Wholesale fish marketing in Hong Kong

“Save with a permit in writing from the Director, or as otherwise provided by regulations, no marine fish may be landed other than at places specified by regulations and no marine fish may be sold, offered or exposed for sale or possessed for the purpose of sale, by wholesale, otherwise than at a market (Wholesale Market operated by Fish Marketing Organization) or otherwise than by way of re-sale following a sale at a market.”

- The Marine Fish (Marketing) Ordinance (Cap. 291)

The Marine Fish (Marketing) Ordinance (Cap. 291) provided the legal framework for the operations of wholesale trading of captured marine fish (which were no longer alive or in water) in Hong Kong. Under the Ordinance, no marine fish could be landed or sold by wholesale, other than at a wholesale market operated by Fish Marketing Organization (FMO), unless a written permit was issued by the Director of Agriculture, Fisheries and Conservation Department (AFCD). There were exceptions, however, for fish that had been caught for sport or pleasure, and for those that were not intended for sale or export.

While traditional price theory would suggest that a monopoly would acquire huge monopoly rents/profits, the Fish Marketing Organization, as a legal monopoly on the wholesale trading of captured marine fish, however, experienced a sharp decline in profits since 1985 [Exhibit 1]. Eight straight years of deficit were recorded since 1992. It was only in the years 00-01 and 01-02 that the organization turned around and generated a profit that matched the level it achieved in 1985.

Why did a legal monopoly like FMO get into financial difficulties? How did FMO turn around? Fish, like other products, had to go through a supply chain which was consisted of the production level, the import level, the wholesale level, before reaching the consumers. What role did FMO play in the chain?

The Fish Market in Hong Kong

Fish were perishable commodities and were marketed in live, chilled or frozen forms. Preferential habits of consumer and high perishability of the produce were factors that made the industry complex and fraught with risks.
Hong Kong consumed some 305,500 tonnes of fisheries products\(^1\) annually and some 70% of these were marine fish.\(^2\) The local capture and mariculture production contributed to some 50% of the demand for consumption of marine fish while pond fish culture supplied about 6% of the demand for freshwater fish [Exhibit 2]. The shortfalls were supplied by imports from various sources largely from the Asia-Pacific region. The total demand of fish and basic preferences for domestic consumptions remained steady in recent years. Amongst the 305,500 tonnes of fisheries products consumed, about half were marine (72%) and freshwater (28%) fish respectively [Exhibit 3].

**Origin of Fish – The Production Level**

In order to meet the demand for local consumption, fishermen either captured or cultured them, through marine capture, or aquaculture. The majority of local production came from marine capture, although more than half of them were landed outside Hong Kong. As a matter of fact, retained local production of both marine fish and freshwater fish declined considerably in recent years [Exhibit 4].

**Marine Capture**

The Hong Kong fishing fleet, manned by some 10,860 local fishermen, comprised some 4,700 vessels [Exhibit 5], producing a total fish catch amounted to 169,790 tonnes, with an estimated wholesale value of $16 billion in 2002. Discounting the catch landed or sold outside Hong Kong, some 62,880 tonnes of the catch were supplied for local consumption.\(^4\)

The predominant fishing method was trawling, which involved cone-shaped nets which were towed along the ocean floor. Fish were trapped in the closed end of the net, which had a mesh size that allowed only the smaller fish to escape.

Other fishing methods included lining, gill netting and purse-seining. Lining was a method in which long fishing lines with baited hooks spread out on the ocean floor. Originally, the line was pulled in and baited by hand, but there were now mechanized retrieval systems which did most of the work. In gill netting, fish were caught when their gills got entangled in the webbing (known as gill-nets) as they attempted to swim through it. The size of the mesh differed depending on the type of fish being sought. Nets could also be placed at different water depths, depending where the fish were located. Purse seines were similar to gill-nets, but they had a wire cable running through rings on the bottom, which allowed the sides of the net to be drawn together to trap fish. This method was most often used in catching schools of fish.

