

Relationships between the value of the boat's production and the individual earnings are illuminated by the following factors :

a) Value of the catch

As the running costs remain relatively constant across trips, individual incomes are primarily influenced by the value of the catch. Data derived from the accounts of boats highlight the regularities that characterise such an influence. First, the range of incomes observed for the successive trips made by a single boat during one year is significantly wider in the case of boats with a more limited capacity. Yet, although incomes are contingent on seasonal variations, both the greater ranges of the trips undertaken by large seiners and the quality of their managers and crew reduce the effect of these variations (Tab. 1).

Table 1 : Range in crew income (shares only) compared with range in sales turnover of purse seiners, by type of boat
Kisaran bagi hasil nelayan dan penjualan kotor, menurut jenis kapal pukot cincin

Type of boat	Boat sales turnover (minimum-maximum)	Crew income (minimum-maximum)	Period
Medium purse-seiners (4 boats)			
1*	1 - 5	1 - 7	1993
2	1 - 12	1 - 18	1994
3	1 - 9	1 - 20	
4	1 - 5	1 - 9	
Large purse-seiners (12 boats)			
1	1 - 3	1 - 9	1994
2	1 - 2	1 - 3	
3	1 - 1.4	1 - 1.7	
4	1 - 3	1 - 4	
5	1 - 4	1 - 4	
6	1 - 1.5	1 - 2	
7	1 - 1.3	1 - 3	
8	1 - 2	1 - 3	
9	1 - 3	1 - 5	
10	1 - 2	1 - 8	
11	1 - 4	1 - 5	
12	1 - 4	1 - 7	

* for example, the highest sales turnover in a fishing trip of Medium purse seiner n°1 was 5 times more than the lowest in years 1993-1994, while its highest crew's shares income was 7 times more.

The differential results of boats within a same class confirm observations that suggest that the best crews are assigned to the most productive units, especially the large of the new generation (35 meters with holds having a capacity of about 100 tons).

There is a very good positive correlation between the value of individual boats' catches and the income of their fishermen (Fig.1). It invalidates assertions according to which the standard of life of crew members is somehow independent of their boat's production. Indeed, they all have a vested interest in contributing to the boat's output rather than in fishing on their own.

b) Skills and duties of the crew

Traditional models continue to account for the distribution of shares. Skippers (*nakhoda*) receive three or four shares as a reward for their numerous duties. Chief motorists are entitled to a slightly smaller number of shares. Finally, skilled crew members (specialists of currents, fish aggregating devices and lighting, etc.)² get a little more than unskilled sailors (*ABK*)³ who receive only one single share.

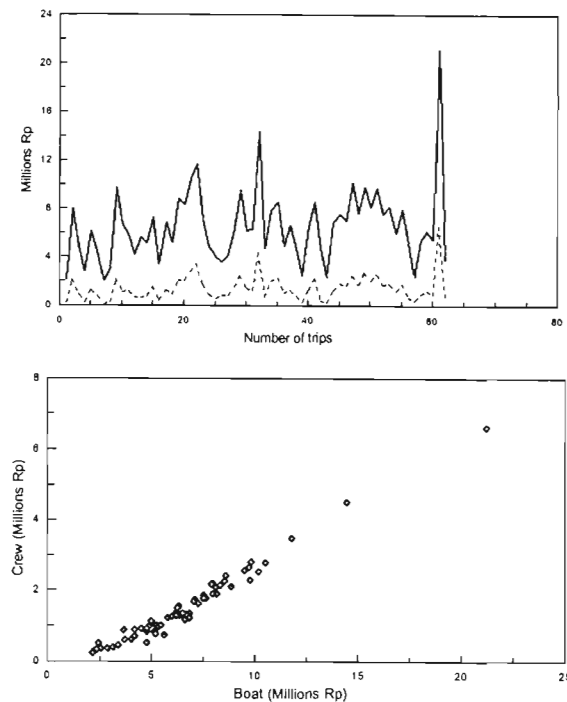


Figure 1 : Example of incomes for given purse seiner.

Top : boat's (dark line) and crew's (broken line) incomes;

Bottom : regression of crew income vs. boat income ($r^2=0.93$)

Contoh berbagai pendapatan untuk pukat cincin tertentu.

