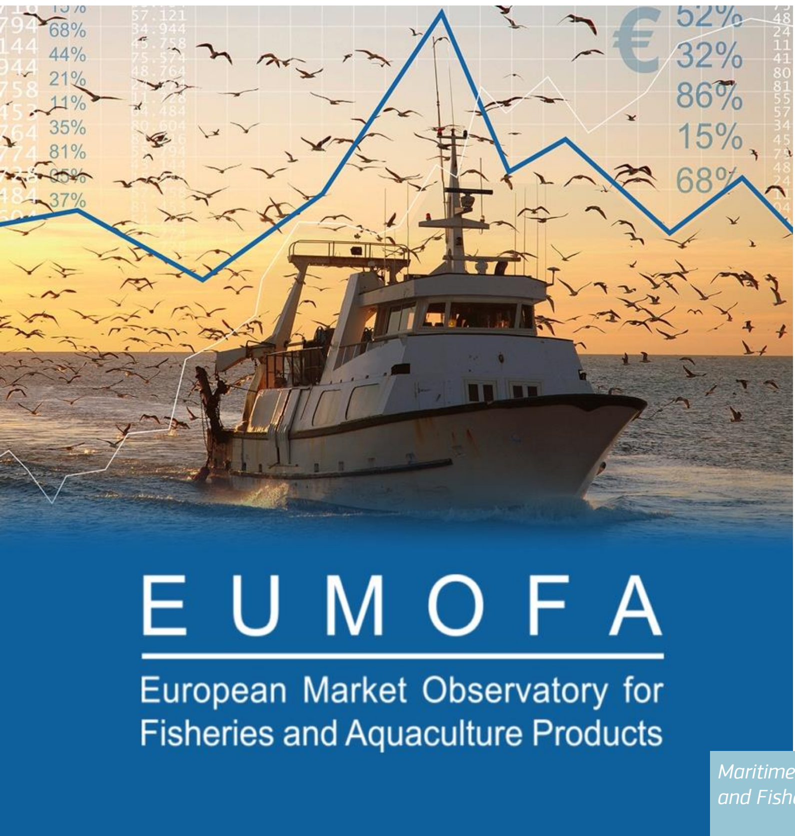
European Commission

CASE STUDY

OCTOPUS IN THE EU

PRICE STRUCTURE IN THE SUPPLY CHAIN

FOCUS ON ITALY, SPAIN AND GREECE



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Summary

World catches of octopus reached 405.773 tonnes in 2017 (source FAO). The main world producers are China, Morocco, Mauritania, Japan and the EU28, accounting for 76% of world production of this species.

While world production of octopus increased from 2008 to 2017 (+12%), EU production decreased (-40%). In 2017, EU28 catches were 27.872 tonnes and accounted for 7% of world catches.

The main EU producing countries are Italy, Spain, Portugal and Greece. These Member States accounted for 90% of EU28 catches of octopus in 2017.

The EU28 is a large importer of octopus (103.909 tonnes imported in 2018, mainly from Morocco and Mauritania). Spain and Italy are the main importers from third countries, mainly receiving frozen octopus.

Exports from the EU28 are limited. They reached 12.862 tonnes in 2018, mainly exported by Spain. The US is the most important country of destination.

In the EU, estimated apparent consumption of octopus in 2017 was higher in Italy, Spain, Portugal, Greece and France. Fresh octopus accounts for a limited share of octopus consumption, and it mainly relies on national catches. However, there are large volumes of frozen octopus imported, which may be retailed thawed.

We propose a set of price transmission analyses:

- Italy:
    - Fresh octopus produced in Italy retailed in Milan: in June 2019, the price surveyed at first sale stage was 7,07 EUR/kg, while the retail price was 19,42 EUR/kg;
    - Thawed octopus (imported) retailed in Milan: in June 2019, import price from Morocco was 8,56 EUR/kg and retail price was 17,99 EUR/kg.
- Spain:
    - Frozen medium octopus landed fresh in Spain and sold frozen in the Spanish supermarkets: in 2018, first-sale price was 6,30 EUR/kg (fresh product) and retail price was 13,50 EUR/kg (frozen product);
    - Cooked and chilled octopus imported from Morocco and sold in the Spanish supermarkets: in 2018, import price was 10,05 EUR/kg and retail price was 30,00 EUR/kg.
- Greece:
    - Fresh octopus produced and sold in Greece: in June 2019, prices were 7,50 EUR/kg (at first sale stage) and 15,66 EUR/kg (at retail stage).

