming. As a result, few gold stores choose to assume such risks. Those that managed to do so, have been very successful. The possibility of developing a government-run gold-certification unit is farfetched. The government has neither the know-how nor qualified personnel to perform such tasks. As trades in gold jewellery are of large values, certification process will have to be not only effective, but also speedy. It is highly unlikely that a government-run organization will be able to perform the task adequately.

Gold certification can be provided alternatively by internationally reputable gold assayers. However, retailers voice their complaints that fees charged are too high. As long as consumers contend with the the current information asymmetry and do not demand a verification of the purity of the ornaments they buy, there is unlikely to be a demand for an assayer. It is possible that consumers have been tolerant of such an unfavourable condition because they themselves are also a part of the illegitimate gold jewellery industry.

4.2 Price-setting behaviour and gold prices in Thailand

The price of bullion gold in Thailand -- quoted at 96.5% purity -- is set by a group of 7 large gold stores that are member of the Gold Trader Association. These are all large stores in the Yaowarat which control well over 60% of the Bangkok market and about

half of the national market? Each morning, members obtain the spot bullion gold price from Hong Kong and decide on a price for 96.5% gold alloy. Throughout the day, price setters monitor fluctuations in the price of gold from markets in either London, New York, or Hong Kong, depending on the time of the day. If price changes do not exceed a 5-8% grid, then the quoted price of the local 96.5% gold will remain unadjusted throughout the day. Small retailers are price takers. They will then price accordingly. Should they refuse to comply to an upward price adjustment, large retailers who set the price are ready to purchase all gold at the specified price. Therefore, the market is a cartel with dominant players consisting of few large gold stores. Because the number of cartel members are limited, monitoring is relatively easy. Thus, such a price-management scheme is stable.

Besides the price of bullion gold, transportation costs and exchange rates, the local demand condition is the key determinant of the local price. When local demand is high, prices of gold jewellery are also high. This then encourage resale of gold jewellery, giving a boost to the local supply. Prices will then fall. Hence, the resale market provides a stabilizing mechanism for the local gold price.

Despite the cartelized system, the price of 96.5% gold in Thailand and that in the international market (discounted from 99.95 % purity to 96.5%) is rather small. The margin can be seen in table 4 to fluctuate around 3% inching up to 4-5% in the nineties. Although the cartel might have the market power to set high prices, but that may not be the strategy to maximize profit. Since the repurchasing business contributes a major share of retail stores' business (according to interviews), the spread between the selling and the repurchasing price will have to be kept at minimal to encourage investment demand for gold jewelleries. This would imply that a high selling price will have to be matched by a proportionately high repurchasing price.

⁷ Approximately 80% of number of retail stores are in the Bangkok Metropolitan Area.

While the selling price of gold is fixed by the cartel, this is not so with the buying price. Each individual retail shop set its own repurchase price for gold and hence the spread between buying-selling prices. This spread known as "Gamned" or "servicecharge" which is supposed to represent the cost of fabrication which consists mainly of labour cost. But as can be seen in Table 4 and illustrated in Figure 1, this cost appears to fluctuate with the changes in the price of gold rather than wages. It is believed that the service charge represents speculation with respect to the movement of gold prices. If the retailer anticipates the price of gold to rise, then he would be willing to buy used gold ornaments at a good price for future sales. In this case, the difference between the buying and selling price is likely to be small. On the other hand, if the price of gold is expected to fall, then the buying price is likely to be low. As can be seen in table 4, during the inflationary periods(oil price shocks) 1973-1979, service charges as percentages of selling price are relatively low: they ranged from 0.06-1.34 per cent. However, once the price of gold peaked in 1980, a fall in gold price is expected and hence, the increase in the service charge to 3.13%. Since then gold prices seemed to have stabilized and so as the service charge at approximately 2 per cent of the price of gold.

The spread between the selling and the repurchasing price is also determined by the level of activity in the market. If the market is "light" then the margin between the buying and selling price of gold is likely to be higher, just as how the size of exchange rate spreads are determined.

The price of jewellery gold in Thailand follows closely that of bullion gold as can be seen in Figure 2. During 1979-1980 there was a rapid increase in the world price of gold resulting from the second oil shock. At the time, the average price of gold ornament in Bangkok reached as high as 6,550 baht per baht weight. The sharp increase in the price of gold was followed by a slight decline as inflationary pressures subsided. During 1982-1983, the world economy improved, causing the price of gold to edge upward once again. But the then Soviet Union dumped part of her vast gold reserves into the market in order to secure hard currencies, causing the price of gold to drop once again. Then came the devaluation of the baht towards the end of 1984. The value of the baht depreciated approximately 14% against the US dollar. The price of gold in Thai baht rose accordingly. Since 1987 onwards, we have observed a relatively stable trend in gold prices. In conclusion, prices of gold jewellery in Thailand, which consists of the selling price, are set strategically not only to maximize profit from sales of jewelleries, but also to encourage resale of bought jewelleries.

