Marine Policy 61 (2015) 77–86

Contents lists available at ScienceDirect

Marine Policy

journal homepage: www.elsevier.com/locate/marpol

Government support and profitability effects – Vietnamese offshore fisheries

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ARTICLE INFO

Article history:
Received 14 May 2015
Received in revised form
10 July 2015
Accepted 10 July 2015

Keywords:
Fishing rent
Government support
Offshore fisheries
Profitability
Subsidy
Vietnam

ABSTRACT

Bioeconomic theory and empirical evidence have demonstrated that open-access fisheries tend to break even and also that intra-marginal rent may be generated in heterogeneous fleets. Theoretically, input and output subsidies are expected to increase profit in the short term, but not in the long term. Vietnamese government subsidies of offshore fishing vessels are investigated and quantified, and their profitability effects are examined, through representative surveys of costs and earnings data. The subsidy schemes had positive effects on vessel profitability, with the quasi-lump sum fuel cost support having the greatest effect. The largest vessels received relatively more support than the smaller ones and earned most of the super-profit as well as the intra-marginal rent generated. However, higher subsidies for larger vessels did not help all of them achieve higher economic performance. The subsidisation programmes may come from infant industry arguments, the strategic rent-shifting incentives of neighbouring countries, social and geopolitical objectives, and because of South China Sea border security reasons.

1. Introduction

It is well known in the fisheries economic literature that, in an open-access fishery, the availability of profits, especially when combined with subsidies, will lead both to an expansion of the operations of existing firms and the entry of new firms [1–3]. Thus, after an initial rise in the profits of existing firms, the increase in effort stimulated by the potential growth in profits can lead to an increase in catch and a substantial decline in the fish population [3,4]. Ultimately, fishing costs rise and revenues fall, leading to a gradual erosion of profits over time. However, in the case of Vietnam, the government has tried to create incentives to counter the disincentive to fish when this is likely to exacerbate the tragedy of the commons problem. Hence, it may be appropriate to first ask whether a subsidised open-access fishery creates any net benefits at present.

Since 1997, the Vietnamese government has made strenuous efforts to develop its offshore fishing industry [5].[1] There are at least two reasons for the introduction of the offshore fisheries development programme in Vietnam. First, the Vietnamese Exclusive Economic Zone (EEZ), which is part of the South China Sea (SCS), was considered to be abundant in marine resources yet under-exploited, with its maximum sustainable yield (MSY) estimated at about 1.1 million tonnes [5]. Second, with some international fishing disputes in the SCS and the lack of an internationally recognised delineation of the sea, the government wanted to encourage the presence of its country's own vessels in these areas. Under the open-access regime, with and without government support, fishers have thus been attracted to shift their fishing from the partially over-exploited inshore waters to the less exploited offshore waters.

In 1997, Vietnam introduced an investment programme for offshore vessels and, in 2008, introduced fuel cost compensation subsidies, along with another subsidy programme in 2010. These subsidies have encouraged the growth of under-developed offshore fisheries with the expansion of the fleets and an increase in production [5,7]. Theoretically, it may be argued that the distribution of natural resources in the coming period will be dependent on the agents' extraction of that resource in the past [8]. If future agreements on the SCS's EEZs and fish shares among countries are based on track records, it may make sense for Vietnam to increase its historic share by use of subsidies. This is a kind of investment for a better future bargaining position when history-dependent allocations in quantity regulation may be expected [9,10].

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[1] Fishing in the sea areas outside the 24 nautical mile limit from the coast to the outer limit of Vietnam's sea areas is referred to as offshore fishing, and offshore vessels are equipped with engine capacity of 90 HP or more [6].

http://dx.doi.org/10.1016/j.marpol.2015.07.013
0308-597X/

Fishing subsidies, which may have been considered favourably by the industry when the government attempted to develop an under-developed fishing industry,[2] can be seen as a tool to implement an 'infant industry' strategy, where government aid in the early stages results in a rapid development of the industry. Temporary protection for such an infant industry is expected to help modernise the fleet, acquire the fishing experience and skills needed to compete effectively with foreign vessels, and overcome short-term difficulties so that the industry may then become self-sustaining [4]. In addition, the Vietnamese government may have considered that offshore fisheries have long-term (strategic) potential, and it wishes to foster and protect it for future socio-economic growth and development. This is additionally promoted by several exemptions on subsidies, for which developing countries (e.g., Vietnam) would be authorised to apply in the context of new World Trade Organisation (WTO) fisheries subsidies rules [7,11,12].[3] However, the questions over the long-term sustainability of these fisheries may put this into doubt.

It is well known that, in one way or another, the behaviour of a firm is affected by the existence of any government's action or inaction [13]. The perceived benefits to a fishery will motivate fishing firms to modify their behaviour [14]. The usual method of determining the benefits of a subsidy to the industry, or to the fishing firms in the industry, is to determine whether, and to what extent, the profits are altered by such subsidies. Thus, an important step on the way to evaluate subsidies is to evaluate their effects on the profitability of a fishery, allowing us to determine the reactions of the industry, and therefore the effect of the subsidy on resources and on the sustainability of the fisheries [4]. This implies that all subsidies have both short- and long-term effects [13]. The long-term effects of subsidies are often caused by the impact of changes in behaviour triggered by short-term effects. However, analysis of the long-term effects is a complex issue, and such an examination is outside the scope of this study (although see Fig. 1). Indeed, with the knowledge and information currently available, longer term aspects are difficult to assess.

