# The beche-de-mer trade in 1995/1996 and an assessment of exchanges between the main world markets

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## Introduction

### The main sea cucumber markets

Hong Kong, Singapore and Taiwan are the main international beche-de-mer markets (Conand and Byrne, 1993). Hong Kong is the largest of the three and, since 1986, has imported more than 6,000 t and re-exported 3,500 t of sea cucumber annually, with import values amounting, on average, over the decade, to US$ 27 million ± 10 and re-export values to US$ 11 million ± 4. However, since 1994, imports have decreased in comparison to the early 1990s, while re-exports have risen, reaching 4,000 t in 1996 (Table 1). Hong Kong's main suppliers are Indonesia and the Philippine Islands, which together supply 40% of this market's imports. The Hong Kong market's biggest customer is China, which buys 80% of its re-exports.

Singapore is the second biggest market, but its annual imports (1100 t, i.e. a value of US$ 8.5 million ± 3.3) and re-exports (1000 t, i.e. a value of US$ 7.5 million ± 3.3) are well below Hong Kong's. Its main suppliers are Tanzania, Madagascar and Papua New Guinea; together, they account for 50% of import tonnage. Its major customers are Malaysia and, in particular, the Hong Kong and Taiwan markets.

Taiwan is third; it imports dry products (beche-de-mer) from Indonesia, Singapore and Japan and frozen products from the temperate fisheries of the North American continent. Its import tonnages are about 600 t per year for beche-de-mer and 450 t for frozen products, with respective values of US$ 3.5 and 1.8 million. There are also other smaller markets in many South-east Asian countries, which only supply the local trade (Ferdouse, 1999).

### Two-way trade between the markets

Analysis of the trade statistics for the three markets reveals the existence of two-way trade in this commodity between the markets. Such exchanges can involve large tonnages and may distort actual trade statistics for these markets by causing some quantities to be counted several times. This type of trade had already been shown to exist (Conand & Byrne, 1993; Conand, 1998), but had never really been quantified in terms of worldwide beche-de-mer production.

Also, this analysis allowed an evaluation to be made of the reliability of these markets' trade statistics. Declared imports to one market from one of the other two should, in fact, be equivalent to the re-exports declared by the second or third towards the first.

This paper proposes first to present all trade between the three markets during the 1986–1996 period, in terms of both tonnages and values for the Hong Kong and Singapore markets, so as to track trade over the course of a decade and thereby determine the flow of goods and values which resulted from this trade. The trade's scale will then be compared to both a previously-assessed portion of 1995 world production (Jaquemet, 1999) and to the markets themselves.

Table 1:  **Beche-de-mer trade for the three international markets in 1995 and 1996. T: tonnage, V: value in US$ million, i: imports, r: re-exports.**

| | 1995 | | | | 1996 | | | |
|---|---|---|---|---|---|---|---|---|
| | Ti | Vi | Tr | Vr | Ti | Vi | Tr | Vr |
| HONG KONG | 5788 | 41.1 | 3907 | 15.5 | 5020 | 41.9 | 3976 | 18.1 |
| SINGAPOUR | 1051 | 13.2 | 759 | 11.5 | 1009 | 13.2 | 836 | 13.4 |
| TAIWAN | 715 | 4.0 | 34 | 0.6 | 592 | 3.4 | 25 | 0.5 |

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## Method

The theoretically equivalent quantities were compared in order to evaluate the reliability of the data provided by these markets. To do this, Hong Kong's imports from Singapore markets and Singapore's re-exports to the Hong Kong market (and vice-versa) for the period 1986 to 1996 were compared by means of a Wilcoxon test. Taiwan's trade statistics were processed in the same manner in relation to data from the two other markets.

The beche-de-mer flow resulting from these exchanges was also determined for each market by calculating the differences between imports and re-exports to the other markets. This flow was then related to the market's imports and re-exports in order to estimate the extent of reciprocal trade between the markets in relation to their own activity and to world production. Values and per-kilo prices for trade between the Hong Kong and Singapore markets were also analysed so as to gain a better understanding of how important this trade was for these markets.