**Problems encountered by local marine capture fishermen - overfishing**

With modern trawlers, Hong Kong fishermen were able to fish for extended periods at the continental shelf of the South and East China Seas and fish less on Hong Kong waters. Nevertheless, decline in fisheries resources was a global trend and most of international waters were subject to some forms of fishing control. Trawl bans, for example, had been introduced in many Southeast Asian countries (e.g. Thailand, Malaysia, China and the Philippines) for a variety of reasons, including protection of important spawning and nursery grounds, and the prevention of conflicts between trawl operations and local communities that used less technologically advanced fishing methods.

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\(^1\) Fisheries products include marine and freshwater fish, crustaceans and mollusks.


\(^3\) Hong Kong did not have a registry for local vessels. The number of vessels was estimated by AFCD from survey.

\(^4\) AFCD Annual Report for 2002-2003
In local waters, there was also some control of trawling through the following regulatory and non-regulatory means:

- **All forms of fishing, including trawling, are banned in Marine Reserves**
- **No bottom trawling is permitted in the three Marine Parks in Hong Kong**
- **Trawlers are not allowed to fish inside Marine Department exclusion zones**
- **Due to the illegal dumping of construction waste, many areas of seabed have become too hazardous to trawl due to the potential for net damage.**
- **Typhoons and strong storms associated with the winter monsoon make the eastern waters of Hong Kong difficult to trawl at certain times of the year.**

Over-fishing in local waters and South and East China Seas prompted marine capture fishermen to venture further offshore into distant waters in search for abundant and profitable fish stocks. Recent technology advancement in radio, satellite phone, boat design and the frozen facilities onboard had facilitated fishing in distant waters. In 2002, the AFCD commissioned a consultancy study on the feasibility of offshore fishing. It raised some legal issues that made it impossible for fishermen to pursue offshore fishing in the near future. In particular, Hong Kong did not have a local registry for fishing vessel and would thus not be able to ensure local fishermen’s compliance with international laws when they ventured into the waters of neighbouring countries. The study, however, did not recommend the establishment of a registry for offshore fishing vessels, and suggested instead that Hong Kong fishermen could register their vessels with other jurisdictions, because “the legislative process for setting up such a system would be very complicated and lengthy as it will require introducing and amending legislation governing areas of ship safety, registration of vessels and seafarers, and immigration control of crew members, etc.”

### Aquaculture

Aquaculture was viewed as a practice that would reduce pressure on over-fishing. However, this could only be the case if the culture was full-cycle (egg to adult) and did not use wild-caught juveniles for cage grow-out. There were two kinds of aquaculture: mariculture and pond fish culture.

### Mariculture

In Hong Kong, 1,237 mariculturists operated in 26 designated fish culture zones (FCZs) under licence from the Agricultural and Fisheries Conservation Department (AFCD). The Ordinance was implemented in 1982 to protect and control marine fish farming industry. Production had increased three fold to a peak of 3,860 tonnes in 1991 since the implementation of the legislation, although it had declined slightly in recent years. The legislation required all marine fish culture operations to be practised under license within gazetted Fish Culture Zones. The majority of these FCZs were situated in eastern waters away from development sites, urban population and navigational fairways, and were usually sited to the west of islands or in sheltered bays for protection from dominant easterly prevailing winds and the associated high waves. The FCZs altogether supplied 1,210 tonnes of live marine fish valued at $57 million in 2002.

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7 AFCD Annual Report for 2002-2003
Pond Fish Culture

Freshwater and brackish water fish were cultured in fish ponds covering some 1,030 hectares, most of which were located in the north-western New Territories where they formed part of the wetland system of conservation interest. With the increasing urbanisation of the New Territories, commercial fish pond production gradually declined [See Exhibit 4 for local production of fresh water fish]. In 2002, pond fish culture yielded 1,990 tonnes, or 4 per cent, of freshwater fish for local consumption.

The Import Level

The government maintained a level playing field for any importer of fish, requiring all imported marine fish to meet only the necessary health standards and sanitary requirements. From 1985 till 1997, retained import of marine fish increased steadily, although that for fresh water fish remained more-or-less steady [Exhibit 6]. Since the Financial Crisis in 1997, retained import of marine fish dropped and importers were badly affected. “Demand for high-valued fish in particular had plummeted and as a result most of the traders had suffered decreases in profit return of 30-50% and in certain cases up to 80-90%.”

