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THE VALUE CHAIN AND PRICE FORMATION IN THE SPANISH OLIVE OIL INDUSTRY

January 2010





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Study carried out by

THE OLIVE OIL AGENCY



In collaboration with





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1.- INTRODUCTION

1.1. General and specific background

General background:

THIS STUDY IS A FEATURE OF THE ACTION TAKEN BY THE MINISTRY OF ENVIRONMENTAL, RURAL AND MARITIME AFFAIRS (SPANISH ACRONYM, MARM) TO REPORT ON THE VALUE CHAIN AND PRICE FORMATION OF FRESH AND PROCESSED PRODUCTS

- **It is a descriptive overview aimed at gaining a deeper insight** into the value chain of the olive oil sector with a view to contributing to market transparency and to detecting potential inefficiencies in the chain.
- To do so, **it identifies and analyses the chief configurations of the value chain** in the sector and it examines **the price formation process** along the chain on the basis of the following:
 - **Description of the basic activities** at each stage of the value chain.
 - **Identification of the chief players** and how they interact along the chain.
 - **Construction of the price structure** from cost and profit data supplied by the sector for each stage.
- **It is not meant to be a statistical survey of the income, costs and profit** of the value chain players, or a detailed or diagnostic analysis of the sector.
- **The object is to encourage players to become involved in improving the sector** by jointly analysing the costs incurred along the chain that have an impact on the end consumer price.
- It will also enable **key conclusions to be drawn** about price formation in the olive oil sector.

The general objective of the study is to analyse the value chain and price formation in the olive oil sector with a view to contributing to market transparency.

1.- INTRODUCTION

1.1. General and specific background

Specific background:



- This **study on the olive oil value chain** was prepared between **March and October 2009** within the framework of the activities of the **MARM Food Price Observatory**. It was conducted in line with the technical and operational specifications stipulated in that framework and applied the research and analytical methodology that will be detailed farther on.
- Before beginning the overview, the sector was consulted in order to **demarcate certain aspects** concerning:
 - **Products and types of value chains** to be covered.
 - **Reference period** of data and results.
 - **Interviews** with players during the data collection stage.
- The period between **1 November 2007 and 31 October 2008** has been taken as the **reference period for the production and processing stages** because this is the last crop year for which comprehensive cost and price data exist. The data on **prices at the distribution stage refer to the second semester of 2008, coinciding with the period when the oils produced in the 2007-2008 season were marketed.**

1.- INTRODUCTION

1.1. General and specific background

Specific background (contd):

- It is first necessary to make a distinction between the **commercial categories of olive oil. Annex XVI of Regulation (EC) No 1234/2007** establishing a common organisation of agricultural markets and specific provisions for certain agricultural markets gives the designations or names and definitions of the products mentioned in this overview.
 - **Virgin olive oils:** oils obtained from the fruit of the olive tree solely by mechanical or other physical means under conditions that do not lead to alterations in the oil, which have not undergone any treatment other than washing, decantation, centrifugation or filtration, to the exclusion of oils obtained using solvents or using adjuvants having a chemical or biochemical action, or by re-esterification process and any mixture with oils of other kinds. Virgin olive oils are exclusively classified and described as follows:
 - **Extra virgin olive oil:** virgin olive oil having a maximum free acidity, in terms of oleic acid, of 0.8 g per 100 g, the other characteristics of which comply with those laid down for this category.
 - **Virgin olive oil:** virgin olive oil having a maximum free acidity, in terms of oleic acid, of 2 g per 100 g, the other characteristics of which comply with those laid down for this category.
 - **Lampante olive oil:** virgin olive oil having a maximum free acidity, in terms of oleic acid, of more than 2 g per 100 g, and/or the other characteristics of which comply with those laid down for this category.
 - **Refined olive oil:** Olive oil obtained by refining virgin olive oil, having a free acidity content expressed as oleic acid, of not more than 0.3 g per 100 g, and the other characteristics of which comply with those laid down for this category.
 - **Olive oil - composed exclusively of refined olive oils and virgin olive oils:** olive oil obtained by blending refined olive oil and virgin olive oil other than lampante olive oil, having a free acidity content expressed as oleic acid, of not more than 1 g per 100 g, and the other characteristics of which comply with those laid down for this category.

1.- INTRODUCTION

1.1. General and specific background

Specific background (contd):

- **The analyses and appraisals of the olive oil value chain refer to two specific products** which have been selected because they are most representative of domestic consumption. The products concerned are **extra virgin olive oil (EVOO) and olive oil (OO), the grade composed exclusively of refined olive oils and virgin olive oils**, with respective 35% and 64% shares of household consumption of olive oil.
- **These two products are processed differently.** As these differences have a direct impact on the cost and price structure, **two separate value chains will be reviewed:**
 1. **Value chain of EVOO, sold in clear PET plastic containers with a capacity of 1 and 5 litres, and in glass bottles \leq 1 litre.**
 2. **Value chain of OO, sold in clear PET plastic containers with a capacity of 1 and 5 litres.**
- **Pre-identified players** in the different stages of the value chain were interviewed in the areas with the largest volumes of olive oil production. In all, **45 players were interviewed**, chiefly in **Andalusia, Castile-La Mancha and Extremadura.**



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1.- INTRODUCTION

1.2. Working methodology

THE WORKING METHODOLOGY ENTAILED COLLECTING DATA FROM THE PARTICIPANT PLAYERS, CALIBRATING THOSE DATA AGAINST SECONDARY SOURCES AND THEN VALIDATING THEM WITH PLAYERS AND SECTOR ASSOCIATIONS

DATA COLLECTION STAGE

- The participant players from each stage of the value chain were interviewed by the **Olive Oil Agency (Agencia para el Aceite de Oliva - AAO)**, an autonomous body of the Ministry of Agricultural, Rural and Maritime Affairs specialised in olive growing, olive oil and table olives. The data obtained during the interviews were used as the primary source of information for the analysis and construction of the cost and price structure.
- The most representative chain configurations were then identified on the basis of the interview data and information on the players and their activities.
- The criterion for the data search process was to choose players with a considerable turnover and range of activities and who do business with a range of other players.

CALIBRATION STAGE

- After the information was collected, a data model was constructed. Product costs were entered in the model and the maximum and minimum values of each cost range were identified.
- The consolidated price and cost ranges were calibrated by cross-checking against information published in pre-identified secondary sources in order to compare the price ranges and maximum and minimum costs.
- The next step was to validate the consolidated data model with the interviewees in order to correct any deviations or to confirm the data obtained.

VALIDATION AND REPORTING STAGE

- A draft of the overview was drawn up incorporating all the information collected in the previous stages.
- The draft was further validated with representative public food chain associations and State, Autonomous Community and local authorities to ensure consensus on the findings for all the players involved.
- Any comments made by players during the draft validation process were incorporated and the final report was presented.

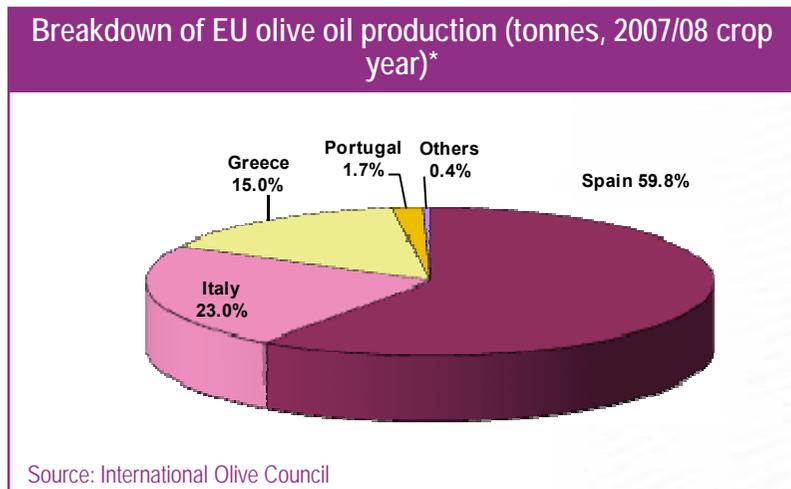
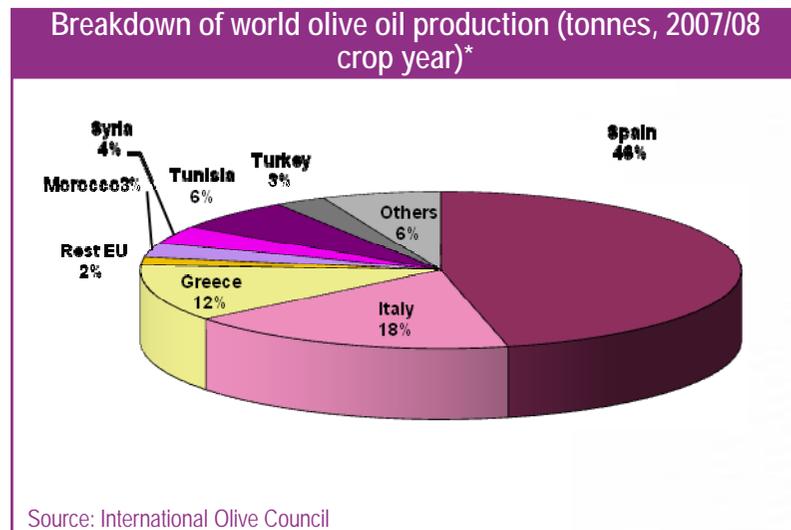
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1.3. Sector characteristics and trends

International analysis:



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(*) Provisional IOC data

In the 2007/08 crop year **the world produced 2,633,000 t* of olive oil.**

Spain is the top producer, recording a production of 1,221,800 t in 2007/08, followed by Italy and Greece, with an aggregate production of 470,340 and 307,560 t*, respectively.

The Mediterranean countries account for **92%** of all the olive oil produced in the world.

The European Union (EU) produced 2,042,500 t*, representing almost 80% of the world total in 2007/08. Mirroring the situation at world level, **Spain is the leading EU producer, with a 60% slice of total production, followed by Italy, with 23% and Greece with 15%.**

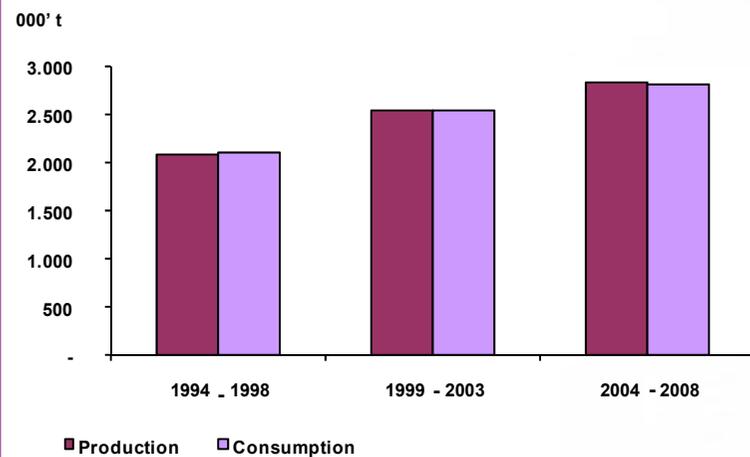
Among the non-EU Mediterranean countries, **Tunisia, Syria and Turkey** stand out with productions ranging between 72,000 and 170,000 t*.

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1.3. Sector characteristics and trends

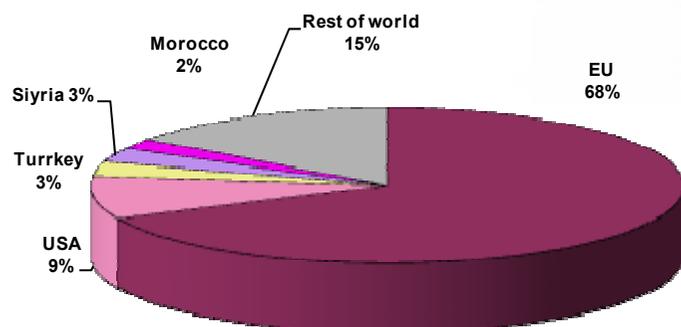
International analysis (contd):

Changes in average world olive oil production and consumption (1994 - 2008*)



Source: International Olive Council

World olive oil consumption (tonnes, 2007/08 crop year)*



Source: International Olive Council

(*) Provisional IOC data



According to data released by the International Olive Council, **over the last five years world production of olive oil has increased by 20% versus the preceding five-year period, rising from 2,356,000 t/year to 2,823,000 t/year***.

World consumption has absorbed the whole of this production, climbing from a yearly average of 2,323,000 t to 2,781,000 t* between the same two five-year periods, which translates into an increase of 20%. So far, consumption has risen on a par with production.

In 2007/2008, **world consumption** came to a total of **2,778,000 t***.

The **Mediterranean region** accounts for roughly **70% of this world tonnage**.

The **EU is the leading consumer of olive oil**, with a **68%** share of world consumption, equivalent to **1,889,600 t***.

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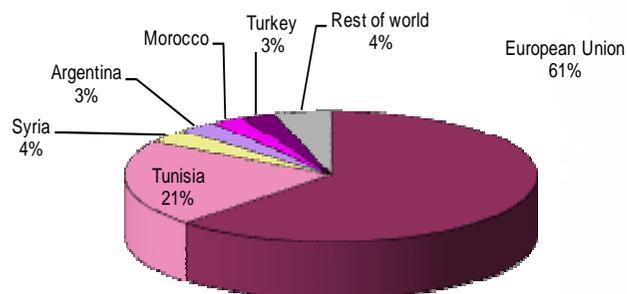
1.3. Sector characteristics and trends

International analysis (contd):



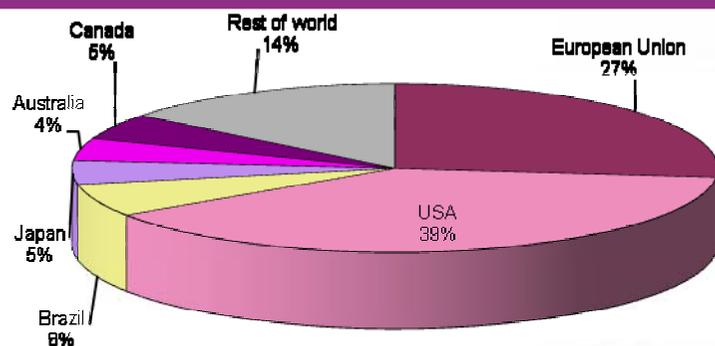
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Chief world exporters of olive oil (tonnes, 2007/08 crop year)*
THESE FIGURES DO NOT INCLUDE TRADE BETWEEN EU COUNTRIES



Source: International Olive Council

Chief world importers of olive oil (tonnes, 2007/08 crop year)*
THESE FIGURES DO NOT INCLUDE TRADE BETWEEN EU COUNTRIES



Source: International Olive Council

The EU heads the world league in olive oil exports.

Spain is the world's top individual exporter, exporting **662,850 t** in 2007/2008, almost **80%** of which went to **EU countries**.

In second place lies Italy with around **332,000 t** in 2008* (provisional data).

According to IOC data, **world exports of olive oil** totalled **566,500 t**** in 2008 (excluding exports between EU countries).

Italy is the world's top importer, importing 509,000 t in 2008* (provisional data).

World imports of olive oil in 2007-2008 came to **633,000 t**** (excluding imports between EU countries). Outside the EU, **the United States is the leading importer**.

(*) *Scenario economico di settore. Consorzio Olivicolo Italiano. 2009* (Economic scenario in the sector. Italian Consortium of Olive Growers. 2009.)