## Results

In Table 2, data on trade between the Hong Kong, Singapore and Taiwan markets are presented in terms of import and re-export tonnages. As the Taiwan data were incomplete, the analysis mainly covers statistics from the Hong Kong and Singapore markets.

The largest amount of reciprocal trade involved the Hong Kong and Singapore markets. The statistics for these two markets did not show any significant differences (Wilcoxon at 5%) over the ten-year period between the quantities of beche-de-mer shipped to Hong Kong and those shipped to Singapore. In some years, however, there may have been significant differences between the tonnages declared by these two markets (Table 2). The differences between imports and re-exports for each market made it possible to determine that the flow resulting from this trade was positive in the Singapore-Hong Kong direction, at about 600 t per year, for the period 1986-1996.

Study of two-way traffic with the Taiwan market is more difficult, from that market's trade statistics. Many data were missing and comparison of these data to those from the other two markets showed significant differences. Study of trade between the Hong Kong and Singapore markets and knowledge of the trade statistics records in Taiwan showed that data from this market were much less carefully compiled than those from the other two markets and so were less reliable. Nevertheless, the differences in imports and re-exports between the other two markets and Taiwan were both positive, i.e. the beche-de-mer flow was towards the Taiwan market from both Singapore and Hong Kong. Over this 10-year period, Hong Kong re-exported mean annual quantities of about 250 t to Taiwan, while Singapore re-exported an average of 80 t.

In order to better understand trade between the Hong Kong and Singapore markets, it was useful to study the value of the products traded as well as per-kilo prices. These exchanges are presented in Table 3 for the 10 year period, 1986–1996.

The highest values occurred in trade involving re-exports to Hong Kong and matched the flow of beche-de-mer tonnages. For the Hong Kong market, the values of imports from Singapore represented on average 1/5 of total annual imports, while such re-exports accounted for less than 1/10 of total re-exports. For Singapore, 50% of re-export values came from trade with Hong Kong, while imports were only 5% of total annual imports. Per-kilo prices fluctuated from year to year but all increased over the decade. The highest per-kilo prices were found in re-exports to the Singapore market. The higher per-kilo prices for trade between Hong Kong and Singapore have to be considered in the light of the quality of the goods. Singapore only imported a small quantity of products from Hong Kong, but they were of high commercial value.

## Discussion

### Trade in these three markets in 1995 and 1996

Analysis of the Hong Kong trade statistics for 1995 and 1996 confirmed that market's position as world Leader. Import and re-export tonnages increased slightly in comparison to 1994, but remained below those of the early 1990's (Conand & Byrne, 1993). In contrast, these values have very clearly risen in recent years, as have per-kilo prices, which have quadrupled in 10 years for both imports and re-exports. This significant increase was the result of an increase in demand which supply was not able to match. Singapore's imports and re-exports also increased, in terms of both tonnage and value. Imports remained clearly below those of Hong Kong, but a constant increase in tonnages transiting through this market over the decade was observed. Since 1986, the Taiwan market has experienced relative stability in imports in comparison to the other two markets.

### Reciprocal trade and world production in 1995

Study of the trade between the three international beche-de-mer markets brought about a better un-

**Table 2:** **Beche-de-mer exchanges (in tonnes) between the Hong Kong (HK), Singapore (SG) and Taiwan (TW) markets. \*, ^: non significant difference of 5%.**