Importers sourced fish from all over the world, including Southeast Asian countries (such as Indonesia, Malaysia and the Philippines), Australia, New Zealand, South Africa, France and the USA. In a survey conducted by World Wide Fund, only one local wholesaler had vessels to travel overseas to collect fish directly from the source countries. Most of the others bought from foreign agencies, and transported the fish to Hong Kong mainly by sea or by air. Foreign agencies used live-fish carriers to collect the catches from the fishermen. The fish would then be delivered to packing centres, normally located in cities with an international airport for export by air. Export by air continued to grow because it required lower running capital and the risk was smaller than if fish were stored until enough had been accumulated for a large shipment. Sea imports, therefore, dropped markedly, “with more than 50 per cent of fish now transported to Hong Kong by air.”

The Wholesale Level

Some local vessels, instead of landing their catches in Hong Kong, landed their fish outside the territory [Exhibit 7]. For fish landed in Hong Kong, there were two channels depending on the type of fish – if the fish were not alive in water, they were required by law to be sold through the Fish Marketing Organization; otherwise, the fish either went through a complex network of live-fish distribution channel, or a vertically-integrated network if the retailer was capable of collecting fish directly from the producers.

Landings outside Hong Kong

Many fishermen sold a substantial portion of their catches either on the high seas to vessels of other countries or at ports in Mainland China before returning to Hong Kong [Exhibit 8]. In particular, landings in Mainland China had doubled from 1992 to 1998. Landings on high seas to Japanese and Taiwanese importers, who might have a freighter waiting to take the fish to their respective countries, were also popular. In this way, fishermen could get their money right away, so that they did not have to pay interest on borrowed money to finance the costs of holding their catches in inventory. These transactions outside Hong Kong did not

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contravene the Marine Fish Ordinance as the regulation only governed the wholesale marketing of marine fish in Hong Kong.

Similar transactions which took place in local waters, however, were illegal. When those fishermen who had not sold all their catches returned to Hong Kong at the end of their fishing trips, their incoming fishing vessels were likely to be approached by vessels of local fish traders who wished to buy the premium part of the catches before the remaining catches reached the wholesale fish markets (WFMs). These fishermen were willing to sell their catches to local fish traders because they could probably fetch a higher price. As a matter of fact, the price of fresh fish rapidly fell by the hour from the moment they were caught, for fish were perishable commodities. Thus, despite being illegal, some fishermen would diligently categorize and store the fish they caught in order to sell their best catches at premium prices in places other than a FMO market. Some black spots (e.g. the Aberdeen Harbour) for such illegal activities were identified and the AFCD, FMO and the Maritime Police were jointly responsible for the enforcement of law. The amount of such illegal transactions, however, remained low and insignificant. [See Exhibit 7 for landings elsewhere in Hong Kong].

**Landings in Hong Kong**

**Distribution of Live Marine Fish**

For live fish landed in Hong Kong, they either went through a complex network of live-fish distribution channel or a vertically-integrated network if the retailer was capable in collecting fish from the producers directly [Exhibit 9]. In local waters, collector boats transported fish from marine fish farms and inshore fishing boats in relatively remote areas to landing ports near potential markets. These family-based boats were usually about 8-18m in length and equipped with live fish holds with a capacity of a few tonnes. At the landing ports, fish were either transferred to live fish transporting trucks provided by primary distributors or they were loaded to nearby retailing stalls. Live fish trucks were equipped with aerators and conditioned water in order to distribute the fish to various markets and restaurants where similar stocking facilities were available for keeping the fish alive before selling or cooking. Separately, it was not uncommon to find direct supply from inshore fishermen to households as they might directly load and sell the fish at better prices at their own retailing stalls close to the landing ports.

Primary distributors played a significant role in marketing the fish with their integrated networks. Some primary distributors collected fish directly from mariculturists as they might have their own collector boats and retailing stalls in addition to live fish trucks. They also collected live fish from various sources including importers so that they would be able to provide fast delivery to restaurants and retailers, as well as re-export to China. However, some large restaurants might collect fish directly with their own trucks from these primary distributors with abundant sources of supply of live fish.