Table 4 Prices of Gold

Unit : Baht

| Year | | f gold in Ban | | | Prices of Gold - World | | | The Differences in Prices of Gold (Naht)* | % | |
|------|-----------------|------------------|-------------------|-------|-------------------------------------|-----------------|---------------------|---|---------|---------|
| | Buying Price | Selling Price | Service Charge | % | Per troy ounce in US\$ (99.5% | Purity 96.5% | Rate of Exchange | Baht | | • |
| 1966 | 401.15 | 414.17 | 13.02 | 3.14% | 40.64 | 39.24 | 20.75 | 399.03 | 15.14 | 3.79% |
| 1967 | 402.90 | 413.10 | 10.20 | 2.47% | 40.91 | 39.50 | 20.80 | 402.65 | 10.45 | 2.59% |
| 1968 | 436.75 | 451.06 | 14.31 | 3.17% | 44.20 | 42.67 | 20.85 | 436.08 | 14.98 | 3.44% |
| 1969 | 462.44 | 476.43 | 13.99 | 2.94% | 46.44 | 45.04 | 20.93 | 462.02 | 14.41 | 3.12% |
| 1970 | 402.25 | 416.25 | 14.00 | 3.36% | 40.44 | 39.22 | 20.93 | 402.33 | 13.92 | 3.46% |
| 1971 | 437.66 | 451.66 | 14.00 | 3.10% | 43.88 | 42.56 | 20.93 | 436.55 | 15.11 | 3.46% |
| 1972 | 560.15 | 576.34 | 16.19 | 2.81% | 56.00 | 54.31 | 20.93 | 557.13 | 19.21 | 3.45% |
| 1973 | 897.01 | 912.12 | 15.11 | 1.66% | 89.90 | 87.19 | 20.37 | 870.46 | 41.66 | 4.79% |
| 1974 | 1496.27 | 1497.21 | 0.94 | 0.06% | 149.38 | 144.88 | 20.37 | 1446.38 | 50.83 | 3.51% |
| 1975 | 1562.13 | 1580.18 | 18.05 | 1.14% | 157.67 | 152.92 | 20.40 | 1528.89 | 51.29 | 3.35% |
| 1976 | 1362.50 | 1379.00 | 16.50 | 1.20% | 137.59 | 133.44 | 20.40 | 1334.18 | 44.82 | 3.36% |
| 1977 | 1502.33 | 1518.86 | 16.53 | 1.09% | 151.54 | 146.97 | 20.40 | 1469.45 | 49.41 | 3.36% |
| 1978 | 1960.96 | 1982.09 | 21.13 | 1.07% | 198.47 | 192.49 | 20.39 | 1923.58 | 58.51 | 3.04% |
| 1979 | 3021.48 | 3062.52 | 41.04 | 1.34% | 305.42 | 296.21 | 20.43 | 2965.95 | 96.57 | 3.26% |
| 1980 | 5482.38 | 5659.54 | 177.16 | 3.13% | 562.50 | 545.54 | 20.63 | 5515.94 | 143.60 | 2.60% |
| 1981 | 4765.76 | 4869.18 | 103.42 | 2.12% | 456.58 | 442.81 | 23.00 | 4991.63 | -122.45 | -2.45% |
| 1982 | 4128.64 | 4228.97 | 100.33 | 2.37% | 374.35 | 363.06 | 23.00 | 4092.64 | 136.33 | 3.33% |
| 1983 | 4691.14 | 4791.14 | 100.00 | 2.09% | 424.11 | 411.32 | 23.00 | 4636.65 | 154.49 | 3.33% |
| 1984 | 4133.41 | 4233.41 | 100.00 | 2.36% | 372.40 | 361.17 | 27.15 | 4805.93 | -572.52 | -11.91% |
| 1985 | 4173.62 | 4273.62 | 100.00 | 2.34% | 320.13 | 310.48 | 26.65 | 4055.28 | 218.34 | 5.38% |
| 1986 | 4607.55 | 4707.55 | 100.00 | 2.12% | 364.65 | 353.66 | 26.13 | 4529.11 | 178.44 | 3.94% |
| 1987 | 5514.00 | 5614.00 | 100.00 | 1.78% | 444.37 | 430.97 | 25.07 | 5295.37 | 318.63 | 6.02% |
| 1988 | 5543.83 | 5643.83 | 100.00 | 1.77% | 454.42 | 440.72 | 25.24 | 5451.86 | 191.97 | 3.52% |
| 1989 | 4903.73 | 5003.73 | 100.00 | 2.00% | 396.61 | 384.65 | 25.69 | 4843.12 | 160.61 | 3.32% |
| 1990 | 4816.17 | 4916.17 | 100.00 | 2.03% | 388.95 | 377.22 | 25.29 | 4675.63 | 240.54 | 5.14% |
| 1991 | 4515.72 | 4615.72 | 100.00 | 2.17% | 365.50 | 354.48 | 25.28 | 4392.00 | 223.72 | 5.09% |
| 1992 | 4275.44 | 4375.05 | 99.61 | 2.28% | 347.79 | 337.30 | 25.52 | 4218.86 | 156.19 | 3.70% |
| 1993 | 4366.83 | 4466.83 | 100.00 | 2.24% | 356.33 | 345.59 | 25.54 | 4325.84 | 140.99 | 3.26% |
| 1994 | 4645.38 | 4745.38 | 100.00 | 2.11% | 381.30 | 369.80 | 25.09 | 4547.42 | 197.96 | 4.35% |
| 1995 | 4611.33 | 4712.31 | 100.98 | 2.14% | 383.02 | 371.47 | 24.89 | 4531.52 | 180.79 | 3.99% |

Source : Economic Monthly Report, Bank of Thailand : International Financial Statistics Yearbook 1995 : Department of Business Economics, Ministry of Commerce

Notes * The difference in prices of gold (selling) = The prices of gold in Bangkok (selling) - The world prices of gold (selling)

Figure 1: Prices of Ornamental Gold in Bangkok

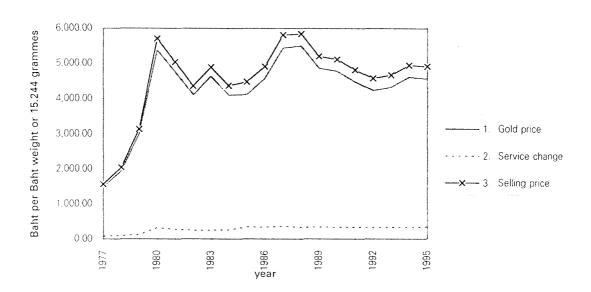
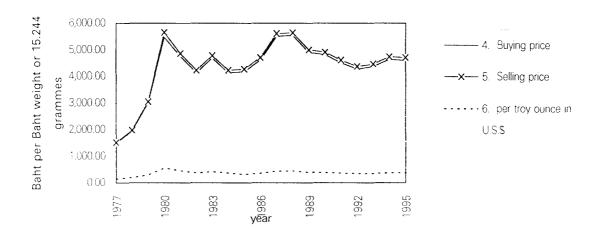


Figure 2: Prices of Gold Bangkok Metropolis (Ornaments)price and the repurchasing



5. The underground gold market: smuggling and evasion of taxes

Gold smuggling has been a chronic problem since gold imports were banned in 1979. But import restrictions were not the only factor which gave rise to the underground gold trade, but also the elevated import duty of 35%. At present, with the elimination of import duty -- which was later replaced by the 7% VAT -- and the liberalization of bullion imports, smuggling persisted on a relatively large scale.