List of acronyms

Acronym	**Full name**
CN	Combined Nomenclature
ELSTAT	Hellenic Statistical Authority
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
MAPA	Ministerio de Agricultura,Pesca y Alimentación
MIPAAF	Ministero delle Politiche Agricole Alimentari e Forestali
MSC	Marine Stewardship Council
VAT	Value Added Tax
ERS	Electronic Recording and Reporting System

0 INTRODUCTION

0.1 Scope

Product	Origin	Characteristics	Main Member States (focus)	Market and price drivers
Fresh / thawed / cooked octopus	Catches Import	Fresh product / thawed raw or cooked products Competition with frozen and processed products	Greece, Italy, Spain	Supply/demand balance (stability of the market)

0.2 Content of the document

In conformity with the methodology developed within the EUMOFA project and published on its website (http://www.eumofa.eu/price-structure), this document includes:

- A description of the product;
- An analysis of production and market trends at EU level;
- An analysis of the price structure along the supply chain in Greece, Italy and Spain.

1 DESCRIPTION OF THE PRODUCTS

1.1 Biological and commercial characteristics

The case study focuses on fresh, thawed and cooked octopus products.

Name: Common octopus (*Octopus vulgaris*) – producers: Mauritania, Morocco, Mexico, Senegal, Portugal, Spain, Tunisia, Greece, Italy and France.

FAO 3-alpha code: OCC

Presentation: Fresh whole, tentacles

Commercial size: from 300 grams to more than 4 kg.

Other main species:

- Mexican octopus (*Octopus maya - OQY*) - producers: Mexico;
- Horned octopus (*Eledone cirrosa - EOI*) - producers: Italy, Spain, Portugal;
- Musky octopus (*Eledone moschata - EDT*) - producers: Italy.

Related codes in the product nomenclature (Eurostat-COMEXT)

Octopus (*Octopus spp.*):

- 03 07 51 00: live, fresh or chilled
- 03 07 52 00: frozen (03 07 59 10 - before 2017)
- 03 07 59 00: smoked, dried, salted or in brine (03 07 59 90: smoked, even cooked but not otherwise prepared - before 2017)

Prepared or preserved octopus

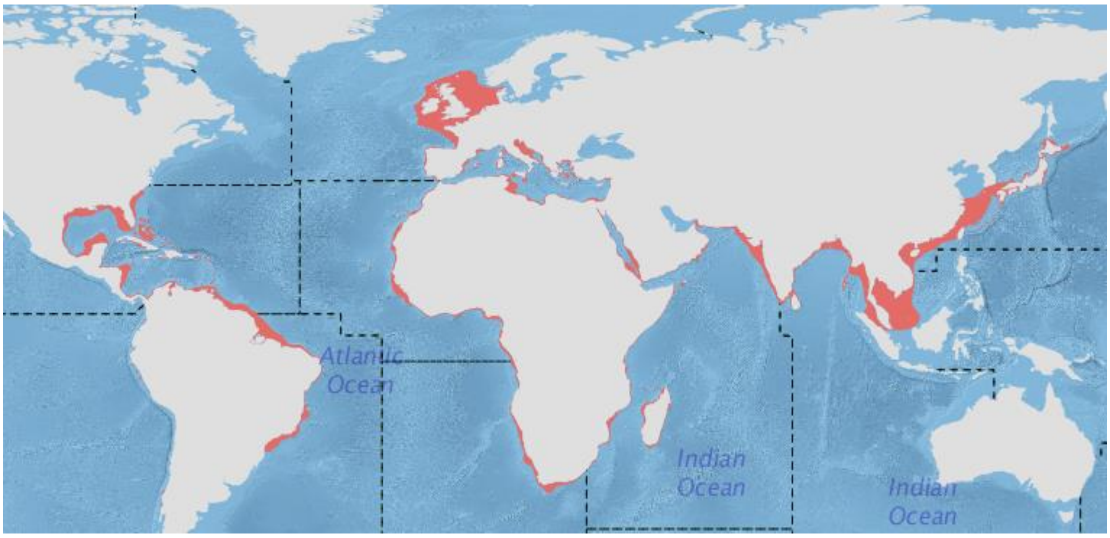
- 16 05 55 00: prepared or preserved (excl. smoked).