(**) *Provisional IOC data*

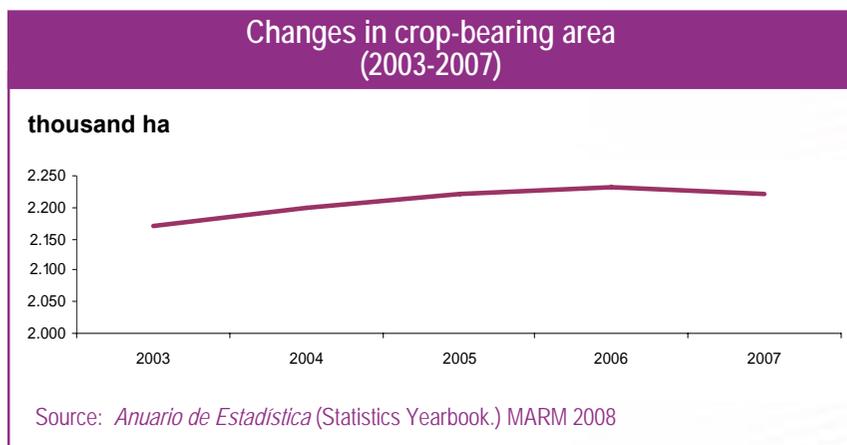
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1.3. Sector characteristics and trends

Domestic analysis:

A number of **basic characteristics and scales of magnitude** representative of sector structure and activity in Spain are now summarised:

Crop area:



In 2007 an area of **2,221,300 ha** produced **olives for oil production**. **Between 2003 and 2006**, this area **expanded** by almost **3%**. Crop area is **tending to level off** and may possibly experience a downturn in the future.

Geographical distribution of olive crop area, itemised by Autonomous Community

CC.AA.	ha	%
Andalucía	1.399.054	61
Castilla La-Mancha	358.324	16
Extremadura	200.900	9
Cataluña	122.825	5
C.Valenciana	98.324	4
Aragón	47.456	2
Resto	72.439	3

Source: *Anuario de Estadística* (Statistics Yearbook.) MARM 2008

In nationwide terms, **olive growing accounts for the second largest area under crops**, after cereals, and is found in **34** of Spain's 50 **provinces**. **Andalusia has a 61%** share of the country's total olive crop area.

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1.3. Sector characteristics and trends

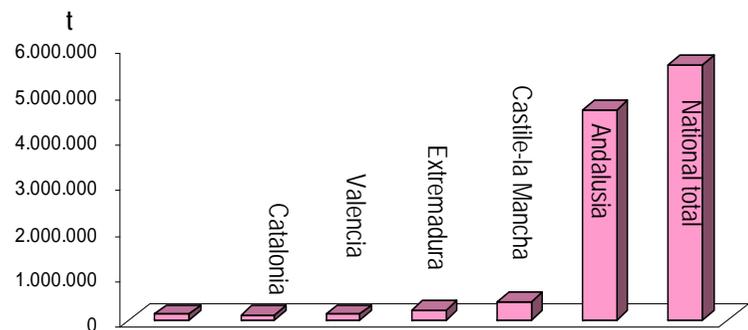
Domestic analysis (contd):

Production:



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Production of oil-olives by Autonomous Community, 2007

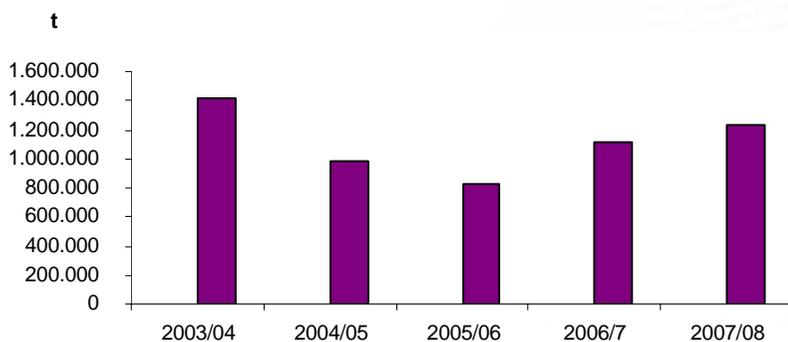


Source: *Anuario de Estadística* (Statistics Yearbook). MARM 2008

Andalusia accounted for **4,620,924 t** of the oil-olives produced in Spain, equating with **83% of the national total** (5,593,752 t). Next in line came Castile-la Mancha and Extremadura with respective shares of 7% and 4%.

Many varieties of oil-olive are grown in Spain's orchards. The most representative ones are **Picual, Hojiblanca, Cornicabra, Arbequina, Lechín, Verdial de Badajoz, Empeltre, Carrasqueña, Blanqueta and Farga.**

Time series of domestic olive oil production (2003/04-2007/08 crop years)



Source: *Informe de gestión de la campaña 2007/08*. (Management report on the 2007/08 crop year). Olive Oil Agency. MARM

In **2007/08**, Spain produced **1,236,100 t of olive oil**. The oil yield obtained from the olive fruits works out at an average 21%, which can be considered medium-to-high compared with the levels obtained in Spain in the last 15 years.

The **poor harvest of 2005/06** coincided with the **driest year in Spain** since rainfall first started to be recorded in 1947.

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1.3. Sector characteristics and trends

Domestic analysis (contd.):

Marketing:



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In the 2007/08 crop year **1,195,000 t** of olive oil were marketed, the highest tonnage since **2003/04** (1,260,000 t). This works out at a **monthly average of almost 100,000 t**.

Although the actual monthly distribution varied significantly, **the 2007/08 season was positive overall** compared with earlier seasons (**5.5% up on the average of the four preceding crop years**).

Fifty-six percent of **the total volume of olive oil marketed during the crop year** went for **export**. The remaining **44%** remained on the **domestic market**. The volume marketed on the home market **dropped by 7%** compared with the average for the preceding four crop years.

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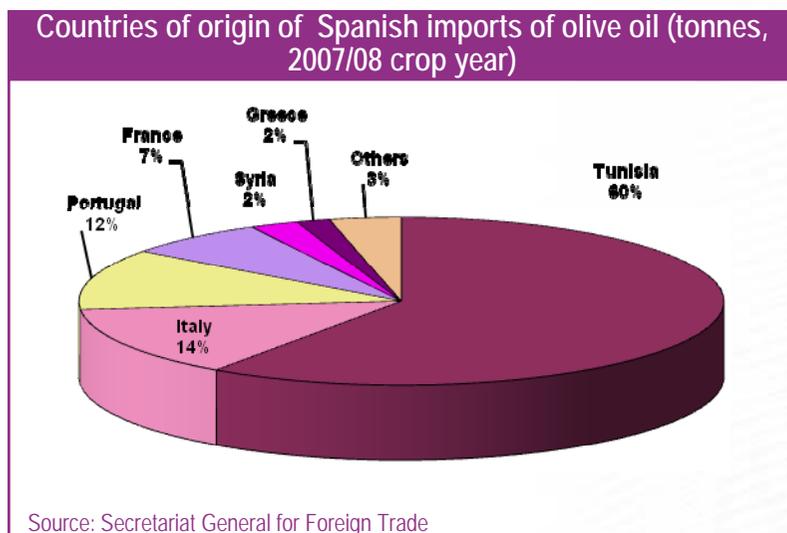
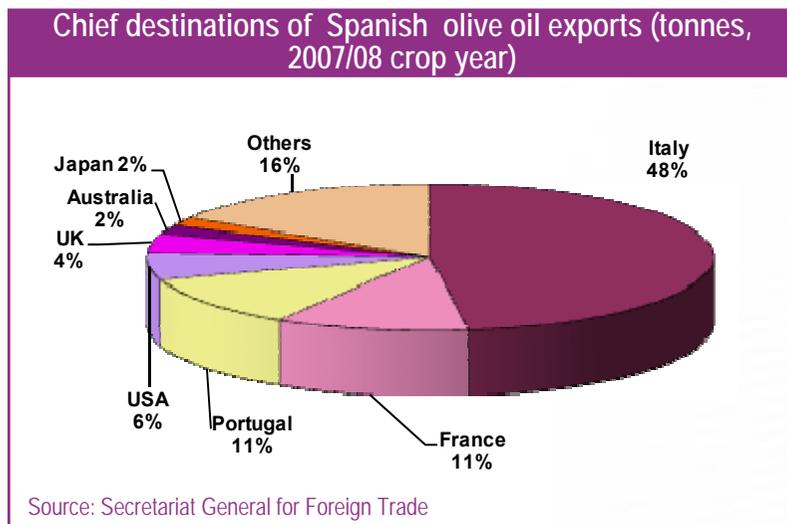
1.3. Sector characteristics and trends

Domestic analysis (contd):

Destinations of Spanish exports and imports:



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Spain is **basically an exporter of olive oil**. In 2007/08 it exported the **all-time record of 662,850 t**.

Italy was the **main destination** for olive oil exports in 2007/08. It took **48%** of the total, basically in bulk, while **31%** went to other Member States. Put differently, **exports to countries inside the European Union accounted for close to 80%** of Spain's export trade for this season.

The **United States, Japan and Australia stand out among the non-EU destinations of Spanish exports**.

In 2007/08 Spain imported a total of **59,700 t of olive oil**.

Consignments from EU countries accounted for 35% of this tonnage, with **Italy** holding a predominant **14%** share of the total. It is noteworthy that the product imported from Italy was packed.

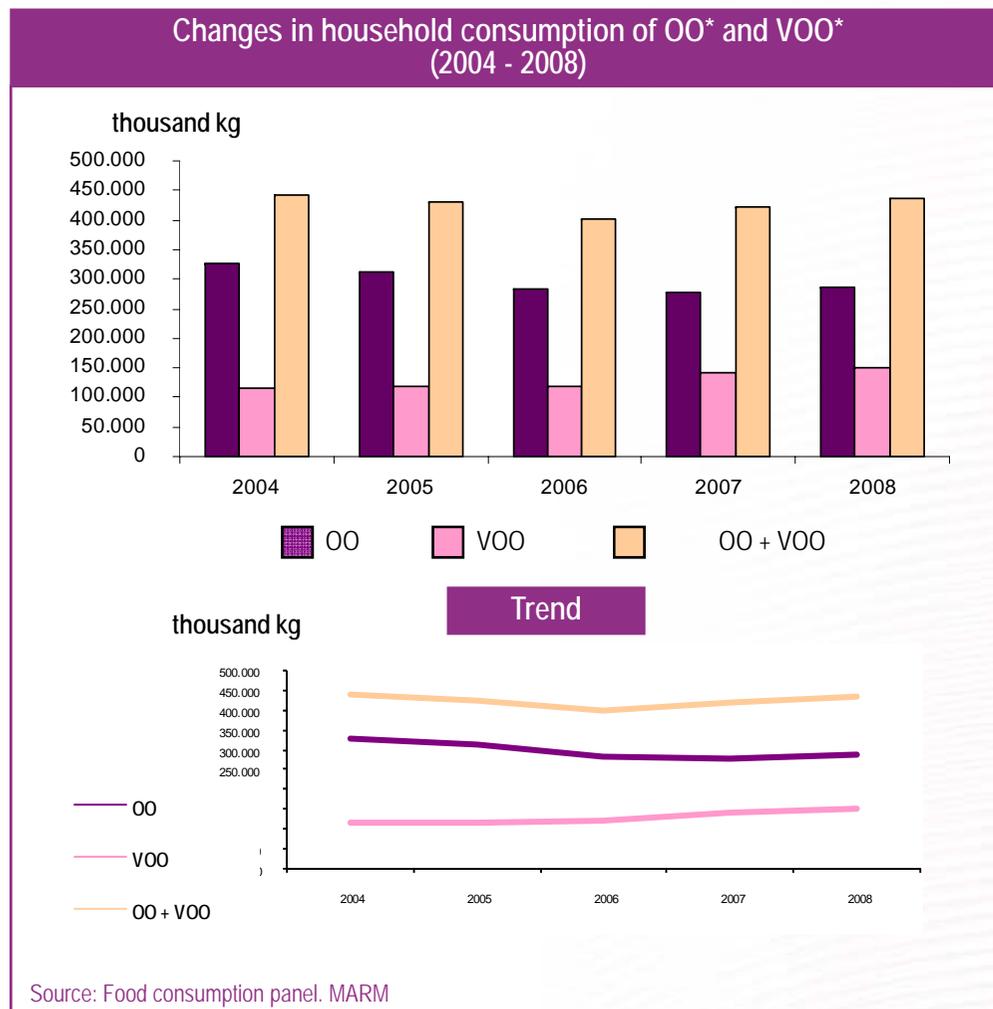
Imports from non-EU countries represented around 65% of the total tonnage. **Tunisia** was the **top country of origin**, with a **59%** share which can be explained by the **tariff-free EU quota for Tunisian olive oil**. Significantly, all the product from these countries is bulk imported.

1.- INTRODUCTION

1.3. Sector characteristics and trends

Domestic analysis (contd):

Household consumption:



Consumption of virgin olive oil has risen by **23%** since 2004, driven by the **substitution of virgin olive oil and extra virgin olive oil for olive oil**. This trend has basically been prompted by sponsored educational campaigns and the drop in the price of these products at the end of the period reviewed.

Notably, during the same period **sales of distributor brands (DBs)** climbed by **44%** in the case of EVOO (hypermarkets 28% and supermarkets 54%) and by **57%** for OO (similar % shares for both types of outlet).

(*) VOO: virgin olive oil (includes virgin and extra virgin categories)

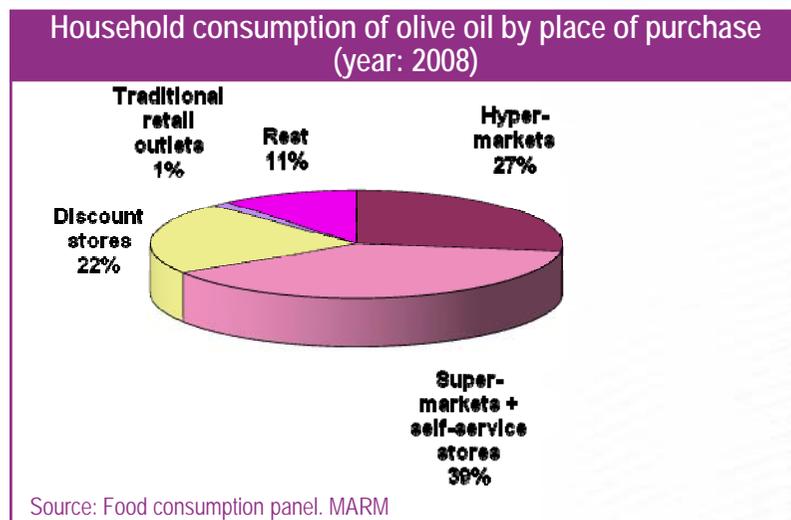
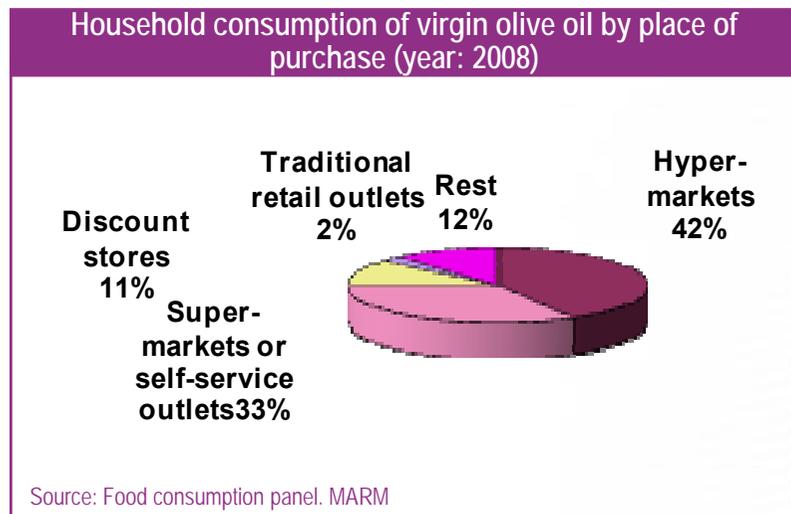
OO: blend of refined olive oil and virgin olive oil

1.- INTRODUCTION

1.3. Sector characteristics and trends

Domestic analysis (contd.):

Household consumption (contd):



(*) Source: *Estadística de ventas al mes de agosto de 2009* (Sales statistics at August 2009). ANIERAC.



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Modern distribution channels (hypermarkets, supermarkets and discount stores) continue to be the **major place of purchase of olive oil**. Specifically, **86%** of the olive oil consumed is bought at this type of premise where the range of products and brands, prices, offers and special promotions are the chief reasons for purchasing.

In the group of virgin olive oils, consumption is preponderantly **(96%)*** of **extra virgin olive oil**.

Hypermarkets are consumers' preferred place of purchase for **virgin olive oil**, accounting for **40% of all the olive oil consumed**. Supermarkets, with a 39% share of purchases, are the preference when it comes to **olive oil**.