It is estimated that approximately 75% of gold supply is smuggled into the Kingdom. In 1994 the volume is estimated to be 90 tons valued at 28 billion baht (US\$ 1.14 billion)8. The loss to the government is estimated to be in the vicinity of 2.5 billion baht (US\$ 1 billion). Based on the assumption that a) the size of the local gold ornament market is 35 billion baht and b) the profit margin for gold stores is 5%. The calculation can be seen in table 5 below:

Table 5: Government 's tax-revenue shortfall in 1994

(unit: million baht)

| Type of tax | Estimated | Actual tax | Tax | Actual tax collection/ |
|--------------------|-----------|------------|-----------|------------------------|
| | tax | collection | shortfall | estimated tax dues: |
| | dues(1) | (2) | | (2)/(1) |
| VAT(7%) | 2450 | 109* | 2341 | 4.44% |
| Corporate tax(30%) | 525 | 167 | 358 | 31.8% |

^{*} This is a 1995 figure, which is the only one that is furnished by the Department of Revenue

⁸ The volume of smuggled gold is approximated by taking the difference bewtween the total gold demand as estimated by the WGC and the volume of imported bullion as reported by the Customs Department. Since a part of the gold supply comes from recycled gold ornaments (approximately 15%), the actual percentage of smuggled gold may be lower than the figure presented.

The government is not the only one who feels the pinch from smuggling, but also producers with limited access to the supply of illegal gold. As import of smuggled gold is not registered, neither are production and sales. Thus, users of smuggled gold not only evade the VAT tax imposed on bullion gold and gold jewellery, but also the corporate tax. With such benefits, he can afford to price his products more competitively. To this effect, less advantaged users-- ie., producers with limited supply of smuggled gold -- have to find ways to remain competitive. With higher cost(due to VAT and corporate tax obligation), they cannot afford to cut their prices. However, they may choose to lower the gold content of the product they sell. This is found to be the case for smaller gold retail stores outside the Yaowarat area.

What is the difference between the cost of bullion acquired through legitimate and illegitimate channels? Chart 1 exhibits the composition of the cost of a kilogram of 99.99% gold bought in each market from unofficial sources familiar with underground gold trades. It is interesting to see that the cost of the bullion acquired through the illegitimate channel is actually higher that that acquired through the legitimate channel. A rough estimate of a kilogram of smuggled gold is estimated to be between 317,718 - 325,718 baht depending on how much the smuggler charges. Legally imported bullion, on the other hand, would cost only 309,618 baht per kilogram (after the 7% VAT tax paid has been refunded). However, when this kilogram of gold is sold as jewellery, it will be subject to a 7% VAT at the point of retail. The tax obligation on a kilogram of gold par is estimated to be 21, 631 baht so that the total cost of a kilogram of a legally-imported bullion to be 331, 249 baht. Thus, the cost differential between legitimate and smuggled gold net of the VAT tax is approximately 5,531 baht per kilogram. This represent less than 2 percent of the price of the bullion. While this may not seem to be significant, one must realize that

1) at the retail level, the gold ornament business is cut-throat; a small cost advantage may provide the producer with a marked competitive edge;

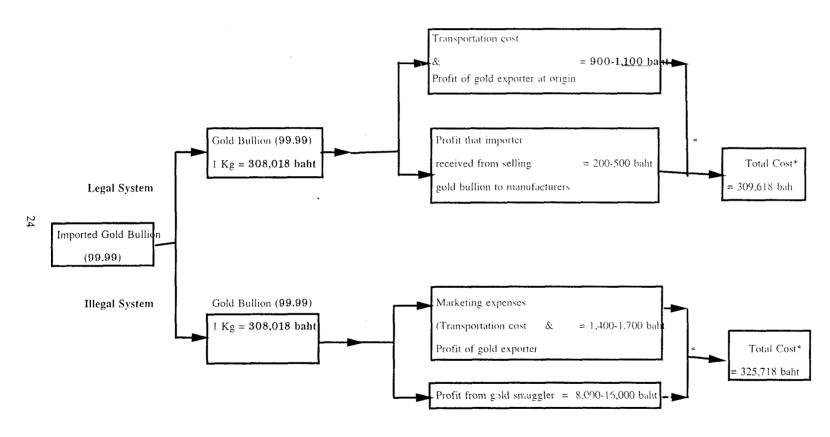
- 2) users of smuggled are entitled to the added benefit of not having to set aside a large sum of money for VAT tax bills. Tax returns in Thailand may take anywhere from 1.5 to 6 months. The interest forgone on this idle money can be quite significant for large importers. Considering that the cost of bullion constitutes well over 90% of the total cost of a piece of gold ornament, lengthy tax return procedure may impose a rather serious liquidity constraint on the business; and
- 3) income from unregistered sales are not subject to corporate income tax. Thus, users o smuggled gold also benefit from evasion of income tax. Assuming that the profit margin for a retailer is 5%, with the corporate tax of 30%, the amount of tax avoided is estimated to be approximately 5000 baht per kilogram of gold. This figure should be treated as a minimum estimation as it is calculated on a relatively conservative profit margin and on the cost of bullion only. With the additional tax benefits, the cost differential between smuggled and legally imported gold is pushed up to the vicinity of 10,000 per kilogram.

Let us turn to consumers who may appear to gain from smuggling. With a relatively competitive retail market, tax savings are passed on to the consumers in terms of lower prices. This is only partly true. It must not be forgotten that a large part of the rent (8000-16000 baht per kilogram of 99.99% gold as shown in Chart 1). Let us conduct a rough estimation of how much consumers save from smuggling.

Assuming that an average retailer uses legitimate and smuggled gold bars in a proportion of 60 to 40. Let the price of a kilogram of a 1-kilogram gold bar be 336,250 baht as shown in Chart two. Assume also that smugglers extract a maximum rent of 16,000 baht per kilogram of gold so that the total price of a 1-kilogram bar of smuggled gold is 325,718 baht. With such prices, the average price of a retailer's gold stock will be 329,934.8 baht per kilogram. Comparing this price with the official price of 336,250 baht per kg, this represents a mere 1.8% cost savings that can be passed to the consumers. Under the alternative assumption that smugglers extract a minimum rent of 8000 baht per kilogram of bullion, the percentage of cost savings will be raised to 3.3%.

CHART 1

A comparison of prices of bullion acquired by smuggling and through official channel



Notes: * The estimated total cost is derived from the maximum price ranges.