Biological parameters

Parameter	Characteristics
Temperature	It is inactive in waters of 7°C and colder. Throughout its distribution range, this species is known to undertake limited seasonal migrations, usually overwintering in deeper waters and occurring in shallower waters during summer.
Habitat	*Octopus vulgaris* is a benthic species occurring from the coastline to the outer edge of the continental shelf (in depths from 0 to 200 m). It is located in different habitats: rocks, coral reefs and grass beds.
Diet in the wild	Bivalves and crustaceans.
Juvenile phase	There are two spawning peaks per year. In the Mediterranean, they occur in April/May and in October, the spring one being the most important. In West Africa, the first spawning peak occurs in May/June and the second (more important) in September. Females deposit eggs in strings in crevices or holes, usually in shallow waters. Spawning may extend up to one month. The brooding period lasts 25 to 65 days. The hatchlings are pelagic: they move to benthic life after about 40 days when their size is approximately 12 mm.
Grow-out	In the western Mediterranean, it grows from 3 to about 20 cm in 17 months.
Distribution in the wild	The distribution of *Octopus vulgaris* is worldwide, in temperate and tropical waters (see map below). There are limited seasonal migrations. Usually, it is located in deeper waters during winter and in shallower waters during summer.
Catches	Several gears may be used for octopus fishery: pots, traps, hooks and lines, otter trawls and spears.

Source: FAO

Figure 1: World distribution of *Octopus vulgaris*



Source: FAO

1.2 World production

1.2.1 Evolution of catches

World catches of octopus reached 405.773 tonnes in 2017, which were 12% higher than in 2008. In particular, catches of *Octopus vulgaris* declined from peaks in the early seventies (up to 109.000 tonnes) to 35.000 to 40.000 tonnes in recent years (FAO). Nonetheless, these figures do not include the production of Morocco and Mauritania, whose catches of *Octopus vulgaris* are included in "octopuses, etc., nei".

The following table provides the details of catches of octopus species between 2008 and 2017. Common octopus accounts for 9% to 12% of total catches, depending on the year. However, as mentioned before, it is estimated that a large share of "Octopuses, etc. nei" is Common octopus.

Table 1 – World production of octopus (in tonnes)

Year	Total octopus	Common octopus	Octopus maya	Horned and musky octopus	Octopuses, etc. nei
2008	362.188	33.551	2.396	7.879	318.362
2009	373.874	40.716	6.879	8.518	317.761
2010	349.088	41.593	5.713	7.297	294.485
2011	345.647	40.340	9.339	6.385	289.583
2012	340.484	40.682	12.629	5.273	281.900
2013	360.511	42.184	8.806	6.594	302.927
2014	354.684	43.333	15.403	6.886	289.062
2015	400.536	34.186	23.441	6.625	336.284
2016	397.712	35.930	25.722	5.851	330.209
2017	405.773	38.447	26.020	6.980	334.326

Source: FAO

In 2017, catches of octopuses of Morocco and Mauritania amounted to 53.000 tonnes and 39.000 tonnes respectively[1]. Lower octopus quotas in Morocco 2018-2019 and the stepping up of the fight against illegal fishing and octopus smuggling is expected to lead to a tighter supply situation and rising prices.

[1] Source: FAO

1.2.2 Catches by main producing countries

The largest world producers are China, Morocco, Mexico, Mauritania, Japan and the EU28; they accounted for 76% of world production of octopus.

Catches in China ranged between 110.835 to 130.245 tonnes between 2008 and 2017: the peak was registered in 2015 and lowest point in 2017. Nonetheless, in 2017 China accounted for almost 30% of world production.

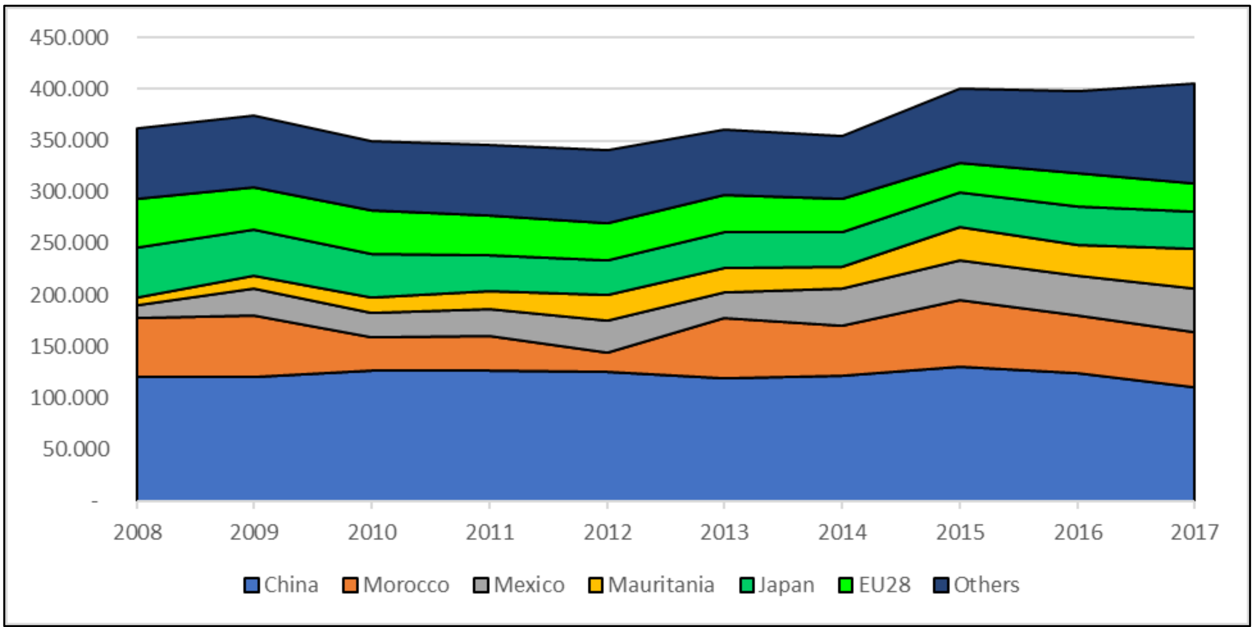
Morocco was the second producing country in 2017, with 52.969 tonnes (13% of world production). There has been large variation of the Moroccan catches since 2008, with volumes under 35.000 tonnes between 2010 and 2012 and over 50.000 tonnes during 2015-2017.