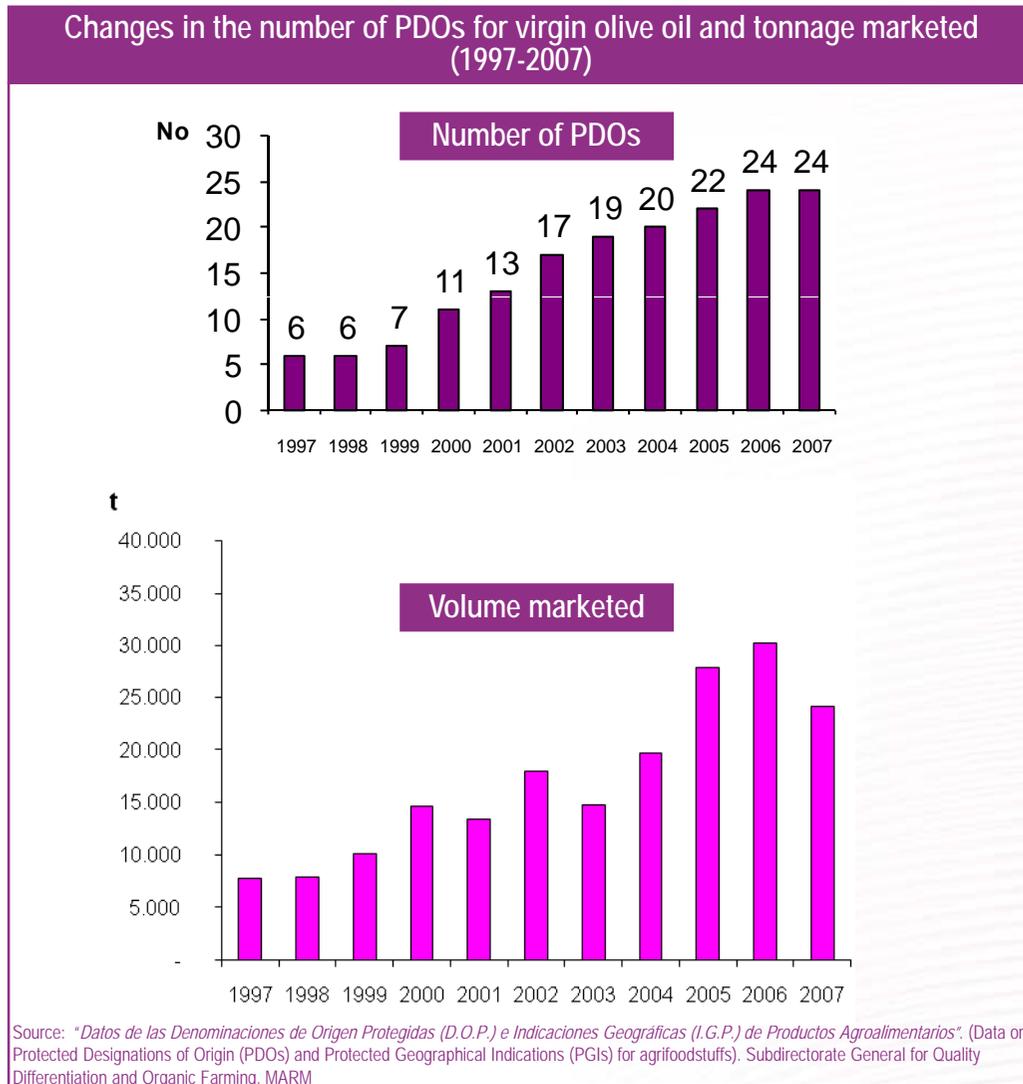
Notably, around **one fifth of olive oil purchases are made in discount stores**.

1.- INTRODUCTION

1.3. Sector characteristics and trends

Domestic analysis (contd.):

Protected designations of origin:



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The last ten years have seen a substantial increase in the **number of protected designations of origin (PDOs) for virgin olive oils**, which now number **31**.

An area of **970,000 ha** is **registered under PDO schemes**, with approximately 76% located in Andalusia.

The **volume of virgin olive oil sold under PDOs** has also been **on the rise**.

1.- INTRODUCTION

1.3. Sector characteristics and trends

INSTITUTIONS IN THE OLIVE SECTOR:



- **The Olive Oil Agency (*Agencia para el Aceite de Oliva*):** Spanish government agency attached to the Ministry of Agricultural, Rural and Maritime Affairs and legally recognised as an independent body with a separate legal personality and private assets. Specialised in olive growing, olive oil and table olives, its prime objectives are:
 - To ensure CAP subsidies for the sector are used effectively and efficiently;
 - To ensure the olive oil and table olive markets are transparent;
 - To ensure the sector operates smoothly.
- **Spanish Olive Oil Interbranch Organisation (*Organización Interprofesional del Aceite de Oliva Español*):** organisation made up of associations representing national producers, processors and marketers. Its chief aims are to promote consumption, to broadcast the benefits of olive oils, to drive research, development and technological innovation and to track markets in order to stimulate the continuing adaptation of supply to consumer needs.
- **Olive Growing Foundation (*Fundación Patrimonio Comunal Olivarero*):** non-profit organisation under the umbrella of the MARM. Its resources are allocated to achieve long-term objectives of general interest, including:
 - To promote olive oil on the domestic and foreign markets and to collaborate in advertising campaigns to boost olive oil consumption.
 - To cooperate with public administrations, via the MARM and the competent bodies of the various Autonomous Communities, to secure compliance and implementation of the rules governing the olive crop years.
 - To implement, promote and support research and studies to enhance olive and olive oil production and to contribute to the understanding of the dietary and health properties of olive oil.
 - To provide advisory and information services for olive growers, as well as storage services (provided on a rental, collateral loan or purchase basis), quality control, packing and distribution services.
- **Olive Oil Futures Market (*Sociedad Rectora de Futuros del Aceite de Oliva, S.A. (MFAO)*):** official Spanish exchange for futures trading in olive oil where futures contracts for olive oil are negotiated. It is the only futures market in the world to trade in olive oil.

1.- INTRODUCTION

1.3. Sector characteristics and trends

INSTITUTIONS IN THE OLIVE OIL SECTOR (contd):

- **Price Pool (Pool Red, Sistema de Información de Precios en Origen del Mercado de Contado del Aceite de Oliva):** this network receives, stores, calculates and instantly releases data on the prices, volume and characteristics of bulk purchases of olive oil on the producer spot market. It is one of the activities of the Foundation for the Advancement and Development of Olive Growing and Olive Oil prompted by the joint efforts of producers, public authorities and financial establishments in Andalusia to promote and enhance awareness of olive oil.
- **International Olive Council (IOC):** the only international organisation in the world dedicated to olive oil and table olives. Its main objectives include:
 - Encouraging international technical cooperation on research and development projects, training and the transfer of technology and promoting the consumption of olive oil and table olives;
 - Encouraging the expansion of international trade in olive oil and table olives, drawing up and updating product trade standards and improving product quality;
 - Supplying clear, accurate information and statistics on the world olive and olive oil market.



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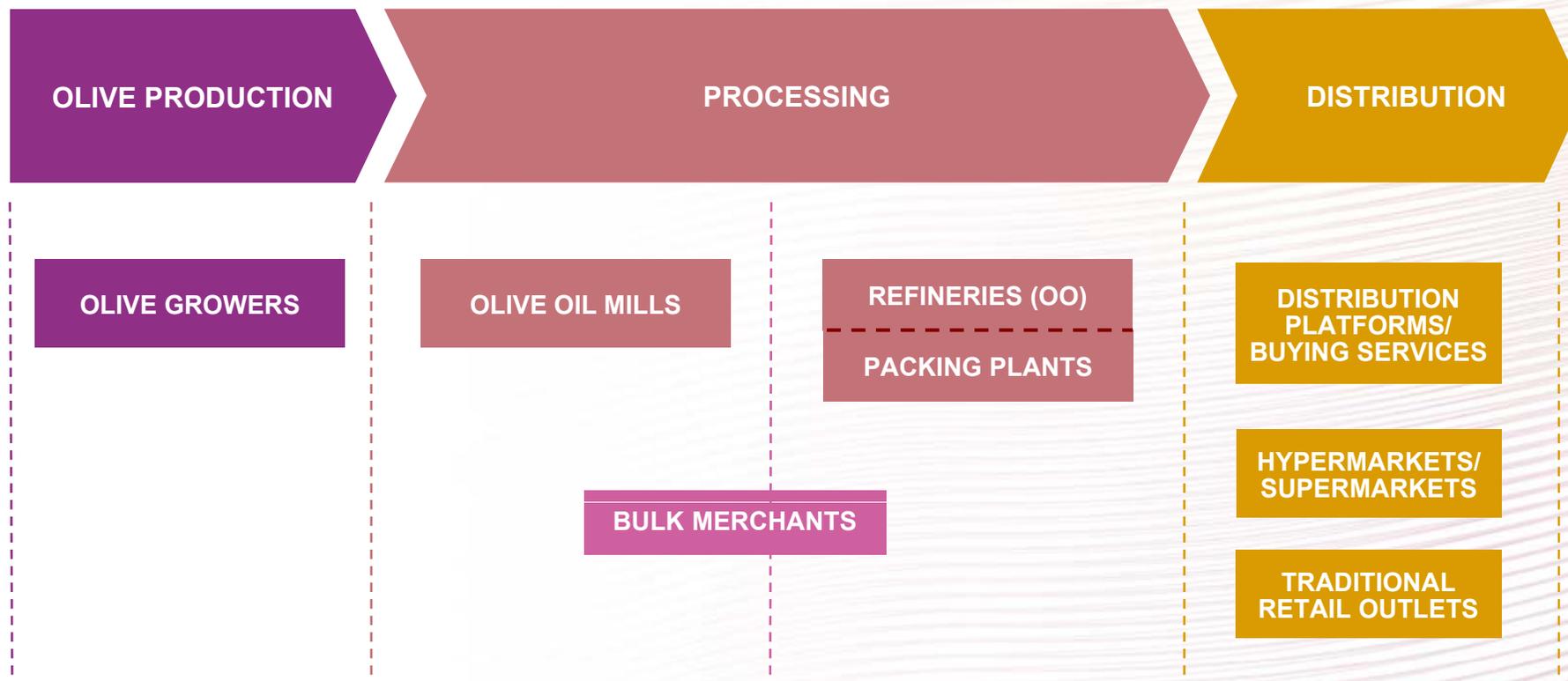
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- Description of the chief cost concepts

2.-VALUE CHAIN

2.1. General structure and description of the value chain

THE OLIVE OIL VALUE CHAIN COMPRISES THREE STAGES INVOLVING HIGHLY SPECIALISED PLAYERS

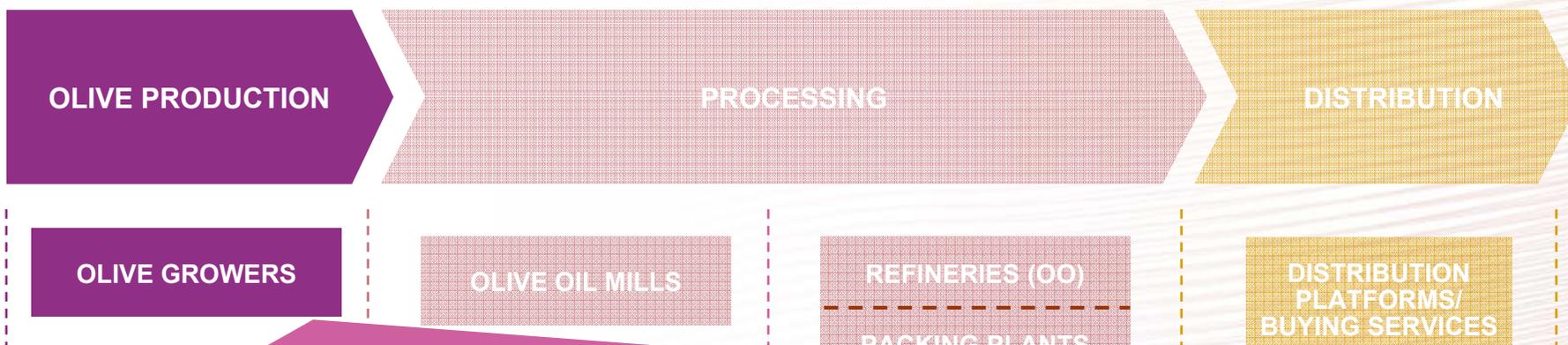


The olives are transported from the orchard to the mill where the oil is extracted. The oil may be packed straight away if it is virgin grade (fit for consumption), or it may be sold to refineries which produce refined olive oil. The grade known as olive oil is a blend of varying proportions of refined olive oil and virgin olive oil

2.-VALUE CHAIN

2.1. General structure and description of the value chain

PLAYERS IN THE PRODUCTION STAGE:

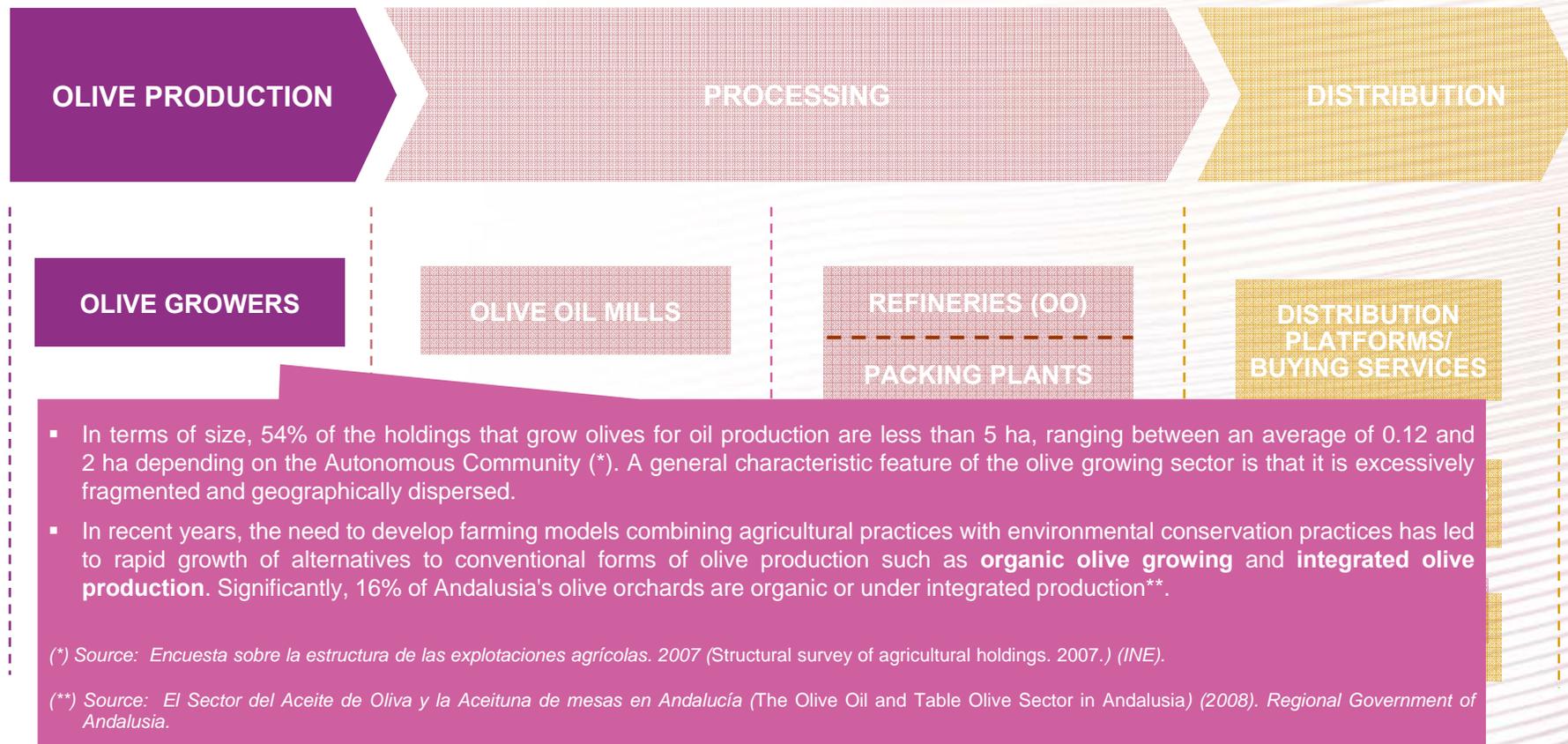


- **Olive growers** are farmers, who may work on their own or in business associations (cooperatives or agricultural partnerships known by their Spanish acronym, SAT). They grow, harvest and transport the olives to the oil mill where the olives are crushed and the oil is extracted.
- Three types of olive growing exist in Spain: **traditional** or **extensive farming**, **intensive farming** and **superintensive farming**.
- The first type of farming is customary in areas with a tradition of olive growing and is generally rainfed. Planting densities are around 80-120 trees/ha (with one or more trunks). A further distinction can be made between traditional olive orchards that can and cannot be mechanised. In the latter case, costs are generally high.
- In the intensive farming system, which is always practised on better soils and under irrigation, planting densities range from 200 to 400 trees/ha while in superintensive orchards (or hedgerow orchards) they can be more than 800 trees/ha. These systems represent what has been dubbed “new-style olive growing”.
- Intensive farming (intensive and superintensive) looks to raise hectare yields and to make cost savings in cultivation and harvesting through mechanisation. Another characteristic of these two systems is the early start to crop bearing.
- As yet, intensive farming accounts for a small share of domestic production because it has not yet realised its significant potential.
- There are also marginal or low-yield olive orchards. These are traditional orchards established on poorer soils, in worse climatic conditions and on terrain that hinders cultural practices, which makes for lower production and higher costs.

