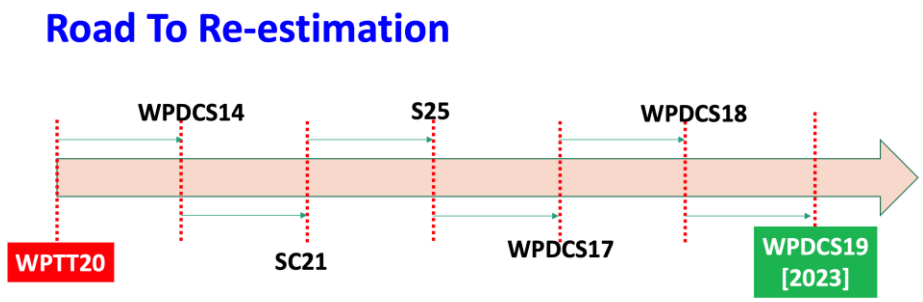
DRAFT TECHNICAL REPORT ON THE RE-ESTIMATION OF INDONESIAN ANNUAL CATCH DATA FOR 1950-2022

I. BACKGROUND

The WPDCS and SC requested that Indonesia continue – in collaboration with the IOTC Secretariat – to reassess their official catches.



Seven-Sessions assistance meeting (virtual and physical) with the IOTC staffs were held during **2021-2023**

II. NEW RE-ESTIMATION METHODOLOGY

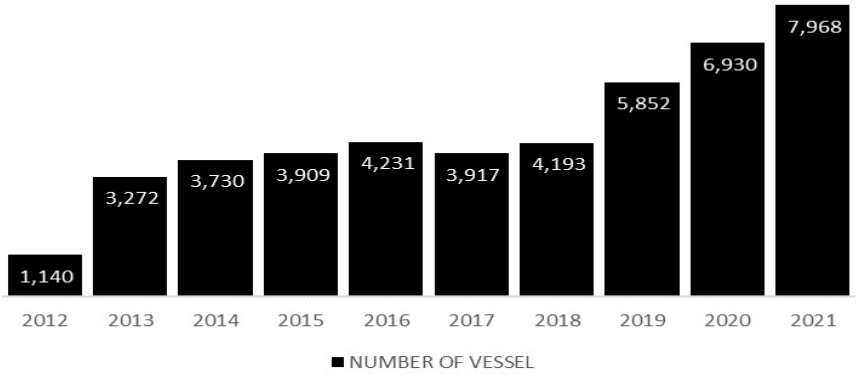
a. Source of catch composition :

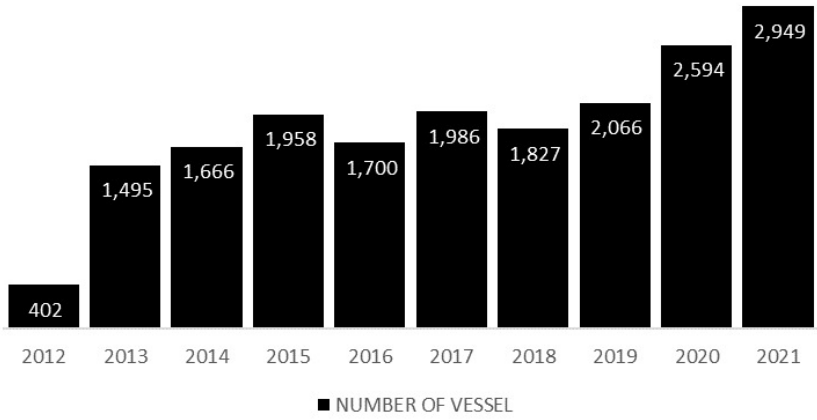
Logbook and port landing data that provides more appropriate information of catch composition among the data sources.

1. The catch composition of logbook data is used to re-estimate the catch composition: for LL (Drifting longline; over 1800 hooks), LLFR (Drifting longline; up to 1800 hooks), LLCO (Small longline), PS (Tuna purse seine), PSSS (Small purse seines), GI (Gillnet), HL (Handline) and HLOF (Offshore handline), while
2. The catch composition of port landing is used to re-estimate the catch composition for DS (Danish seine), LN (Lift net), PL (Pole and line) and TL (Trolling).

Fishing Logbook

- The logbook information used for this study available from 2012-2022.
- Logbook reporting was mandatory since the issuance of Marine Affairs and Fisheries Ministerial Regulation No.18/2010. In order to elevate the efficiency and optimization of data reporting, a logbook information system (SILOPI) was initiated in 2011.
- The number of vessels reporting logbook in the IOTC area of competence rose from less than 500 into almost six-fold in 2021.

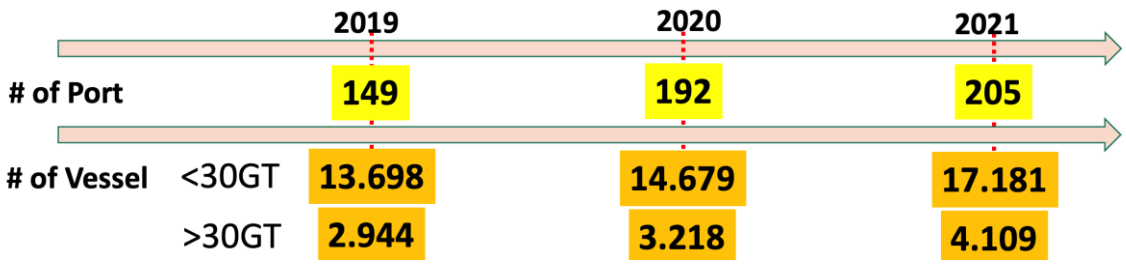




Port Landing (PIPP)

PIPP covers data and information of fishing port facilities, daily, monthly, and annual operational data of fishing ports, which contain the frequency of vessel's arrival, fish production and prices, fishing gear, logistics, marketing, and labor in the form of daily data that can be accumulated in the form of monthly, quarterly and even yearly.

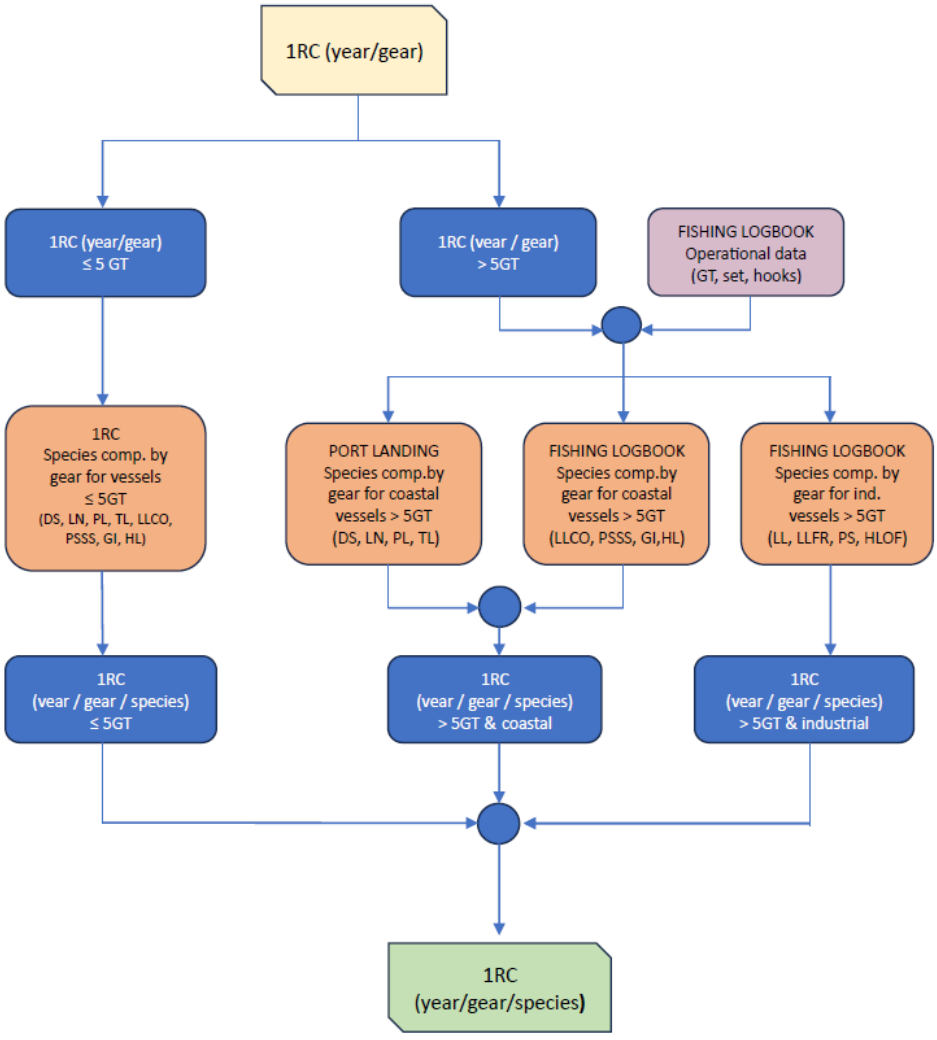
Based on the Decree of the Minister of Marine Affairs and Fisheries Number 6 of 2018 concerning the National Fishing Port Master Plan, there are 538 fishing ports in Indonesia whose operational data and facilities are expected to be entered in the Fishing Port Information Center (PIPP) digitally that can be easily accessed and processed into the update and valid information for the development of capture fisheries, especially in fishing ports. There are 205 fishing ports which joined in the PIPP.



b. New definition of the fisheries

Based on the recommendation of The IOTC Technical Support Mission in March 2023 that the updated threshold of 115 GT be used from now on to identify purse seine vessels with length overall (LoA) of 24 m and above within all IDN data sets (logbooks, port landing, vessel registries, etc.). That the 85 GT threshold for longline vessels is also used, in lack of any other current evidence, for all other vessel types besides purse seiners. The updated threshold became the basis for determining the fisheries according to types of fisheries for IOTC species (IOTC Secretariat, 2014) and classification and dimensions of fisheries (IOTC Secretariat, 2014).

The Flow Chart of the Re-estimation Methodology



The fishing logbook provides information for vessels above 5 GT, therefore, the catch in the 1RC is divided into two categories, which are the catch for vessels above 5 GT and vessels up to 5 GT for each fishery;

The re-estimation will keep the total annual catches (2010-2021) remain the same as what originally reported by IDN through forms 1-RC. The re-estimation of catch composition for vessels above 5 GT is conducted by multiplying the catch in the 1RC with the catch composition from logbook for LL, LLFR, LLCO, HL, HLOF, GI and multiplying the catch in the 1RC with the catch composition from port landing (PIPP) for DS, LN, PL, TL. The catch composition for vessels up to 5 GT is using catch composition in the 1RC.

Calculation of catch composition based on fishing logbook data using the data range for 2012-2021, taking into account:

a. Spatial and temporal fishing logbook data available as well as catches since 2012 even though e-logbooks are not yet used.
b. The reason why not using average data for 2019-2021, because the time gap is too large, there are concerns that it will not represent the conditions of the year.
c. Recap of years of use of manual and electronic fishing logbook.

The preparation of the catch composition of **fishing logbook** data is carried out in the following steps:

1. Categorization of fishing vessel with the following procedure:
   a. create a Fishing Gear Code according to the fishing gear category in IOTC by considering the LoA based on the size of the vessel and fishing waters area.
   b. for Longline, apart from point (a), also consider the number of hooks used for each setting.
2. Data filtering, based on:
   a. vessel size above 5 GT
   b. year of capture according to what will be reconstructed
   c. fishing gear according to the IOTC code
   d. types of species according to those managed by IOTC
3. Taking into account the composition of fish species per fishing gear per year.

The procedure to estimate the **port landing** catch composition are in the following :

1. The PIPP catch composition is used only for vessels > 5 GT, LoA < 24m but operates inside EEZ, since the coverage in the fishing logbook data is low for lift net, pole and line, danish seine and trolling. The PIPP data is available for period 2015- 2021.
2. Using PIPP data in re-estimation requires the coverage of PIPP catch data on 1RC data, with the following calculation stages:
   a. Calculate the weight of fish caught per type of fish per fishing gear based on PIPP data.
   b. Calculate the weight of fish caught per type of fish per fishing gear based on 1RC data.
   c. Calculate the amount of coverage by comparing PIPP catch weight data with 1RC catch weight data per type of fish per fishing gear per year.

The PIPP catch composition data preparation is carried out in the following steps:

1. Create an IOTC fishing gear code by vlookup the list of fishing gear codes resulting from the agreement.
2. Determine the weight of catch by adjusting the reconstruction form by PIPP data pivot table as in the following:

1) Filter Column:
   - the year of capture corresponds to the year of the reconstructed data
   - fishing gear based on classification in number 1 (new code 2)
2) Row column:
   - FAO code
3) Value column:
   - weight of catch in tons

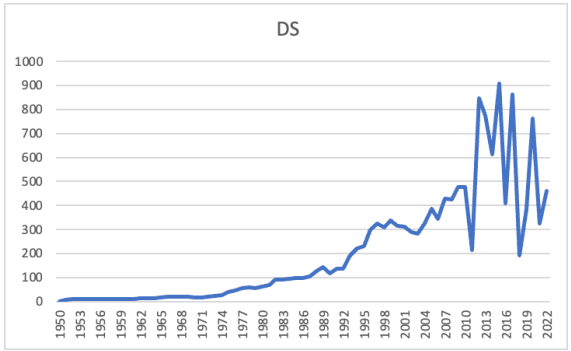
3. The results of the pivot table are carried out for each fishing gear and input into the reconstruction form per fishing gear per year.
4. The reconstruction form produces catch composition per fishing gear per year.
5. Input the catch composition from the PIPP reconstruction form into the processing form by multiplying the total number of catches from 1RC by the percentage of PIPP catch composition.

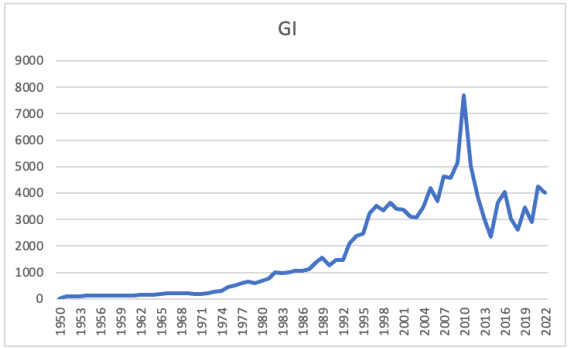
There are 2 (two) distinct methodological approaches to estimate :

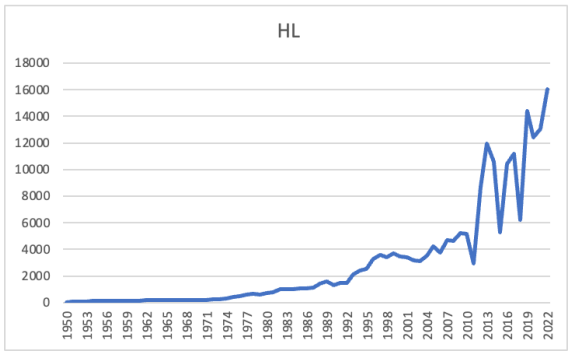
1. The catches for the period 2010-2022 based on the imputation method (for addressing the NA catch for some key species) and average species composition estimated for 2010-2015 (LLCO/GI/DS/PL) or 2010-2016 (LN/HL/PSSS/TL) for estimating the catch for 2010-2022 and
2. The catches for the period 1950-2009 based on the average species composition of 2010-2012 since these periods years have the similar condition as in those prior 2010.

