

Collapse of Political and Economical System as a Cause for Instability in Fisheries Sector: An Estonian Case

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Abstract: The transition process from the Soviet economical system to the market economy in fisheries has received relatively little attention from fisheries researchers. This study analyze how overall changes in political and economical life of Estonia during the last decade have affected the complex system of the environmental, economic, social and legal issues connected to the coastal fishery of the Baltic Sea. At the beginning of the nineties the possibility to export fish to the European market appeared. Opening of this new and highly profitable market outlet resulted in rapidly increasing pressure to the fish resources, both in terms of the number of fishermen and in their effort. Some of the most important coastal fishery resources have been over-fished because of high export market demand coupled with insufficient resource management, and not effective enough control and enforcement capacity. The costs connected to fishery have grown much more than the first buyer prices. Additionally, dynamic development of the Estonian economy has yielded in substantial increase of wages in other sectors of economy and therefore the well-being of fishermen has steadily worsened. This has resulted in increasing social problems. The conclusion is that countries in transition may encounter serious difficulties in the fishery sector arising from privatization and rearrangement of financial system, which may affect the fishery even years after the establishment of new ruling principles.

Keywords: Estonia, fisheries development, trade liberalization, transition to market economy

INTRODUCTION

Estonian fisheries transition to market economy has analyzed in a few studies only. Investing in human capital as a important prerequisite for sustainable development of Baltic States' coastal areas has been underlined at the beginning of nineties already (Aps, Vilu 1992). The process of restructuring of the Baltic fisheries was described later on focusing on re-colonization of the Estonian coastal areas (the border areas of the former USSR), destabilization of fisheries in transition, co-operation as an instrument of restructuring and the issue of regional functional identity (Aps 1994). Some similarity of concepts of sustainability and of biological adaptation has been used to analyze the trends in recent development of the Baltic coastal zone (Aps 1995). Results of the first five-year of development of Estonian fisheries in transition have been also published (Aps *et al.*, 1997). Recent developments of Estonian fisheries in transition are analyzed in much more detail (Vetemaa *et al.*, 1999; Vetemaa *et al.*, 2000). The aim of this paper is to analyze how overall changes in political life of Estonia during the last decade have affected the legal, economic, social and environmental issues connected to the small-scale coastal fishery in the Baltic Sea targeting mostly freshwater species such as pikeperch *Stizostedion lucioperca* (L.), perch *Perca fluviatilis* L., pike *Esox lucius* L. but also marine species such as flounder *Platichthys flesus* and spawning stocks of herring *Clupea harengus membras* (L.) and garfish *Belone belone* (L.) as well as migratory species such as sea trout *Salmo trutta*

trutta L., whitefish *Coregonus lavaretus* L., etc. (Vetemaa & Eero, 2000). Open-sea fishery in the Baltic Sea which is mainly pelagic trawl fishery targeting herring and sprat *Sprattus sprattus balticus* Schneider is not discussed in the present paper.

The transition to the market economy in Estonia started already during the end of eighties with gradual disintegration of the Soviet economic system, and culminated with re-establishment of independence in 1991. This process caused comparatively rapid and very deep changes in almost all sectors of life of the state. The rearrangement of the financial system took place in 1992 with establishing of own currency, Estonian kroon (EEK) with a fixed exchange rate: 1 DEM = 8 EEK.

The dramatic decrease of production in the agricultural sector, which during the command economy of the Soviet period was orientated to produce goods mainly for the Russian market, caused serious problems in the vital strategy of economy in rural areas. In parallel to the loss of the Eastern market also the profitability of the sector decreased substantially. During the former period agricultural sector used cheap fuel and machines produced in the Soviet Union (which were very uneconomic in terms of fuel use). The disintegration of the centrally planned economy resulted in the discontinuation of subsidies. As a conclusion, the traditional market was closed and possibilities to find new outlets were very restricted due to the low profitability of the sector under new conditions.

The fate of the people who lost their jobs in agricultural sector hit also many others. Since the whole

Estonian industry at that time was built to meet the needs of the Soviet centrally planned marketing system, the disintegration of the former administrative structure resulted in serious difficulties for most of enterprises. Many of them were not able to survive and bankrupted. At the same a new possibility for employment arose, as the sudden and very substantial decline of incomes in rural areas was partly compensated by new possibilities opened in the fishery sector.