2. VALUE CHAIN

2.1. General structure and description of the value chain

PLAYERS IN THE PRODUCTION STAGE (contd):



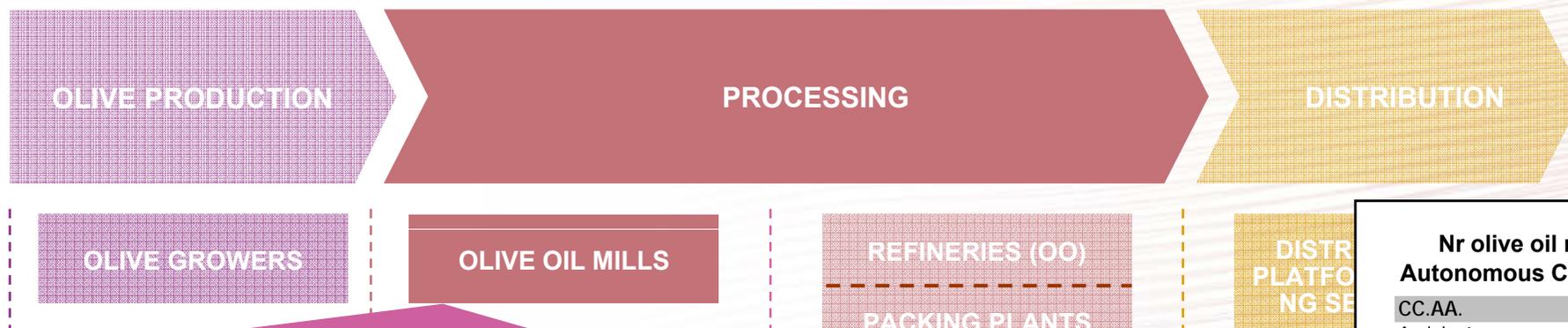
2. VALUE CHAIN

2.1. General structure and description of the value chain



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PLAYERS IN THE PROCESSING STAGE:



- In **2007/08** there were **1,732 working olive oil mills** spread across 13 Autonomous Communities. The largest percentage of mills is located in Andalusia (45%), followed by Castile-La Mancha and Catalonia.
- In terms of size, the largest category of mills are those producing between 20 and 100 t of oil per crop year (23% of the total). Although they account for just short of 11% of the total, mills producing between 1,000 and 2,500 t figure predominantly in domestic output (34%).
- From the legal viewpoint, olive oil mills in Spain are primarily of two types:
 1. Cooperatives or agricultural partnerships: these crush the olives for their members and account for 55% of the total. In the 2007/08 season they produced approximately 70% of all the oil made.
 2. Privately owned mills (sole proprietors or corporate entities): factories or companies which crush olives for olive growers under contract and account for 45% of Spain's mills and 30% of the oil produced.
- Mills basically sell oil through two channels: for farmers' own consumption (virgin and extra virgin oils) or as bulk product sold to refineries (lampante oils), packing plants (virgin and extra virgin oils) and bulk merchants. Some mills have their own facilities for packing extra virgin olive oil for local self consumption and markets within a short radius.
- Recent years have seen a gradual concentration of supply as cooperatives form second-tier cooperatives (cooperatives whose members are cooperatives as opposed to individual farmers), a process which has picked up pace in the last crop year. Quite often these second-tier cooperatives pack extra virgin olive oil and have developed their own brands of this type of oil.

Nr olive oil mills by Autonomous Community*

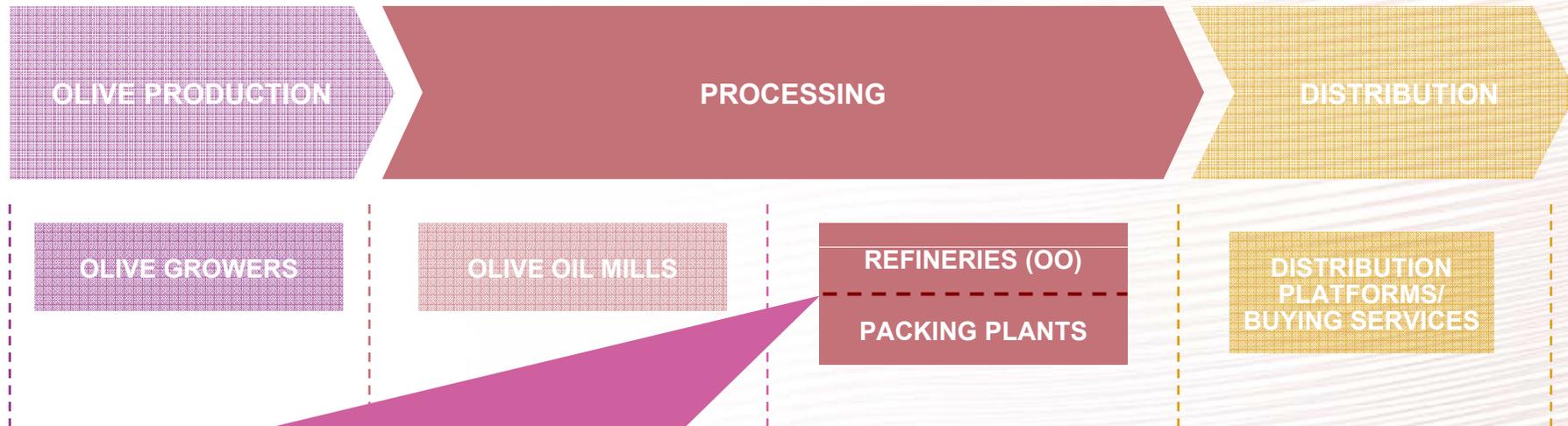
CC.AA.	nº
Andalucía	818
Aragón	104
Baleares	11
Castilla - La Mancha	241
Castilla y León	15
Cataluña	205
Extremadura	114
Comunidad de Madrid	19
Murcia	38
Navarra	14
País Vasco	3
La Rioja	16
Valenciana	134
Total Almazaras	1732

Source: *Informe de gestión de la campaña 2007/08* (Management report for the 2007/08 crop year). Olive Oil Agency. MARM

2.-VALUE CHAIN

2.1. General structure and description of the value chain

PLAYERS IN THE PROCESSING STAGE (contd):

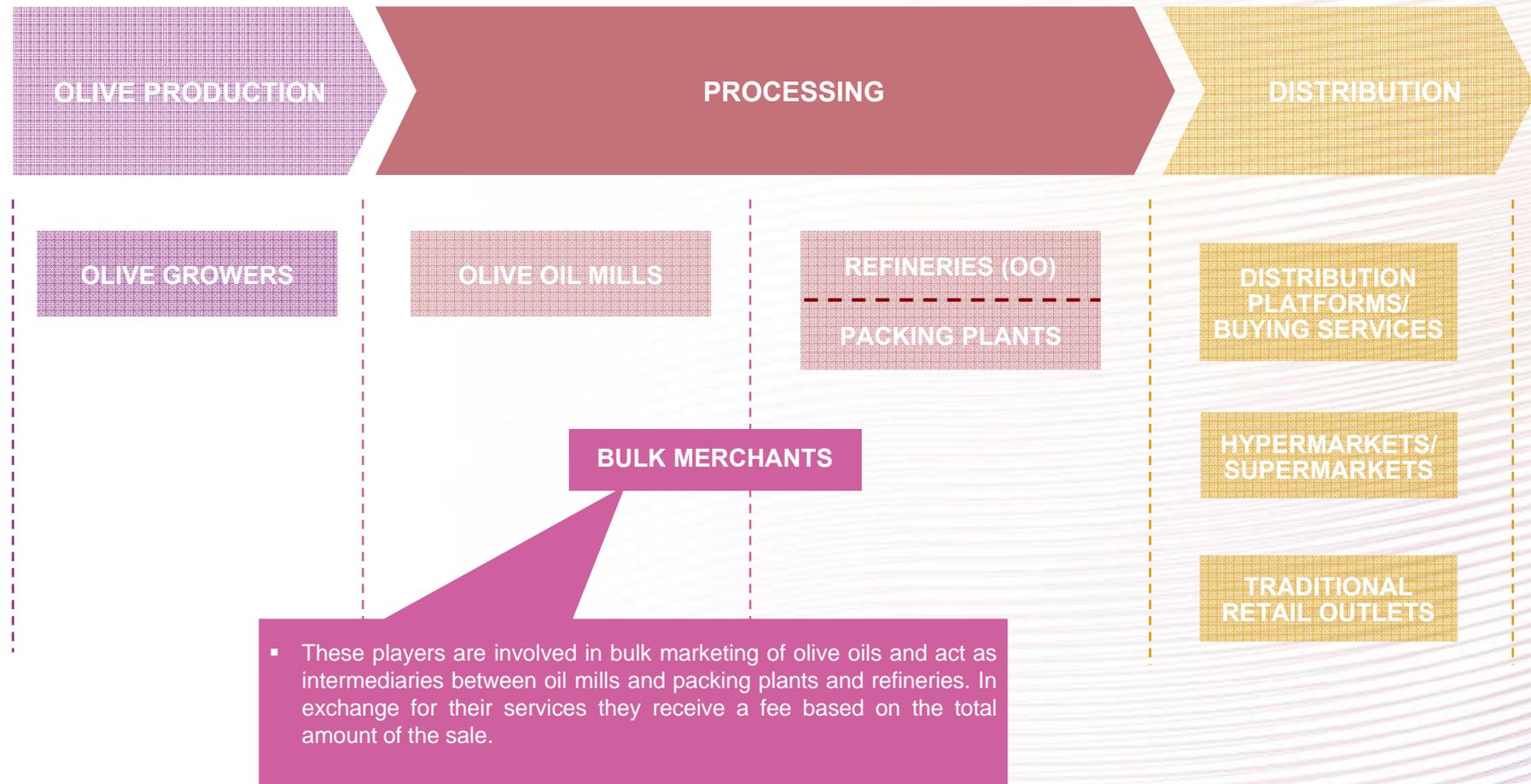


- There are currently **15 olive oil refineries** in Spain, nine of which are in Andalusia. The supply source of refineries is lampante oil sold by mills or second-tier cooperatives. Some also refine seed oils. OO is obtained by refining lampante oil, which is then blended with virgin olive oils before being packed for sale. EVOO is packed straight away without refining. Ten of these refineries belong to companies that also pack the oils.
- In the 2007/08 season 711,000 t of oil were packed in a total of **1,471 packing plants**. The top five packing plants account for 35% of the oil packed in Spain, the top 10 account for 50%, the top 15 for 58% and the top 20 for 65%.
- **Packing** is carried out by companies which operate at different stages of the value chain. Consequently, the following types of packing plants exist depending on the stage at which the product is packed:
 - **Packing plants integrated into refineries**, which market the full range of olive oils, including OO and EVOO, and are the most significant in packed volume terms.
 - **Packing plants belonging to large mills or second-tier cooperatives**, which pack only virgin olive oil.
 - **Independent packing plants**, which pack all types of oils. Some are in the leader group.

2. VALUE CHAIN

2.1. General structure and description of the value chain

PLAYERS IN THE PROCESSING STAGE (contd):



2. VALUE CHAIN

2.1. General structure and description of the value chain

PLAYERS IN THE DISTRIBUTION STAGE:

CONSUMERS BUY 86% OF THEIR OLIVE OIL, BOTH EVOO AND OO, AT MODERN DISTRIBUTION OUTLETS, CHIEFLY HYPERMARKETS AND SUPERMARKETS



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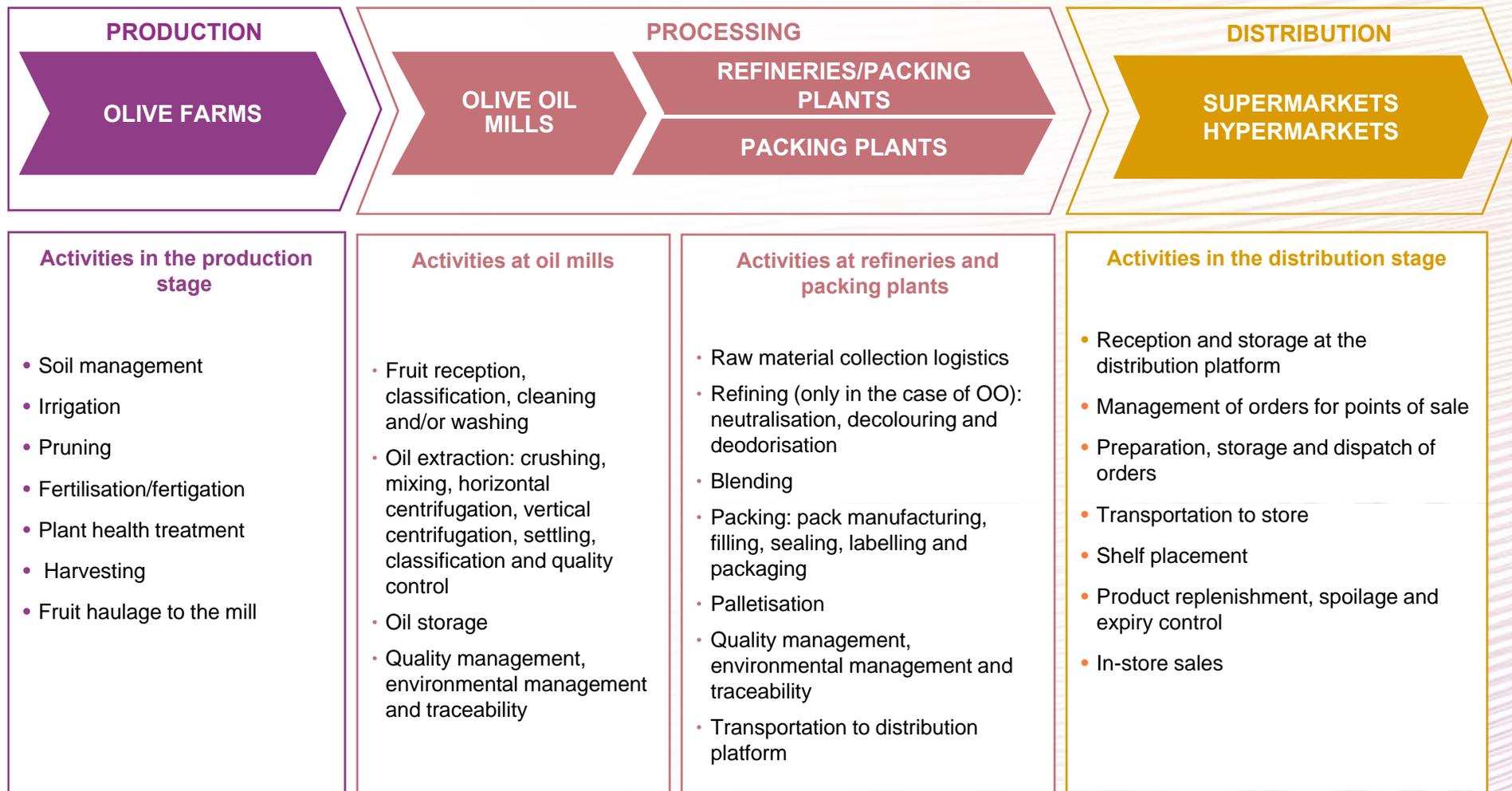
2. VALUE CHAIN

2.1. General structure and description of the value chain



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THE PLAYERS IN THE VALUE CHAIN CARRY OUT A SERIES OF ACTIVITIES TO TAKE THE END PRODUCT TO CONSUMERS



2.-VALUE CHAIN

2.1. General structure and description of the value chain

ACTIVITIES IN THE PRODUCTION STAGE:



1.- Description of activities during the production stage

1.1. Soil management: this entails different practices such as traditional tillage, non-tillage, reduced tillage and cultivation of plant covers.