Catches in Mexico and Mauritania largely increased between 2008 and 2017: three times higher for Mexico and five times higher for Mauritania. The catches were about 40.000 tonnes in each country in 2017, accounting for 10% of world catches each.

Catches in Japan decreased from 2008 to 2017, from 48.821 tonnes to 35.500 tonnes; the country accounted for 9% of world catches in 2017.

In the EU, catches decreased in the same period (-40%, from 46.643 tonnes to 27.872 tonnes). The share of the EU in world catches of octopus decreased as well over the decade, reaching 7% in 2017.

Figure 2 – World production of octopus by main producing countries (tonnes) 2008-2017



Source: FAO

2 STRUCTURE OF THE EU MARKET

2.1 Production in main Member States

Four Member States provide 90% of the total EU production of octopus: Italy (8.227 tonnes in 2017), Spain (7.624 tonnes), Portugal (5.970 tonnes) and Greece (3.159 tonnes). Common octopus represented 59% of the total EU production of octopuses in 2017. EU catches of these species decreased by 32% between 2009 and 2017. As for common octopus, production decreased less rapidly (-22% between 2009 and 2017) than the rest of octopus species (-42%).

Table 2 - Evolution of EU production of octopus by main species (in tonnes)

Species	ERS code	2009	2010	2011	2012	2013	2014	2015	2016	2017
Common octopus	OCC	21.230	22.525	20.524	19.239	24.318	20.925	17.663	22.476	16.464
Horned octopus	EOI	187	270	152	136	855	593	2.609	2.215	2.780
Musky octopus	EDT	-	-	-	-	-	-	2.818	2.669	3.290
Horned and musky octopuses	OCM	7.682	6.305	5.643	4.561	5.025	5.485	510	383	374
Octopuses, nei	OCT	11.857	13.283	12.829	12.287	6.837	4.801	5.140	4.683	4.975
Total octopodidae		**40.956**	**42.383**	**39.148**	**36.223**	**37.035**	**31.804**	**28.740**	**32.426**	**27.883**

Source: FAO

As specifically concerns common octopus, the main producing Member States in 2017 were Portugal (5.776 tonnes), Spain (3.531 tonnes), Greece (2.741 tonnes), Italy (2.672 tonnes) and France (1.609 tonnes).

Table 3 - Evolution of EU production of common octopus by main producing Member State (in tonnes)

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Croatia	146	141	149	166	192	313	331	257	135
Spain	6.752	4.759	5.317	3.536	6.231	3.914	4.073	5.311	3.531
France	1.191	1.621	1.644	1.629	1.890	1.531	1.390	1.559	1.609
Greece	1.580	1.487	1.426	1.301	1.705	1.835	1.646	3.316	2.741
Italy	4.841	4.063	4.789	3.336	2.787	2.387	2.680	2.370	2.672
Portugal	6.720	10.454	7.199	9.271	11.513	10.945	7.543	9.663	5.776
Other MS	0	0	0	0	0	0	0	0	0
Total EU	**21.230**	**22.525**	**20.524**	**19.239**	**24.318**	**20.925**	**17.663**	**22.476**	**16.464**

Source: FAO

2.2 Import - Export

Both extra-EU imports and extra-EU exports of octopus products were two times higher in 2018 compared to 2012 (in value). It is worth emphasising that nominal values are analysed, so the increase could also be partially explained by inflation. Imports were highly larger than exports, respectively EUR 1 billion and EUR 145 million in 2018.