III. RESULT OF RE-ESTIMATION

a. Yellowfin tuna (YFT)



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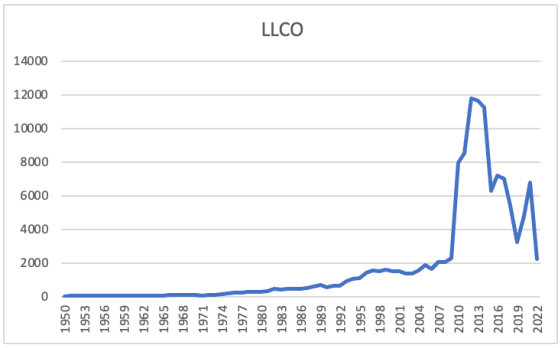
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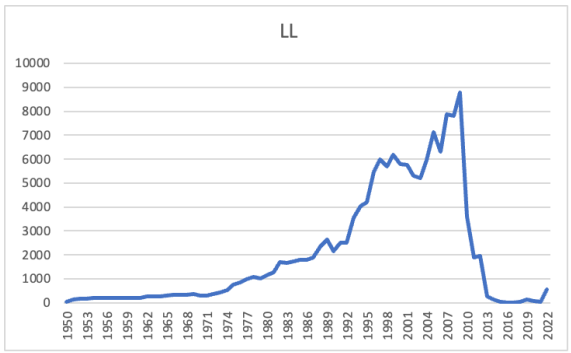
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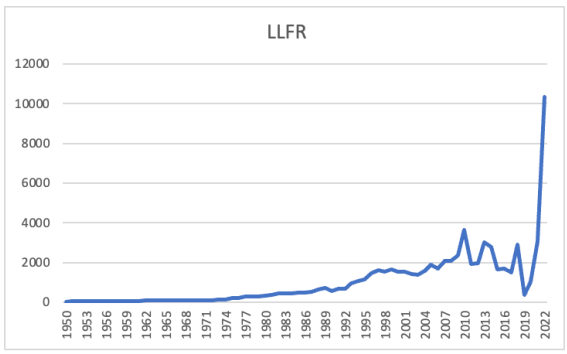
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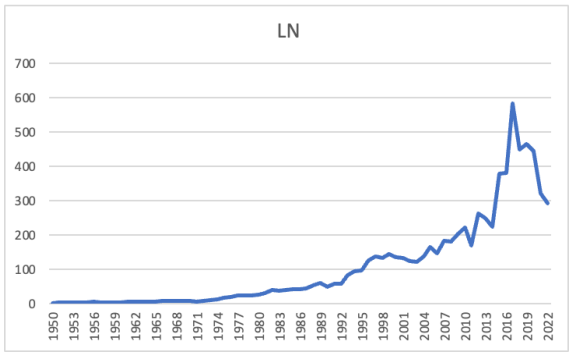
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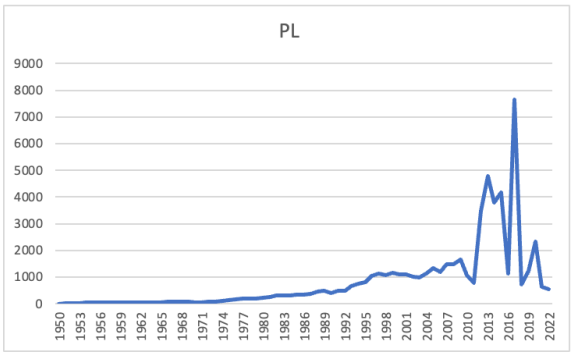
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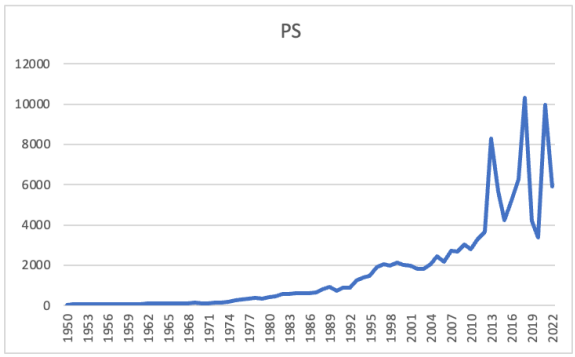
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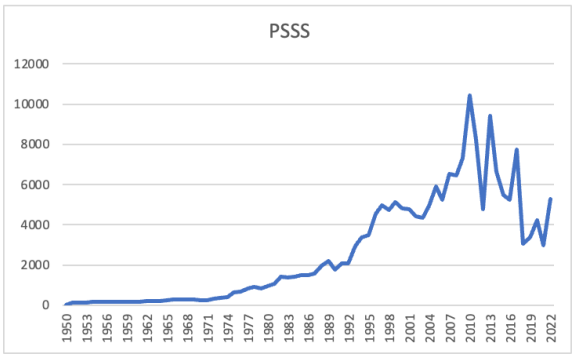
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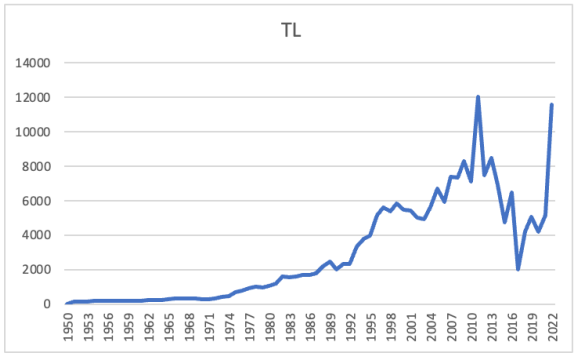

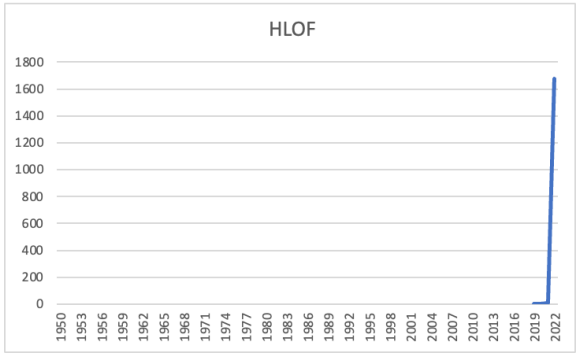

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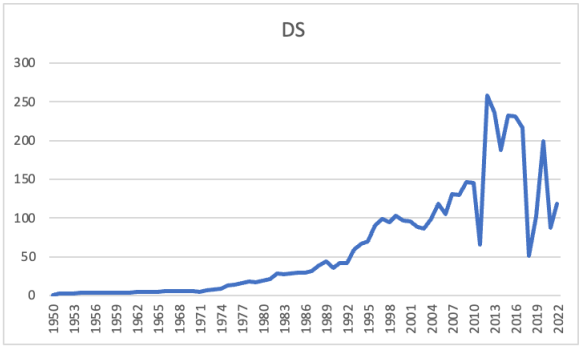
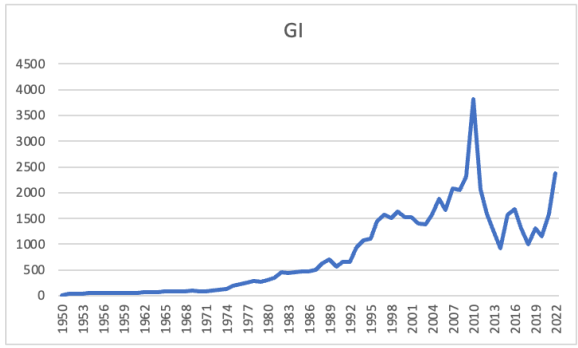
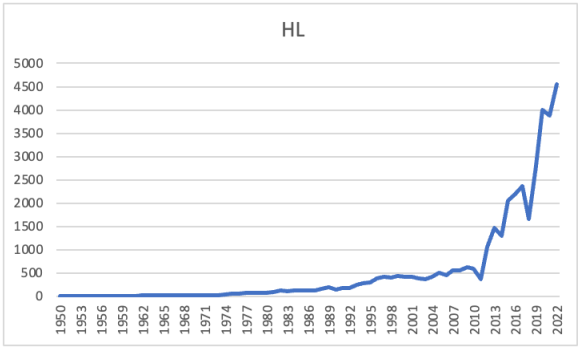
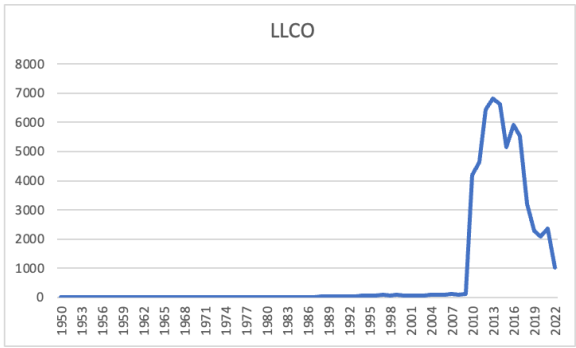
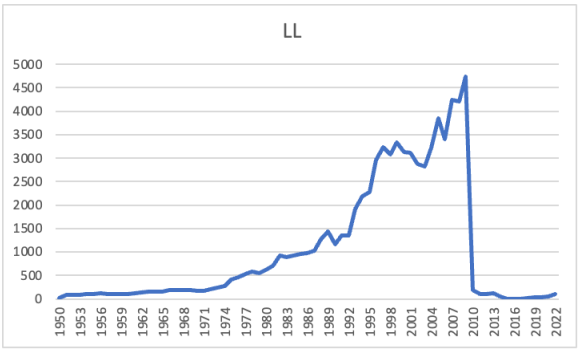
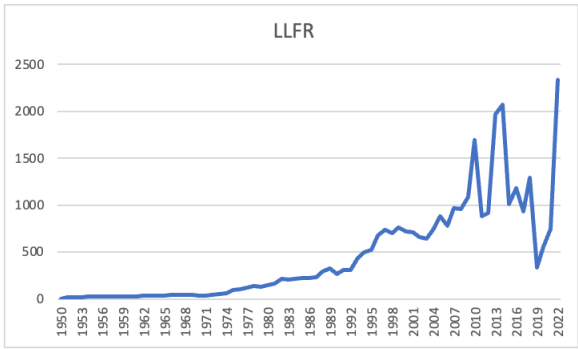


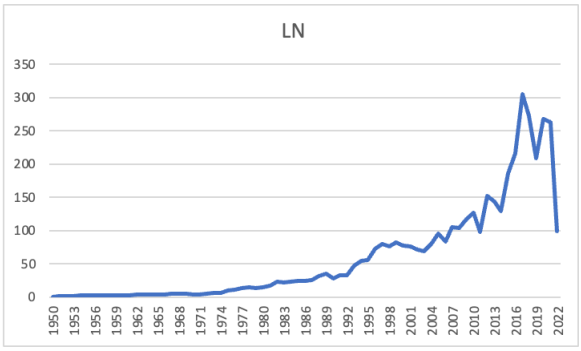


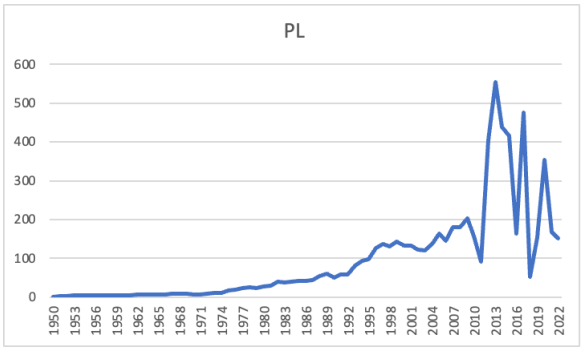


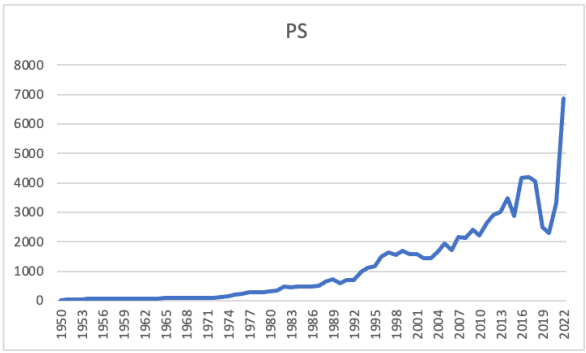


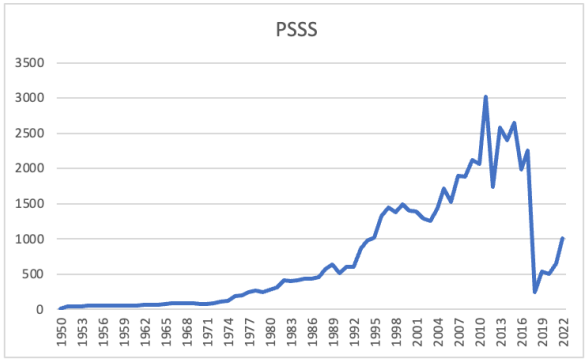


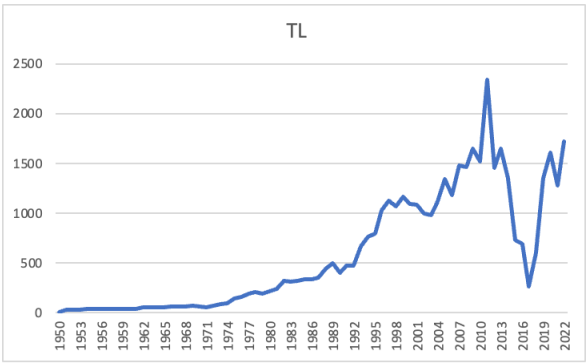


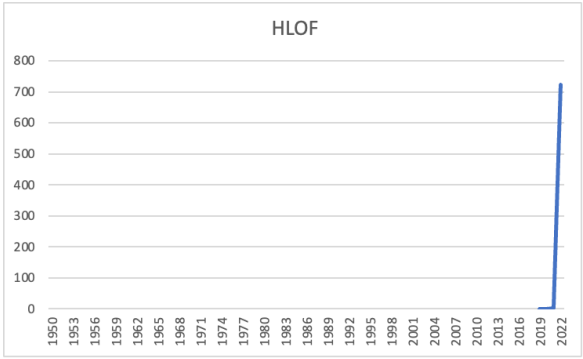




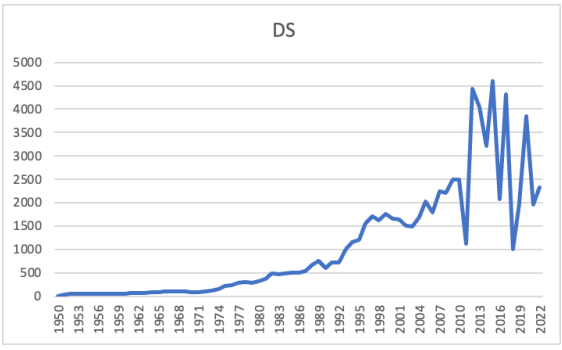


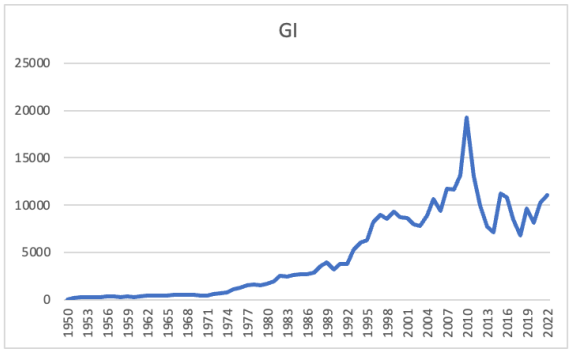


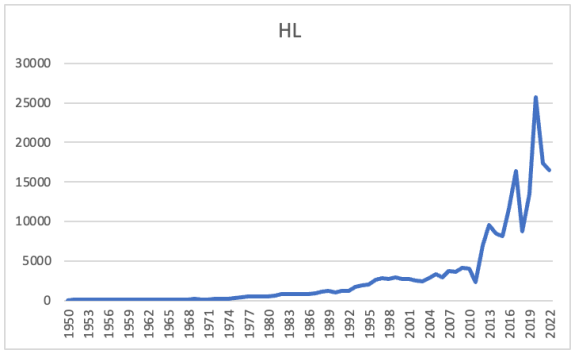




c. Skipjack tuna (SKJ)