1.2. Irrigation: 555,673 ha of olive orchards are irrigated, equal to 22% of the total. Localised irrigation systems are the most widespread, accounting for 85% of the irrigated area under olives. Irrigation strategy is determined by climatic, soil and crop conditions, which vary greatly in the producing regions.

1.3. Fertilisation, fertigation and plant health treatment: the cost of these activities depends on the frequency and type of fertilisation and plant health treatments and the machinery used. Fertilisation costs usually increase as crop production increases.

1.4. Pruning: this covers all the operations intended to give the olive trees the right shape, structure and size and to adapt them to their growing environment. Pruning is done manually by professional pruners or by machine in intensive orchards.

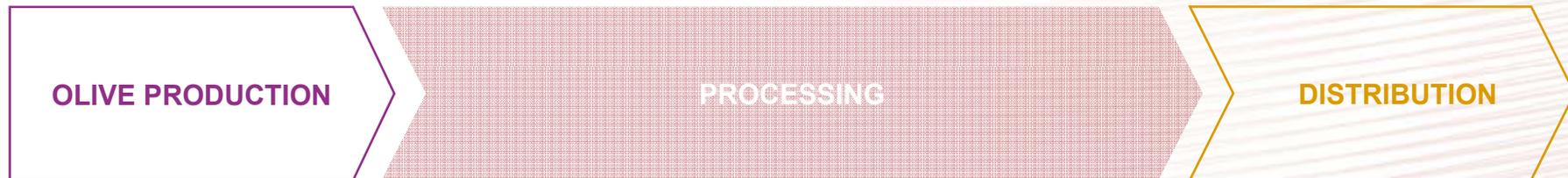
1.5. Harvesting: the olives may be harvested manually (by hand picking from the tree or poling) or mechanically using specialised machinery (shakers, over-the-row harvesters). There is a clear trend towards mechanising olive harvesting, prompted by the high cost and seasonal nature of labour requirements. Harvesting usually accounts for between 40% and 60% of total cultivation costs.

1.5. Fruit haulage to the mill: the olives are transported in a variety of containers (sacks or plastic crates) or loose in trailers. Haulage costs depend on the distance between the farm and mill and average farm output and they increase in inverse proportion to farm output.

2. VALUE CHAIN

2.1. General structure and description of the value chain

ACTIVITIES IN THE PROCESSING STAGE:



2.- Description of activities in the processing stage

2.1. Olive oil mills:

2.1.1. Fruit reception, classification, cleaning and/or washing

2.1.2. Oil extraction: the oil is extracted after the olives are crushed and the resultant mash is beaten (paste preparation). Technologically speaking, two-phase centrifugation (used in 80% of Spain's mills) is the most advanced system of extraction technology and leads to cost savings (it requires less water and labour), more oil and less waste.

2.1.3. Oil storage: after being extracted, the oil undergoes settling and is then stored in tanks until it is marketed.

2.1.4. Quality management, environmental management and traceability: these activities are necessary to implement quality assurance management systems, to comply with environmental requirements and to put in place product traceability systems across the chain.

2.2. Refineries:

2.2.1. Raw material collection logistics

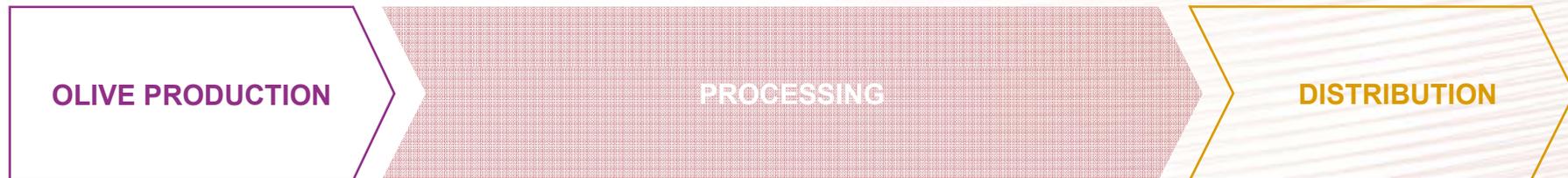
2.2.2. Refining: this is the process applied to virgin olive oils when their organoleptic and physico-chemical characteristics do not make them fit for consumption.. The oil may undergo physical or chemical refining depending on the intensity of its defects and the criteria of the refiner. Refining involves neutralisation, decolouring and deodorisation.

2.2.2. Blending: refined oil is almost taste, smell and colour-free. It is blended with varying proportions of virgin or extra virgin olive oil, which add aroma and fruitiness. The end result is the commercial grade known as olive oil (OO).

2. VALUE CHAIN

2.1. General structure and description of the value chain

ACTIVITIES IN THE PROCESSING STAGE (contd):



2.- Description of activities in the processing stage

2.3. Packing plants:

2.3.1. Raw material collection logistics

2.3.2. Packing: irrespective of the type of container used (PET or glass), this process entails pack manufacturing, blowing or handling, pack transportation, filling, sealing, labelling and packaging.

2.3.3. Palletisation: this entails pallet formation, strapping, placement of corner guards and shrink wrapping.

2.3.4. Distribution logistics: this is usually at the expense of the packing plants and entails distribution to the distribution platform and occasionally directly to the store.

2.1.4. Quality management, environmental management and traceability: these activities are necessary to implement quality assurance management systems, to comply with environmental requirements and to put in place product traceability systems across the chain.

2. VALUE CHAIN

2.1. General structure and description of the value chain

ACTIVITIES IN THE DISTRIBUTION STAGE:



4.- Description of activities in the distribution stage

4.1. Distribution platform

4.1.1. Reception and storage: reception of incoming goods from suppliers and quality control.

4.1.2. Warehouse placement

4.1.3. Management of orders for points of sale

4.1.4. Loading of orders and distribution to points of sale

4.1.5. Transportation to points of sale: this is normally managed by the distribution platforms and organised according to delivery routes

4.2. Stores

4.2.1. Product placement on shelves

4.2.1. Product replenishment, spoilage and expiry control: this entails withdrawing and replenishing spoiled product.

4.2.2. In-store sales: self service.

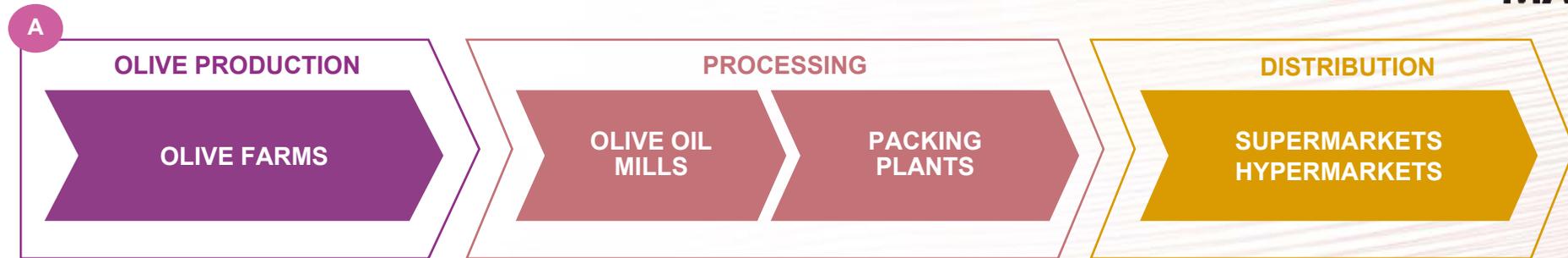
2. VALUE CHAIN

2.2. Configuration of the selected value chains

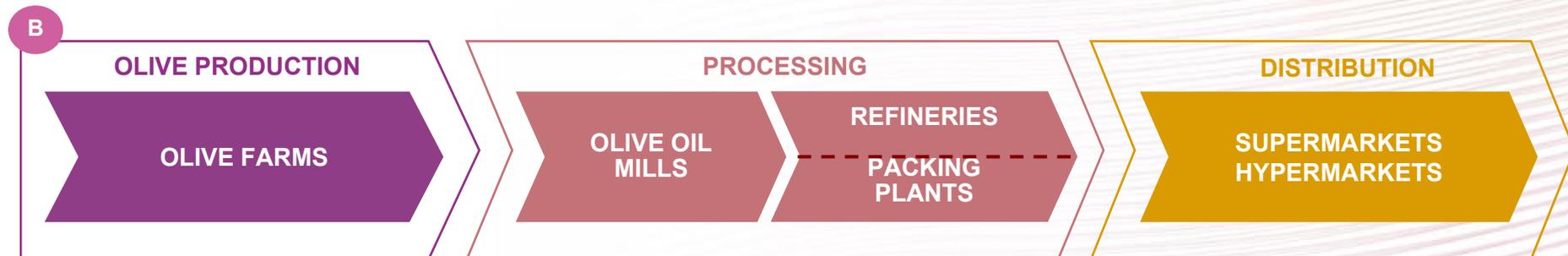


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Extra virgin olive oil (EVOO):



Olive oil (OO)*:



- The configurations reviewed here are for the two most representative products in terms of domestic consumption: **extra virgin olive oil (EVOO)** and **olive oil (OO)***.
- **Modern distribution channels** are the **predominant channels for marketing both EVOO and OO** (86% of the olive oil consumed in these two categories is bought through these channels). Consequently, **the cost and price analysis for these two products is focused on this modern configuration.**

(* Olive oil composed exclusively of refined olive oils and virgin olive oils (Reg (EC) No 1234/2007)



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3.1. Schematic outlines of the cost and price structure

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- I. Methodology
- II. Secondary sources
- III. Description of the chief cost concepts

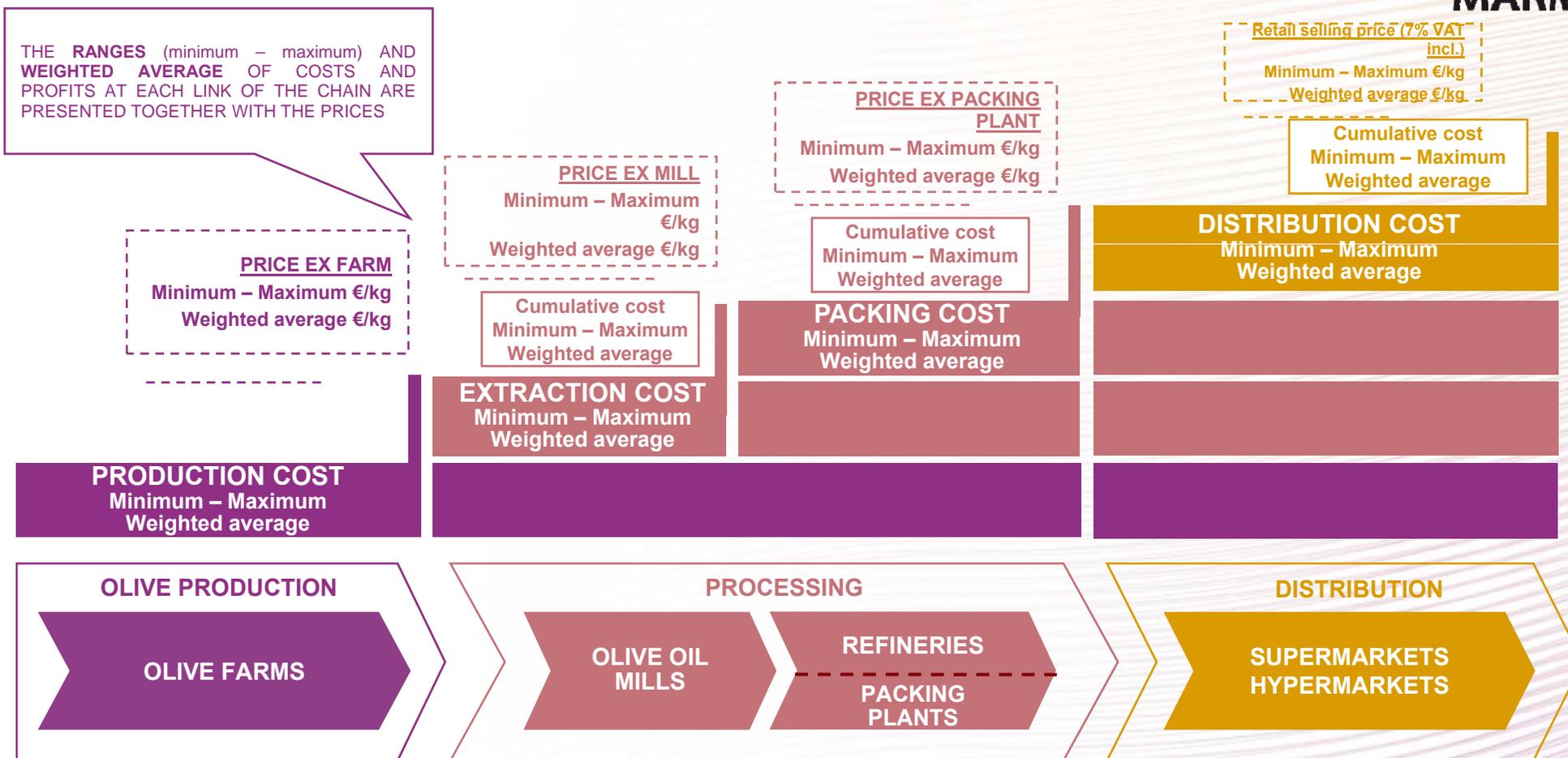
3.- COST AND PRICE STRUCTURE

3.1. Schematic outline of the cost and price structure



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THE STARTING POINT OF PRICE FORMATION ANALYSIS IS TO IDENTIFY THE COSTS GENERATED AT EACH STAGE



The prices and costs reported in this study for each value chain configuration refer to the 2007/2008 crop year, from 1 November 2007 to 31 October 2008, except for the distribution stage which refers to the second semester of 2008