The paper is organized as follows. First, it examines the changes in core policies such as transition to the market economy, trade liberalization, financial reorganization and privatization that followed re-establishment of the Republic of Estonia and considers their impact upon the profitability of the fisheries sector. Description of the state of stocks of some most important commercial species follows, which link the change in profitability of the fishery to the dynamics of stocks. Then the economical situation of fishermen during the nineties is discussed and, finally, the paper offers our conclusions focusing upon the difficulties of management of fish stocks during the extremely dynamic economical transition.

The catch statistics used in the present paper originates from the Department of Fishery, Ministry of the Environment. Estonian Fishermen Association provided data on number of coastal fishermen by counties. The catch per unit data for perch and other species was collected by the University of Tartu and the Estonian Marine Institute during coastal fish monitoring programs.

IMPACT OF NEW POLICIES TO FISHERY

During the Soviet period all waterbodies belonged to the state and all commercial fishing activities were carried out by collective farms. According to the 1991 and 1995 Estonian Fishery Acts, almost all waters in Estonia (including all coastal waters of the Baltic Sea) are public property. According to the Fishery Act, the Estonian government monitors fishing activities through the issuance of fishing permits for commercial and recreational fishery and special permits for the coastal inhabitants. In principle every citizen has a right to register himself as a fishermen and apply for commercial gear licenses. However, as the number of fishing gear licenses is limited and already distributed between fishermen it is often not possible for newcomers to start fishing. Fishing, fish processing and marketing is totally privatized in Estonia. Almost all fishing harbors are privatized as well. The role of the state in the fisheries sector is in ensuring the sustainable exploitation of fish resources and in creating a favorable climate and legislative basis for business. Additionally, the state is responsible for organizing international co-operation and enforcement of legislative acts. Unlike to many other

sectors of industry, foreign investments are very limited in the Estonian fishery, especially in small-scale coastal and freshwater fishery. This is caused by the fact that capital input to the fishery is rather low. Coastal fishing activities are carried out using rather small and cheap boats and equipment. Therefore the main constraint to the coastal fishery is abundance of fish.

Trade liberalization, which started in eighties and was completed in 1991, enabled Estonian coastal fishery to expand its markets. Before that, all marketing and trade was organized by governmental structures and orientated to socialist countries markets. Those markets were stable, but the price level was comparatively low. Direct contacts with western markets were not possible, in spite of the fact that those markets were geographically very close. Rapid increase in exports and high demand for fish from the side of exporters at the beginning of nineties caused a quick and huge increase in the Estonian first buyer prices for fish, which rose nearly to the West-European level. As most of the Soviet-time fishermen had the possibility to privatize at very low prices fishing gears and boats that belonged to former collective farms, there was no lack of fishing equipment. Fuel and transport costs were more or less only costs connected to fishery at this time. Since the coastal fishery is carried on mostly close to the fishing ports, fuel costs were not high. Finally, due to the smallness of Estonia and relatively good road network transport of raw fish was easy and quick.

The second important reason that increased the pressure to the stocks was the cancellation of the border regime. During the Soviet period most of Estonian coastline was border of the Soviet Union and a special border regime hindered seriously all fishing activities. For example, fishermen of the Gulf of Finland had to receive permit from boarder guard for every single trip to the coastal sea. Special lists containing the names of the licensed fishermen had to be elaborated and all boats were kept closed in a few special harbors, which were controlled by the border guard. After the re-establishment of the Estonian Republic such formalities were cancelled and free pass to sea was granted to all fishermen. However, some areas such as the Väänameri (West-Estonian archipelago area) were opened also during the Soviet period. As in such area people were more used to go to sea (also there were more boats and experienced fishermen), fishing intensity increased rapidly and, in the Väänameri area, overfishing of some stocks was obvious already by mid-nineties (Saat & Eschbaum, 2000).

As the threats of over-exploitation were understood, Ministry of the Environment (which is responsible for all activities in the Estonian fishing sector) made efforts to control fishery pressure and keep it on sustainable level. On the base of the rather efficient Soviet fishery enforcement system, the Estonian Marine Inspection was formed in 1991. However, it was very difficult to build up the up to date fisheries control and enforcement capacity in Estonia. Several weaknesses of

the legal base as well as economical problems decreased significantly the ability to fulfil enforcement duties. One of problems was that disintegration of the former totally controlled system of economy resulted in the loss of effective mechanism of accounting of economic data connected to the fishery. Additionally, the absence of precise regulations for new type of economic relations and activities simplified different kinds of “cheating” in the whole economy including fishery sector. Finally, as salaries of state employees including fishery inspectors were very low in comparison with fishermen, it could be hypothesized that in some cases inspectors and fishermen established illegal bargains allowing fishermen to increase their fishing effort remarkably over the level set by the number of allowed gears.