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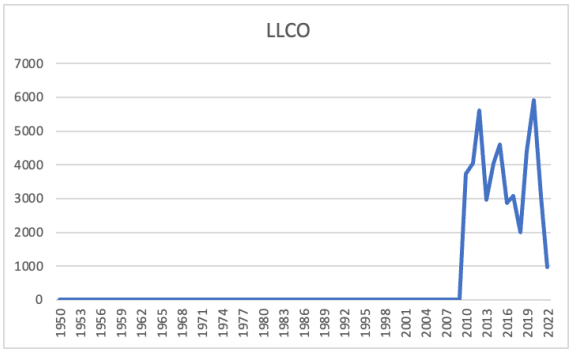
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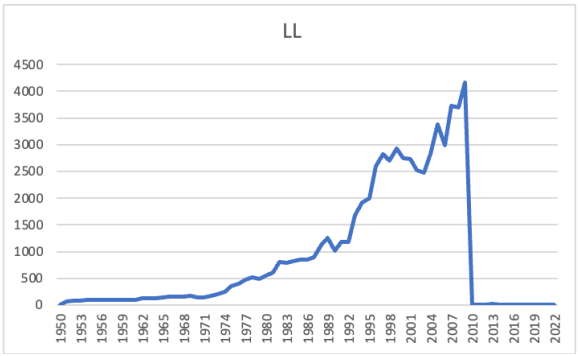
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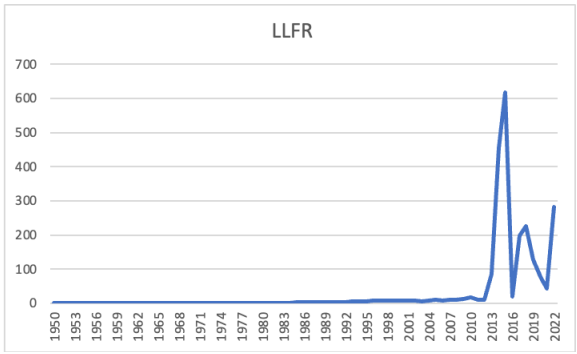
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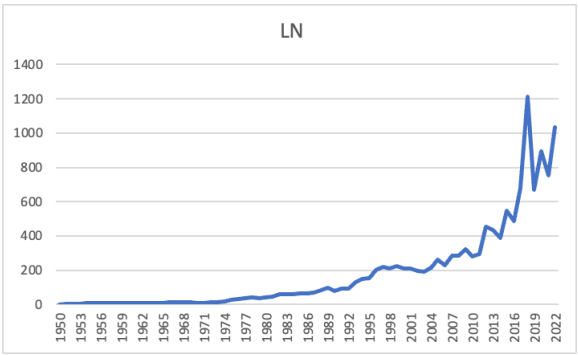
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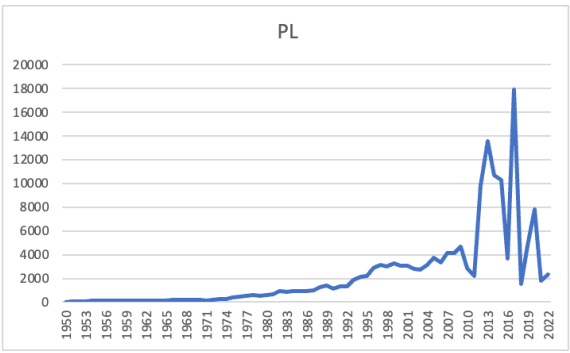
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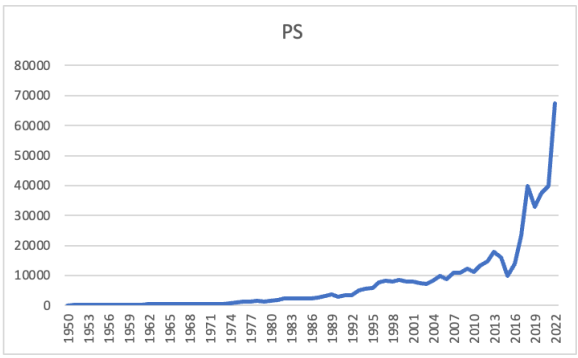
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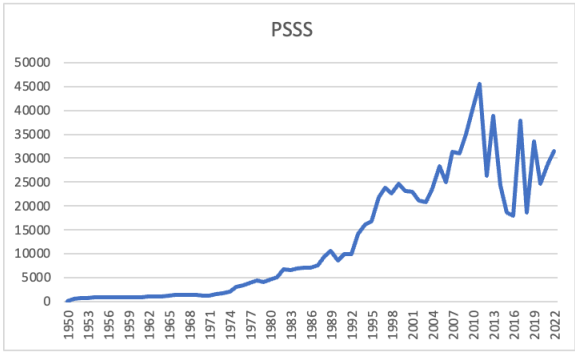
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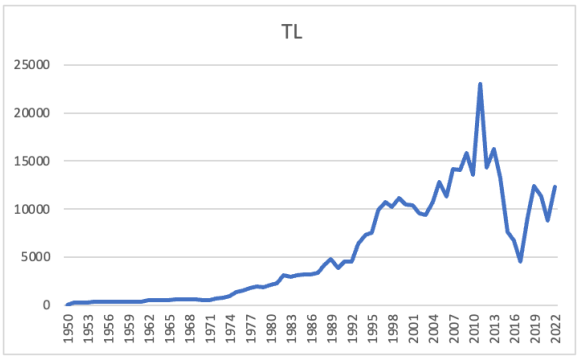
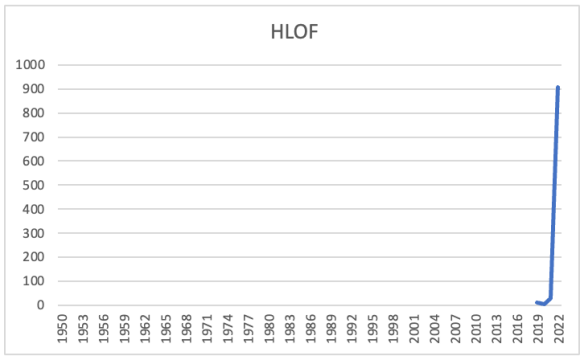
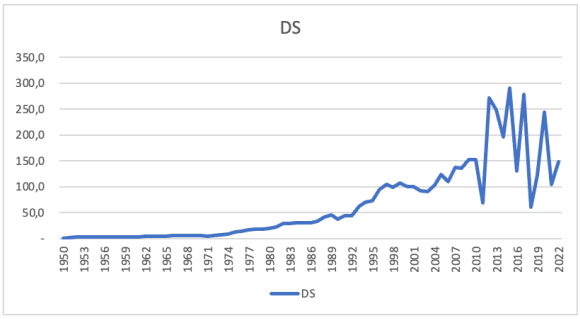
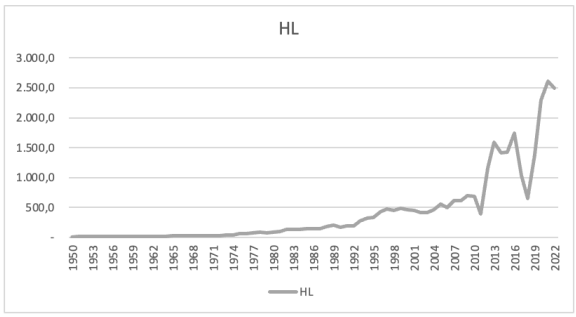
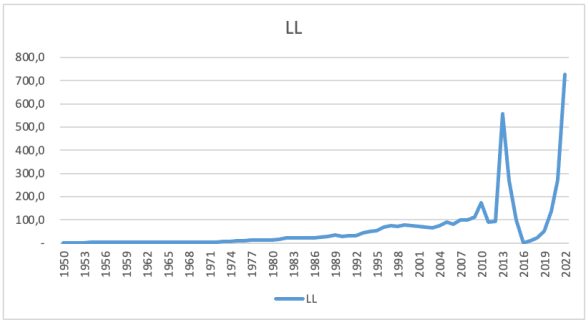


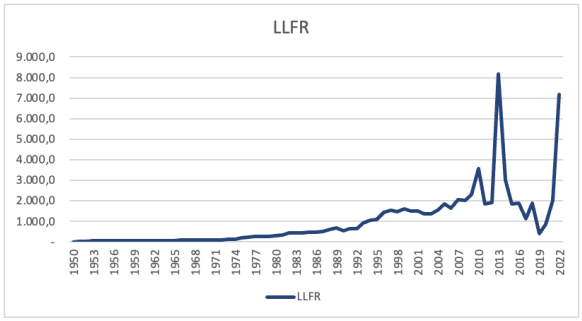


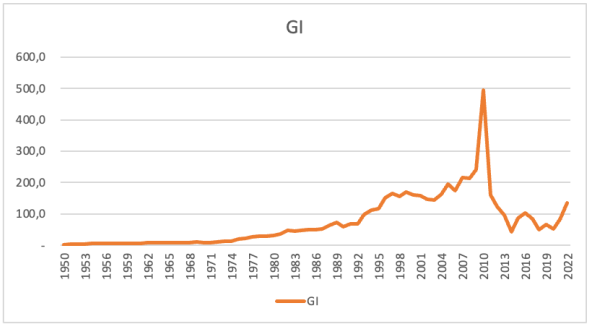
d. Albacore (ALB)