This study firstly investigates and quantifies Vietnamese government subsidies of offshore fishing vessels, and then examines the effect of these subsidies on the profitability of the vessels. It presents the costs and earnings findings, with and without subsidies, based on 2011 and 2012 data, which was collected through representative surveys of two offshore fleets: gillnet and hand-line vessels in the province of Khanh Hoa, operating in the SCS. Economic performance (EP) indicators are used to evaluate vessel profitability, and to examine whether intra-marginal rent (IMR) exists in these two fleets. The effects of the government subsidies are analysed by a static comparison of the EP of vessels, including and excluding subsidies.

The remainder of this paper is organised as follows. Section 2 provides background information on the investigated fisheries. Section 3 describes the theory and methods used. The data are presented in Section 4. Section 5 is devoted to the research results. Section 6 focuses on discussion of the results. The findings and concluding remarks are summarised in Section 7.

[2] VIFEP et al. [7] found that Vietnam's subsidy policies on fuel and vessel building, upgrading, and infrastructure have focused on solving short-term issues (and are not likely to remain in the long term).

[3] That is, a list of subsidies could be directly linked to public policy objectives specific to developing countries, such as support for food security, subsistence and small-scale fishing, and emergency actions [11,12]. In the Vietnamese case, these exemptions fall under Special and Differential Treatment for Developing Countries. However, under the WTO negotiations on fisheries subsidies, policies on fuel, credits for vessel building, infrastructure, tax, and vessel renewal and upgrading are still debated and these require further consideration [7].

2. Background

Khanh Hoa is a coastal province in Southern Central Vietnam with a coastline of 520 km. This coastline is made up of territorial waters and more than 200 islands. Khanh Hoa's fishing vessels numbered about 10,000 units in 2012, of which the offshore fleet was 1041 units [15]. The major offshore gears are gillnet, longline/hand-line, trawl, set netting and lift net. Among these vessels, 258 (25%) and 153 (15%) are gillnet and hand-line vessels, with a total capacity of 78,211 horsepower (HP) (on average 303 HP/unit) and 42,942 HP (283 HP/unit), respectively.

The offshore fishery has been open-access since its inception and a minor resource tax was abolished in 2008 [16,17]. In addition, the offshore vessels have been supported by government subsidies. The 2010 subsidy programme mainly included fuel cost support and insurance subsidies and has been implemented since 2011 [18,19]. The fuel cost subsidies were based on the engine size of vessels and all vessels could be supported to a maximum of four trips per year.[4] This support appears as quasi-lump sum subsidies per trip. Insurance subsidies cover 50% of vessel insurance costs and 100% of accident insurance costs for fishers. Some vessels have been supported with loans at below market interest rates.

The fishing takes place all year round, from October to September of the following year and is divided into two fishing seasons: the northeast monsoon (from October to March) and the southwest monsoon (from April to September). Offshore vessels often stay onshore for repairs and maintenance from either August to September or September to October. The target fish species of the gillnetters and hand-liners are migratory pelagic species (e.g., tuna species). The main target species in the gillnet fishery include striped tuna (*Sarda orientalis*), skipjack tuna (*Katsuwonus pelamis*) and mackerel species, such as the Indo-Pacific king mackerel (*Scomberomorus guttatus*), wahoo (*Acanthocybium solandri*), and narrow-barred Spanish mackerel (*Scomberomorus commerson*), as well as some other species caught as incidental bycatch. For the hand-line fishery, yellowfin tuna (*Thunnus albacares*) and bigeye tuna (*Thunnus obesus*) are the main target species caught, while a small amount of other species is referred to as bycatch.

The fishing grounds are the offshore waters of the central sea region (11°30'N–14°00'N, 109°30'E–114°00'E) and the waters of the southeastern and southwestern areas, as well as high sea waters (6°00'N–11°30'N, 105°00'E–114°00'E). In the northeast monsoon, tuna species are often found in the offshore sea areas of the central provinces from Phu Yen to Vung Tau and the central SCS (10°30'N–14°00'N, 110°00'E–114°00'E). The offshore vessels move to the southeastern waters and southwest of the Spratly Archipelago (6°00'N–10°30'N, 105°00'E–114°00'E) in the southwest monsoon. Tuna is also fished in the territorial waters of the provinces from Phu Yen to Binh Thuan, located at a distance of about 50–100 nautical miles from the shore in this second season.

The average total catches of the two fleets in 2011 and 2012 were larger than those in 2004, 2005 and 2008 (Table 1). It is important to note that, in 2011 and 2012, compared to previous years, the average engine capacity of an offshore vessel was greater, and that the average total fishing days in a year was higher [20–23]. Furthermore, the number of Vietnam's offshore vessels operating in the SCS has increased from around 20,000 vessels in 2004 to nearly 28,000 vessels in 2012 (an increase of 4.2% p.a.), this corresponds with an increase in total capacity from 2642 to 5996 thousand HP (an increase of 10.8% p.a.), respectively [24].

[4] Vessels with an engine from 90 HP to less than 150 HP were supported with 18 million VND per trip, vessels with an engine from 150 HP to less than 250 HP received 25 million VND per trip, vessels with an engine from 250 HP to less than 400 HP received 45 million VND per trip, and vessels with an engine of 400 HP or larger were supported with 60 million VND per trip [18,19].