**Distribution of Chilled and Frozen Fish - The Fish Marketing Organization**

The Fish Marketing Organisation was a statutory body established under the Marine Fish (Marketing) Ordinance to provide orderly marketing services at its seven wholesale markets. These markets were located in Aberdeen, Cheung Sha Wan, Kwun Tong, Sai Kung, Shau Kei Wan, Tai Po and Tuen Mun and there was one Fish Collecting Depot in Cheung Chau [Exhibit 10]. In these markets, fishermen’s catches were sorted, graded and auctioned by FMO staff. Revenue of the FMO mainly came from charging commission on the proceeds of

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sales. During 2002, 49,220 tonnes of marine fish valued at $850 million were sold through the organisation. [See Exhibit 7 for percentage of fish sold through FMO].

The Fish Marketing Organization

History of FMO

The FMO regulated the trading of marine fish only. This regulatory arrangement of marine fisheries in Hong Kong had a wartime origin. Before the war broke out, Hong Kong fish market was established in the forms of “laans”, which kept the fishermen poor and constantly in debt. Fishermen were compelled to sell their catches at very low prices as dictated by the “laan” owners and at the same time forced to pay high interest on their debts.

The ideal solution to this problem was for the fishermen themselves to unite and operate their own wholesale markets as a co-operative marketing enterprise but this ideal solution was not immediately attainable due to the powerful and well-established “laans” system and lack of education of the fishermen. It was doubtful that such an enterprise could succeed without assistance from the government. Therefore in October, 1945, the Hong Kong Government decided to set up an Organization, now referred to as the Fish Marketing Organisation, in order to control the transportation and wholesaling of fish on behalf of the fishermen. This Organisation was concerned only with the wholesale marketing of marine fish on behalf of the fishermen but concerned itself neither with the marketing of freshwater pond fish from the New Territories, nor with any live marine fish because live fish was only a very limited market in Hong Kong.

The FMO arrangement provided a valuable service during the 1950s and 1960s because it supplied ice to fish landed and road transport of fish to retailers. In those days most fishing vessels (and indeed households) in Hong Kong had no refrigerating facilities and vehicles were expensive. Furthermore, loans were made available to fishermen by the FMO for mechanisation purposes - for building new fishing boats and reequipping old boats. However, the improvement in vessel design and growth in affluence rendered the services of the FMO redundant in the 1970s and 1980s.

Use of profits

Besides loans to fishermen for mechanisation purposes, FMO, as a statutory non-profit organization, had to channel surplus earnings into providing other welfare and services to the fishing industry. As a non-government organization, FMO could not incur loss for a long period of time. In this sense, FMO had to make profit in order to be sustainable, but the earned profits cannot be distributed as bonus to managers or interests to shareholders. In contrast to a profit-maximizing firm where profit was the key metric for the performance of an organization, FMO’s performance measures would be “the weight and value of fishery products sold through the FMO.”12 Thus, profit-making incentive was not very strong. From 1970s till mid 1985, since revenue increased more than costs, FMO was able to generate increasing profits which were used in improving services and facilities in the markets, providing schoolings and scholarships for fishermen and their children, and expanding the staff team and organization [See Exhibit 11 for a typical cost structure for FMO with surplus earnings].

In order to provide an increasing variety of services, FMO’s headcounts increased steadily and cost ballooned. In particular, wages accounted for more than half of the cost incurred by the FMO, and had been increasing in line with those of the government officials – up one

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point in the salary scale per year until they hit the maximum scale in a given rank. This created problems later when FMO fell into deficit because substantiated staff could not be fired easily.

On the other hand, the usage of land had been heavily subsidised by the government with most of the land occupied by the WFMs granted by the Government. The land lots occupied by the WFMs in Aberdeen, Kwun Tong, Sai Kung and Tai Po and the FCD in Cheung Chau were granted by the Government through private treaties, while the land lots occupied by the Castle Peak WFM and the Shau Kei Wan were allocated by the Government by way of a Temporary Land Allocation and a Permanent Land Allocation. Finally, the Cheung Sha Wan WFM was rented from the Government.