Under the Soviet command economy the number of commercial fishermen was relatively small. Catches by recreational fishery were very low. In early nineties, political pressure increased to grant all coastal inhabitants with a license to fish with a limited number of gill nets. As most of stocks were still in rather good shape and profits from fishery were high, new Fishing Act (1995) granted this possibility. The original meaning of that legislative act was to allow coastal inhabitants to fish for their own households. Due to the high profitability of fishery carried out using even a small number of gill nets, catches from this segment of fishery were, however, very often sold to fish traders for export. Governmental restrictions for this segment of fishery fixing the maximum number of gear per counties and per person (maximum 3 gill nets per person) were insufficiently enforced. Interviews with local inhabitants of coastal areas carried out by the authors of the paper have revealed that in many cases much more of gill nets was used per person. Local authorities also increased the number of licence holders and many of licenses were distributed not to local inhabitants. For example, on Saaremaa Island substantial fraction of licenses was hold by people living in the county center, town Kuressaare.

It can be concluded that in parallel to the declining importance of agriculture, new challenging possibilities and also practical need to carry on fishing activities emerged in the beginning of nineties. Such a development resulted in rapid increase in the number of fishermen and in their fishing effort. Since alternative employment possibilities were limited, coastal fishery became very important source of livelihood in coastal areas of Estonia.

DYNAMICS OF THE MOST IMPORTANT COMMERCIAL FISH STOCKS

Estonian Baltic Sea coastal fishery is regularly targeting about 20 species. Most important gears are fyke nets (incl. trap and pound nets) and gill nets. Target species could be distributed into three categories: 1)

herring, 2) high-value species such as perch, pikeperch, eel, pike, whitefish, burbot, salmon and sea trout, 3) other less valuable species such as cyprinids, flounder, etc.

Herring has been the most important species by total value of landings. As price per kilogram is low, high total value is based on big landings. Herring in the coastal area is targeted mostly by pound nets in spring, which are rather big and expensive gears and not accessible for most of coastal fishermen. Most of herring (about 70%) is caught by trawling fleet in the open sea. Internationally distributed quotas for herring are declining, due to worsening the stock situation (especially in southern parts of the Baltic Sea).

Most of high-value species could be exported to western markets. Therefore the prices of such fish rose quickly and substantially after the gradual trade liberalization at the end of eighties and the beginning of nineties. Due to the unlimited export possibilities the pressure to the stocks increased substantially. The paper focuses on dynamics of stocks and catches of perch, pikeperch and pike, the species that are rather sedentary and very vulnerable to overfishing. Catches of other species of this group have been low and they are based on recruitment from distant areas (eel) or, in a remarkable proportion, from stocking of juveniles in Estonia and in adjacent countries (salmon, sea trout and whitefish).

Low-value species such as ide (*Leuciscus idus* L.), roach (*Rutilus rutilus* L.), bream (*Abramis brama* L.), silver bream (*Blicca bjoerkna* L.) and vimba bream (*Vimba vimba* L.) are almost entirely sold on local market. All these species (as well as high-value species) could be fished using comparatively cheap fyke and gill nets.

During the Soviet period perch, pikeperch and pike were fished mostly for local consumption. Due to restricted possibilities for fishery and comparatively low price of these species the stocks were in rather healthy state at the beginning of the nineties, except for pike, which recruitment was low due to low water level in spring in late eighties (Saat & Eschbaum, 2000).

Estonian Marine Institute and University of Tartu launched coastal fish monitoring programs using standardized methods (Thoreson, 1993) in the Hiiumaa reference area (Väinameri) already in 1992 and in some other areas in 1993 and 1997. Catch per unit of effort (CPUE) data for perch from two monitoring areas in the Väinameri (Hiiumaa and Matsalu) clearly indicate the sharp decline in the stock size in mid-nineties (Fig. 1). Even if some strong year-classes which enter the fishery may increase CPUE for one year (as 1992 year class in 1994) the steady decline of CPUE of older fish and their high mortality rates still indicate very high fishery pressure.