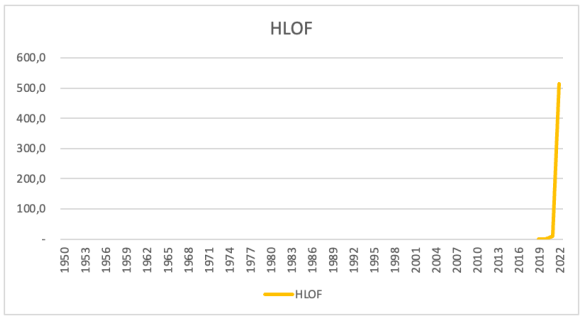


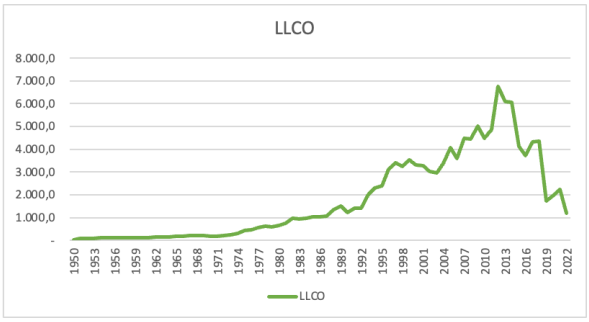


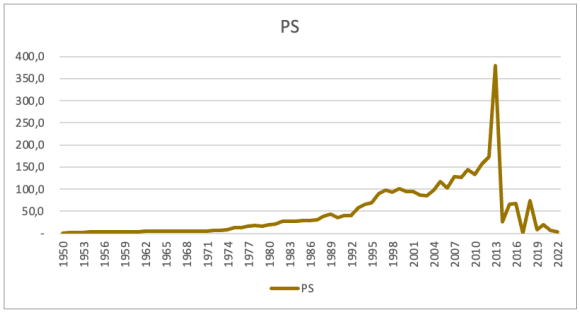


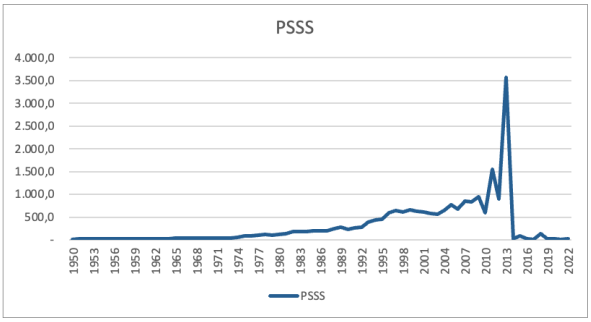


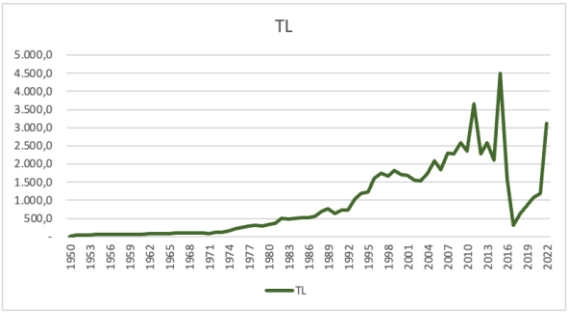


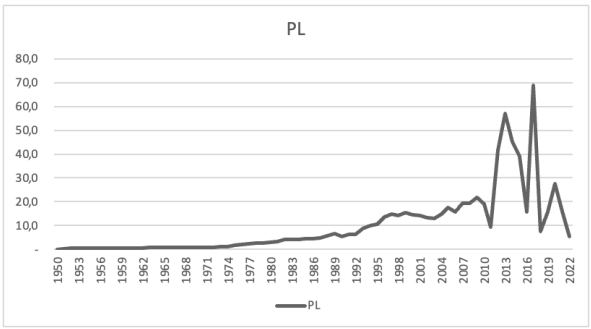


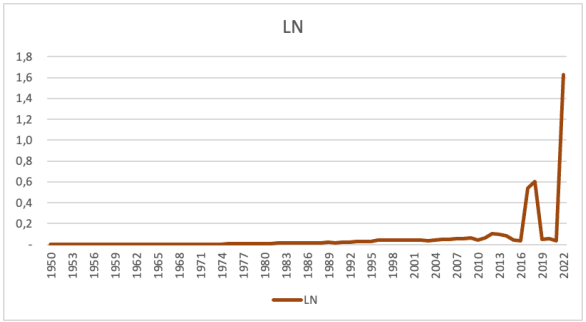




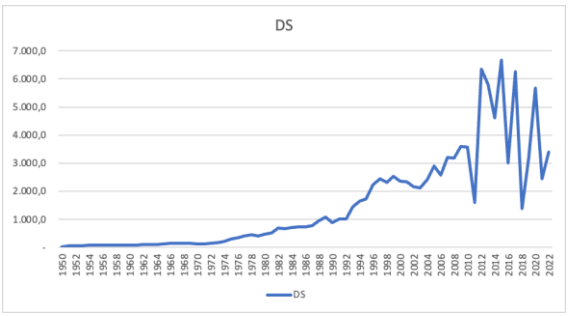


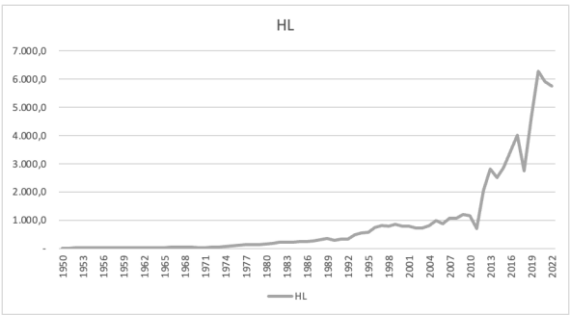


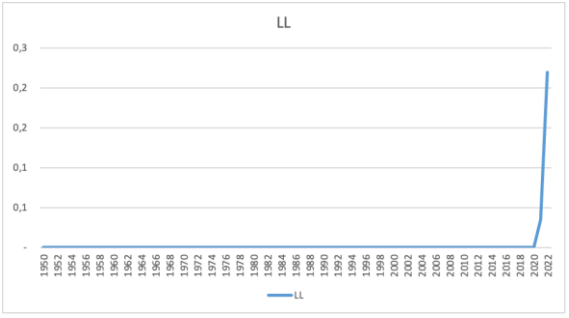


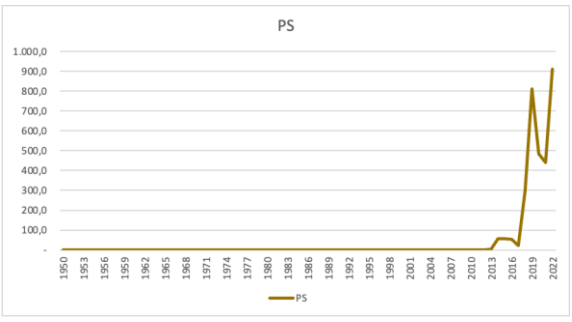


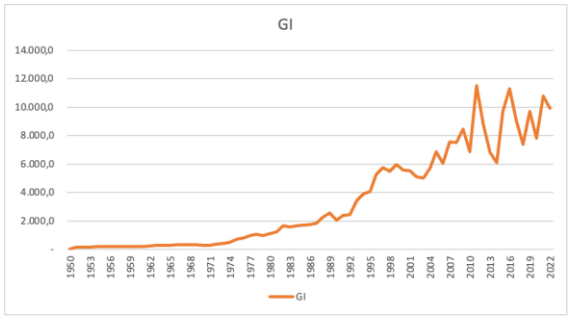
e. Longtail tuna (LOT)

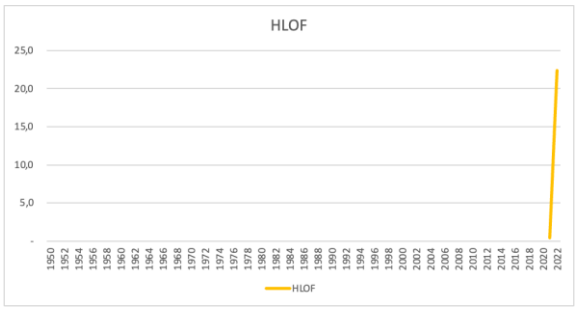


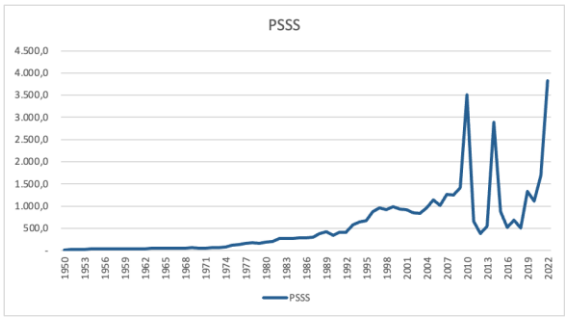


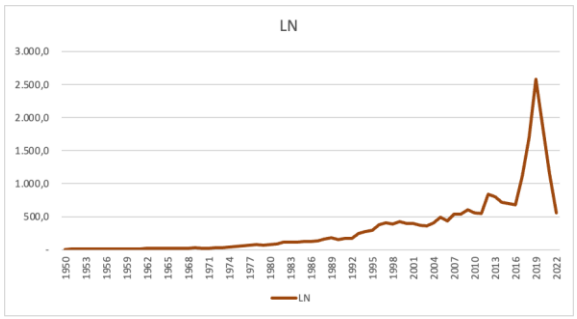


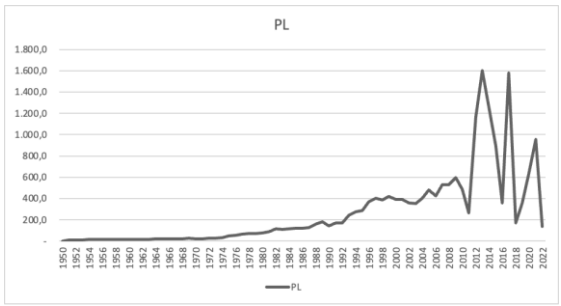


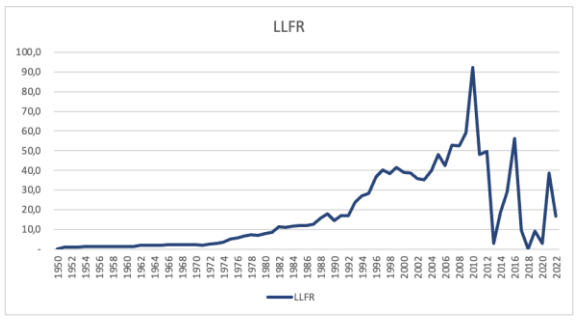


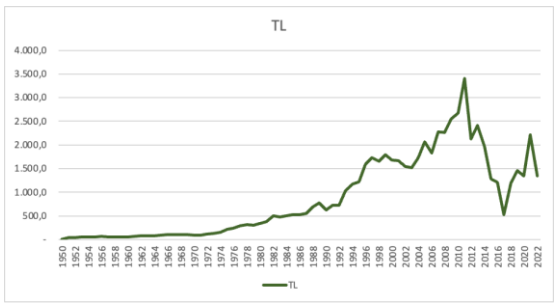




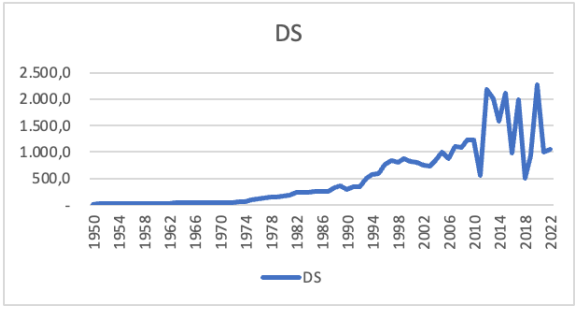


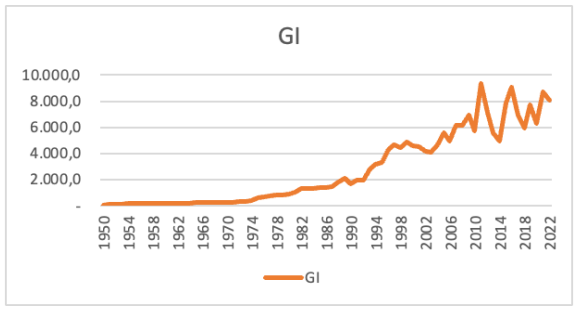


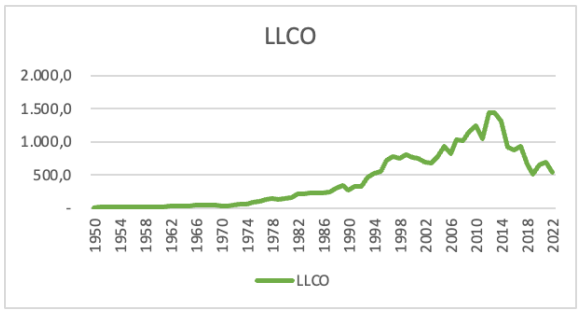


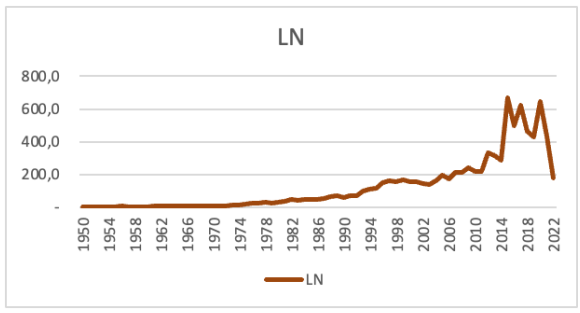


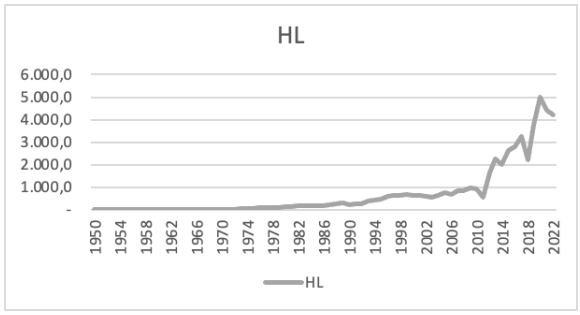
f. Kawa-kawa (KAW)