Extra-EU imports

Extra-EU imports of octopus reached EUR 1 billion in 2018 for 104.909 tonnes. They were almost exclusively frozen products (99,1% of value), as prepared products accounted for 0,7%, fresh for 0,1% and smoked, salted or in brine for another 0,1%.

The main countries of origin are Morocco and Mauritania. These two countries accounted for 66% of import value and 51% of import volume in 2018. Other origins were Mexico, Senegal and Indonesia. Those three countries accounted for 20% of the import value and 27% of import volume.

Spain is the main importer (58% of the value in 2018, EUR 583 million), followed by Italy (29%, EUR 287 million).

While the value of imports from 2012 to 2018 increased by 128%, the volume has only increased by 34%. This is related to a significant increase of price: from 5,62 EUR/kg in 2012 to 9,56 EUR/kg in 2018. This price increase is mostly due to the combination of reduced supplies and increasing demand in some countries, especially the USA and Japan, but also in Spain[2].

Extra-EU exports

Extra EU exports of octopus products reached EUR 145 million and 12.862 tonnes in 2018. While value has grown by 122%, volume has grown by 35%. As for extra-EU imports, this is linked to a high increase of price resulting from the increase of demand in a context of reduction of catches: 6,85 EUR/kg in 2012 compared to 11,25 EUR/kg in 2018.

Most of the products exported were frozen (81% of the total value in 2018), followed by prepared octopus (13% of the value), smoked octopus (4%) and fresh octopus (1%).

Spain is the main exporter (79% of extra-EU trade of octopus was from Spain in 2018). The main destination was the United States: EUR 84 million and 7.434 tonnes (58% of extra-EU trade from EU Member States of octopus products in 2018, both in volume and value).

[2] Source: http://www.fao.org/in-action/globefish/market-reports/cephalopods/en/

2.3 Apparent consumption

The following tables present the supply balances and estimated apparent consumption in the main EU Member States[3] and in the EU28 as a whole. These are calculated for **all octopus products** and for **fresh octopus** only.

All octopus products

EU catches of octopus were 27.872 tonnes in 2017. As 129.196 tonnes live weight equivalent (lwe)[4] were imported, the EU total supply was 157.068 tonnes lwe. A limited share of this supply was exported (11%, 16.953 tonnes lwe) so the apparent consumption at EU level in 2017 can be estimated at 140.115 tonnes lwe.

The main market for octopus was Italy with an apparent consumption of 71.905 tonnes lwe, followed by Spain (31.355 tonnes lwe), Portugal (15.487 tonnes lwe) and Greece (9.275 tonnes lwe). Italy, Spain and Portugal are large importers (between 25.000 and 75.000 tonnes lwe in 2017). While Spain and Portugal are also great exporters (between 15.000 tonnes lwe and 51.000 tonnes lwe exported), exports from Italy are limited.

Table 4 – Supply balances for all octopus products in the EU28 in 2017 (volumes in tonnes live weight equivalent)

	Catches	Import	Total supply (catches + imports)	Export	Apparent consumption (total supply – export)
IT	8.227	68.395	76.622	4.717	71.905
ES	7.624	74.660	82.284	50.928	31.355
PT	5.970	25.204	31.174	15.687	15.487
GR	3.159	7.122	10.281	1.006	9.275
FR	1.850	5.463	7.313	1.060	6.253
DE	0	3.865	3.865	472	3.393
UK	378	1.869	2.247	189	2.059
CY	24	1.310	1.334	0	1.334
HR	497	611	1.108	93	1.015
NL	1	1.670	1.671	1.186	486
PL	0	426	426	8	418
SI	12	473	485	123	362
MT	29	318	347	0	347
RO	0	297	297	3	294
AT	0	357	357	92	266
BE	101	1.714	1.815	1.573	242
CZ	0	287	287	47	240
LU	0	213	213	5	208
BG	0	216	216	70	147
EU28	**27.872**	**129.196**	**157.068**	**16.953**	**140.115**

Sources: FAO for catches and EUMOFA elaboration of Eurostat-COMEXT data for import-export

[3] Data are provided at MS level only for those 19 countries with an estimated apparent consumption of octopus above 100 tonnes (lwe).