The difference in price of gold in legal system - the illegal system = 331,256 -314,400 = 16.856 baht

Illegal transactions are also conducted without documents, which absolves the seller of all after-sale liability, in particular the actual gold content of the product sold. Most consumers are unable to verify the gold content of the product they buy, and thus easily fall prey to retailers scam. Without a certification of the purity of the gold ornament, consumers are often taken advantage of when reselling their jewelleries to the retailer. There is, however, certification of purity for gold pieces bought from reputable retailers in the Yaowarat area.

If Thailand were to remain at the forefront of the jewellery industry in the future as it does now, it is essential that the present smuggling be terminated and bullion trades be legitimized. The underground bullion market has dragged with it the entire downstream industries such as fabrication, refinery, wholesales and resale. It has spawned corruption among officials from tax authorities, deprived the government of a large sum of corporate and value-added tax revenues, and created a cartelized jewellery market and provided users of smuggled gold with an unfair competitive edge. Finally, the attempt to stay aloof from authorities has rendered the jewellery industry generally unsophisticated.

Smuggling must be terminated in order for a properly function and efficient bullion market to be developed. All parties stand to gain from such a market, even producers who enjoy excessive rents from the existing cartel. Jewellers can benefit from a bullion market in three ways. First, smaller retailers will benefit from lower-priced and standardized quality of bullion(at the moment small retailers who are not importers of bullion can only acquire 96.5% gold). The margin between the domestic and international price of bullion will narrow as gold trades are no longer monopolized by major retailers as does now. Second, they will have access to low-interest financing (through gold loans) and hedging facilities. Third, as bullion trades become legitimized and fabrication is no longer secretive, jewellers can afford to modernize their factories, upgrade the existing technology in fabrication, improve product designs, develop marketing techniques and expand the scale of production to become competitive at the

global level. In the past, these producers have limited themselves to the domestic market. With excessive rents guaranteed by the cartel, they need not look overseas. Rapid economic expansion of the Thai economy since the early eighties has also kept the domestic gold demand expanding at a healthy rate. These times are over, however, with the present economic slowdown (or even a slump). Gold businesses need to come out of their cocoons and venture the global market where stakes are enormous.

Consumers or investors of gold may also benefit from lower-price jewellery product reflecting lower costs, a narrowing spread between buying and selling prices of gold jewellery as the market become more competitive. It can be argued, however, that with the VAT, costs and thus prices of gold ornaments can be pushed higher. While this can be true, consumers must realize that a) they are perhaps paying a premium much larger than they estimate. This premium derives form monopolistic rents, inefficiencies and sub-standard quality of purchased gold products (in the absence of an official bullion trade, gold is not assayed). For those who buy gold jewellery for investment will find that the margin between the buying and selling price will narrow. Gold holders will be able to generate interest income from their gold assets through gold loans.

Gains to the government is obvious. An efficient bullion market will expand the scope of the financial market and the jewellery sector, giving rise to employment and generating additional taxable income. These gains are, however, conditional on one very important assumption that smuggling be terminated. How and whether smuggling will or can be terminated is the focus of the next section.

6. How can smuggling be terminated?

Recently, the Gold Traders Association and the Association of Diamond and Gems Merchant have been lobbying for the government to exempt bullion gold from VAT in order to uproot the ongoing underground bullion trade. It is argued that since neighbouring countries, in particular Malaysia, Indonesia and Hong Kong, do not impose

any kind of tax on bullion import, arbitrage of the cost differentials through smuggling is inevitable. The excess of gold import over the local gold in both Singapore and Malaysia shown in table 6 would provide some evidence that there is indeed import of bullion gold from Malysia and Singapore into Thailand. If the 7% VAT tax obligation were to be lifted, gold producers will no longer have an incentive to acquire illegal gold. What are the implications of a tax exemption for bullion gold? Will a VAT exemption uproot smuggling?

A tax exemption on import of bullion gold should not have any impact on the ongoing smuggling. Under a value-added tax regime, producers are reimbursed for all tax paid on imported bullion anyway. Thus, the burden of the tax falls mainly on the consumers who must pay the VAT at the point of sale9. Therefore, as long as the VAT still applies at the retail level, a VAT exemption for bullion does not represent any real cost savings for producers, except for the fact that they need not put upfront the tax dues 10. Moreover, benefits associated with the avoidance of corporate tax will remain. Therefore, a VAT exemption can only provide businesses will greater liquidity, but it cannot eliminate smuggling.

The Gold Traders Association and the Association of Diamond and Gem Merchants have also proposed that the VAT at the point of retail be collected only on the added value portion of the gold ornament. This is equivalent to proposing that the VAT tax on bullion gold is "zero-rated" rather than "exempted". There is a marked difference between zero-rating and tax exemption.

"Exemption" implies that purchasers of bullion need not pay the 7% VAT. The trader needs not register with tax authorities nor keep records for VAT(but records must be kept for income tax). So, clearly, exemption helps simplify the administration of VAT. However, at the retail level, the bullion is taxed at its full value when consumers have to pay the 7% VAT on the bullion and the added value associated with fabrication and distribution. Therefore, the benefits of tax exemptions are not passed on to the consumers in the case of exemption.

⁹ The VAT considered to be a form of sales tax.

¹⁰ Producers do benefit from lower gold prices, however, when the demand elasticity for gold is high.

Table 6 Gold Import & Glod Demand in Malaysia, Thialand, and Singapore

unit : tonne

| Year | Mal | aysia | Tha | iland | Singap | Singapore | | he Differenc | е |
|------------|----------------------|---------------------|----------------------|---------|---------------------------|---------------------|----------|-----------------------|-------------------|
| | Gold | Gold | Gold | Gold | Gold Imports ⁵ | Gold | Malaysia | Thailand ⁸ | Singapore 9 |
| | Imports ¹ | Demand ² | Imports ³ | Demand⁴ | | Demand ⁶ | | | |
| 1985 | 8.50 | 10.00 | 4.36 | 26.50 | 125.00 | 29.60 | -1.50 | -22.14 | 95.40 |
| 1986 | 7.10 | 7.90 | 4.06 | 17.00 | 74.00 | 16.20 | -0.80 | -12.94 | 57.80 |
| 1987 | 6.40 | 8.00 | 6.65 | 26.50 | 41.00 | 12.20 | -1.60 | -19.85 | 28.80 |
| 1988 | 21.20 | 8.00 | 3.57 | 56.00 | 160.00 | 31.10 | 13.20 | -52.43 | 128.90 |
| 1989 | 72.40 | 9.00 | 8.39 | 121.00 | 252.00 | 16.00 | 63.40 | -112.61 | 236.00 |
| 1990 | 115.40 | 32.50 | 18.44 | 115.00 | 309.00 | 22.90 | 82.90 | -96.56 | 286.10 |
| 1991 | 122.90 | 28.00 | 19.75 | 95.00 | 268.00 | 18.60 | 94.90 | -75.25 | 249.40 |
| 1992 | 62.40 | 22.50 | 18.95 | 87.00 | 415.00 | 25.00 | 39.90 | -68.05 | 390.00 |
| 1993 | 80.40 | 22.40 | 24.47 | 96.00 | 297.00 | 21.40 | 58.00 | -71.53 | 275.60 |
| 1994 | 125.90 | 24.80 | 34.27 | 124.00 | 281.30 | 23.90 | 101.10 | -89.73 | 257.40 |
| 1995 | 152.60 | 29,60 | 184,02 | 01600 | 337 30 44 | 24.10 | 126(00 | 65.02 | 34 (5)3(8) |
| 1996 | 111.50 | 24.30 | 25.09 | 81.00 | 273.10 | 15.20 | 87.20 | -55.91 | 257.90 |
| (Jan-Sept) | | | | | | | | | |