Commercial catch statistics is available for years 1969-1999. In the case of perch, there is no increase in registered catches in early nineties (Fig. 2). However, the reliability of statistics from the first half of the nineties is

questionable. During the Soviet period coastal fishermen had to report on their catches on monthly basis. This practice has remained unchanged also during the later years. However, in the Soviet Union the marketing was organized using the controlled structures of the collective farms and therefore the compiled catch data from this years are rather reliable. After the trade liberalization, at the beginning of nineties, many small private enterprises started their activities. Private interviews with fishermen active at that time have revealed that in order to lower taxes in many cases the catches were misreported if reported at all. As the newly established Estonian Marine Inspection encountered many problems, the control of the catch and trade was not sufficient to guarantee the collection of reliable statistics. The official catch during the first half of nineties is most likely significantly (up to 2-3 times) underestimating the real catches. The official catch statistics of perch, pike and pikeperch, three most important species that were filleted and sold to the western markets, is on Fig. 2-4. In the Väinameri area (ICES area 29-4) catches of perch in 1999 declined to absolute minimum of 5,3 tons which is only ~1% of average during the last thirty years.

Catches of pike and pikeperch have not decreased so much as catches of perch, but the decline during the nineties is obvious. As in the case of perch, most serious decline of catches has occurred in the Väinameri area (Fig. 3-4).

Parallel to the depletion of stocks of the most valuable species, fishery pressure on other species such as eel and cyprinids increased. In spite of the high first sell value the fishery pressure to eel was rather low during the beginning of nineties. Due to massive use of small fyke nets in recent years, the total catch of eel has increased from ~10 tons at the beginning of nineties to ~30 tons in 1999.

Following the decline of revenues from high-value species the fishermen's incentives to target low-value species have increased. Catches of roach that is the most abundant low-value species have grown from ~150 tons in 1990-1991 to ~300 tons in 1998-1999. The change of attitude against roach could be described also following the dynamics of average first buyer prices of some fish in 1996-1999. Whereas prices of high-value species such as eel, perch, pikeperch and pike in 1996 were correspondingly 101%, 69%, 162% and 91% to 1999 price level, price of roach was only 36%. Unfortunately official price statistics from the beginning of nineties is lacking. However, according to our estimations the increase of roach prices between 1993 and 1999 has been three-four times higher than the price increase of high-value species.

ECONOMICAL SITUATION OF FISHERMEN

Due to dynamic development of the Estonian economy during the last decade the balance between the first buyer prices of fish, fishery costs and average gross wages of Estonia has changed a lot. The increase of price for fuel and increase of average gross wages in Estonia is presented on Fig. 5. Due to the new export possibilities and rather healthy fish stocks the profitability of fishery was very high at the beginning of nineties. Year by year, however, profitability has steadily declined. This has been caused by the increasing fishery costs and declined stocks. First buyer prices have not grown much. On the contrary, huge and increasing exports of some species such as pikeperch from Russia have dumped prices during the recent years in Western European markets, which in turn has caused decline of pikeperch prices in Estonia. The total value of the Estonian coastal catches in last years (10⁶ EEK) has been as follows: 1996 – ca 45.2, 1997 – ca 45.5, 1998 – ca 38.0 and 1999 – ca 25.5. So, both absolute incomes of coastal fishermen and relative earnings in comparison with income of people working in other sectors of economy have decreased year by year.

Statistics concerning revenues of separate fishermen is lacking in Estonia. Whereas data concerning total revenues exist, the exact number of fishermen is not known. In present study some estimations on incomes of fishermen were made based on the number of fishermen according to the data of the Estonian Fishermen's Association. However, this database probably overestimates the number of fishermen in years 1997-1999. First, due to very low profitability of coastal fishery during the recent years many fishermen have totally canceled their activities in this field. Secondly, interviews with fishermen reveal that if during the beginning of nineties they received nearly all of their income from fishery then now the share of part-time fishermen has increased remarkably. However, detailed statistics concerning the number of full-time and part-time fishermen is lacking. The data in Table 1 indicate approximate average revenues of fishermen calculated using compiled catch statistics of all targeted species in different counties and average Estonian first buyer prices. As the compiled first buyer statistics exist only from year 1996 onwards, earlier years could not be included in this analysis. However, the year-by-year worsening situation is still obvious. In Table 2 effort has been made to analyze profitability of pikeperch fishery in 1993, 1996 and 1999. Price level for pikeperch in 1993 is obtained from interviews with fishermen. Fishery costs are calculated using the cost data compiled by the authors of the paper and not presented here. It appears that about six times more pikeperch is needed to earn the average Estonian monthly gross wage in 1999 than in 1993. As the level of first buyer prices of perch and pike have been relatively stable during 1993-1999, the situation is almost the same in perch and pike fishery. It could be concluded that those

three species which during the first half of the nineties were sources of very big profits and well-being of fishermen have by now, in some regions with depleted stocks (as the Väinameri), almost totally lost their economic importance.