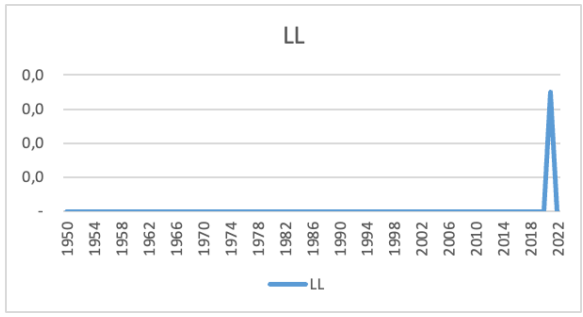


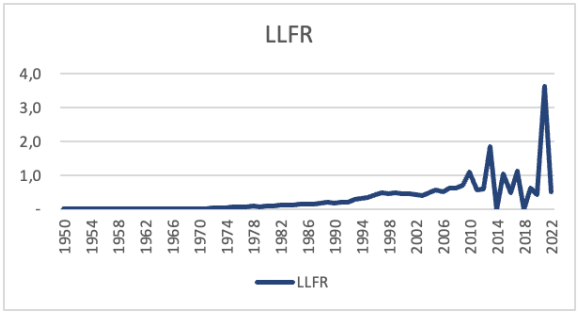


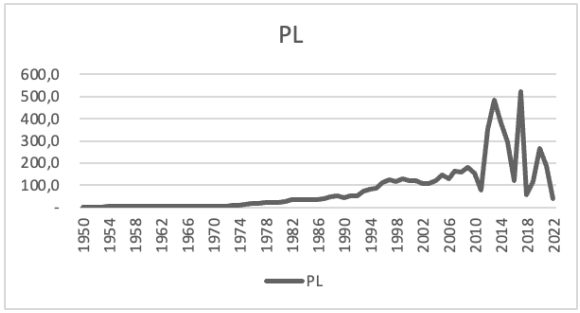


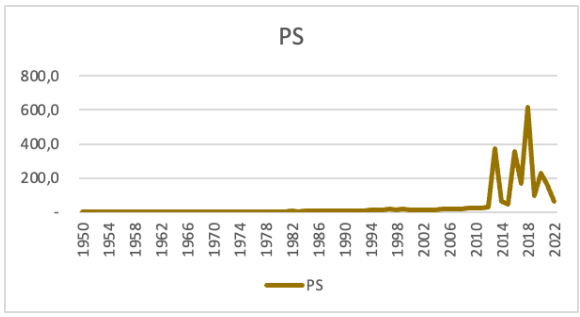


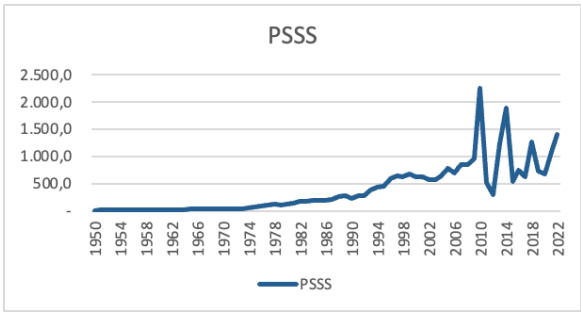


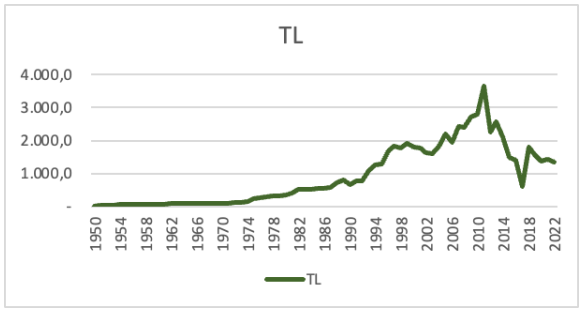




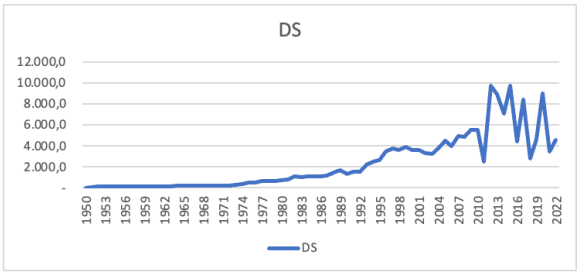








g. Frigate tuna (FRI)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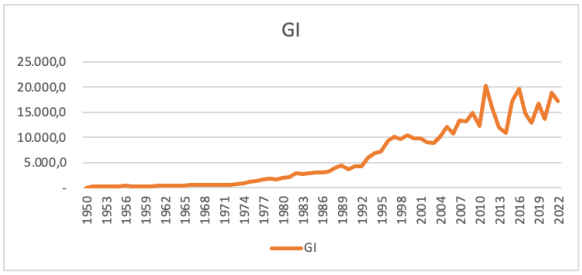
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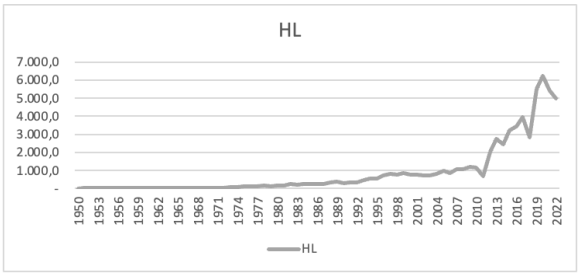
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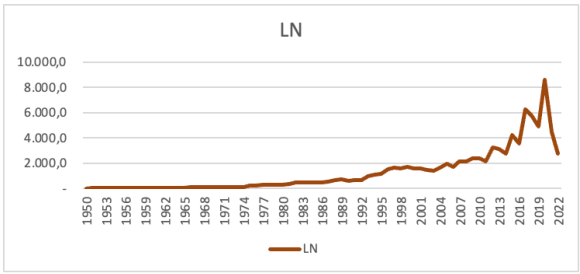
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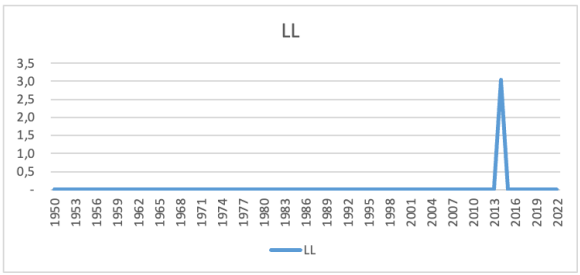
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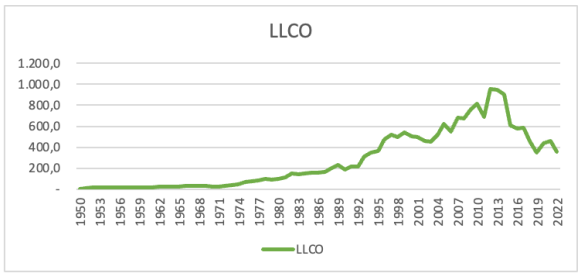
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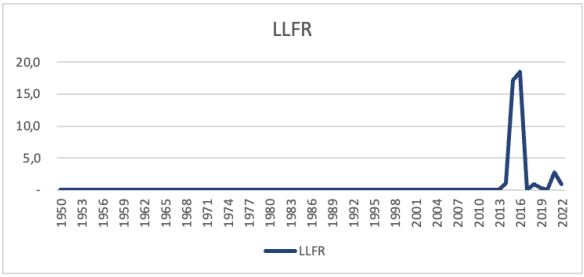
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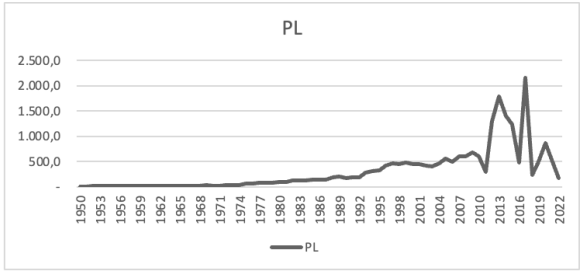
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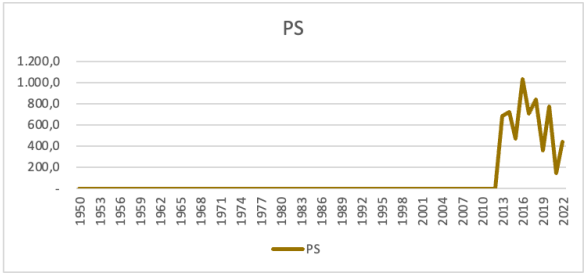
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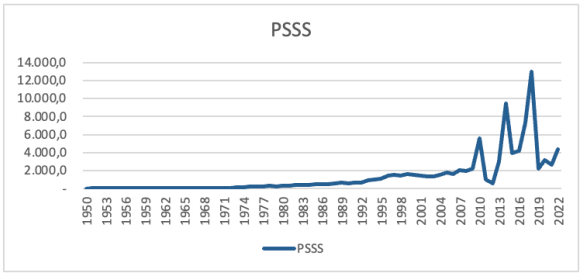
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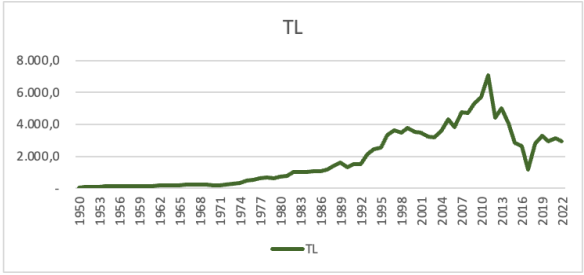
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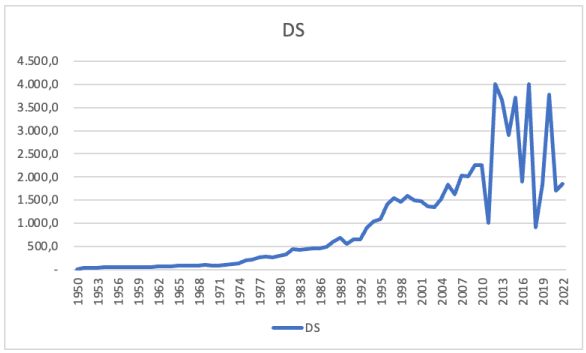
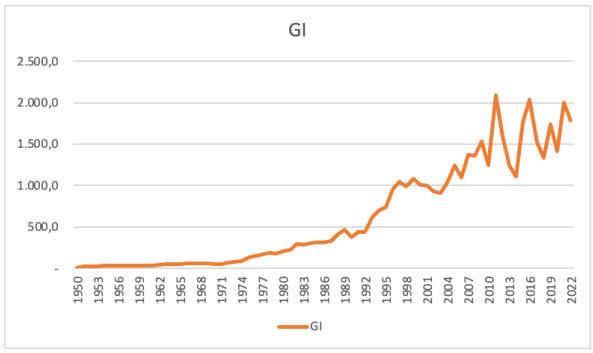
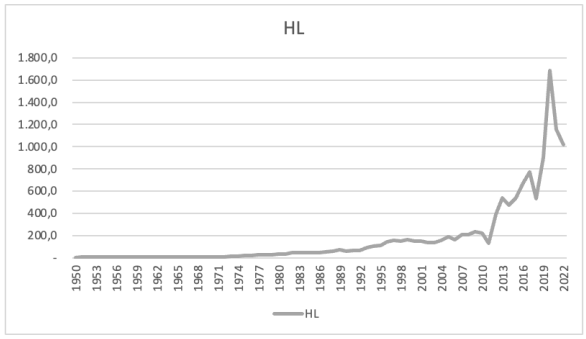
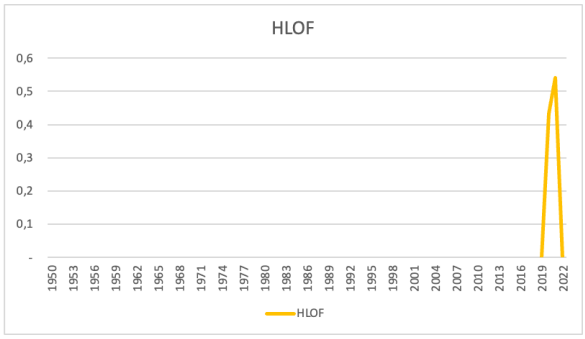
TL

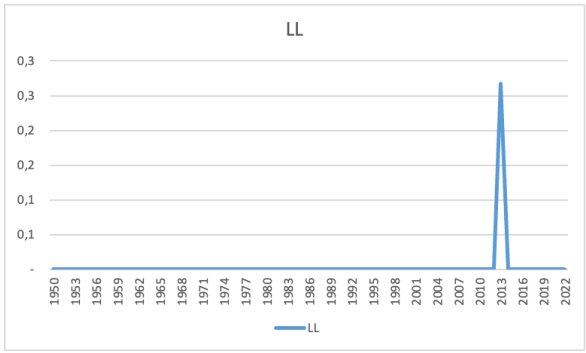
h. Bullet tuna (BLT)

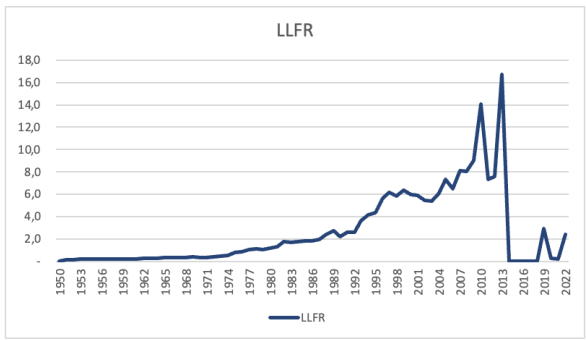


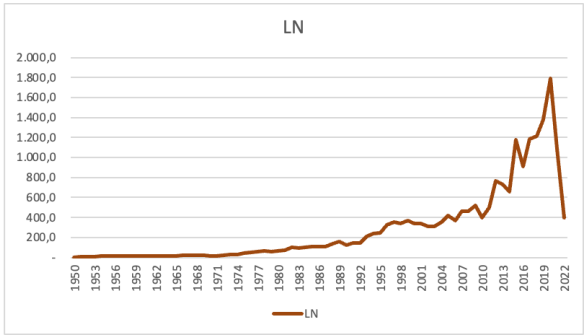


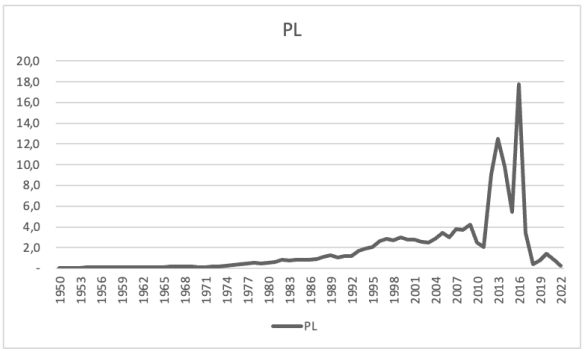


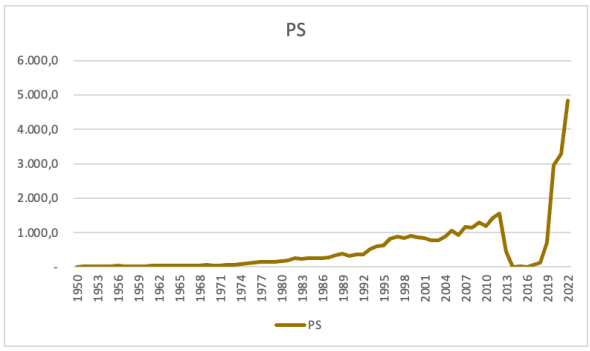


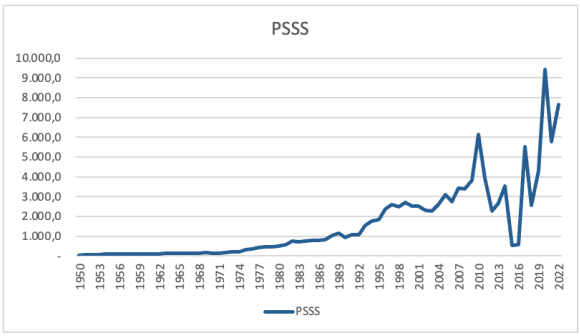


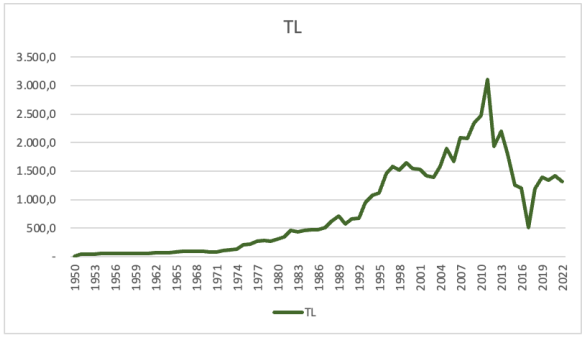




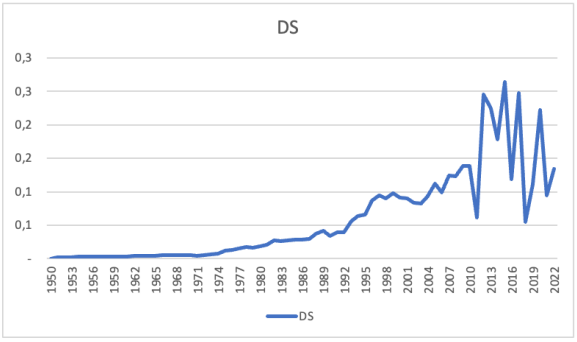


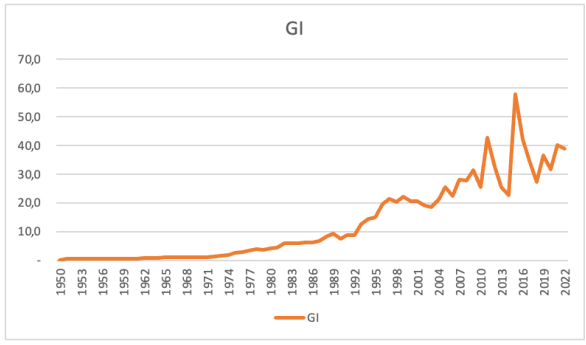


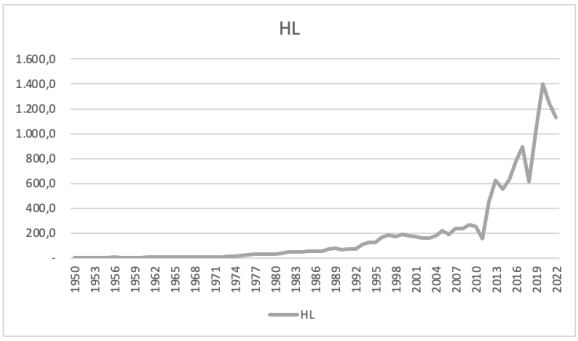


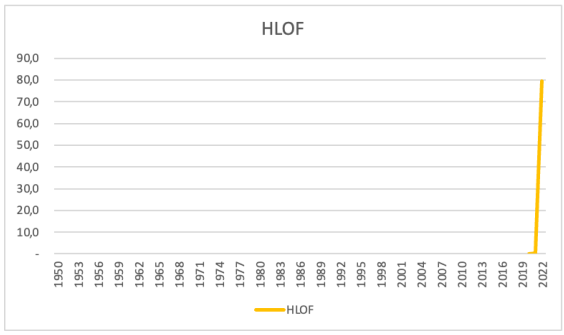


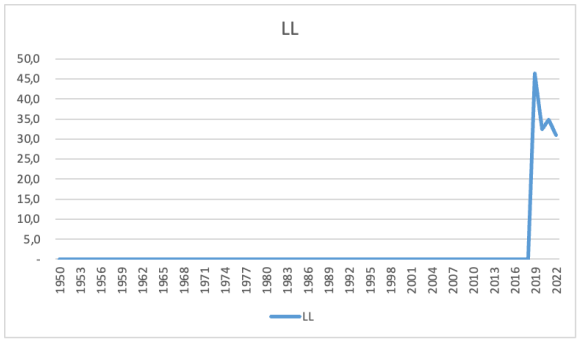
i. Blue Marlin (BUM)