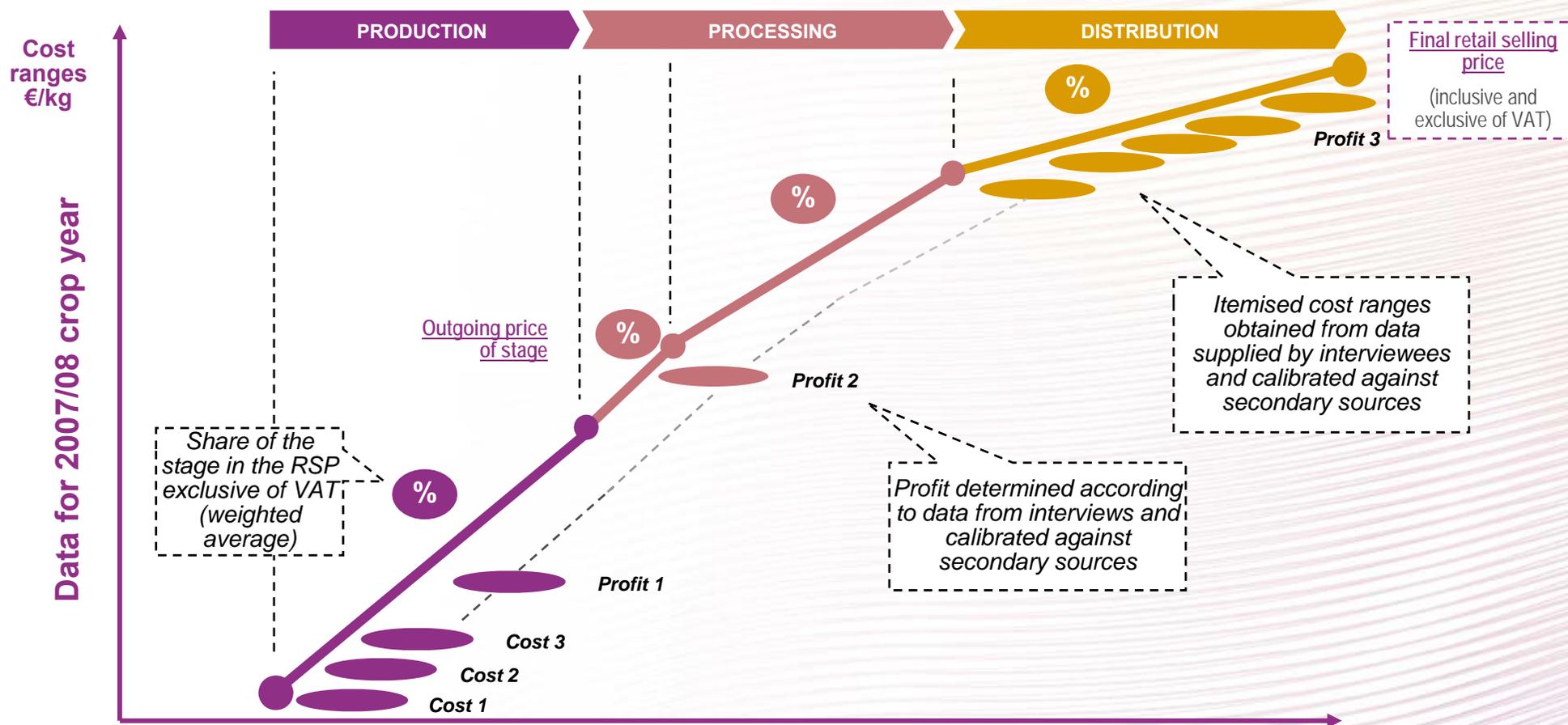
3. COST AND PRICE STRUCTURE

3.1. Schematic outline of the cost and price structure



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THE CONSUMER PRICE IS THE RESULT OF SETTING SUPPLY AGAINST DEMAND AND DETERMINES WHETHER COMPANIES MAKE A PROFIT OR LOSS AT THE DIFFERENT STAGES OF THE CHAIN



The price formation process is plotted in graph form and details the cost ranges and net profits obtained according to sector data.

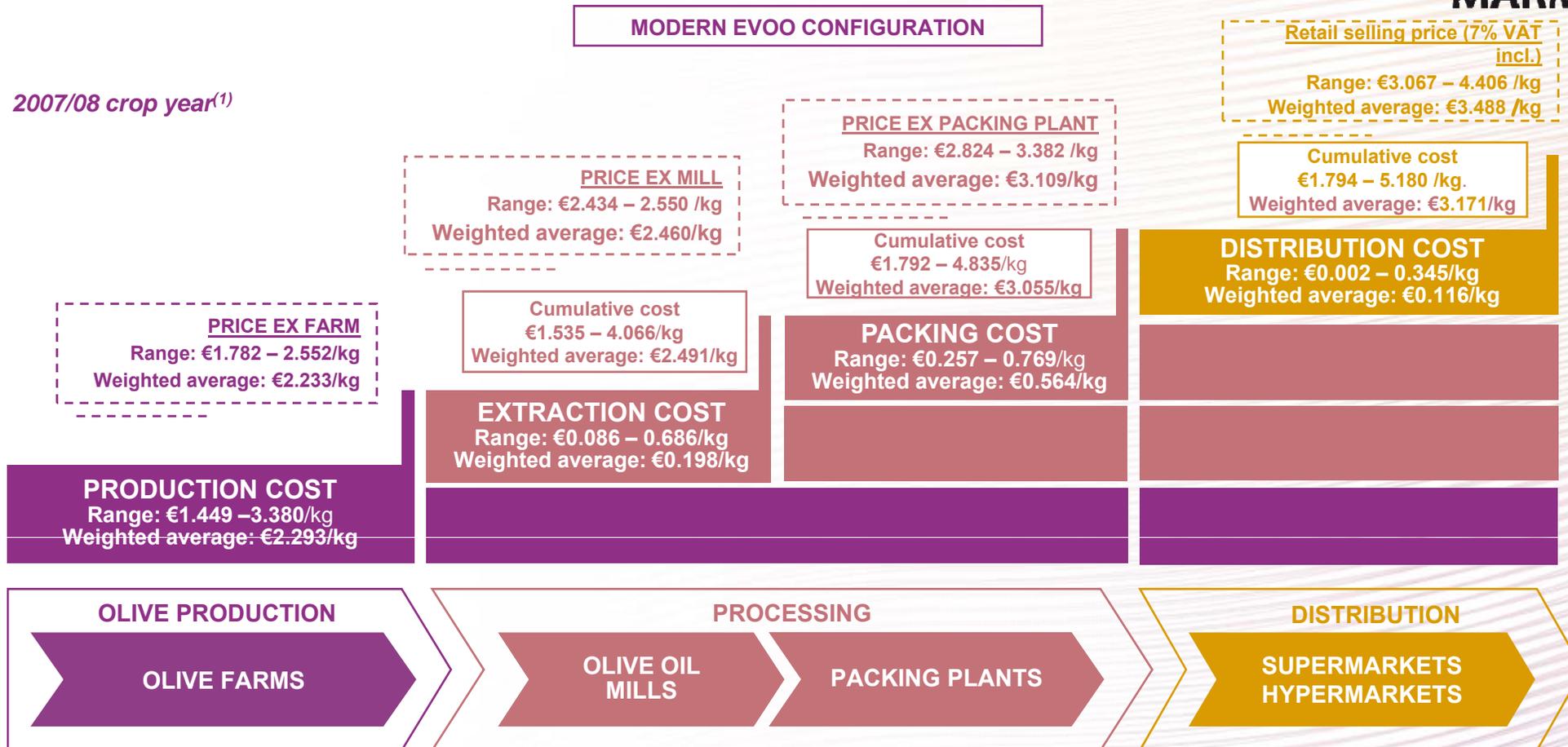
3. COST AND PRICE STRUCTURE

3.1. Schematic outline of the cost and price structure



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OLIVE PRODUCTION IS THE STAGE THAT GENERATES THE MOST COSTS IN THE MODERN CONFIGURATION OF THE VALUE CHAIN FOR EXTRA VIRGIN OLIVE OIL



The set of cumulative costs along the EVOO value chain in the 2007/08 crop year represented approximately 91% of the RSP of the oil (VAT incl.).

(1) The crop year spans the months from November 2007 to October 2008

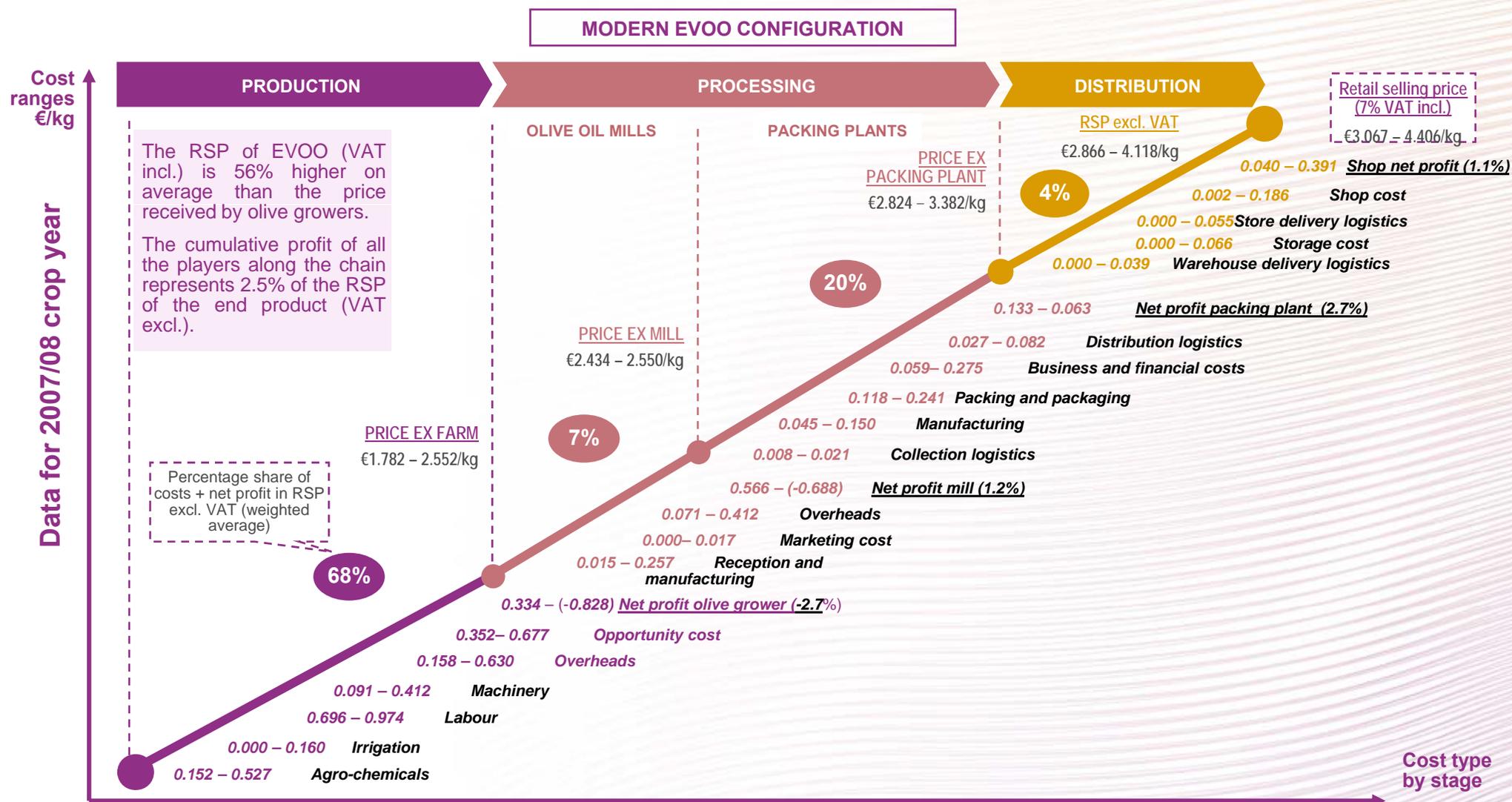
3. COST AND PRICE STRUCTURE

3.1. Outline of the cost and price structure



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PRODUCTION IS THE STAGE THAT MOST HEAVILY INFLUENCES THE RSP OF EVOO (VAT EXCL.), CHIEFLY OWING TO THE HIGH COST OF LABOUR FOR OLIVE PRUNING AND HARVESTING



3. COST AND PRICE STRUCTURE

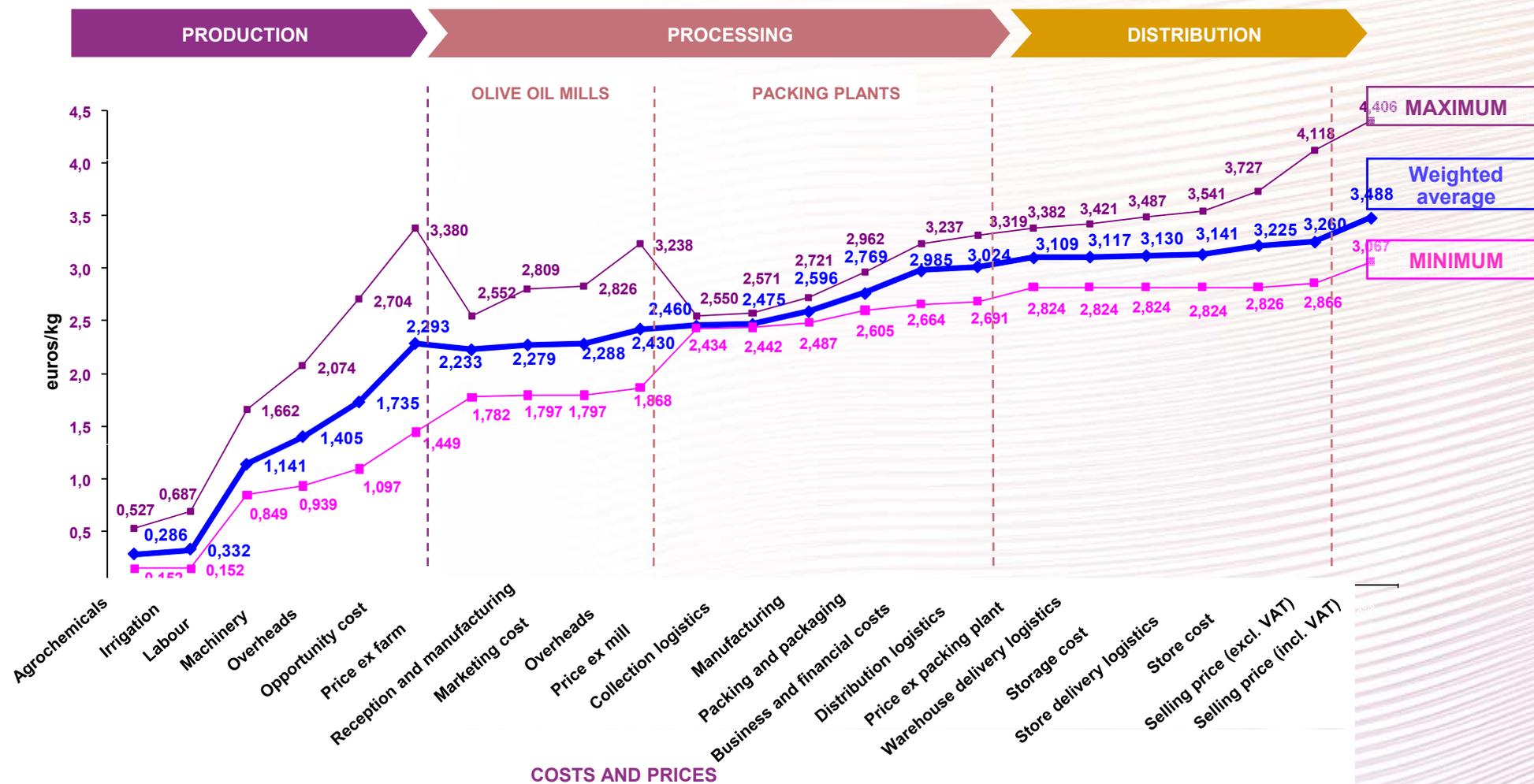
3.1. Schematic outline of the cost and price structure



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THE COST RANGES OF THE PLAYERS IN THE PRODUCTION AND OIL EXTRACTION STAGES FLUCTUATE TO A GREATER EXTENT THAN THOSE IN SUBSEQUENT STAGES