Source

: Statistics from World Gold Council, Thailand

Gold Demand (1981-1993): Gold Acquisition Study 1994 Far East Markets (p. 3)

Gold Demand (1994-1995): Gold Demand Trends, A Quarterly Publication, Issue No. 17, November, 1996, World Gold Council

Gold Imports (1994-1996): Gold Demand Trend, A Quarterly Publication, Issue No. 17, November, 1996, World Gold Council (p.6)

The Difference = Gold Imports in Singapore - Gold Demand in Singapore

Firstly, some of the invoices are missing and the customs officials from the customs department had to estimate the imported quantity.

Secondly, this measurement is in tonnes. Pranda imported extensive amount of gold wire which weights a lot but has a smaller value per ton than gold bullion.

Foreign Trade Statistics of Thailand, Customs Department

Gold Demand from World Gold Council

⁵Gold Imports (1985-1993): Gold Acquisition Study 1994 Far East Markets (p. 30)

⁶ Gold Demand from World Gold Council

The Difference = Gold Imports in Malaysia - Gold Demand in Malaysia

⁸ The Difference = Gold Imports in Thailand - Gold Demand in Thailand

^{*} Gold imports in Thailand are very high in 1995 for mainly 2 reasons.

Zero-rated, on the other hand, implies that the trader is reliable to an actual rate of VAT, which happens to be zero. Thus, a zero-rated trader is part of the VAT system. In this way, the zero-rated trader claims all the VAT on his inputs and bears no tax on his output. The purchasers of such trader's sales buys the goods or service free of VAT. This suggests that if the government genuinely wants to pass on to the consumers the benefits of the VAT-free goods and services, it should opt for the zero-rate.

In the case of bullion gold import, a zero-rated VAT on bullion gold would eliminate the 21,631 baht tax burden. This will certainly squeeze all the rents available to the smugglers. In the absence of VAT obligations, the only rent left to be had would be that associated with corporate income tax avoidance, which was estimated to be at 5000 baht per a kilogram of bullion gold. Therefore, only if the total cost of smuggling -- which includes the transportation cost of transporting the metal across the border and the margin for smugglers (which includes the cost f risk taken and bribery required) -- is lower than 5000, will there still be an incentive to acquired gold from the underground channel. The gains are likely to be marginal. Hence, it would appear to be the case that a zero-rated VAT tax on bullion gold will uproot the current smuggling.

As mentioned earlier, Thailand adopts a single-rate VAT system. Thus, according to the VAT law, there is to be a single VAT rate that applies to all goods and services. A zero-rate VAT will require an amendment of the law, which is a notorious long process in Thailand. An exemption, on the other hand, will not be considered a breach of the existing tax law and would therefore be a more plausible change in policy. However, as explained, a VAT exemption will not benefit the consumers nor solve the smuggling problem.

Although a zero-rating will certainly eliminate the current smuggling, is it efficient? Let us for the moment examine what constitutes an efficient VAT tax for the case of bullion gold or jewellery.

7. How should VAT and bullion and ornamental gold

Gold is a unique commodity in that it can be used as either a financial instrument or an input into production of consumer goods. Gold, like money, stocks and bonds and other assets, is a store of value. That is, it can be used to make purchases at a future date. Many central banks keep gold as a reserve currency. As for private investors, gold is a hedge against inflation or depreciation of the local currency; it is often perceived as a relatively low-risk and low-yield investment alternative. Also, because gold is a relatively homogenous commodity (each gold bar can be differentiated on the basis of only weight and the degree of purity), its price is more or less uniform globally. Durability, homogeneity and consistency of the metal rendered it a rather liquid asset. It is therefore no surprise that gold has been used extensively in an array of financial instruments such as gold-swap, gold-hedging, gold loans..etc.

Bullion gold can also be melted for use in dentistry, the jewellery industry or for wiring in electronic industries. In general, a larger proportion of gold is directed for industrial use than investment purpose as can be seen in table 7 which lists the end use pattern of gold in various countries in 1992.

Table 7: End-use pattern of bullion gold 1992

unit: (%)

| | USA | Japan | European Community | Thailand | Other Western Countries |
|------------------------|-----|-------|-----------------------|----------|-------------------------------|
| I 11 a | 57 | 53 | 89 | 94 | 63 |
| Jewellery [.] | | - | 09 | 94 | 03 |
| Electronics | 20 | 32 | 4 | | 3 |
| Dentistry | 5 | 9 | 3 | | 3 |
| Other industrial | 10 | 6 | 3 | | 4 |
| decorative uses | | • | | | |
| Coins and smaller | 8 | | 1 | 6 | 27 |
| items for investment | | | | | |

Source: Gold Fields Mining Services Ltd.

The use of gold for dentistry is particularly high in Japan (9%). For the European Community, almost 90% of gold is channelled to the jewellery industry, while in United States and Japan, a relatively large portion of gold goes into the electronics industry (but still not as large as to the jewellery). In Thailand gold is directed almost entirely into the jewellery industry. It is shown in table 6 that in 1992, 94% of bullion gold is used toward the jewellery industry. Table 2 shows that during 1990-1995, the industry takes an increasingly larger portion of bullion gold as a result of the booming jewellery sector, both domestic and overseas from the boom in the jewellery industry. Since commercial banks are barred from gold dealings and individuals cannot acquire bullion gold, a bullion-gold investment market in Thailand is practically non-existent.