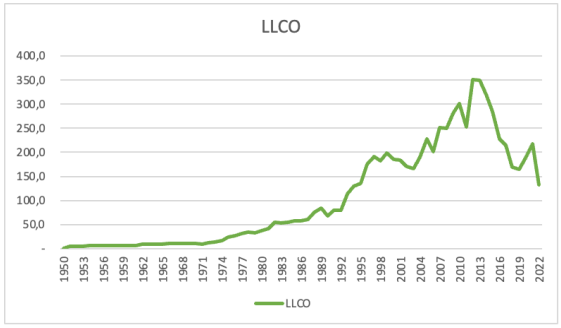


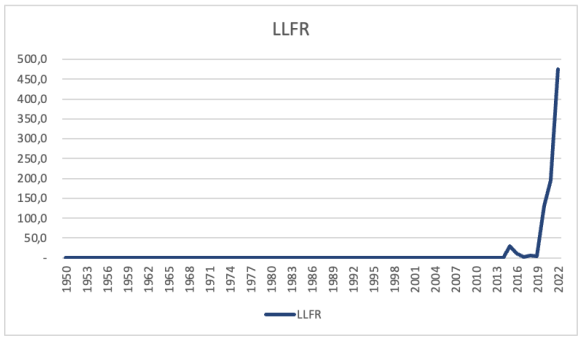


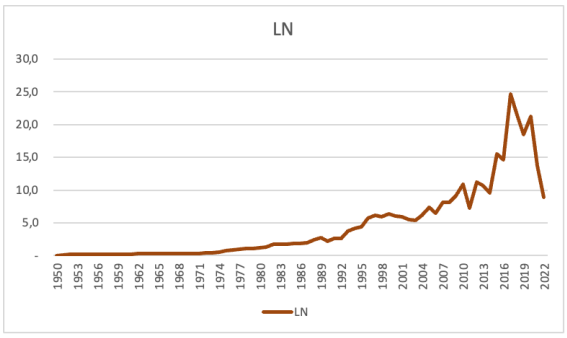


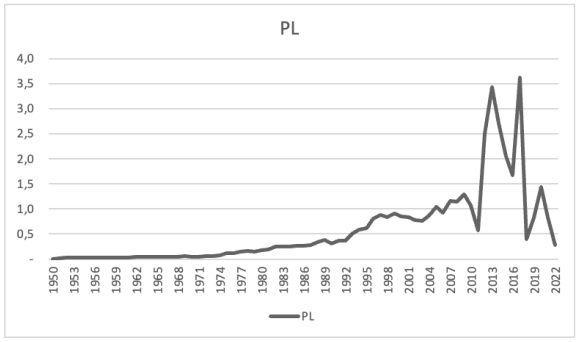


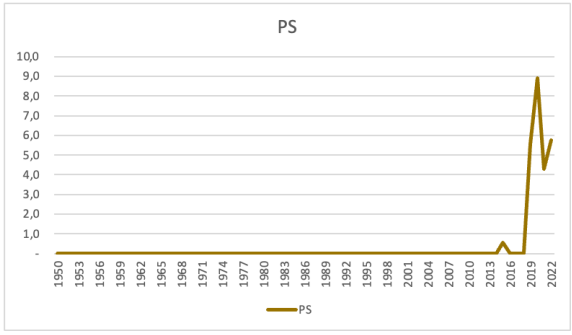


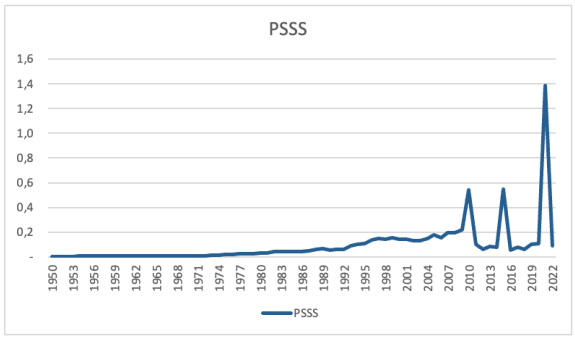


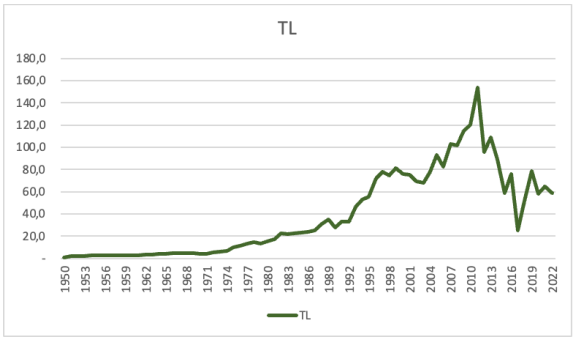




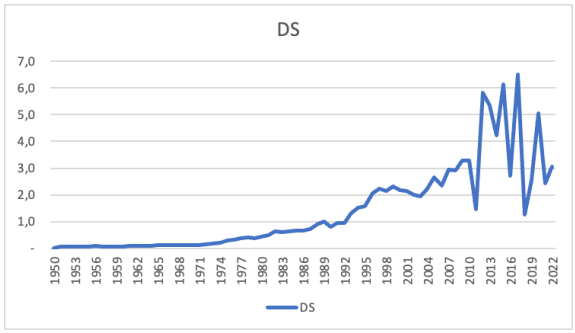








j. Black Marlin (BLM)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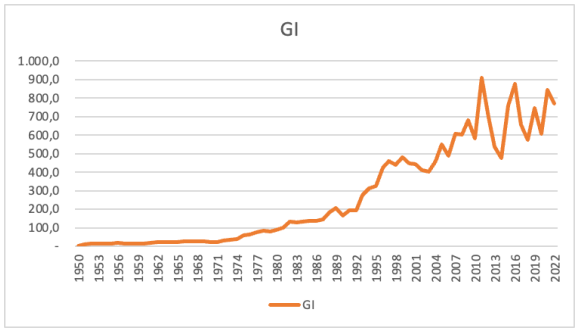
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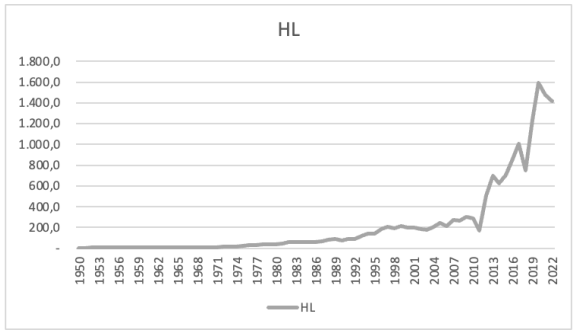
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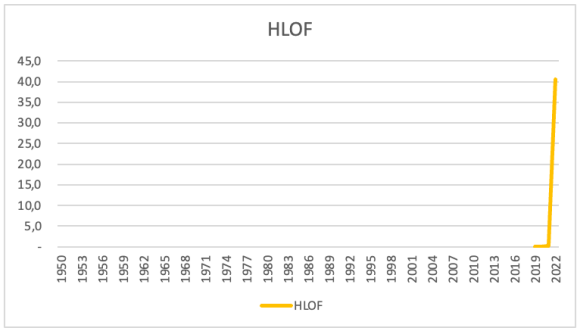
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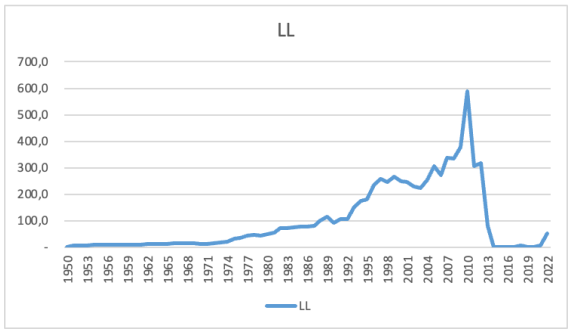
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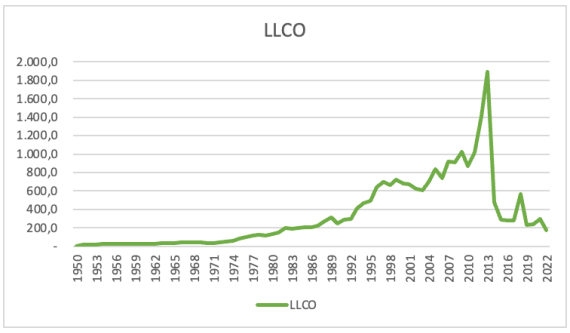
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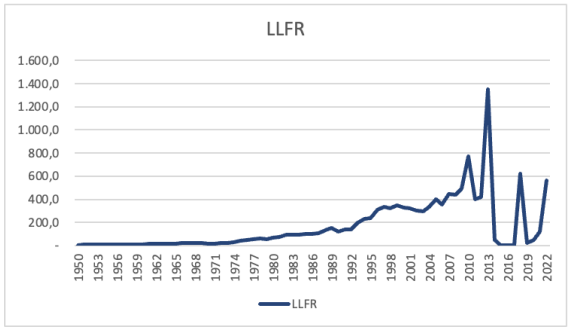
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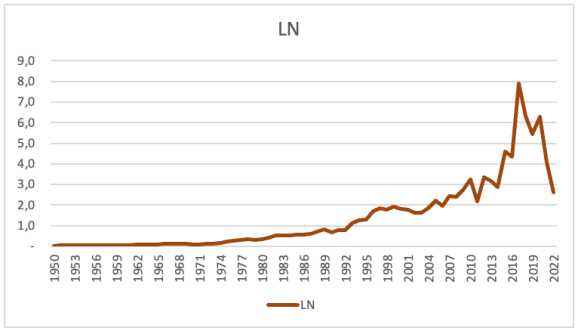
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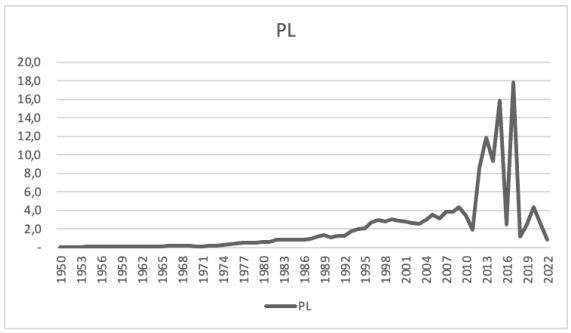
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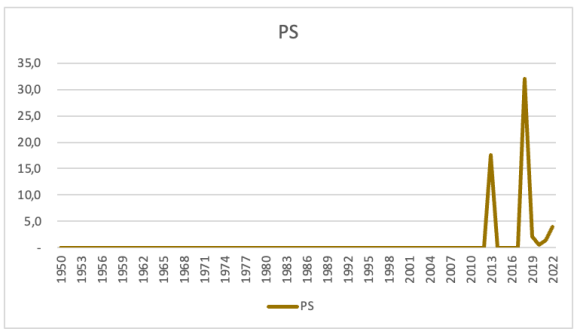
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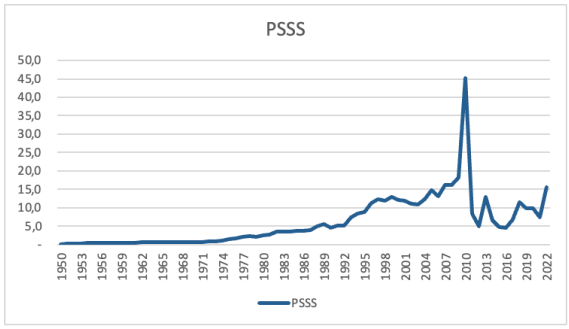
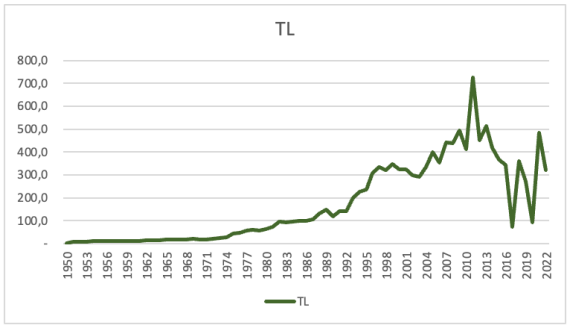
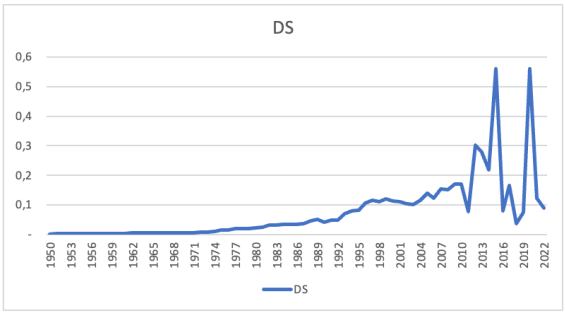
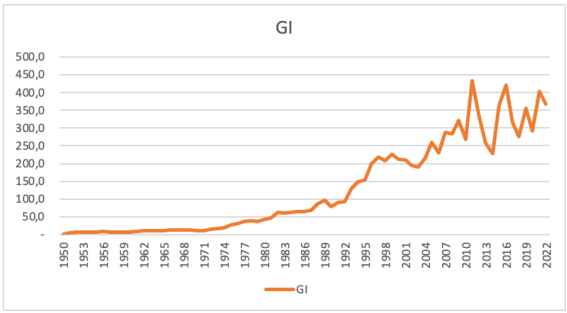
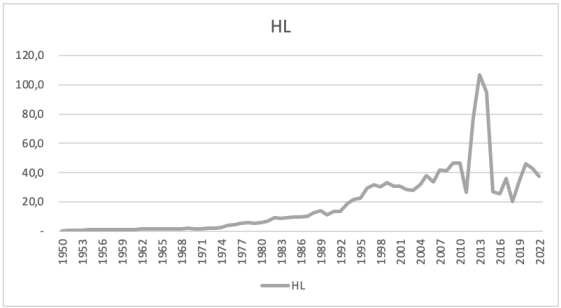


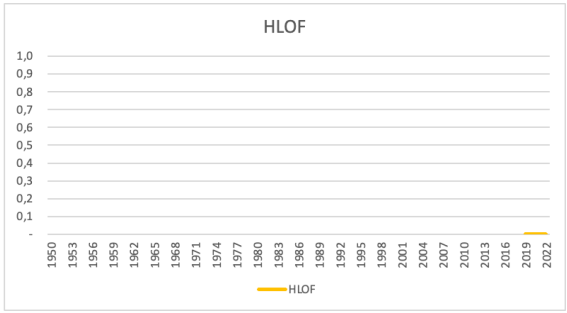


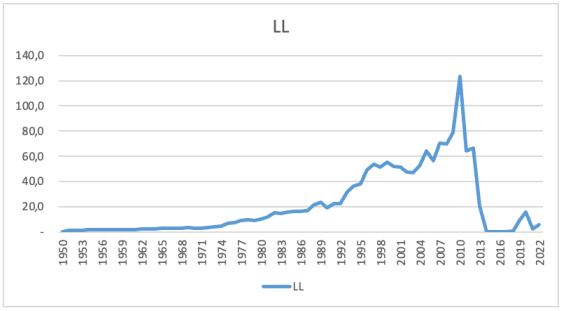
k. Striped Marlin (MLS)