[4] Live weight equivalent is calculated based on conversion factors: 1.23 for fresh octopus, 1.28 for frozen and smoked octopus, 1.36 for prepared octopus. Details on these conversion factors are provided in EUMOFA metadata: https://www.eumofa.eu/documents/20178/24415/Metadata+2+-+DM+-+Annex+7+CF+per+CN8_%252707-%252714.pdf/7e98ac0c-a8cc-4223-9114-af64ab670532

Fresh octopus

If we consider fresh octopus only, the apparent consumption at EU level was estimated at 27.910 tonnes lwe in 2017 (20% of apparent consumption for all octopus products). Extra-EU trade is very limited for fresh products (96 tonnes lwe imported and 58 tonnes lwe exported in 2017), and the supply almost exclusively relies on EU catches (99% of apparent consumption is based on EU catches). The main markets for fresh products are Italy, Spain, Portugal, Greece and France. These Member States accounted for 98% of EU apparent consumption for fresh octopus (Italy and Spain being the main markets, accounting for 68% of the total).

Table 5 – Apparent consumption for fresh octopus in the EU28 in 2017 (volumes in tonnes live weight equivalent)

	Catches	Import	Total supply (catches + imports)	Export	Apparent consumption (total supply – export)
IT	8.227	4.071	12.298	307	11.991
ES	7.624	2.231	9.855	4.111	5.744
PT	5.970	1.043	7.013	2.274	4.739
GR	3.159	82	3.241	14	3.227
FR	1.850	547	2.397	650	1.747
DE	0	808	808	31	777
HR	497	48	545	33	511
UK	378	3	381	86	295
BE	101	182	283	94	189
RO	0	104	104	1	103
SI	12	53	65	7	58
CY	24	15	39	0	39
MT	29	0	29	0	29
AT	0	23	23	0	22
BG	0	30	30	10	20
EU28	**27.872**	**96**	**27.968**	**58**	**27.910**

Sources: FAO for catches and EUMOFA elaboration of Eurostat-COMEXT data for import-export

3 THE ITALIAN MARKET

3.1 Structure of the supply chain for fresh octopus in Italy

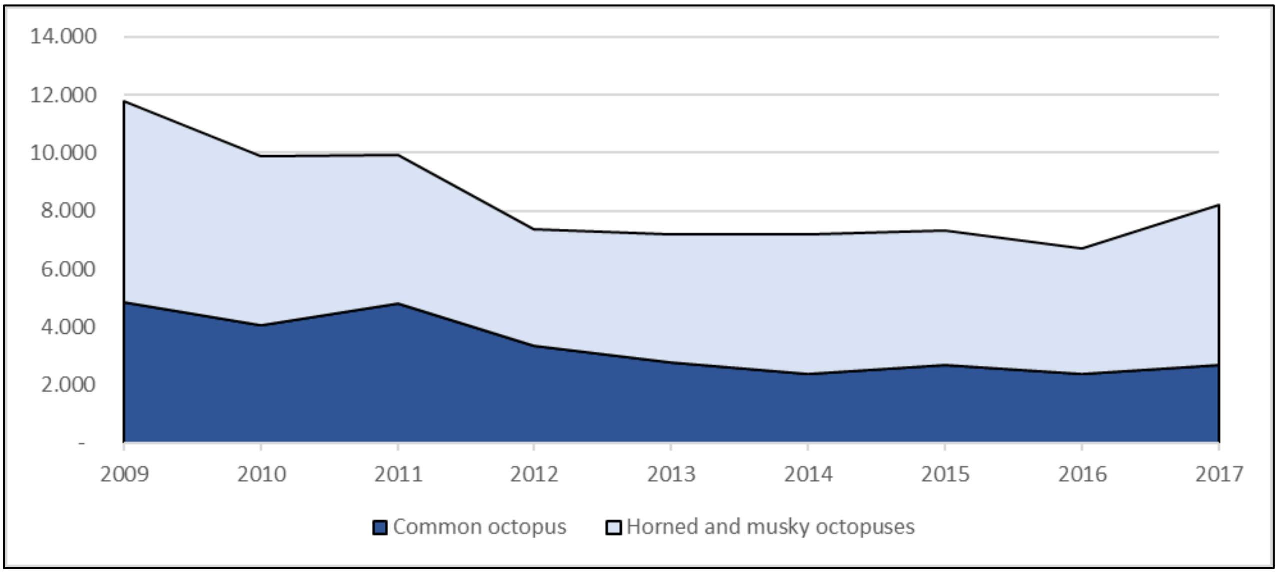
Production

Total landings of octopus ranged from 7.000 and 10.000 tonnes between 2010 and 2017. In 2017, they amounted to 8.227 tonnes.

Italian production of common octopus (*Octopus vulgaris*) decreased over the last years, from almost 5.000 tonnes in 2009 to about 2.500 tonnes in the most recent years (2.672 tonnes in 2017).