EVOO VALUE CHAIN. COST AND PRICE AGGREGATION
2007/08 crop year



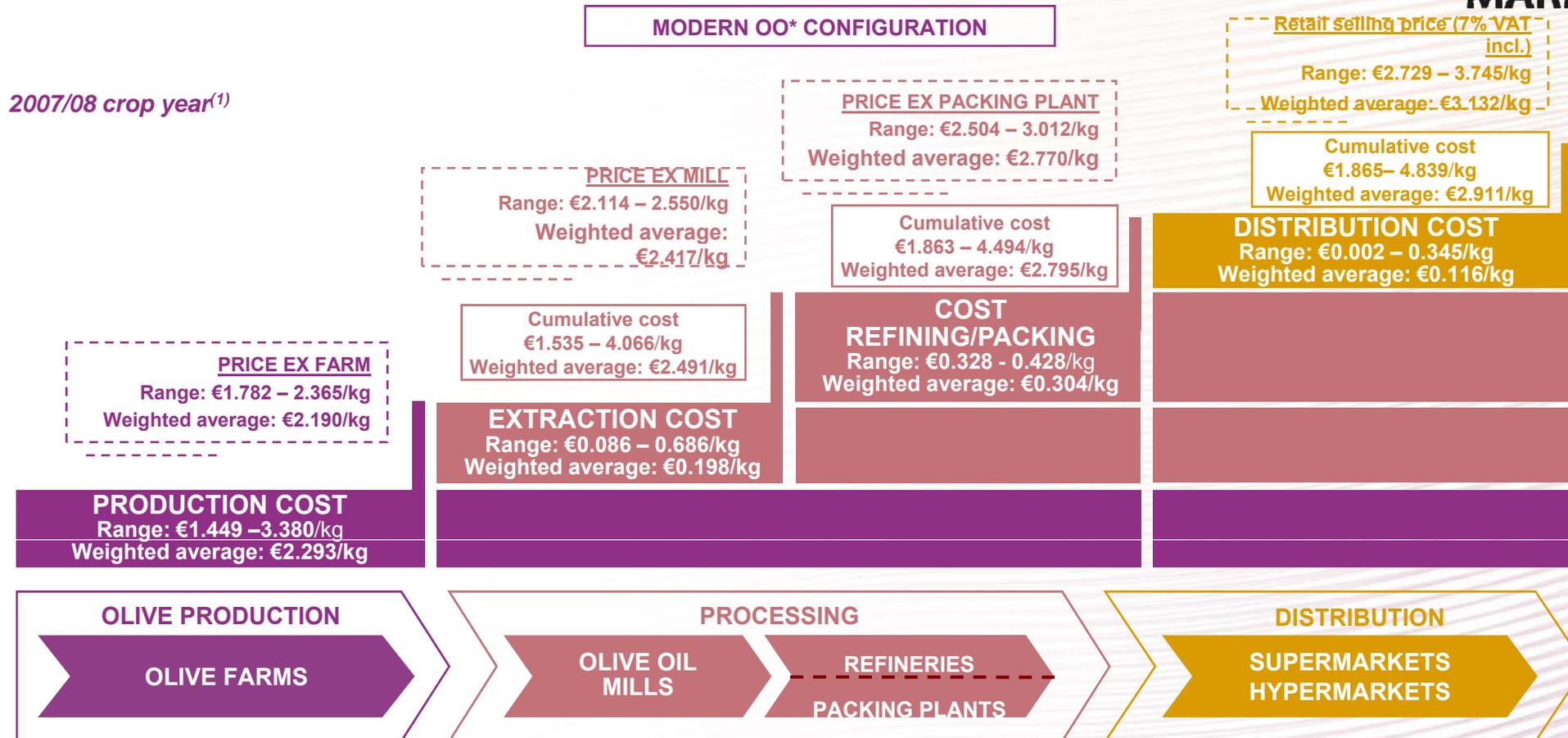
3. COST AND PRICE STRUCTURE

3.1. Schematic outline of the cost and price structure



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THE OO VALUE CHAIN INCLUDES REFINING OF SOME OF THE OILS PRODUCED AT THE MILL. THIS IS DONE BY REFINERIES, WHICH ARE USUALLY INTEGRATED IN PACKING PLANTS



The set of cumulative costs along the OO value chain in the 2007/08 crop year represented approximately 93% of the RSP of the oil (VAT incl.).

(1) The crop year spans the months from November 2007 to October 2008

(*) Olive oil composed exclusively of refined olive oils and virgin olive oils (Reg (EC) No 1234/2007)

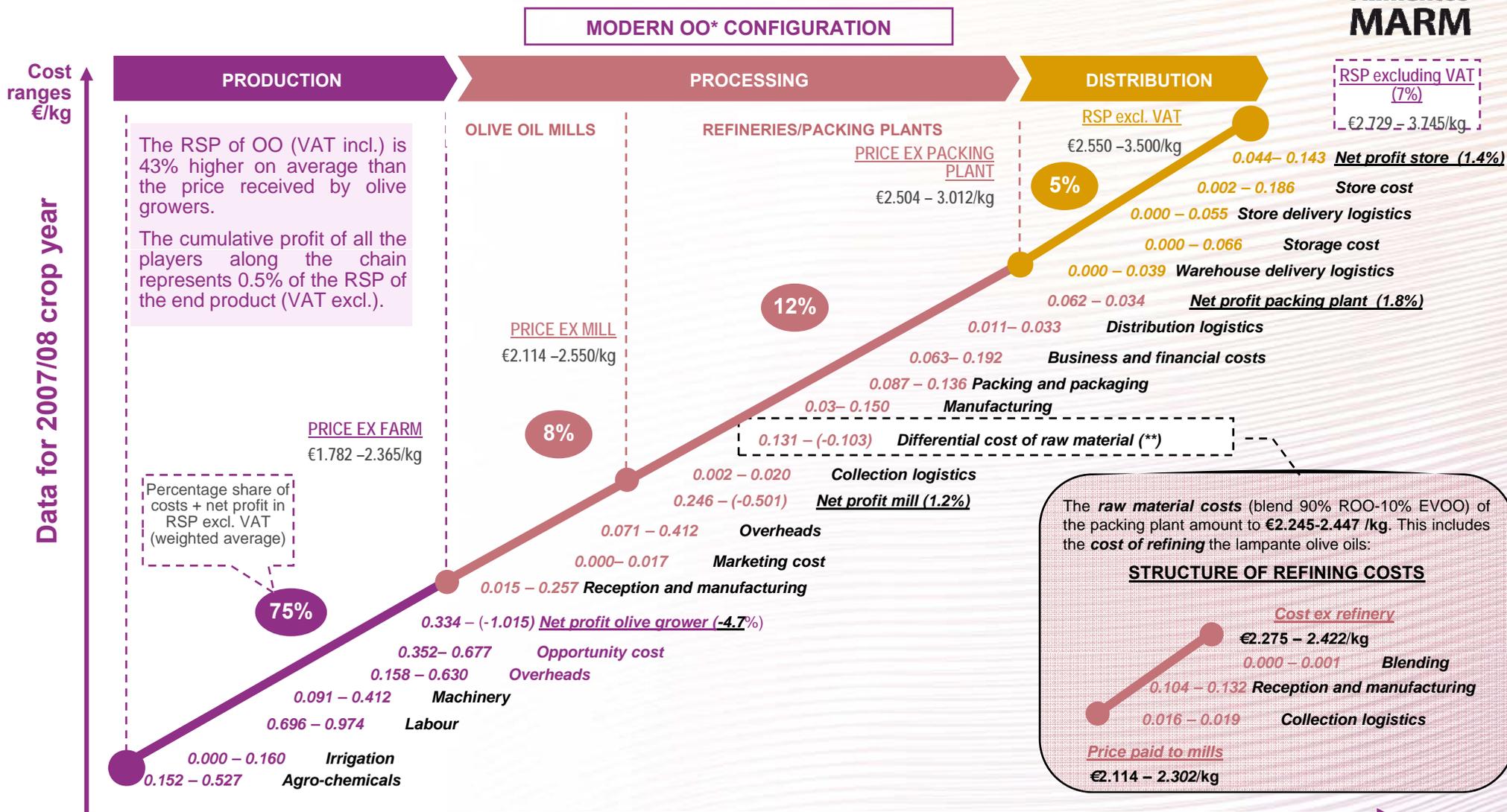
3. COST AND PRICE STRUCTURE

3.1. Schematic outline of the cost and price structure

THE PRODUCTION STAGE HAS A GREATER IMPACT ON THE RSP (VAT EXCLUDED) OF THE OO* VALUE CHAIN OWING TO THE LOWER SELLING PRICE OF THIS GRADE OF OIL



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(*) Olive oil composed exclusively of refined olive oils and virgin olive oils (Reg (EC) No 1234/2007)

(**) The differential cost of the raw material is the difference between the ex mill price and the cost of the raw material at the entry to the packing plant (see Annex I)

3. COST AND PRICE STRUCTURE

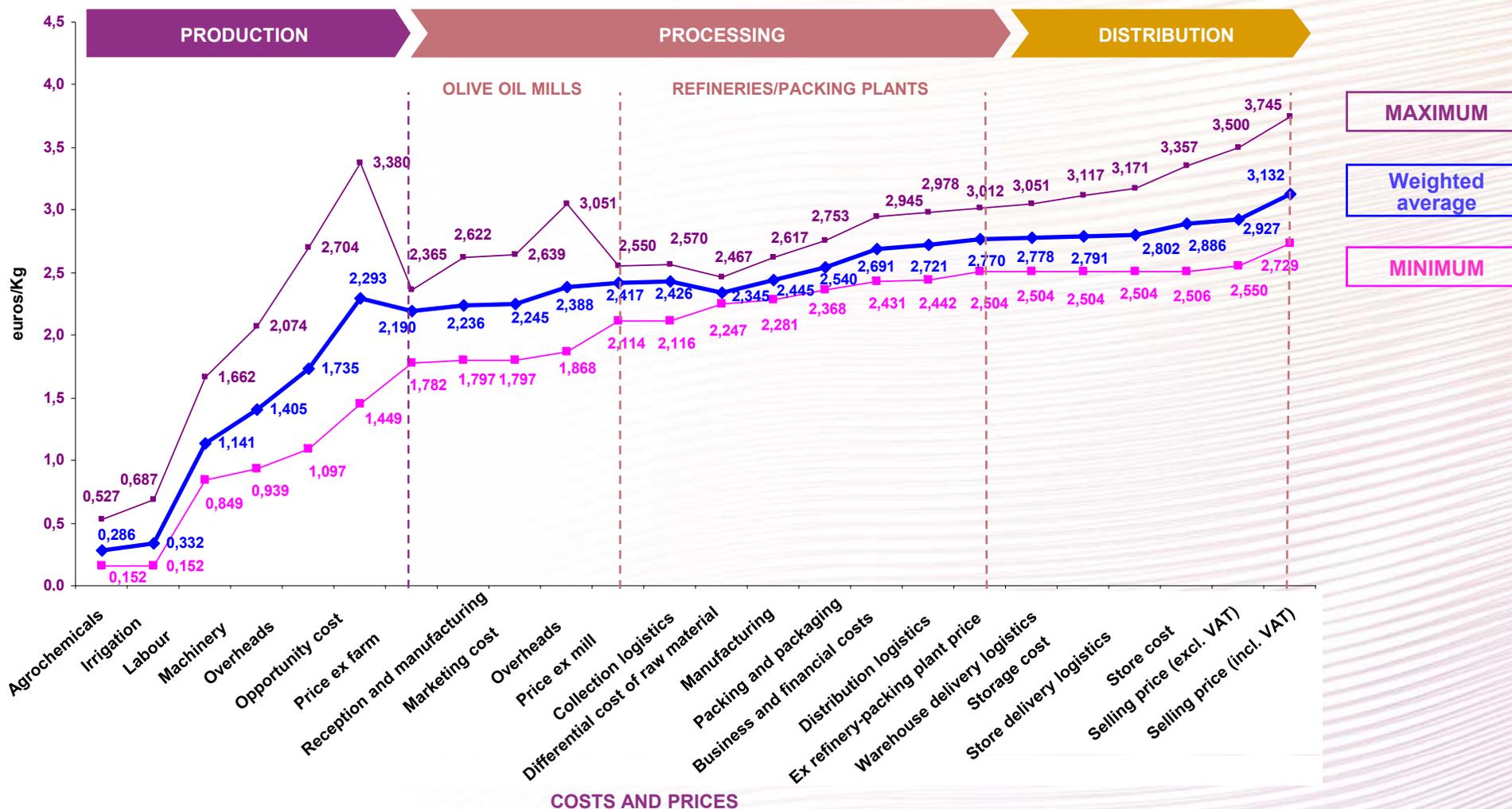
3.1. Schematic outline of the cost and price structure

THE FLUCTUATIONS IN THE COST RANGE OF OO ARE SIMILAR TO THOSE OF EVOO, ALTHOUGH THE RANGE OF FINAL PRICES IS NARROWER OWING TO THE CHARACTERISTICS OF THE PRODUCT



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OO VALUE CHAIN. COST AND PRICE AGGREGATION
2007/08 crop year

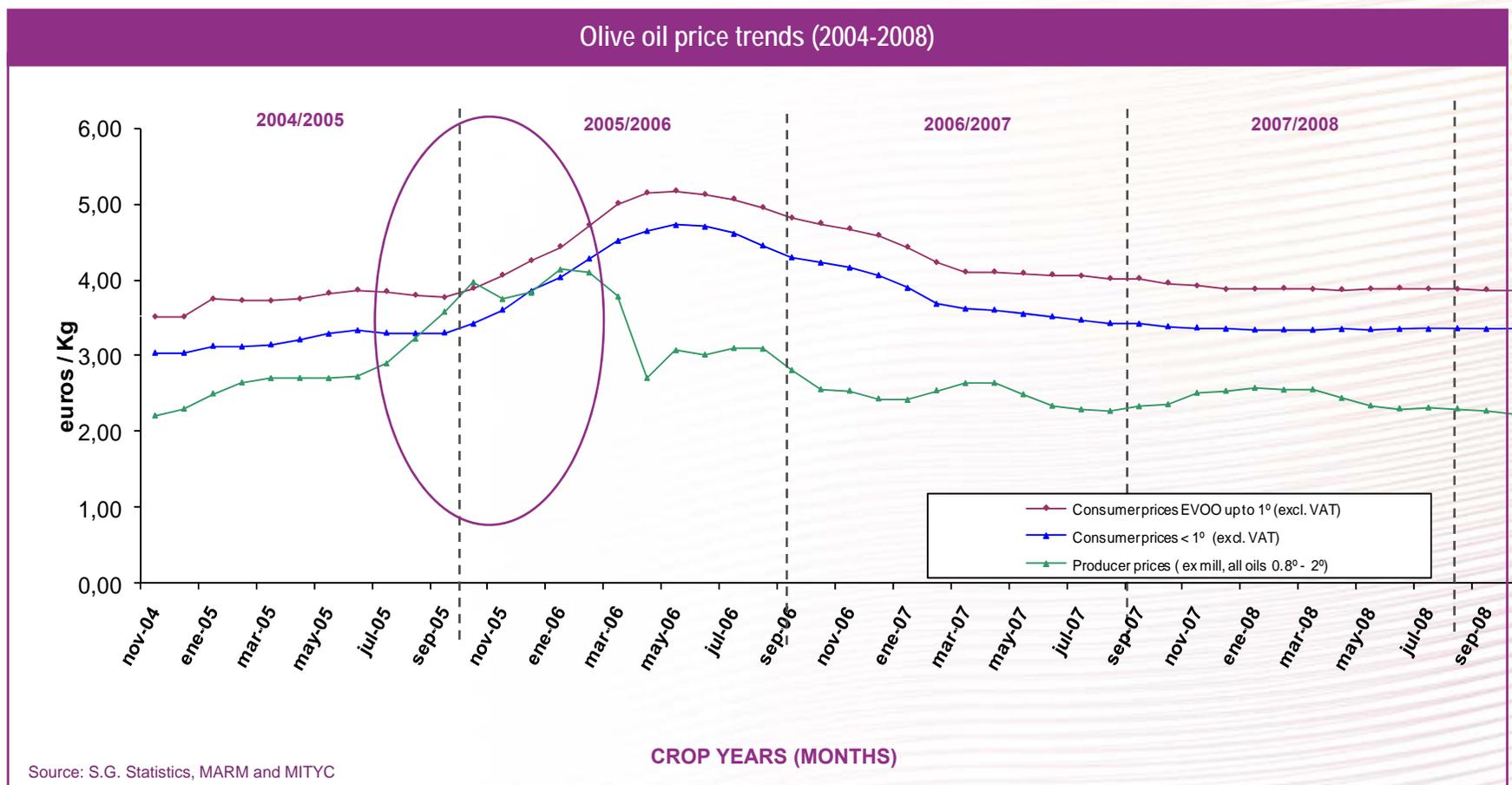


3. COST AND PRICE STRUCTURE

3.2. Analysis of the cost and price structure



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- In **2005/06 producer prices rose sharply** owing to a **drop in production**. A few months later this increase had a knock-on effect on consumer prices.
- Since that crop year, farm and consumer prices **have gradually dropped**. The small increases and decreases in farm prices have not been passed on to consumer prices.