The distinction between gold for the purpose of investment and that for production has important tax implications. Because bullion gold may represent either an investment or an input into production of jewellery (consumer goods), it is not clear whether or how it should be taxed.

Based on the economic rationale that the ideal VAT is one that is applied indiscriminately across all goods and services. Exemptions are often apply to food, agricultural input and "merit" goods and services such as books, culture, education and health. Exemptions often lead to cascading of taxation, however, which is the very shortfall of sales tax that the VAT is designed to eliminate11. The more exempt goods there are, the more likely that goods and services will be taxed at different unintended and unknown rates. The EC expressed the conviction that granting exemptions should be kept at minimum. Moreover, the more exemptions there are, the more others are tempted to claim exemptions for themselves. This is how the tax base gets eroded. Countries that has an extensive exemption list is Indonesia, Ireland and the United Kingdom. As gold is neither an essential nor a merit good, its exemption from the VAT would be unjustified.

¹¹ If exempted products represent inputs in production of other goods or services, then the VAT borne on the exempt trader's inputs is built into his price. Manufacturers or purchasers of the exempted inputs will not be able to claim a credit for the VAT paid. This means that part of the value-added is taxed more than once and that a tax-on-tax cascade is introduced into VAT.

Hence, according to economic principles, bullion gold used in production and gold ornaments should be taxed at the full 7% VAT as do other production inputs and consumption goods.

The issue arises whether bullion gold that is to be used in the financial market should be taxed? This poses are rather difficult question. If gold is perceived as a commodity that is traded at an exchange, then it should be taxed as do other commodities. However, if gold is perceived as an investment medium such as stocks and bonds, then it should not be taxed. Gold is different from stocks and bonds or other investment medium in that it involves production that ranges from mining, extraction to fabrication. Hence, it is a "physical product" that has a clear cost of production. If so, then bullion gold should be taxed at the point of production (if there exists local gold production) or import as do other products that are consumed domestically. Bullion or ornamental gold that is destined to be exported should be subject to the VAT or other forms of consumption tax in the final-destination country rather than the local tax12.

While bullion gold should only be taxed upon production, it should not be taxed when traded. Trade in bullion gold should not be taxed because the VAT is supposed to be a tax on flows. If the trade represents merely movements in the stock of bullion gold that have no added values to it, then it should not be taxed. Thus, it is important that the relevant VAT tax law in Thailand distinguishes between monetary gold and industrial gold so that they can be taxed differently.

To conclude, smuggling can be eliminated by imposing a zero-rated VAT on bullion gold. But zero-rating goes against the economic principles of an efficient tax. Smuggling is <u>not</u> a result of inefficiency of the current tax system but rather, the ineffectiveness of the tax authorities and well as the border patrol. The collection of both

12 The VAT is also designed to be neutral to trade. All present VAT systems are based on the destination principle in that it is levied on the final consumption of goods or services. Thus, VAT paid on exports are fully rebated while imports are taxed at the full rate of VAT applicable to other domestic goods to insure

equal treatment of imported and domestically-produced goods.

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the VAT and the income tax reamins very much primitive in the case of the retail gold industry. About 80% of the stores are registered as "small-business" so that a flat VAT fee calculated on only 1.5% rather than the standard 7%. To qualify to be a small business, the stores' annual sales must not exceed 1 million baht. In gold retailing, such figure is not plausible. Moreover, the lack of documentation forces the authorities to calculate tax obligations based simply on the size of the store. Such ad hoc procedure leaves the system prone to corruption.

Smuggling also persists because of lax enforcement of the laws. Table 8 below exhibit the volume of gold that has been confiscated each year. The unimpressive record of confiscation seems to indicate that little has been done over the years to stop smuggling.

Table 8: The volume of ilegal gold confiscated by the Customs Department

| Fiscal Year | Volume (kg) | Volume imported (tons) | Percentage confiscated |
|----------------|----------------|------------------------|---------------------------|
| 1989 | 354 | 121 | 2.92 |
| 1990 | 378 | 115 | 3.28 |
| 1991 | 532 | 95 | 5.6 |
| 1992 | 619 | 87 | 7.11 |
| 1993 | 416 | 96 | 4.33 |
| 1994 | 443 | 124 | 3.57 |
| 1995 | 828 | 116 | 7.13 |

Source: The Customs Department

To conclude, bullion gold should be subject to the relevant sales tax13 upon production (for countries which produce gold) or at the point of import (for countries that import gold). Transaction in bullion gold should be exempted from tax, however. As for gold ornaments, they should be subject to the full VAT or sales tax as do other consumption goods.

¹³ Sales tax also includes retail sales tax and the VAT

8. The development of a bullion market:

If the VAT on financial gold trade were to be lifted, there would be an investment demand for bullion gold. Let us now turn to the supply-side of the equation. Does Thailand has what it takes to develop a well-functioning bullion market? If not, what institutional establishment or policy changes will be required? This issue is the focus of the following section

The world's biggest gold trading centers are located in Hong Kong, Singapore, London, Zurich and New York. But how did these places come to trade in gold, especially when they may have no indigenous supplies of gold in their own country, e.g. Zurich? There are many reasons for why each of these centers has become active gold trading markets. For example, the Zurich gold market is a physical market and consists of a gold pool. formed by three major Swiss banks - Credit Suisse, the Union Bank of Switzerland, and the Swiss Bank Corporation. These banks operate refineries and supply virtually all the new gold for the gold pool. Even though there is no gold in Switzerland, Zurich became a market centre for gold trading after an agreement formed in 1968 between the gold pool members and the South African central reserve bank. The Swiss gold pool only came about after the London market was forced to close down in 1968 because the volume of gold that was passing through London from America during the Tet offensive in Vietnam, was too great to process quickly. Up until this time, gold transactions for the South African banks were handled by London. Now the three major banks in Switzerland approached the South African central bank and asked if gold might be traded through them instead. This agreement enabled the Swiss gold pool to become the major transaction centre for new gold, with new gold arriving from South Africa and the former USSR. The Swiss have had long dealings with gold since the 1930's, and Switzerland was known as one country which had a stable currency, was politically neutral, and was in a good geographic location as a trading centre. In addition, Switzerland was known as having excellent financial institutions, and had an excellent infrastructure for refining, storing and transporting of gold.