Common octopus accounted for 41% of the total Italian octopus catches in 2009 and for 32% in 2017.

Figure 3 - Evolution of catches of octopus in Italy



Source: FAO

First sales of common octopus occur in all areas in Italy. In 2018, the main locations for first sales were Manfredonia (Puglia), Lampedusa (Sicily), Cagliari (Sardinia), Sant'Antioco (Sardinia) and Anzio (Latium).

Import – Export

Frozen products account for 90% of imported value and volume. Other products imported are live / fresh / chilled octopus (5% of imported value and volume), smoked / dried / salted or in brine octopus (3% of imported value and volume) or prepared / preserved octopus (2% of imported value and volume).

Table 6 – Italian imports of octopus in 2018

	Volumes (Tonnes product weight)	Volumes (Tonnes live weight equivalent)	Value (1.000 EUR)
Live / fresh / chilled	2.803	3.447	22.630
Frozen	49.410	63.245	388.608
Smoked, dried, salted or in brine	1.551	1.985	11.750
Prepared / preserved	857	1.166	9.128
Total	**54.621**	**69.843**	**432.115**

Source: EUMOFA elaboration of Eurostat-COMEXT data

Total imports increased between 2012 and 2018. This is mainly related to increase of frozen products from Spain, Indonesia, Morocco and Mexico (+6.063 tonnes between 2012 and 2018) while imports of fresh products have slightly decreased (-1.152 tonnes). We also observe an increase of smoked, dried, salted and in brine (+1.019 tonnes) while imports for prepared products remained stable.

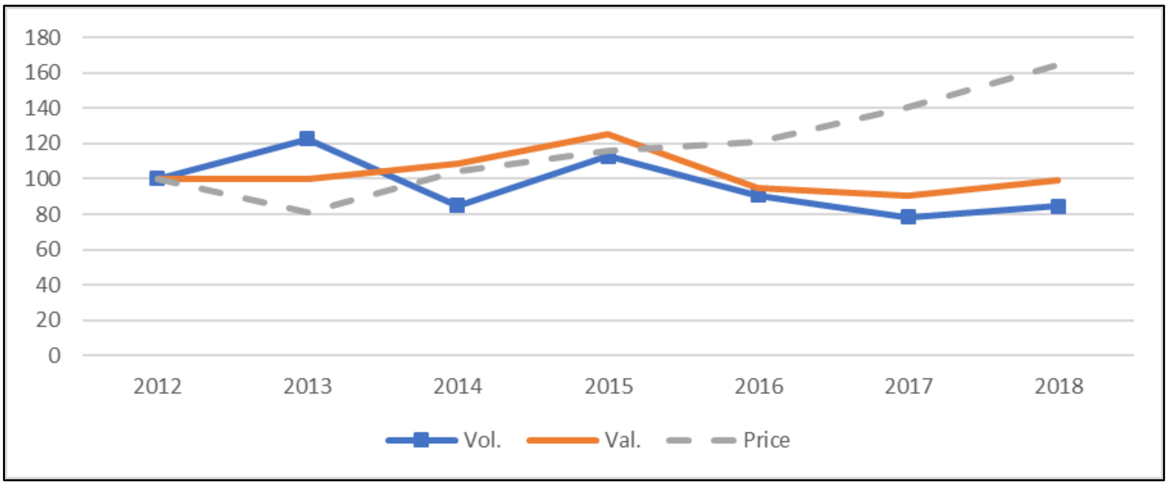
Table 7 – Italian imports of octopus (tonnes, product weight)

Year	Live / fresh / chilled	Frozen	Smoked, dried, salted or in brine	Prepared / preserved	Total
2012	3.955	43.347	532	969	**48.803**
2013	4.856	42.351	556	717	**48.480**
2014	4.120	46.266	601	1.029	**52.016**
2015	4.651	49.819	1.137	953	**56.560**
2016	4.220	53.707	1.142	1.245	**60.314**
2017	3.310	46.967	2.163	1.057	**53.497**
2018	2.803	49.410	1.551	857	**54.621**

Source: EUMOFA elaboration of Eurostat-COMEXT data

We observe a 65% increase of price for imports of fresh product from 2012 to 2018 (from 4,91 EUR/kg to 8,07 EUR/kg), while volume has decreased by 15%. All in all, the import value has remained relatively stable (-1%).