In spite of the increased catches and prices of low-value species it is obvious that incomes from coastal fishery have decreased sharply during the nineties and this has caused severe fall of the importance of coastal fishery sector in the life of coastal areas. Also it could be hypothesized that the number of active coastal fishermen which was around 3000-4000 in the first half of nineties has probably declined to 1000-2000.

CONCLUSIONS

The aim of this paper was to analyze how overall changes in political and economical life of Estonia during the last decade have affected the coastal fishery and fish stocks of the Baltic Sea. Due to many reasons such as restrictions of fishing connected to border regime, low value of fish and moderate number of fishermen during the Soviet period, the stocks were relatively healthy at the end of eighties. Opening of the western markets that followed trade liberalization enabled unlimited exports of Estonian fish. First buyer prices of high-valued species such as perch, pikeperch and pike increased rapidly almost up to the Western European level. Due to high profitability of the fishery the pressure to the fish resources increased substantially, both in terms of the total number of fishermen and in fishing effort. Since fishery costs were low, catches and fish buyer prices high, the incomes of fishermen were good. The relative richness of people engaged in coastal fishery was caused also by the fact that most of Estonians worked at that time in sectors of economy, which didn't have possibilities to export their production to the Western Europe. Earnings of most people were very low at that time.

However, after the first splendid years the incomes of fishermen started to decline both in absolute and relative sense. The first reason was that the first buyer prices had already reached levels comparable to the Western Europe and they didn't rise any more. The revenues increased slowly, if at all. Soon stocks started to decline. Fishermen who were already used to high incomes increased their efforts that in turn accelerated the decline of stocks. At the same time dynamic development of the Estonian economy caused steady increase of all costs connected to the fishery. And finally, firm increase of wages in most other sectors of economy during the nineties has increased for now the average gross wage in the country to a level almost ten times as high as during the first year of independence.

The described developments have caused loss of importance of coastal fishery during the recent years and as there are few alternative employment possibilities in

many coastal areas, increasing social problems have hit households depending on fishery.

The final conclusion of the paper is that countries in transition may encounter serious difficulties in fishery sector arising from privatization and rearrangement of financial system and trade. New economical framework may cause high short-run profits, and help to survive communities during difficult years of reorganization of the economical life of the state. However, the later years give substantial backstroke, as the depleted stocks do not able normal fishery pattern even years after the establishment of new ruling principles.

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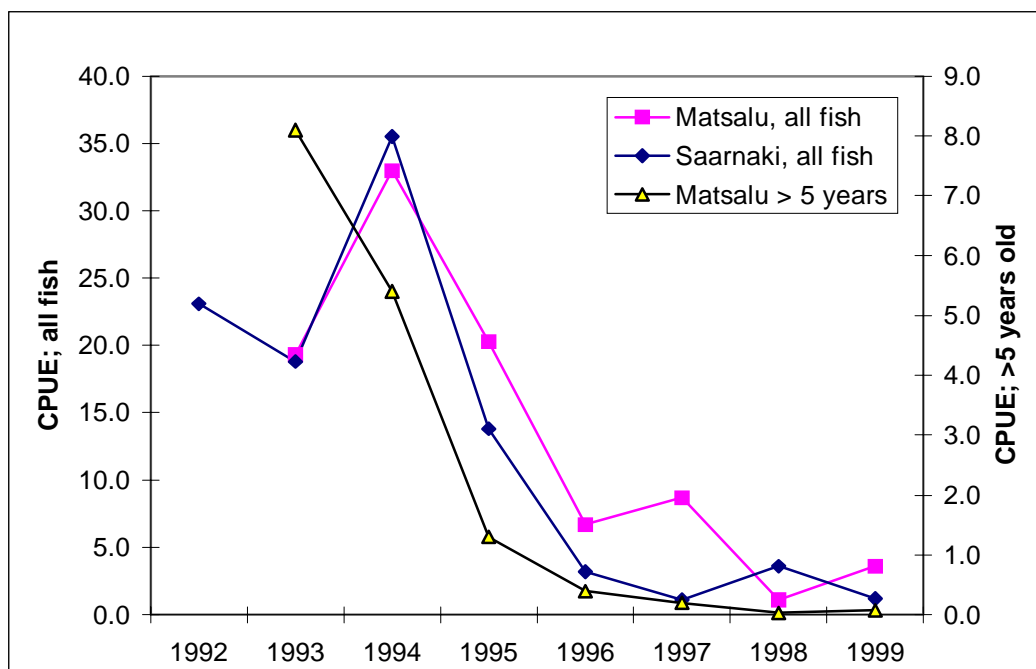
Table 1. Revenues of coastal fishermen by counties and average gross wages in Estonia 1996-1999.