**The Wholesale Process**

When the fishermen sold their harvests through FMO, their catches were sorted, graded and auctioned by staff who were paid a fixed salary. It was a common knowledge that when fishermen landed their fish, they deliberately underreported the amount they caught in order to make fish supply look smaller, and hoped that the fake scarcity would lead to a higher wholesale price. It was also hard for the staff at FMO to monitor the landings from Hong Kong registered vessels since the vessels were not required by Hong Kong law to declare their catches. As a result, the wholesaling process was very slow and inefficient and it could take fishermen three days to completely sold their catches.

At a typical wholesale fish market (WFM) operated by the FMO, fish were sold in three ways: by auction, by negotiation or by direct sale. The majority of the WFMs, including the largest one, Aberdeen, sold fish by auction. Some markets, such as Kwun Tong, charged the individual traders a monthly rental. Sales were made by individual negotiation on price and product quality was up to the stallholders. This operation attracted traders who imported live, frozen and fresh/chilled product and either re-exported or sold products to the local market (mainly hotels and restaurants).

**Sale by auction**

After a fishing vessel berthed at the waterfront of a WFM, the marine fish unloaded from the fishing vessel were transported onto the sorting floor of the WFM where the marine fish were sorted and graded. After sorting and grading, marine fish to be sold by auction were moved to an area of the sales floor specially designated for this purpose. Auctions were conducted by auctions teams, each comprising an Auctioneer and a Market Assistant. After the deal was concluded between the seller and the highest bidder, the Market Assistant completed the necessary documentation and the marine fish were moved away from the sales floor by the staff of the FMO.

**Sale by negotiation**

Similar to sale by auction, the marine fish landed at a WFM were sorted and graded. After sorting and grading, marine fish to be sold by negotiation were moved to another area of the sales floor specially designated for this purpose. Negotiations between buyers and sellers were overseen by a Market Assistant. When the price was agreed between the buyer and the seller, the Market Assistant completed the necessary documentation and the marine fish were moved away from the sales floor by the staff of the FMO.

**Direct sale**

Marine fish to be sold by direct sale were sorted and graded before they were landed at the WFMs. The fish were packed into boxes of 15 catties (i.e. about 9 kilograms) each. Negotiations between the buyer and the seller had been concluded before the landing of the
fish. The fish were landed at theWFMs and were immediately loaded directly onto trucks parked at the waterfront of theWFMs. The FMO staff at theWFMs did not have to perform sorting, weighing or auctioning. All they had to do was to count the number of boxes landed and calculated the commission receivable from the seller.

**Experience in other countries**

**China**

China was the leading producing country in the world in both captured and cultured fisheries.\(^{13}\) In 2001, China produced a total of 16.5 million tonnes of captured fisheries [Exhibit 12], and 26.1 million tonnes or US$ 26.2 billion worth of cultured fisheries [Exhibit 13]. Fisheries products reached consumers through state, collective or private markets and processors from the producers. The liberalization of the market in China resulted in a decreasing share of the state-run marketing channel, while the total number of transactions kept increasing dramatically. The wholesale market in Shenzhen (Buji) was the largest in China. It was set up in 1985 and was twenty times the size of that in Hong Kong. The market was operated by charging the individual traders a monthly rental. Sales were made by individual negotiation on price and product quality was up to the stallholders.

**Japan**

“As an undisputed hub of the fishing world, Tsukiji creates and deploys enormous amounts of Japanese cultural capital around the world. Its control of information, its enormous role in orchestrating and responding to Japanese culinary tastes, and its almost hegemonic definitions of supply and demand allows it the unassailable privilege of imposing its own standards of quality—standards that producers worldwide must heed.”