|  | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **HONG KONG** | | | | | | | | | | | |
| Imports from SG* | 301 | 354 | 772 | 1041 | 1319 | 1308 | 943 | 756 | 920 | 695 | 552 |
| Re-exports to SG^ | 136 | 100 | 132 | 55 | 69 | 111 | 48 | 62 | 55 | 39 | 80 |
| Imports from TW | 44 | 7 | 50 | 44 | … | … | … | … | … | 12 | 39 |
| Re-exports to TW | 272 | 327 | … | … | … | … | … | … | … | 364 | 217 |
| **SINGAPORE** | | | | | | | | | | | |
| Imports from HK^ | 84 | 30 | 48 | 18 | 47 | 79 | 48 | 44 | 46 | 43 | 77 |
| Re-exports to HK* | 657 | 384 | 624 | 439 | 651 | 773 | 786 | 556 | 727 | 455 | 460 |
| Imports from TW | … | 201 | … | 3 | 5 | 3 | 8 | 0 | 5 | 10 | 11 |
| Re-exports to TW | 110 | 115 | 81 | 150 | 123 | 180 | 167 | 132 | 53 | 61 | 59 |
| **TAIWAN** | | | | | | | | | | | |
| Imports from HK | … | 6 | 0 | 6 | 12 | 5 | 3 | 7 | … | 1 | 0 |
| Re-exports to HK | … | … | … | … | … | 22 | 8 | 8 | 2 | 3 | 5 |
| Imports from SG | 9 | 2 | 18 | 36 | 71 | 149 | 55 | 34 | 20 | 30 | 22 |
| Re-exports to SG | … | … | … | … | … | 5 | 8 | … | 6 | 15 | 11 |

**Table 3:** **Reciprocal beche-de-mer trade between the Hong Kong and Singapore markets in terms of total values and per-kilo prices.**

|  | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **HONG KONG** | | | | | | | | | | | |
| Imports from SG | | | | | | | | | | | |
| Value (US$ 1000) | 1533 | 2200 | 3430 | 3444 | 4986 | 4159 | 3594 | 3177 | 4927 | 4938 | 5871 |
| Price per kilo (US$) | 5.1 | 5.7 | 4.3 | 3.2 | 3.7 | 3.2 | 3.8 | 4.3 | 5.4 | 7.2 | 11.0 |
| Re-exports to SG | | | | | | | | | | | |
| Value (US$ 1000) | 1075 | 526 | 1016 | 419 | 712 | 1695 | 669 | 967 | 836 | 775 | 1086 |
| Price per kilo (US$) | 7.2 | 9.2 | 7.7 | 7.8 | 10.7 | 11.8 | 13.8 | 14.6 | 15.7 | 13.0 | 11.5 |
| **SINGAPORE** | | | | | | | | | | | |
| Imports from HK | | | | | | | | | | | |
| Value (US$ 1000) | 801 | 258 | 421 | 150 | 538 | 1239 | 692 | 713 | 590 | 350 | 780 |
| Price per kilo (US$) | 9.5 | 8.6 | 8.8 | 8.3 | 11.4 | 15.7 | 14.4 | 16.2 | 12.8 | 8.1 | 10.1 |
| Re-exports to HK | | | | | | | | | | | |
| Value (US$ 1000) | 1142 | 1932 | 3461 | 2305 | 3130 | 4859 | 4559 | 3883 | 4932 | 3794 | 4545 |
| Price per kilo (US$) | 2.2 | 5.0 | 5.5 | 5.3 | 4.9 | 6.3 | 5.9 | 6.9 | 6.7 | 8.3 | 9.9 |

derstanding of the role each plays in world trade. The significance of such exchanges in each market's trade in 1995 is summarised in Figure 1 (see next page) Tonnages corresponding to two-way trade are indicated in Figure 1; they have not been deducted from the markets' total imports and re-exports.

Assessment of world production in 1995 (Jaquemet, 1999) made it possible to determine that about 13,062 t of dry products were sold. Tonnages involved in reciprocal trade between markets in 1995 amounted to some 890 t, i.e. 7% of world production. The significance of this trade in terms of value is more difficult to estimate. If the US$ 60 million value proposed for 1994 (Conand, 1998) is taken as a reference figure, it is conceivable, given the development of trade tonnages, that the total value of trade in 1995 was at least US$ 80 million. In that case, total reciprocal trade between markets would account for about 10% of world val-

ues. This type of commerce, therefore, had only relative importance in the world beche-de-mer trade; it was, however, probably under-estimated as the tonnages and values reported by Taiwan were probably lower than the actual figures.