County	Number of fishermen	Average revenue per fisherman per year			
		1996	1997	1998	1999
Saare	600	18023	12662	11700	7170
Lääne	400	8187	7791	6000	3317
Hiiu	300	6608	5093	6400	3034
Pärnu	500	52914	59322	48000	32112
Ida-Viru	200	1328	6870	5300	2818
Harju	50	36450	31653	23300	27153
Lääne-Viru	30	18415	20173	17100	28280
Average annual revenue per fisherman		21716	21858	18307	12195
Average annual gross wages in Estonia		35820	42876	49500	53016

Table 2. The profitability of pikeperch fishery.

	1993	1996	1999
Average first buyer price of pikeperch, EEK per kg	25	31	19
Estonian average monthly gross wage, EEK	1066	2985	4554
Amount of pikeperch (kg) needed to earn average Estonian monthly wage (taxes excluded, fishery costs excluded)	43	96	240
Amount of pikeperch (kg) needed to earn average Estonian wage (taxes excluded, fishery costs included)	53	128	342

Figure 1. Catch per unit of effort (CPUE) data from two monitoring areas in the Väinameri, Matsalu Bay and Hiiumaa (Saarnaki) reference area



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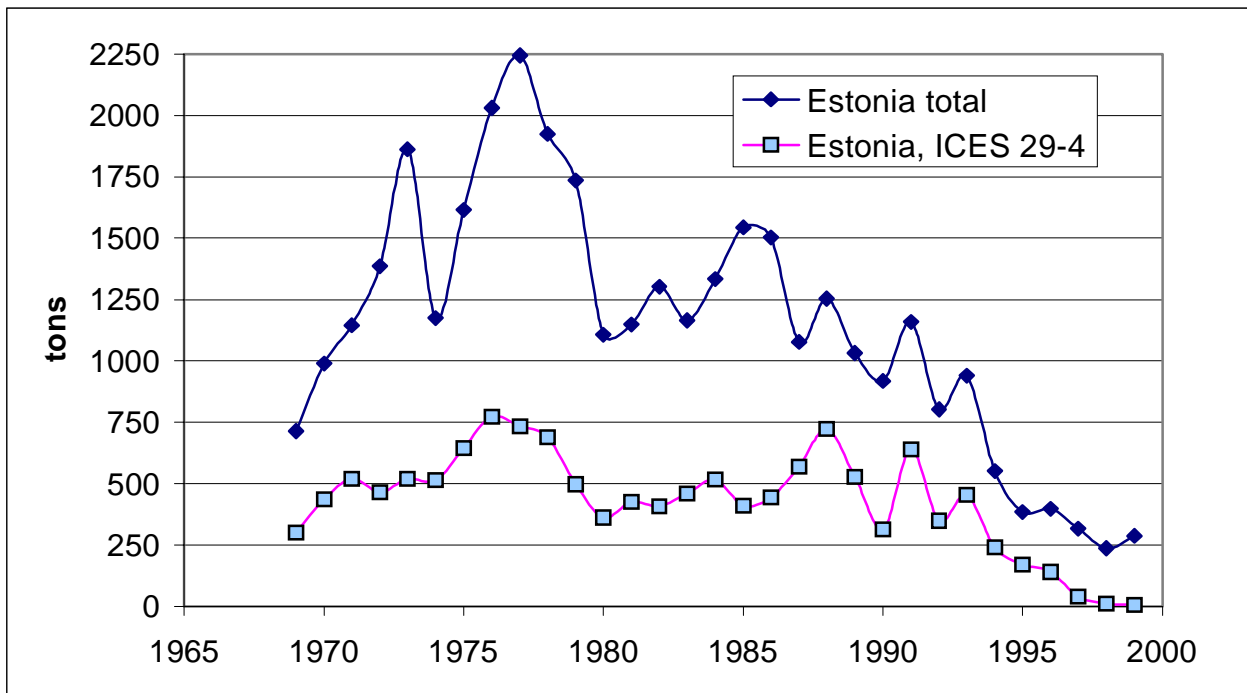


Figure 2. Catch of perch (t) in Estonia and in the Väinameri (ICES area 29-4) during 1969-1999.