- “Tokyo’s Pantry”, Foreign Policy\(^{14}\)

Among the wholesale fish markets of the world, Tsukiji of Japan ranked at the top in every measurable category. Tsukiji handled about five million pounds [2,268,000 kilograms] of seafood every day, seven times as much as Paris's Rungis, the world's second largest wholesale market, and eleven times the volume of New York City's Fulton Fish Market, the largest fish market in North America. It handled 43 times the volume handled by the FMO in Hong Kong. At Tsukiji, 60,000 traders came each day for transactions, and it was the command post for a global seafood trade, especially for tuna fish.

“Tuna are sold at a "moving auction." The auctioneer, flanked by assistants who record prices and fill out invoice slips at lightning speed, strides across the floor just above rows and rows of fish, moving quickly from one footstool to the next without missing a beat, or a bid. In little more than half an hour, teams of auctioneers from five auction houses sell several hundred (some days several thousand) tuna. Successful buyers whip out their cellphones, calling chefs to tell them what they’ve got. Meanwhile, faxes with critical information on prices and other market conditions alert fishers in distant ports to the results of Tsukiji's morning auctions. In return, Tsukiji is fed a constant supply of information on tuna conditions off Montauk, Cape Cod, Cartagena, Barbate, and scores of other fishing grounds around the world.”\(^{15}\)

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15 “Tokyo’s Pantry”, Foreign Policy Magazine (Nov/Dec 2000)
Given the sheer volume of global trade, Tsukiji effectively set the world's tuna prices. Commission at the wholesale market was fixed at 5.5% for marine products.\textsuperscript{16} The auction system and the commodity chains integrated fishermen, firms, and restaurants worldwide in a complex network.

**South Korea**

Auctioning at the wholesale markets was the most common market channel for fishery products in South Korea.\textsuperscript{17} Middlemen participated in the auctions on behalf of distributors. The product was then distributed to retailers such as fish stores, supermarkets and department stores. Noryangin fish market was the largest wholesale fish market in Seoul. About 60 percent of all the fishery products consumed in Seoul were handled by the Noryangjin fish market. Squid, mackerel, and oyster were the main species traded.

**FMO was turning around – because fishermen need FMO**

In response to the decrease in fish landings in Hong Kong and the continuous deficit situation, FMO launched a severe cost-cutting programme. FMO cut the number of employees incrementally from 690 in 1985 to 104 in 2002 [Exhibit 14]. This impacted positively on the financial statements as wage cost had been substantial. Productivity of a FMO staff (measured by the average tonnage handled per staff [Exhibit 15], and by tonnage per real wage [Exhibit 16]) rose considerably as a result.

Furthermore, FMO promoted the sale of fish through direct sales method by introducing new commission scheme. Before June 1999, the commission for direct sales was calculated at 7% of the sales value. Starting from June 1999, the commission was calculated at 7% of the sales value or at a rate of five dollars per 15 catties (i.e. about 9 kilograms), whichever was less [Exhibit 17]. The direct sale method and the new commission scheme were welcomed by both buyers and sellers. As at 2003, most of the fish were sold by direct sales. Direct sale method not only required fewer FMO staff but also required less floor space. The campaign paid off with profits recorded for the years 2001 and 2002. Accompanying the change, average real price of fish transacted through FMO rose, signifying that high-valued fish were transacted through FMO with the reform of the commission scheme [Exhibit 18].

Indeed, certain services provided by the FMO were still highly demanded by the local fishermen, such as loans and information provision. Through its liaison offices at major fishing ports, the FMO provided assistance to fishermen in matters relating to fishing operations and applications for loans. Furthermore, fish transactions at FMO were recorded, and FMO would supply the wholesale fish price to radio stations for daily broadcast. Furthermore, as internet access became more popular, FMO displayed tables of recent wholesale prices of fresh and live fish on its homepage.\textsuperscript{18} Price information was important for the fishermen so that they would not be exploited when selling their catches to processors, buyers or agents.

With an increasingly affluent Mainland China, challenges abounded for both the fishermen and the Fish Marketing Organization in Hong Kong. How could FMO capitalize on the growth in Chinese economies to sustain the current profit trend? FMO should keep rethinking about its role in the supply chain.