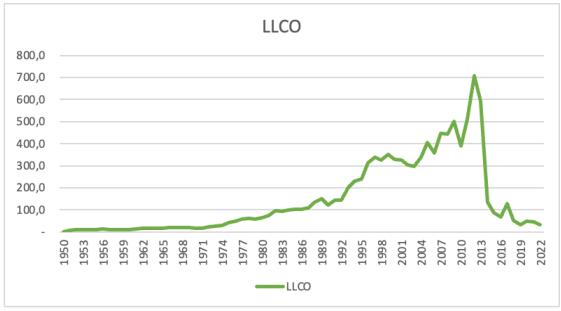


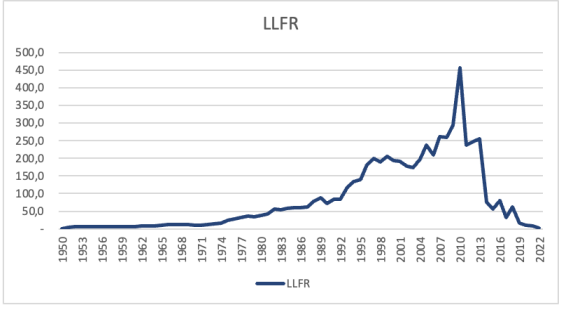


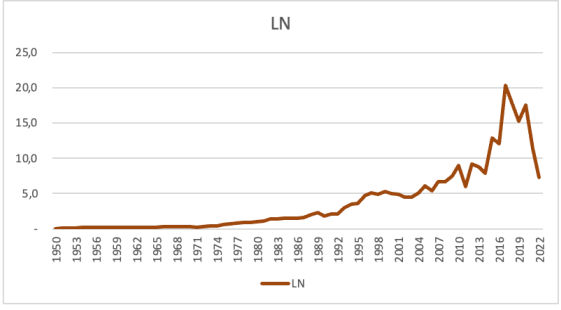


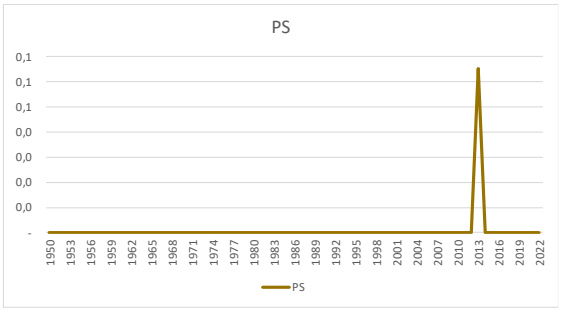


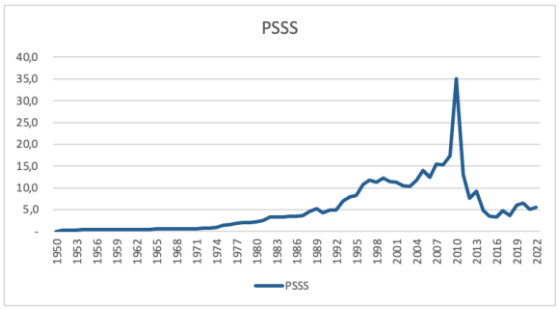


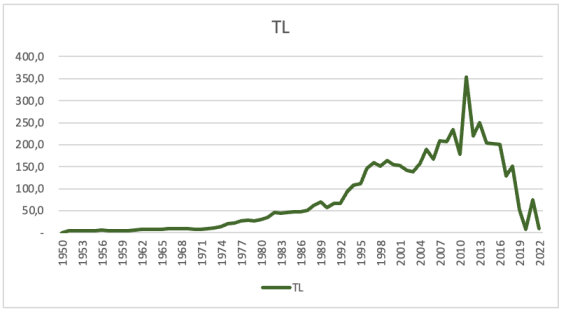




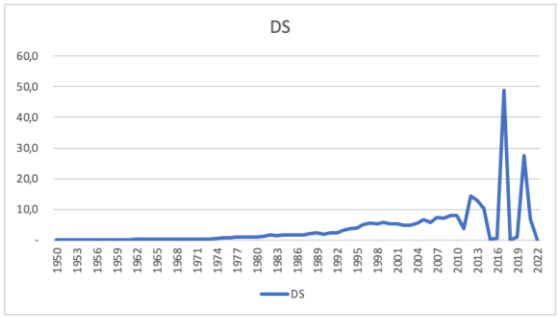


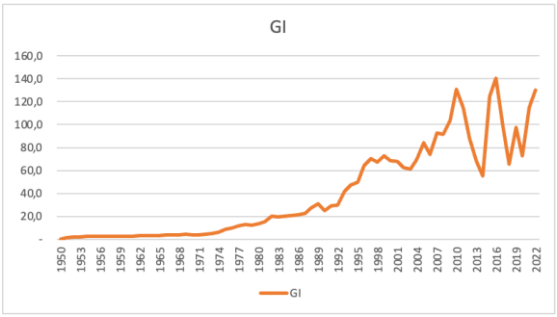


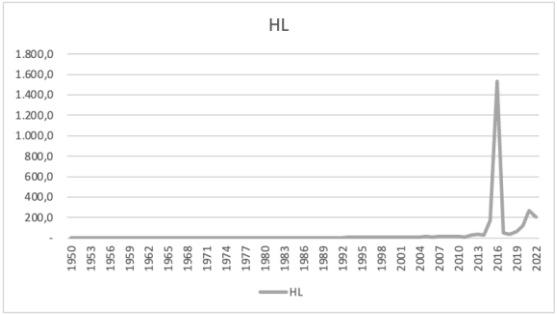


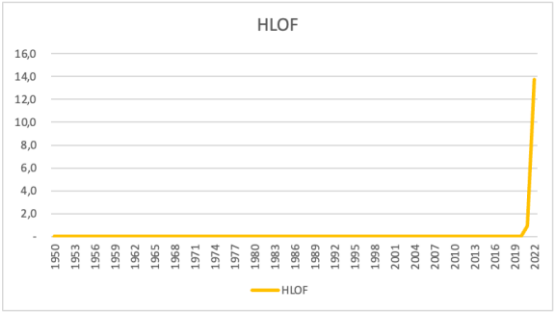


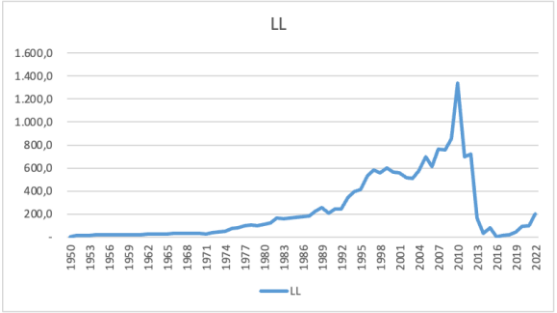
l. Swordfish (SWO)

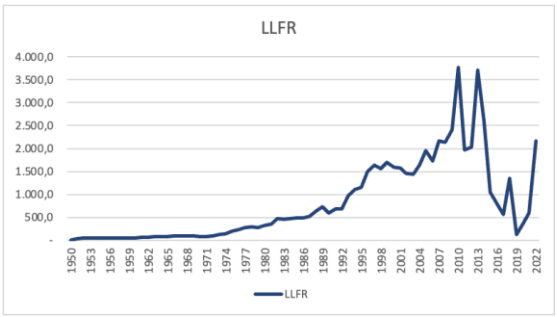


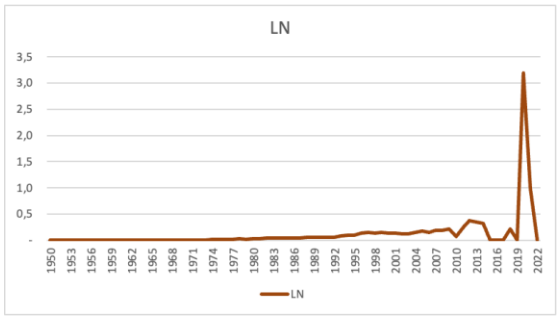


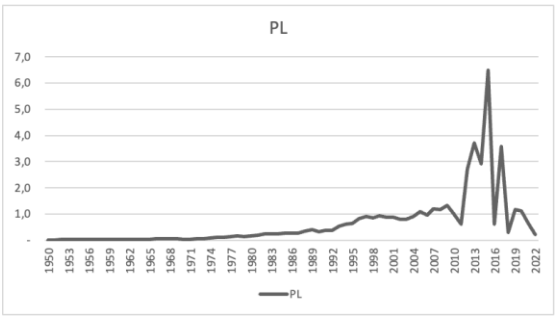


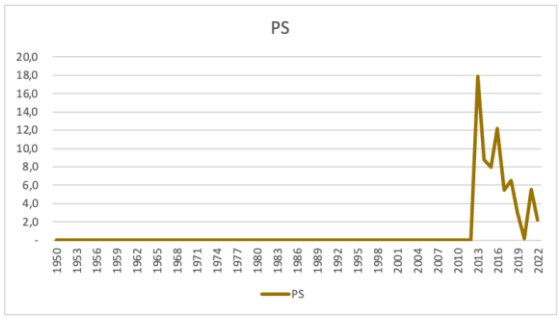


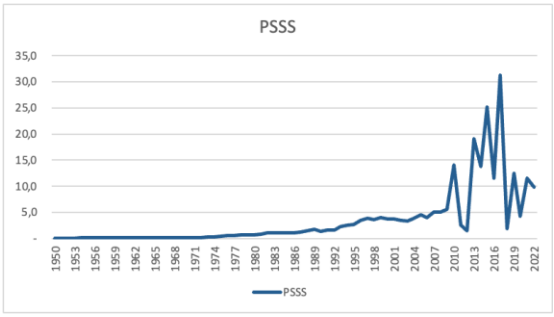


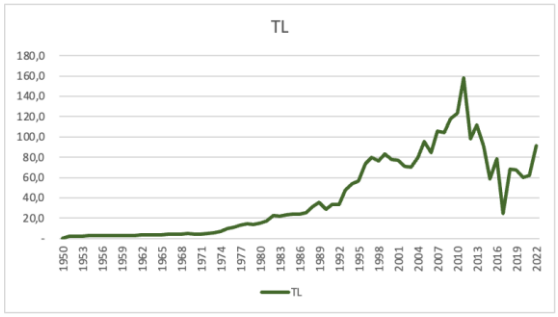




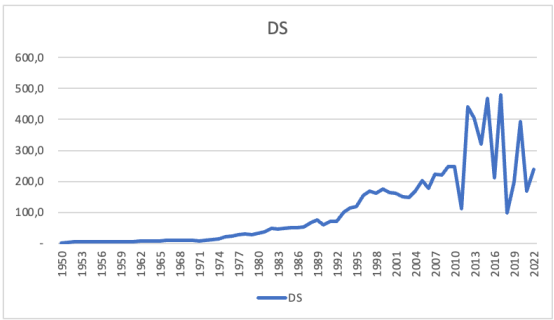


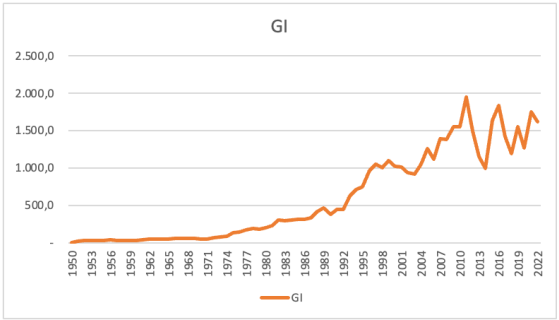


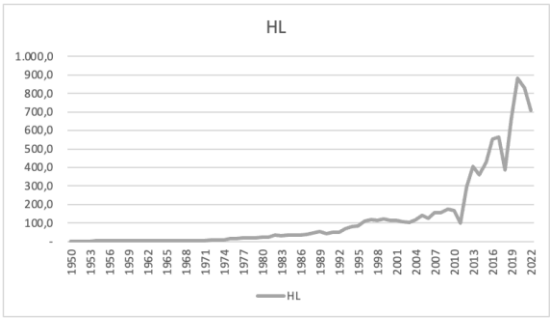


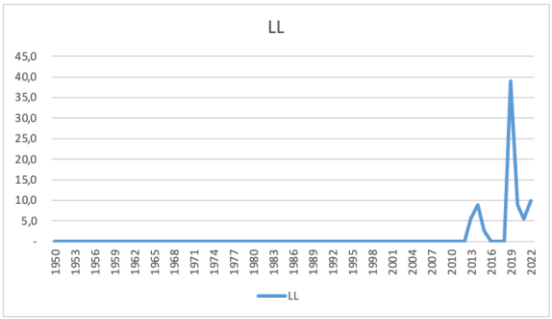


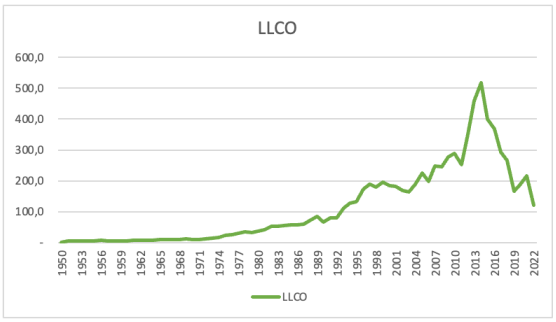
m. Sailfish (SFA)