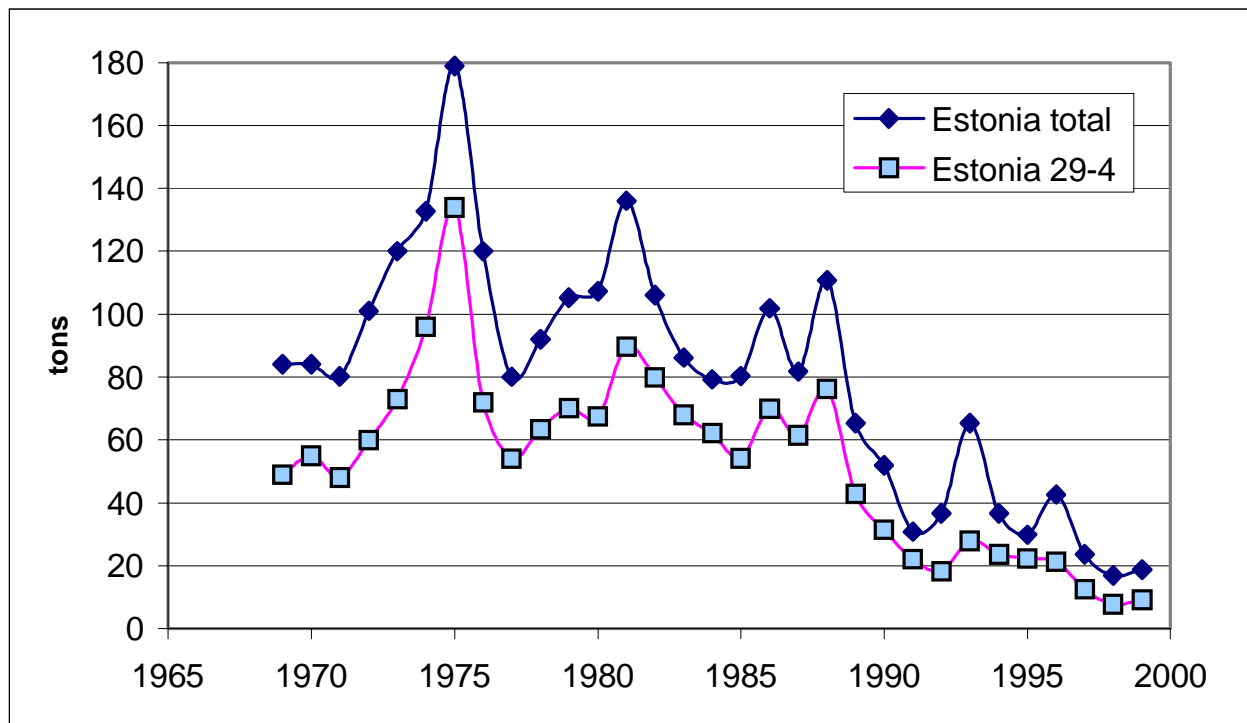


Figure 3. Catch of pike (t) in Estonia and in the Väinameri (ICES area 29-4) during 1969-1999.