Atas : pendapatan pemilik kapal (garis hitam) dan awak kapal (garis putus putus);

Bawah : regresi pendapatan awak kapal dan pemilik kapal ($r^2=0.93$)

c) Status of entrepreneurs and professionalisation of managers

Forming at first a homogeneous class, boat owners come from distinct socio-cultural horizons. Often “ethnic Chinese”⁴, the owners of larger fleets who benefit usually from the support of financial holdings, adapt fast to the new scenery. They minimise their risks by diversifying the gears they use (purse seiners, gill nets and long lines), by engaging in activities related to fisheries or to other sectors, by attracting the most qualified workers, and by adopting innovations concerning navigational and lighting devices, the quality of holds, etc.

The future of small and medium sized businesses, usually Indonesian owned, remains uncertain. Some of these owners originate from within, after having been initially simple crew. Others have accumulated their capital by being successful in another sector. In so far as some of them lack the appropriate technical knowledge, they are often assisted by a former skipper who manages their fleet.

There remains a composite group of newcomers. Operating *in absentia*, they are keen to get their share of the benefits accruing to the purse seiner's fishery. Yet, their results are so erratic that it is difficult to make long term predictions about their survival.

² *juru arus, juru rumpon, juru lampu,...*

³ *ABK (Indonesian) : anak buah kapal.*

⁴ The term, as used in the Indonesian census, refers to all individuals with Chinese ascendants, regardless of the amount of time spent in Indonesia. In certain cases, families with this “label” have been settled in Indonesia over hundred years.

In short, there is a growing differentiation of these owners. The situation provides individual crew with opportunities for higher incomes, it generates also new uncertainties.

- Personal fishing

Both tradition and current conditions of fishing in the Java Sea (notably the amount of time necessary for concentrating schools) give crew free time to fish on their own. Except for skippers and chief motorists, they are allowed to use lines to catch highly valued species that they sell on their own. In Juwana, Pekalongan and Tegal, 64 per cent of *ABK* use this opportunity to obtain an additional income that represents about 26 per cent of their overall earnings. Personal fishing is most frequent on smaller boats, due to the way they operate.

- Participation in profits

The traditional model of payment includes a variety of incentives contingent on the overall results of the trips. The *lawuhan* of the Javanese (or the *lauk pauk* of the Indonesian), that is the dish served to accompany rice, represents about 2 per cent of gross results. However, it is not disbursed whenever results remain below a minimal threshold. Even though it figures on the books of boat owners, its payment often fosters tensions with their crew. Some owners only pay the total amount in cash, particularly those who are the most productive.

A productivity based incentives also granted whenever the gross result of the boat exceeds a critical threshold (15 million rupiahs by trip for a large seiner). In this case, some owners offer a premium representing one per cent of each additional million of rupiahs obtained.

- Incentives specific to skippers

Skippers enjoy a special status. Besides the various earnings already identified, they are entitled to an incentive representing roughly 5 per cent of the gross results of their boats. This additional earning may exceed 10 millions rupiahs per year. As a result, many skippers are part of the local elite, their daily expenses being almost three times greater than those of their crew at large.

In short, they enjoy many opportunities for upward social mobility. Usually between 30 and 40 years of age, they often act as intermediaries between owners and crews. The currently high growth enables them to enhance their bargaining power. For example, they occasionally manipulate the date of departure of their boats to negotiate a better financial deal for them as well as for the crew.

- Advances and gifts

A boat owner must comply with obligations stemming from the traditions specific to fishermen's communities. Thus, he must enable crew and their families to survive periods of low season and compensate them for the lack of social insurance programs. This array of gifts in cash or in kind ranges from the barbecue (*sate*) offered after successful trips to the financing of domestic and community ceremonials, to aim at gaining the loyalty of the crew.

- *KUD* related savings

Cooperatives, called *KUD* (*Koperasi Unit Desa*), play a critical role in the fishery. They manage auction places and saving programs for the fishermen themselves, that are financed by 2 per cent of the taxes levied on the auction turnovers. For example, the *KUD* of Pekalongan manages half of the results of the entire area. All together, the saving funds of this *KUD* reached one milliard rupiahs in 1993, representing roughly 500,000 per capita for the fishermen of the city. Yet, fishermen belonging to *KUD* meet difficulties in cashing the benefits owed to them, due to various forms of mismanagement.