Hong Kong has been one of the largest distribution centers in the Far East for gold since January of 1974, when the government lifted restrictions on the import and export of gold bullion. Up until 1974, the Chinese gold and silver society had handled all transactions in the regional gold trade. The Chinese have had a long affinity for gold, and since Hong Kong held the headquarters of the gold and silver society for the past 80 years, it was only natural that it should become an international trading centre after import liberalisation. Prior to liberalisation, Hong Kong was the only market open in the Far East time zone, and was used extensively by traders and speculators to satisfy their portfolio requirements for gold. Additionally, the existence of an excellent financial infrastructure meant that Hong Kong could become easily accessible from anywhere in the world. Low corporate tax structures provided incentives for businesses to open in Hong Kong, and a lack of exchange currency controls meant that traders were free to deal in any currency of their choosing.

How does a gold market function? The gold market is divided into a paper and a physical market for gold.

The physical gold Market

This market is a spot market, with trades taking place between the offices of bullion brokers, that are often associated with bullion banks that finance the transactions and have the required storage facilities. Often a bullion bank (or bullion house) will be owned by a large commercial bank as only large commercial banks can afford the facilities and the financial backing to store bullion. Trading between market participants in this market is usually done by OTC (over-the-counter), with no formal open outcry meeting place for conducting transactions. There are no regulatory bodies, clearing houses or exchanges (unlike in the futures market) to monitor transactions or maintain rules or standards.

An attractive financial instrument available in the physical gold market is known as the **gold loans.** These loans are mainly used by jewellers as a hedge against price fluctuations, and also because of the low interest repayments on a loan. The way it works is that a lender such as a bullion bank will lend gold to a borrower, who pays back the loan in physical stocks of gold at a prespecified maturity date and a low rate of interest (usually around 2-3%). The borrower then sells the gold on a spot market and uses the money to finance production of jewellery. At the maturity date, the borrower returns the gold stock to the lender.

The hedging benefits of gold loans arise from the fact that gold is both a commodity out of which jewellery items can be fabricated and it is also a recognized currency in the financial market. Thus, by financing production on gold, jewellers enjoy the luxury of borrowing the very same commodity he uses in the manufacture of his merchandise and thereby, create a liability identical to his bullion assets and thus benefit from the resultant hedge. As both assets(gold merchandise) and liabilities(gold loans) are both denominated in gold, borrower is indifferent to movements in the gold price.

There are two types of gold loans: short term and long-term ones. The long-term loan is the one commonly used by the jewellery sector. The objective of the long-term gold loan is to finance gold inventory at low-cost and fully hedged basis. Typically, the manufacturer who borrows gold will immediately sell it back to the bullion lender for cash. This proceed will then be used to finance expansion in gold production. While it can be argued that the conversion of the bullion into currency would undo the hedging benefits of a gold loan, it must be kept in mind that the manufacturer's gold stock will turn over several times during the length of the loan, which normally lasts for two years. During this time, the values of the replaced stocks are continuously revalued and will therefore be close to any potential repayment price.

Short-term gold loans normally lasts for 90 days and are normally used by manufacturers and importers of gold jewellery. Manufacturers typically uses short-term gold loans to finance seasonal increase in production. By borrowing gold, the purchase of additional fine gold can be postponed to coincide with either the fixing of the gold jewellery or more commonly, with the receipt of jewellery sale proceeds.

Importers of gold jewellery can also benefit from short-term gold loans. Historically, the wholesaler is billed for the total cost (plus a margin) of the purchased jewellery, which consists of the cost of gold and the added value. This leaves him fully exposed to the movement of the gold price that may occur during the date of invoice and the date he sells the jewellery. In order to hedge himself against the fluctuation in gold price, the wholesaler could take out a gold loan and arrange for it to be delivered via a bullion bank consignment in the fabricator's country. He will then be billed only for the added value of the product and will retain total control as to when repayment of the fine gold is affected.

While importers of gold jewellery can hedge themselves against the movement of bullion price by taking out a gold loan and have the gold delivered by bullion bank's consignment to the manufacturers, the latter also benefit from such an arrangement. With the provision of fine gold by the importer, the exporter minimises his exposure to the particular client. Often manufacturer will only release a batch of finished jewellery only upon the receipt of fine gold from the local consignment.

Prior to the 1980, gold loan was used widely by mining companies. The surge in gold price in early eighties prompted a rapid expansion in gold exploration in particular in North America and Australia. Large-scale financial needs by gold mines gave rise to sophisticated gold financing techniques such as forward, futures and options that allow mining companies more flexibility, cost savings and hedging as will be explained in more details later.

While large-scale investors such as gold mines prefer forwards, options and futures to gold loans, smaller ones -- mainly jewellers -- have become main users of gold loans.

The paper gold market

In the paper market, speculators and hedgers use paper to hedge positions on an existing portfolio or speculate on the change in price of gold without risking all the capital needed to purchase the gold on the spot market (known as leveraging, or gearing).. In such a market, there is no physical movement of gold. Because of the high cost of security needed when storing gold, and the cost of shipping gold, many investors choose to trade claims on purchases of gold without taking physical possession of the gold itself. Instruments such as options and futures are traded on commodity exchanges which represent claims to a very specific fineness, quantity and delivery date of gold.

Unlike trades in physical gold, trades in paper gold are conducted through exchanges such as COMEX (Commodity Exchange Inc, now merged with the New York Mercantile Exchange, NYMEX), or the Chicago Board of Trade (CBOT). Derivative securities such as options and futures are bought and sold through a **Clearing House** which matches buyers with sellers and also provide a guarantee of any settlements between traders, ensuring that orders are fulfilled assuming the risk of default on the parts of buyers and sellers.

To conclude, a bullion market can offer an array of gold financial instruments which lead to cost-saving and hedging benefiting all participants in the market be they gold mines, jewellery fabricators, exporters or importers. Low-interest gold loans are most useful to gold fabricator who can save not only interest costs, but also hedge himself against fluctuations in gold price by mobilizing funds denominated in gold as his assets. For non-fabricator such as gold mines and speculators, futures, forward and options are more attractive.

As Thailand is a major fabricator of gold jewellery, it can benefit most from a physical gold market. However, it is neither a gold-producing country nor does its central bank hold a large stock of gold reserves14. But that is not a requisite for developing a bullion market as gold can be easily imported from overseas. Thailand has already liberalized gold import.. Because the physical market for gold is OTC, there is no need to set up a formal meeting place for trades. Many transactions in physical gold can be completed loco-London anyway. What is required is a bullion bank.