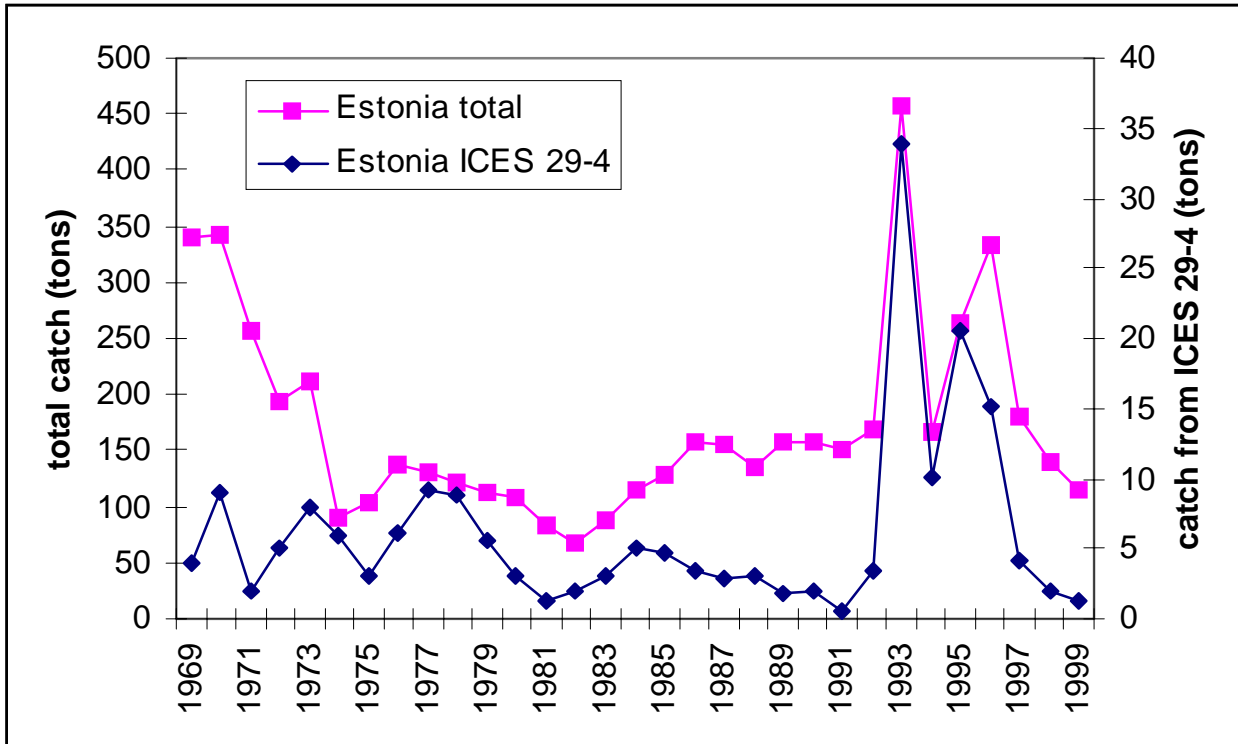


Figure 4. Catch of pikeperch (t) from whole Estonia and from Vänameri (ICES area 29-4) during 1969-1999.

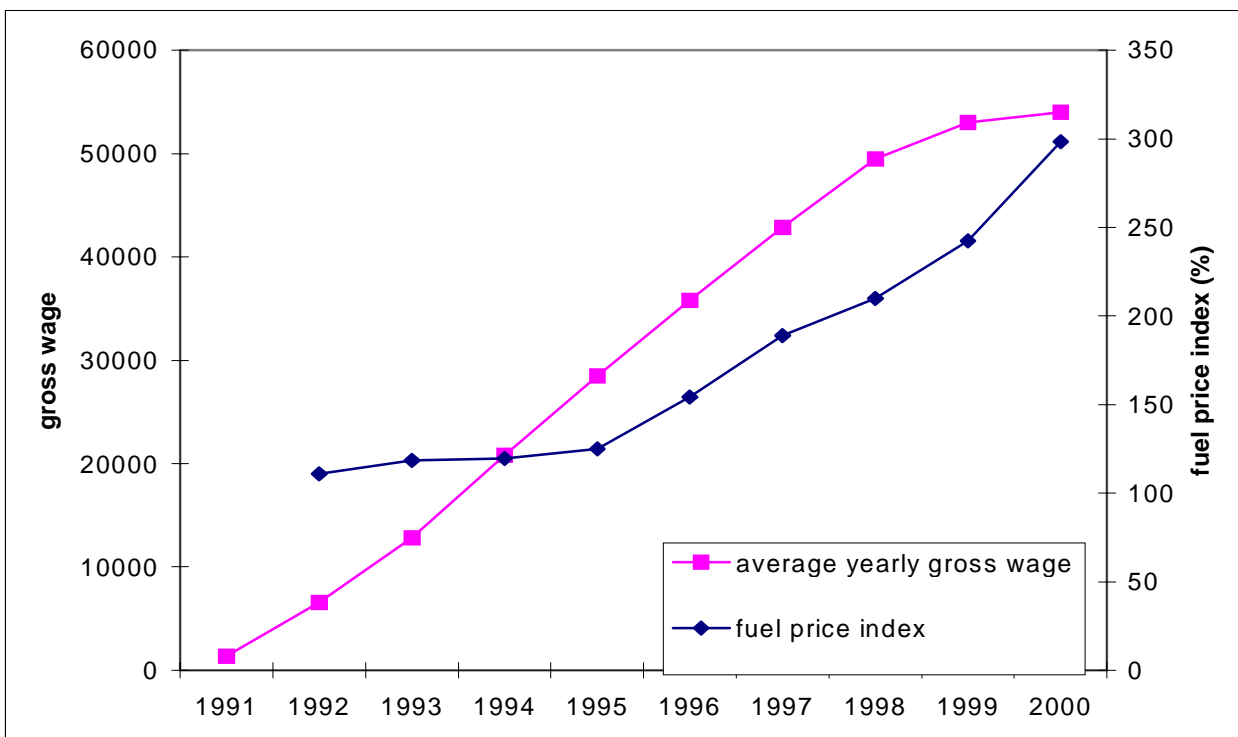


Figure 5. The dynamics of average yearly gross wage (in Estonian kroons) and fuel price index (price in 1992 is equal to 100%) in Estonia.