At the scale of these markets, two-way trade was more important, particularly for the Singapore and Taiwan markets.

In fact, Singapore shipped 72% of its re-exports to the Hong Kong market and 6% to Taiwan.

A total of 9.5% of Hong Kong imports came from the Singapore market and 8% of its re-exports headed for Taiwan.

Taiwan imported 42% of its beche-de-mer from Hong Kong and 6% from Singapore.

Sea cucumbers could in this way to be imported either for local consumption or for later re-exportation, depending on the market. Taiwan engaged in this trade with the other two markets in order to import products for domestic consumption. Singapore imported quantities exceeding domestic consumer demand from producing countries in order to be able to re-export a large proportion to Hong Kong. This market played a central role in trade. In fact, at their own scale, imports and re-exports with other markets only accounted for a small percentage of transiting tonnages. However, this did allow the re-export of high quality goods of high commercial value to Singapore.

## Conclusion

Trade between the main international beche-de-mer markets only accounted for a small percentage of global trade, remaining at less than 10% of total market tonnages and values. The Hong Kong market played a central role in these exchanges and served as an intermediary between the Singapore and Taiwan markets which did very little direct trading. Comparison of the trade statistics of these markets also allowed it to be shown that there were problems with data reliability which hamper proper stock management.

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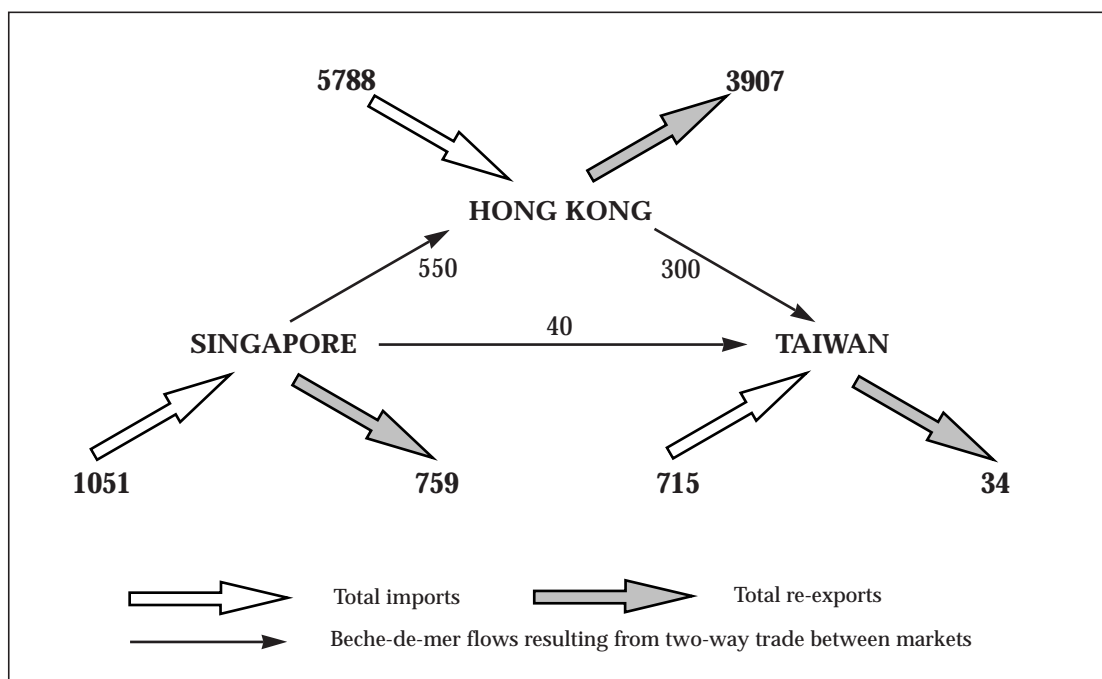


**Figure 1. Scale of two-way trade between markets**