Since the Thai Farmers Bank has vaulting facilities (from the post WWII days), it can easily take the role of a bullion bank where import can be settled on a consignment basis. The bank can act as gold brokers by matching sales and purchases without having to take positions. Other institutes such as commercial banks, large gold traders (such as Moccatta) and major financial institutes should also be permitted to trade bullion gold among themselves and to offer deposit accounts in gold, deposit accounts indexed in gold or gold accumulation accounts15. Gold deposits accounts will allow gold holders to earn some interest on their gold savings. The interest should be freely negotiated by the banks and account holders. In order to balance the gold liabilities, banks will have to extend credits in gold or assets in gold to jewellers or investors. As long as there are no restrictions on individual gold holdings, one may find the natural entry of bullion banks into the financial circuit.

14 Thailand's gold reserves in 1996 is estimated at 2.47 million ounces, which is worth approximately 1 billion dollars. This represents a mere 2.43 per cent of total reserves.(IFS statistics).

¹⁵ Under an GAP, the customers will instruct the bank to purchase gold daily in the investment period. As the daily cash expenditure is fixed, more gold will be purchased when prices are low. Benefits to investors are those inherent in gold accounts

9. Policy recommendations

What needs to be done to stop smuggling and to encourage the development of a bullion market in Thailand? And who will gain from the establishment of a bullion market? There are three ways in which smuggling may be stopped: to eliminate the incentives to smuggle, close the current legal loophole that allow laundering of illegitimate gold and monthe abuse of corporate tax provisions; and step up border patrol to mitigate the flow of smuggled bullion. In order to eliminate the incentive to smuggle, a zero-rated VAT on bullion gold will be required. But as mentioned earlier, this goes against the fundamentals of an efficient tax and is legally difficult to implement. Closing the legal loopholes require the revision of the "Antique and Second-hand Trade Regulation Act 1932", which allows gold stores that have obtained a status of an antique store to claim smuggled gold to be recycled gold. The second loophole lies in the special tax provision for small enterprises. Under such a provision, stores with annual sales lower that 1.2 million baht (US\$ 48,000) are subject to a 1.5% VAT instead of the conventional 7% rate. More importantly, a lump-sum tax payment is often arranged from a very ad hoc estimation procedure. Thus, by filing for a small-business status, gold retailers are able to not only lessen their tax burden, but also circumvent the normal procedure in tiling corporate income tax requiring extensive documentation. Finally, smuggling can be mitigated through better enforcement of the law: be they tax laws or Clearly, lack of enforcement has allowed tax evasions, spawned criminal laws. widespread corruption among tax officers and sustained a flourishing underground bullion trade.

If the laws are revised and better implemented and enforced, smuggling can be markedly reduced. But not until then, will Thailand have a chance to develop a legitimate and an efficienct bullion market.

The establishment of a bullion market itself will require another set of policies. First, the current tax law needs to distinguish between industrial gold and financial gold. While import of gold for whichever purpose should be subject to a 7% VAT at the point of production or importation, only sales of ornamental gold should be subject to the VAT applied at the retail level. Sales of bullion gold in the financial market should be exempted from the VAT since the process does not enhance the valueof the metal in anyway. However, a capital gains tax may be applied to investment in bullion as to investment in other alternative assets such as stocks and properties.

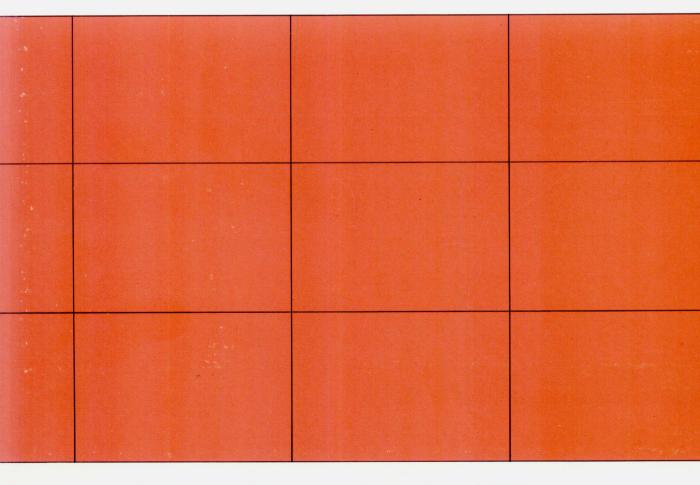
In order to stimulate demand for bullion gold, the clause in the current law which prohibits individual (non-commercial entity) from purchasing imported bullion will have to be abolished. On the supply side, commercial banks should be allowed to mobilize savings and lend in gold -- i.e., gold loans.

10. Conclusion

Smuggling has become a culture of the gold industry. However, it is high time that the industry breaks away from this culture that while absolved it from tax obligation, also deprived it of all modern fabrication and marketing techniques that are available in a transparent market all these years. The breakaway will have to be concerted effort from all producers, retailers as well as the government. Producers need to look beyond the domestic market in which they comfortably out of reach of the arms of tax authorities. The Government needs to revamp its entire tax system so that a more organized, effective and efficient system that is also less prone to corruption and bribery can be installed. At the same time, it needs to make smuggling more costly by imposing severe penalties and step up border patrols. For more specific measures in the short-run, the government may consider an elimination of the VAT on trade (not import) in bullion gold and crack-down on fraudulent "small-business registration and increase documentation requirements for tax purposes.

Bibliography

- Ertuna, Ozer, "The Liberalization of Turkey's Gold Market," Research Study No.7, World Gold Council (Istanbul: Bosphorus University)
- McCannah, I.J., "Bullion Financing for the Indian Jewellery Industry," The World Gold Council's: Gold Economic Conference (New Delhi, India: November 1996).
- Pringle, Robert, "Central Banks and the Changing Role of Gold," prepared for the First Asian Gold Conference (New Delhi, India: Central Banking Publications Ltd, 20 November 1996)
- Tait, Alan A., Value Added Tax: International Practice and Problems, (Washington, D.C., U.S.A.: International Monetary Fund, 1988).
- World Gold Council, Speakers' Papers Annual (New York, U.S.A: World Gold Council, 20 June 1996)





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