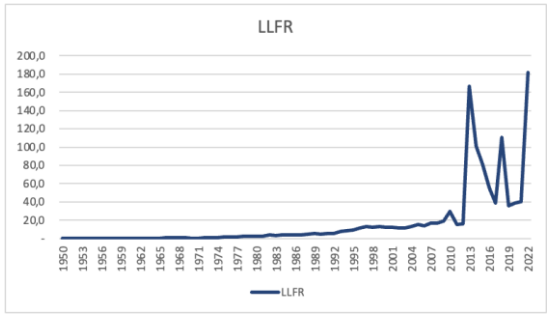


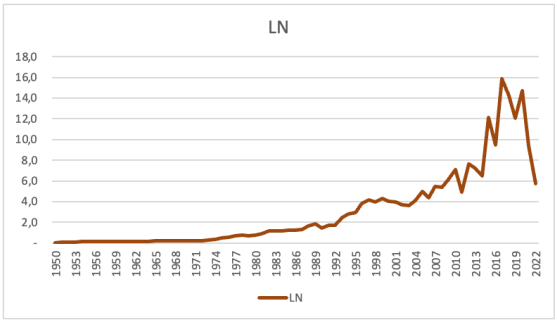


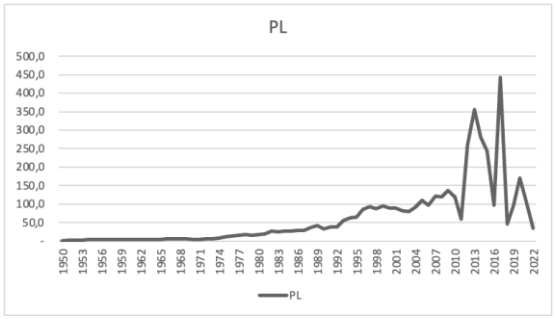


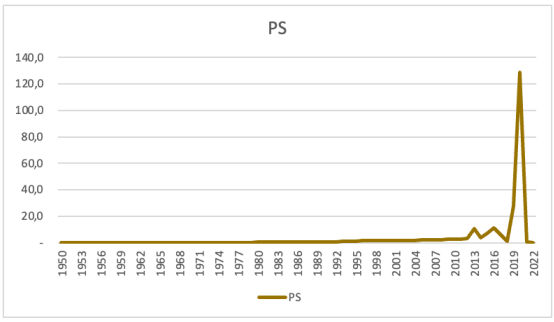


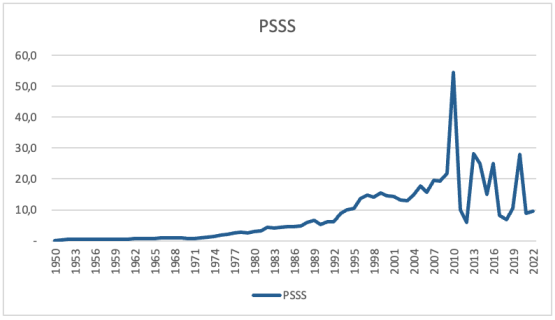


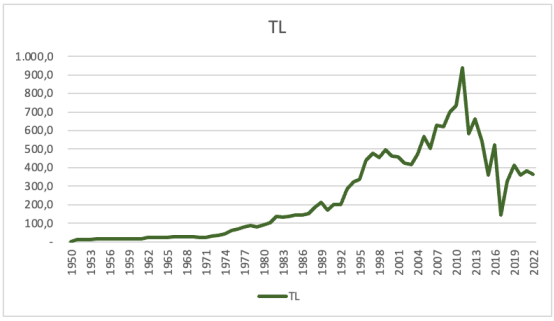




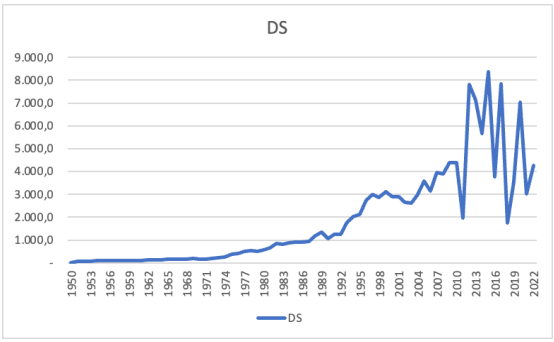








n. Narrow-barred Spanish mackerel (COM)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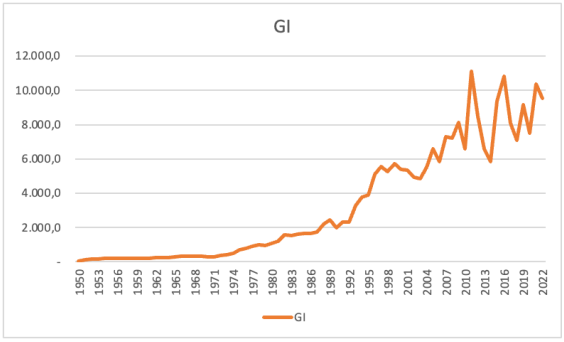
DS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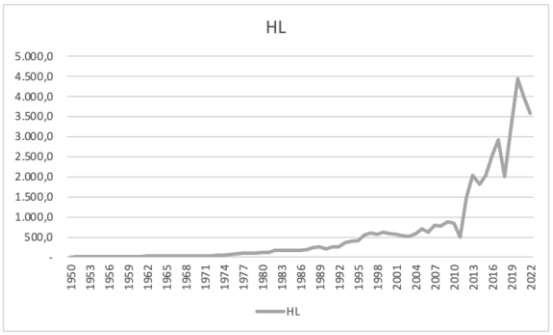
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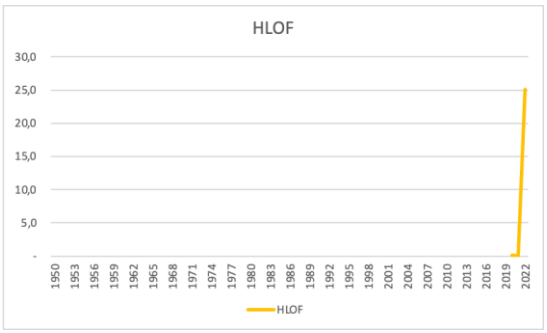
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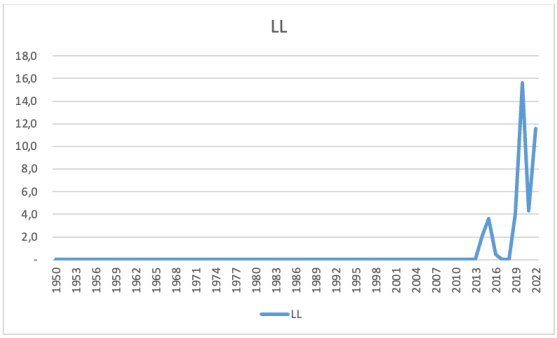
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LL

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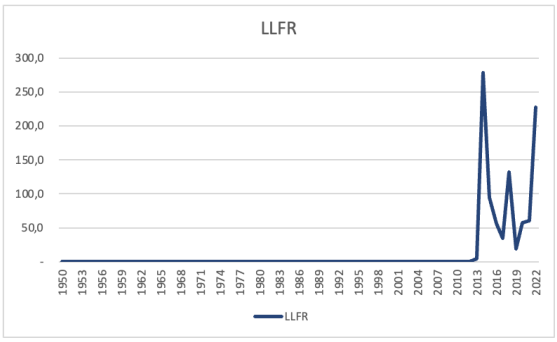
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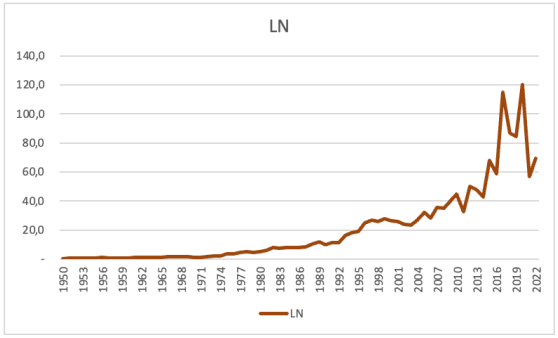
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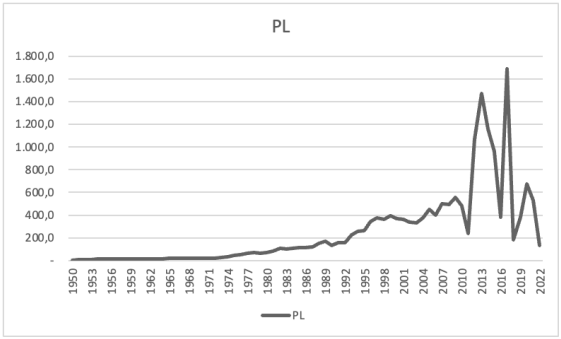
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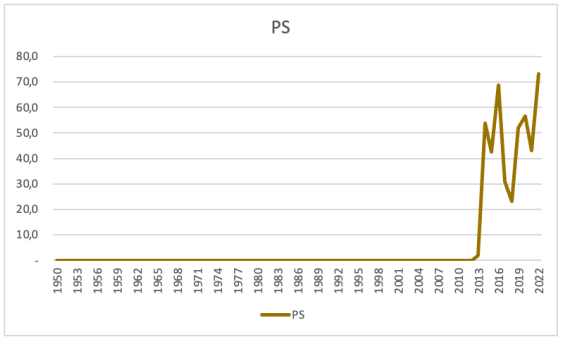
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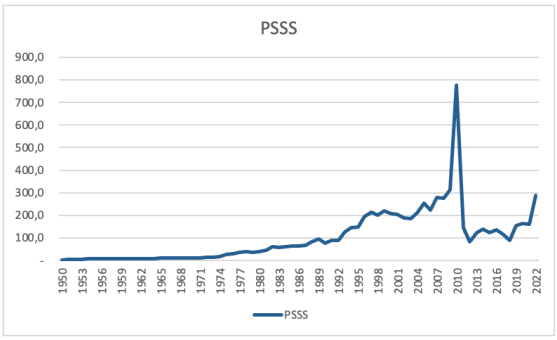
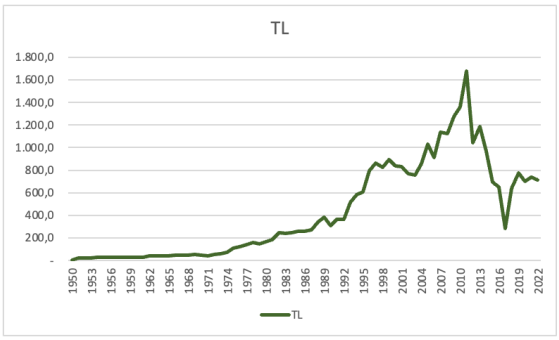
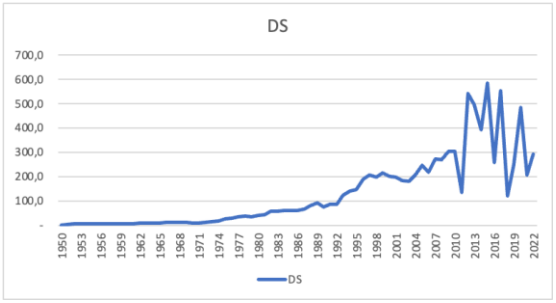
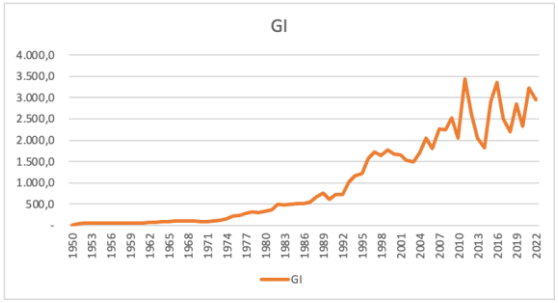
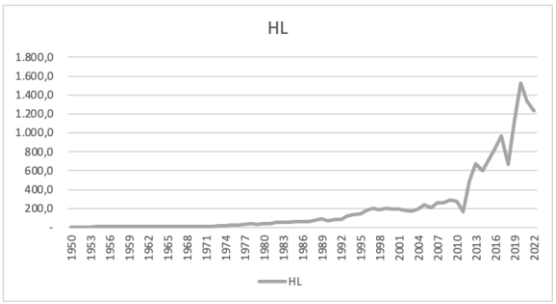


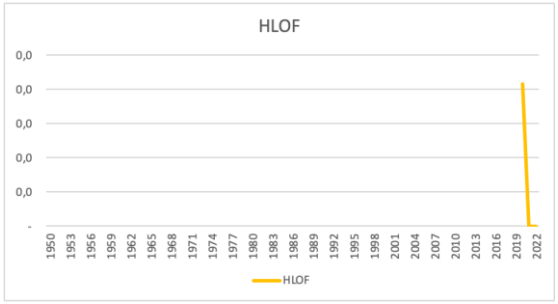


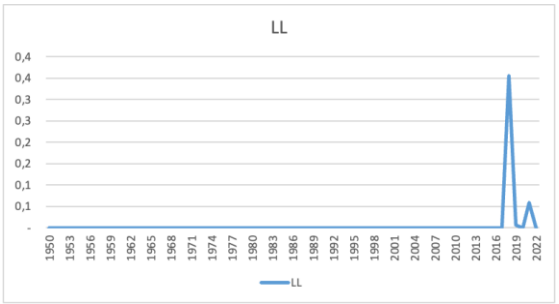
o. Indo-Pacific king mackerel (GUT)

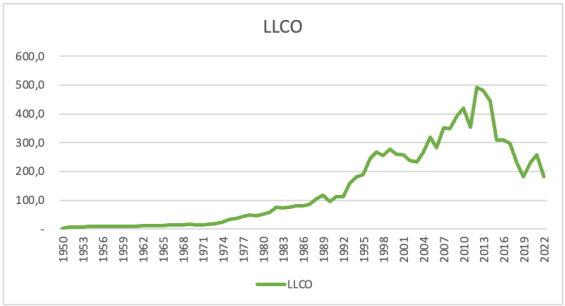


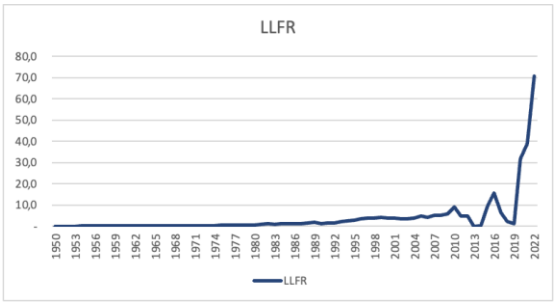


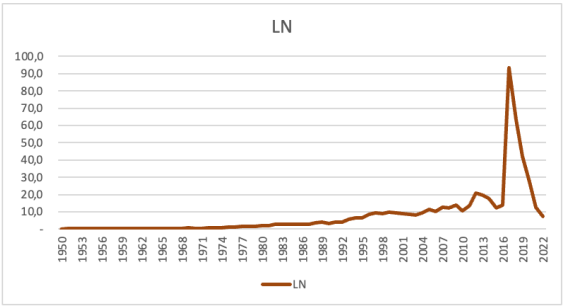


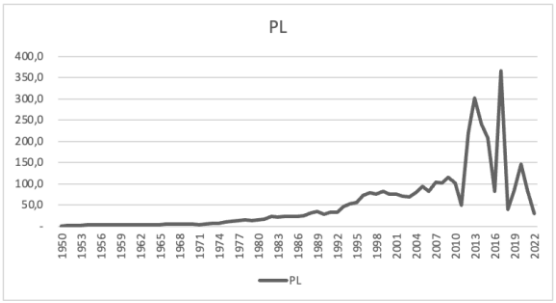


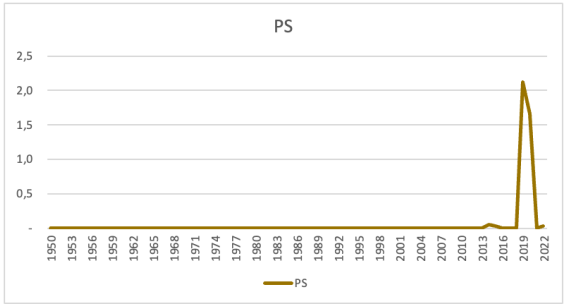


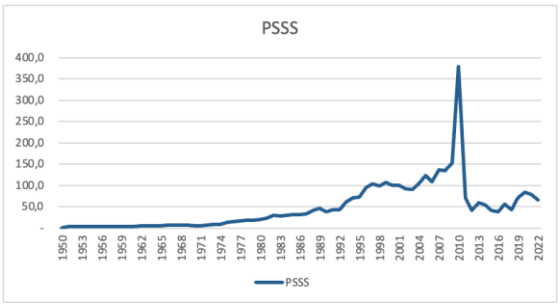


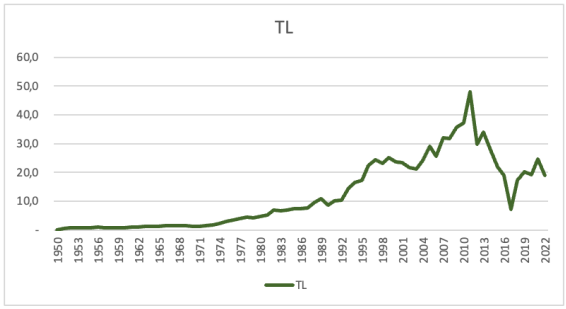












General justification:

a. The anomaly data in 2017 was due to the transition period from the previous program to the one data which had an impact to the data collection implementation (new enumerators, budget constraints, new flow of data collection and validation).
b. Both the increasing and the decreasing of the catch have related to the increasing or decreasing number of active vessels which operated during the concern years. It also happened due to the increasing or decreasing number of provinces that contributed the data.

Technical justification:

a. PSSS: in 2010 and 2011 there was a change in the fishery category from PSSS < 5 GT to > 5 GT.
b. LLCO: because since 2022 LL data has been broken down into LLCO, LL and LLFR where LLCOs operating on the high seas are included in the LL or LLFR category, thereby reducing the LLCO portion in 2022.