Fishing income of purse seine fishermen

A first approximation of the central tendencies and the variations of the income distributions of the purse seiners' fisheries (Tab. 2) show :

- the large range of disparities between as well as within occupational categories, including among *ABK* themselves. This range should get even wider as a result of shifts in the hierarchy of owners;
- the instability of incomes throughout the year.

Yet, the paternalistic behaviour of owners reduces the risks incurred by their crews; so do persisting forms of solidarity within this community, from cooperating at sea to assisting fishermen's families in case of emergency.

Table 2 : Yearly average per capita income of purse seiners' fishermen (thousand rupiahs)
Rata-rata pendapatan per capita per tahun nelayan pukat cincin (ribuan rupiah)

Skill level	Sources (1)	Shares	Personal fishing	Incentives	Total	
					estimated by number of trips	self-reported
Unskilled crew member	a	640	140	520	1 300	1 000
	b	865	n.a.	n.a.	n.a.	
	c	1 030	n.a.	480	1 500	
Chief motorist	a	1 010		650	1 660	2 000
Skipper	a	1 830		5 880	7 710	7 500
	c	3 760		14 400	18 260	

n.a. : non available

(1) : a, survey of 155 fishermen, embarked in 1993 on 56 boats, averaging length 27 meters

b, accounts of three medium purse seiners (20 meters long), over a total of 52 trips in 1993

c, accounts of twelve large purse seiners (30-37 meters long), over a total of 115 trips in 1994

Other sources of income

• Income of subsidiary occupations

Working on large seiners is a full time occupation. In 1993, their crews spent an average of 200 days per year at sea. Yet, during the low season or even between two trips, those fishermen who live in a rural environment can assist relatives growing rice or farming shrimps. Even though their participation remains modest, it represents a sometimes significant additional source of income. Thus, 15 per cent of the fishermen interviewed were engaged in an activity other than fishing, which brought them an additional income of 32,600 rupiahs a head in 1993.

• Familial income

It is important to identify the variety of structures of fishermen's households and to assess the characteristics of their gainfully employed members. Some households benefit from the presence of several crews, others from the variety of jobs held by their residents, notably by women.

The diversity of individual contributions to the welfare of the entire domestic groups confirms the Javanese exceptional advantages, notably those coming from :

- the co-existence in coastal areas of various rural activities (rice growing, aquaculture, processing of sea salt, etc.), as well as urban activities stemming from the development of large cities;
- the high density and the ensuing development of a huge market;
- the creation of sea related jobs with a low capital component in which most inputs have a local origin;
- the high value added to the products of fisheries.

CONCLUSION

Javanese purse seiners' fisheries are characterised by the following features :

- the marked instability of fishermen income,
- the coexistence of traditional and modern patterns and the growing differentiation of individual strategies both among crewmen and entrepreneurs,
- the increase in the range of incomes according to skills and occupational roles,
- the accentuation of disparities between the income of the boat as a whole and the earnings of fishermen, even though this phenomenon is masked by the sustained rhythm of the current growth.

In short, the emerging dimensions of the purse seiners' fisheries (Tab. 3) indeed facilitate the upward social mobility of the current generation of fishermen and the higher participation of their children in educational institutions.

Table 3 : Yearly average per capita income : fishermen and other s (thousand rupiahs)
Rata-rata pendapatan per capita per tahun : nelayan dan lainnya (ribuan rupiah)

	Yearly income		Year
	Indonesia	Java	
• Unskilled crew member of large seiner		1 000-1 500	1993-1994
• Javanese farmer (1)			1992
paddy		909	
maize		487	
cassava		837	
sweet potatoes		913	
peanuts		807	
soya bean		659	
Synthetic assessment		500-900	
• All Population			
Gross National Product	1 524		1993
Gross Regional Domestic Product		1 045 (2)	1992
National Income	1 335		1993

(1) Net income of a farmer cultivating one hectare (value of production at farm gate minus production costs)

Source : Statistical yearbook of Indonesia, Project PELFISH

(2) Province of Central Java only

On the negative side, this development has not been accompanied by a more equitable sharing of the profits. As of yet, fishermen do not enjoy fully either the benefits of their cooperatives. Finally, there is a lack of collective investments, notably for ensuring the safety of crews at sea or the protection of their health both at sea and ashore. All the indicators suggest that it is possible to improve the welfare of fishermen without jeopardising the social balance of the community at large.

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