\textsuperscript{16} APEC Fisheries Working Group (1999). "Air shipment of live and fresh fish and seafood guidelines". APEC Secretariat
\textsuperscript{17} APEC Fisheries Working Group (1999).
\textsuperscript{18} Tables on wholesale prices for fresh and live fish were available on \texttt{http://www.fmo.org.hk/page4eng.html}
EXHIBIT 1
PROFIT AND LOSS OF FISH MARKETING ORGANIZATION FROM 1969-2002

Source: FMO Annual Reports

EXHIBIT 2
SELF SUFFICIENCY RATIO FOR MARINE FISH AND FRESH WATER FISH

Source: AFCD Annual Reports (Note: Self-Sufficiency ratio = local production/consumption)

EXHIBIT 3
CONSUMPTION OF MARINE FISH AND FRESH WATER FISH IN HONG KONG

Source: AFCD Annual Reports
EXHIBIT 4
RETAINED LOCAL PRODUCTION OF MARINE FISH AND FRESH WATER FISH

EXHIBIT 5
NUMBER OF FISHING VESSELS IN HONG KONG

EXHIBIT 6
RETAINED IMPORTS OF MARINE FISH AND FRESH WATER FISH

Source for Exhibits 4-6: AFCD Annual Reports
**EXHIBIT 7**

PERCENTAGE OF PRODUCTION LANDED OUTSIDE HONG KONG

<table>
<thead>
<tr>
<th>Year</th>
<th>Landings outside Hong Kong (Tonnes)</th>
<th>Through FMO (Tonnes)</th>
<th>Landings elsewhere in Hong Kong</th>
</tr>
</thead>
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<td>1974</td>
<td></td>
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<td>1998</td>
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</tbody>
</table>

Source: AFCD Annual Reports (Data from 1999 onwards were not available)

**EXHIBIT 8**

PERCENTAGE OF PRODUCTION LANDED IN CHINA AND AT SEAS WITHIN THE CATEGORY OF FISH LANDINGS OUTSIDE HONG KONG

<table>
<thead>
<tr>
<th>Year</th>
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<th>Landed at seas</th>
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<td>1998</td>
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</table>

Source: AFCD (Data from 1999 onwards were not available)
EXHIBIT 9
DISTRIBUTION CHANNELS OF MARINE FISH IN HONG KONG

IMPORT LEVEL
Fish Importer

Offshore Fishing Fleet

Inshore Fishing Boat

Local Fish Farms

PRODUCTION LEVEL

Local Capture Fisheries

Collector boat

WHOLESALE LEVEL

By Sea / Trucks

Fish Trader

Primary distributor

Re-export

Premium-priced Restaurant

Medium-priced Restaurant

Retailers/ Domestic Consumption

RETAIL LEVEL

Source: Adapted from Louise W.H. Li, AFCD, “Live Marine Fish Trade and Mariculture in Hong Kong”,
EXHIBIT 10
LOCATION OF WHOLESALE FISH MARKETS (WFM) AND FISH COLLECTING DEPOT (FCD)

Source: AFCD

EXHIBIT 11

EXHIBIT 12
WORLD CAPTURE FISHERIES PRODUCTION

Source: Data and Statistics Unit, Fishery Information, FAO (Data exclude aquatic plants)

EXHIBIT 13
WORLD AQUACULTURE PRODUCTION

Source: Data and Statistics Unit, Fishery Information, FAO (Data exclude aquatic plants)
EXHIBIT 14
NUMBER OF EMPLOYEES AT FMO

Source: FMO Annual Reports

EXHIBIT 15
LABOR PRODUCTIVITY AT FMO

Source: FMO Annual Reports

EXHIBIT 16
TONNAGE PER REAL WAGE
((DEFLATED USING THE IMPLICIT GDP PRICE INDICES (2000 AS BASE YEAR))

Source: FMO Annual Reports, Census and Statistics Department
EXHIBIT 17
NEW COMMISSION SCHEME

Source: FMO, CABC

EXHIBIT 18
REAL PRICE PER KILOGRAMS FOR FISH SOLD THROUGH FMO
(DEFLATED USING THE IMPLICIT GDP PRICE INDICES (2000 AS BASE YEAR))

Source: FMO Annual Reports, Census and Statistics Department