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THE CHIEF CONCLUSIONS OF THIS STUDY ARE THAT:

- Spain is the leading world producer and exporter of olive oil. The region of **Andalusia** has a **60% share of the surface area under olives and accounts for 80% of production**.
- **Barely half of production goes for domestic consumption**, which is increasingly being bypassed by **exports**. However, **more product is exported in bulk than under brands**.
- **Structurally speaking, Spain's olive oil sector is organised in highly stratified operational levels of activity**, which are very specialised and efficient although **the functional relations between immediate levels are difficult and complex**.
- **A process of gradual concentration is observed in the links in the chain**: while the production sector is very fragmented and displays poor management and negotiating capacity, the distribution sector is becoming more and more concentrated.
- **Traditional rainfed olive growing (80-120 olive trees/ha) is the most widespread farming system**, although irrigation has increased. **In recent years a new, highly intensive type of olive growing is gaining ground**. This requires better soils, irrigation and extensive mechanisation, which translates into higher yields and lower production costs and makes a significant contribution towards raising current production potential.
- **Mills have undergone extensive capitalisation by incorporating new technologies** (processes, equipment and materials). This has led to significant improvements in the average quality of the oils produced and has eliminated the environmental impact of waste disposal.
- More recently, a process of **horizontal integration is underway, driven by cooperatives**, in order to concentrate farm supply.
- In turn, **the large business groups are implementing vertical integration strategies by creating alliances** in the subsequent links of the chain or by **purchasing companies with well positioned brands** on foreign markets.
- **At world level, olive oil production and consumption remain balanced**. Hence, **any potential increases in production must drive equivalent growth in demand** through intensified efforts to promote consumption of Spanish olive oil.

4. CONCLUSIONS



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- During the crop year reviewed here, **the total costs of the chain represented 91% of the RSP of extra virgin olive oil (EVOO) and 93% of the RSP of the grade known as “olive oil” (OO).**
- **The value chains of EVOO and OO are very compressed because the profit for all the links in the chains represents 2.5% of the RSP for EVOO and falls to 0.5% for OO.** This leads to a situation where the price paid by end consumers for EVOO is 1.56 times that received by farmers and 1.43 times that for OO, including the extraction, handling and packing and distribution stages.
- **Agricultural production costs are the most significant in both value chains, accounting for 68% of the RSP (excl. VAT) for EVOO and 75% for OO.** When broken down, **agricultural labour costs account for over 25% of these costs, exactly 27% of the total chain costs for both categories of oil.**
- **When expressed as a share of the RSP (VAT excl.) the rest of the chain costs as a whole represent 32% for EVOO and 25% for OO,** broken down as follows: mills 7% EVOO and 8% OO, packing 20% EVOO and 12% OO and distribution 5% for both categories of oil.
- During the period considered, **distributor brands (DB) played a lead role in olive oil distribution, with a 44% slice of EVOO sales and a 58% share of OO sales, and are showing a clear upward trend.**
- In the crisis, **distributors' policy of pushing down margins has had a knock-on effect on the other links of the value chain.**
- **The different commercial categories of olive oil experience excessive price concentration on the Spanish market, mirroring the scant importance placed on quality.** The result is that the **RSP of EVOO is only 10% higher than that of OO** and the consumer prices of both categories widely overlap.



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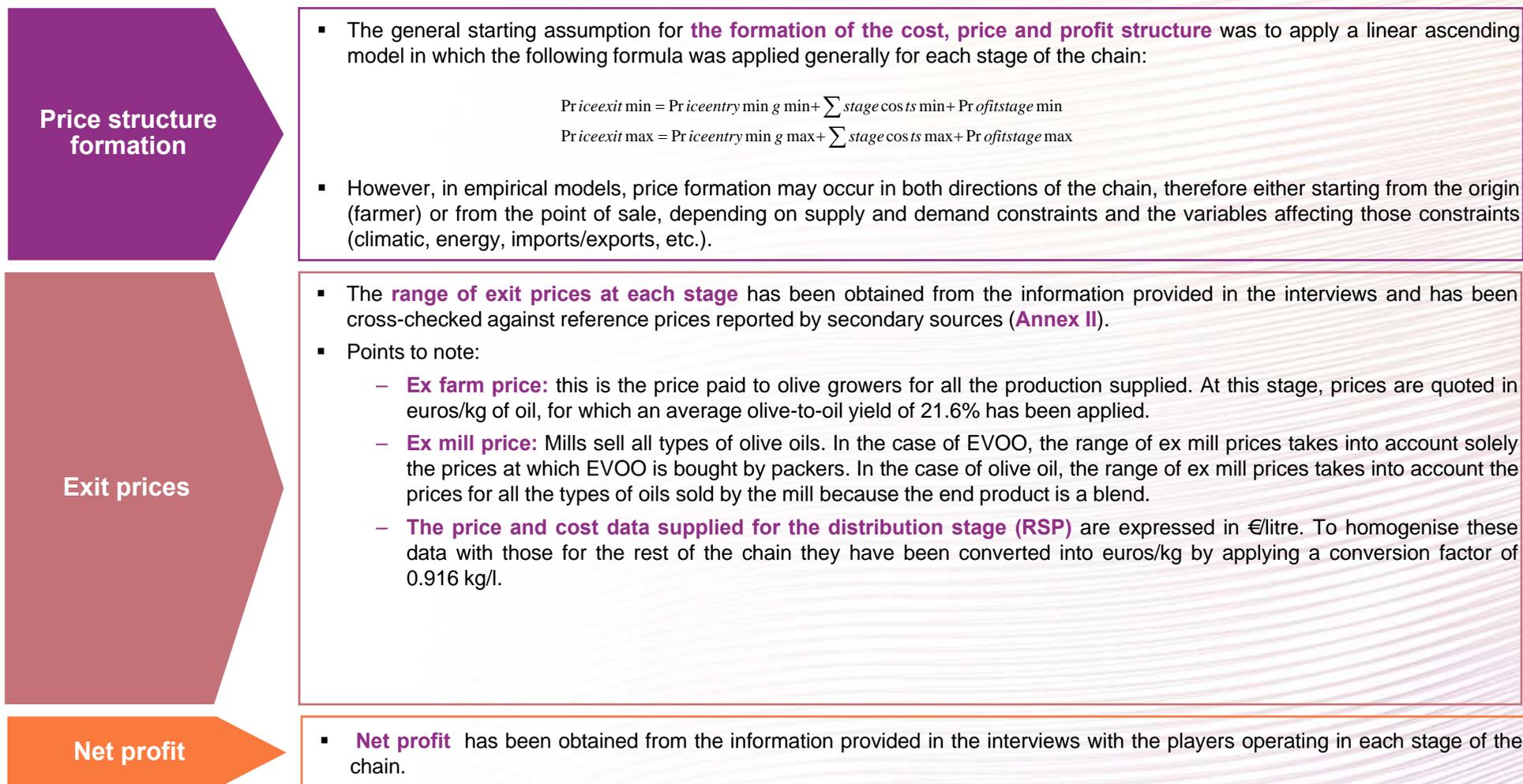
I. Methodology

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Assumptions and formulas for calculations:





Assumptions and formulas for calculations:

Opportunity cost

- The **opportunity cost** included in the olive production stage has been calculated by applying a % average supplied during interviews. According to the data provided, it is 20% of total gross income when farm yields are less than 2,000 kg./ha and 25% when yields are more than 2,000 kg./ha.

Differential cost of raw material (OO)

- This cost has been included in the OO value chain in order **to adjust the prices of the oil** when going from the oil extraction stage (mill) to the packing stage (packing plant). This correction is necessary because the raw material of the packing plant is a blend of oils in the following proportions: 90% refined oils and 10% extra virgin olive oils.
- Consequently, the range of incoming raw material costs at the packing plant is 90% of the range of oil refining costs and 10% of the EVOO price range.
- These costs have been calculated as: $P_{ex\ mill} - P_{entry\ packing\ plant}$



SECONDARY SOURCES CONSULTED:

Scope	Source
Sector characteristics and trends	<ul style="list-style-type: none"> • MARM. Olive Oil Agency. "Informe de gestión de la campaña 2007/08". • MARM: Anuario de Estadística 2008 • MARM: Food consumption panel. Directorate-General for Industry and Food Markets.
	<ul style="list-style-type: none"> • MARM. Subdirectorate General for Quality Differentiation and Organic Farming. "Datos de las Denominaciones de Origen Protegidas (D.O.P.) e Indicaciones Geográficas Protegidas (I.G.P.) 2007": http://www.mapa.es/es/alimentacion/pags/Denominacion/htm/cifrasydatos.htm • MARM: "Estudio de mercado Observatorio del Consumo y la Distribución Alimentaria. Octubre 2008." • International Olive Council. • Ministry of Economic and Financial Affairs. Secretariat-General for Foreign Trade. • ANIERAC (Asociación Nacional de Industriales Envasadores y Refinadores de Aceites Comestibles - National Association of Edible Oil Processors, Packers and Refiners). "Estadística de ventas al mes de agosto de 2009". • Consorcio Olivícola Italiano. "Scenari economico di settore".2009
Structure of the value chain	<ul style="list-style-type: none"> • MARM. "Diagnóstico y análisis estratégico del sector Agroalimentario español. Análisis de la cadena de producción del sector del aceite". 2004. • MARM, ACES, SDV. La distribución agroalimentaria y transformaciones estratégicas en la cadena de valor. 2008 • Regional Government of Andalusia. Department of Agriculture and Fisheries. "El Sector del Aceite de Oliva y la Aceituna de Mesa en Andalucía (2008)" and "El Olivar Andaluz" (2002). • INE: "Encuesta sobre la estructura de las explotaciones agrícolas. Año 2007". • BARRANCO, Diego; FERNÁNDEZ-ESCOBAR, Ricardo; RALLO, Luis. "El cultivo del olivo". Ed. Mundi-Prensa. 2nd edition. Madrid. Spain • 1998.CIVANTOS LÓPEZ-VILLALTA, Luis. "Obtención del aceite de oliva virgen". Editorial Agrícola Española. Madrid. Spain. 1992. • LINARES José, GARCÍA PALMA Manuel, IÑIGO Mariano, GARCÍA José Manuel, BERZOSA, Juan. (2006 -) "Olive and olive pomace oil packing and marketing". Revista Grasas y aceites nº 57 (1), pp 68-85. Madrid. Spain.



SECONDARY SOURCES CONSULTED (contd)

Scope	Source
Analysis of the cost and price structure	<ul style="list-style-type: none"> • MARM. National monthly prices. Subdirectorate-General of Statistics: http://www.mapa.es/es/estadistica/pags/preciostestigo/testigo.asp • MARM. Food consumption panel. Directorate-General for Industry and Food Markets. http://www.mapa.es/es/alimentacion/pags/consumo/BD/consulta.asp • MARM. “Resultados técnico-económicos de explotaciones agrícolas de Andalucía en 2008”. Subsecretariat, MARM. • Ministry of Industry, Tourism and Trade. National average weighted retail selling prices of foodstuffs 2002-2009: http://www.comercio.mityc.es/comercio/bienvenido/Comercio+Interior/Precios+y+Margenes+Comerciales/Bases+de+Datos/pagPreciosmediosnacionalesponderadosdeventaalpublicodeproductosdealimentacion.htm • Price pool: http://www.oliva.net/poolred/Publico/PreciosActualizados.aspx?tipo=0



PRODUCTION

- **Agrochemicals:** this includes the cost of fertilisers and plant health treatments.
- **Irrigation:** this is the cost of the water consumed for irrigation purposes, irrigation charges, electricity and maintenance of facilities.
- **Labour:** this includes all the labour employed on the holding, both direct and indirect, including that of the farmer in charge of its management, and the related social security contributions.
- **Machinery:** this covers the costs of repairs, maintenance and fuel. It does not include work contracted out to other companies or rentals.
- **Overheads:** this covers the costs of farm maintenance (repairs of tracks, buildings, etc.), consumption of gas, electricity and fuels other than those for irrigation and machinery, insurance, taxes, advisory and financial consultancy services, communications, depreciation (irrigation facilities and equipment and machinery) and non-current financial expenses.
- **Opportunity cost:** this includes family labour, land rental and interest on other own resources.
- **Fruit haulage to the mill:** farmers use their own tractors and equipment for this purpose. The labour employed for this job is included under "labour" and the cost of tractors and equipment under "machinery".

PROCESSING (MILLS)

- **Reception and manufacturing:** this includes the following headings:
 - Fruit haulage to the mill (in some cases) and of pomace and residue to the extraction plants.
 - Consumption of water, electricity, fuel and other products.
 - Repairs and maintenance of machinery and facilities.
 - Laboratory testing.
 - Storage costs (occasional).
 - Mill labour.
- **Marketing costs:** this includes broker fees and, in the case of cooperatives belonging to second-tier cooperatives, the maintenance expenses of the latter.
- **Overheads:** this covers the cost of administrative staff, general mill insurance, advisory and financial consultancy services, communications, surveillance and security, IT maintenance and other costs (R&D, traceability, critical points, etc.).

PROCESSING (REFINING)

- **Raw material collection logistics:** this is the cost of transporting lampante olive oils from the mill to the refinery.
- **Manufacturing and spoilage:** this is the cost of refining lampante olive oils. It includes the cost of labour and management, work, supplies and services, maintenance and repairs, cleaning, security and surveillance, leases and charges, quality and environmental management, spoilage and losses, lower cost fatty acids and pastes, depreciation and allowances and other manufacturing costs.
- **Blending:** this is the cost of the activities involved in blending varying proportions of refined and virgin olive oils to obtain olive oil.

PROCESSING (PACKING)

- **Logistics of raw material collection:** this is the cost of transporting virgin olive oils from the mill to the packing plant.
- **Manufacturing:** this is the cost of packing the oil after blending (lampante and virgin). It includes the cost of labour and management, work, supplies and services, maintenance and repairs, cleaning, security and surveillance, leases and charges, quality and environmental management, spoilage and losses, lower cost fatty acids and pastes, depreciation and allowances and other manufacturing costs.
- **Packing and packaging:** this is the cost of the materials used for packing and palletisation of the finished product. It includes:
 - Primary packing (PET, glass) and pack labelling (brand label, customer label, etc.).
 - Secondary packing (cardboard box, plastic crate, etc.).
 - Palletisation (pallet formation, strapping, placement of corner guards and shrink wrapping).
- **Business and financial costs:** this includes the following cost headings:
 - Marketing: this covers business and sales management, marketing and promotion, R&D and innovation, and other marketing costs
 - Administrative, financial and other: this covers financial costs, insurance, taxes and charges and other administrative and financial expenses.
- **Distribution logistics:** this is the cost of dispatching the product from the packing plant to the distribution platform or directly to the store (in some cases).



DISTRIBUTION

- **Warehouse delivery logistics:** in some cases haulage costs from the packing plant to the distribution platform are borne by the latter.
- **Storage:** this is the cost of the logistics distribution platform. Basically it comprises the following three main headings:
 - **Labour:** this is the cost of the operating staff responsible for the distribution platform logistics: reception of incoming goods from suppliers, warehouse placement, order picking and preparation for stores.
 - **Overheads:** this comprises the rest of the fixed costs of the platform: infrastructure (rental/depreciation facilities, machinery), supplies (electricity, telephone, water, etc.), insurance, outside services, indirect labour (managerial and office staff), etc.
 - **Spoilage:** this is the cost of deteriorated product that has to be discarded.
- **Store delivery logistics:** this is the cost of the short-distance transportation of orders from the distribution platform to the different points of sale and is characterised by the following:
It is usually organised according to delivery routes. The reference unit is not the pallet, which is the case for long distances, but the crate, because the orders are smaller. Haulage may belong to the platform or be contracted.
- **Store cost (self service):** this basically comprises the following main cost headings:
 - **Labour:** this is the cost of store sales assistance and shelf refiller staff.
 - **Specific store overheads:** supplies, charges, rentals, etc.
 - **Store spoilage:** this is the cost of product that is spoiled/not sold (owing to expiry, visual appearance, etc.) in the shop. A high percentage of these costs is passed on to the providers.
 - **Central services:** this is the cost of the central services of the distributor which are charged (passed on) to the points of sale.



Observatorio
de Precios de los
Alimentos
MARM



Study carried out by

THE OLIVE OIL AGENCY



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