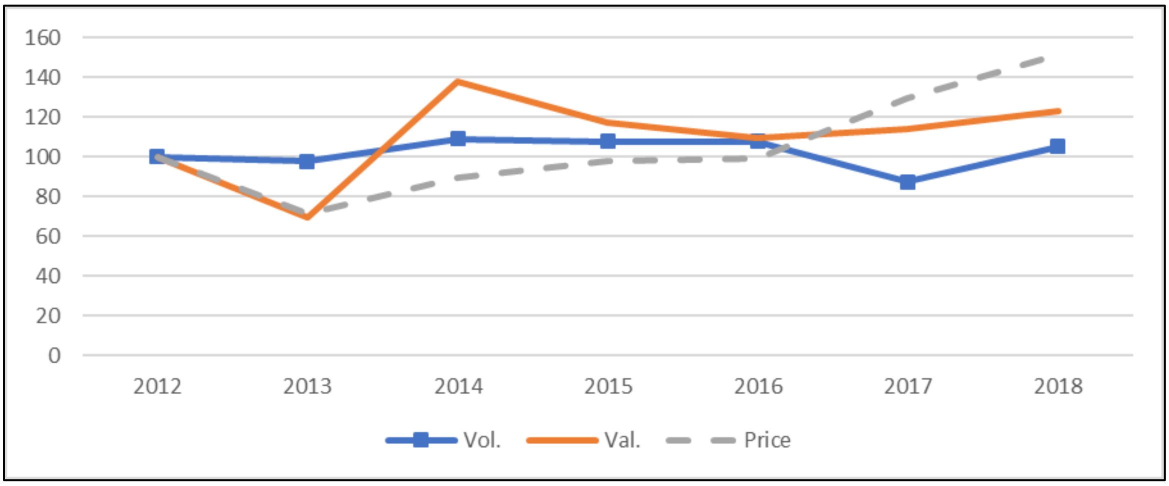
Figure 4 - Index evolution for Italian imports of fresh octopus (base 100 = 2012)



Source: EUMOFA elaboration of Eurostat-COMEXT data

We observe increasing imports of frozen product since 2012, both in term of volume (+5%), value (+23%) and price (+52%). The price was 7,86 EUR/kg in 2018 and 5,18 EUR/kg in 2012.

Figure 5 – Index evolution for Italian imports of frozen octopus (base 100 = 2012)

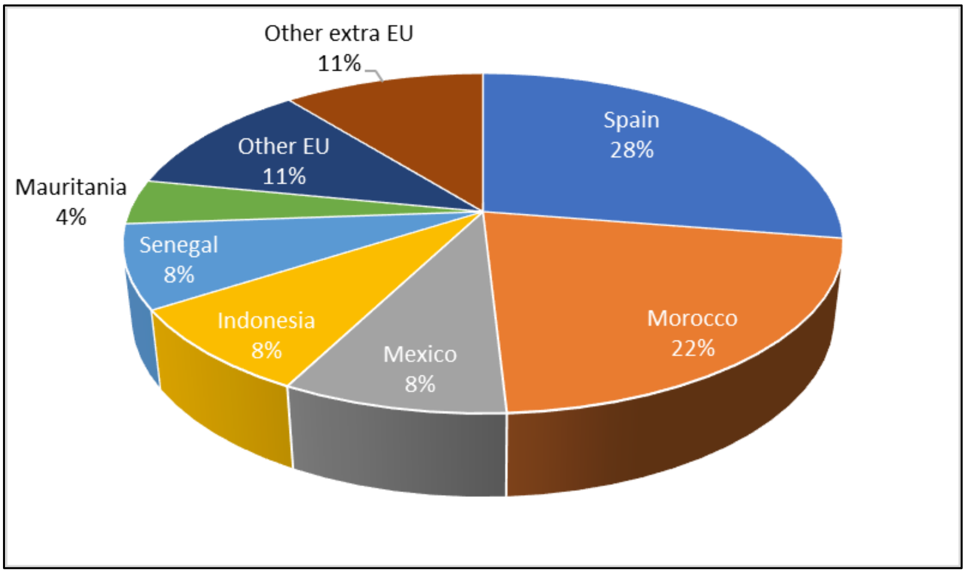


Source: EUMOFA elaboration of Eurostat-COMEXT data

Almost half of the value of octopus imports in Italy in 2018 came from Spain and Morocco. Other relevant countries of origin were Mexico (8%), Indonesia (8%), Senegal (8%), Mauritania (4%). The rest included both EU countries (11%) and non-EU countries (11%).

Regarding the imports of fresh products (5% of total value imported), Spain and France accounted for 90% of value imported (70% from Spain and 21% from France). Most of the imports from Spain were frozen products in 2018 (74% of value). Imports from Morocco consisted exclusively of frozen products.

Figure 6 – Breakdown of import in Italy by country of origin (in value, 2018)



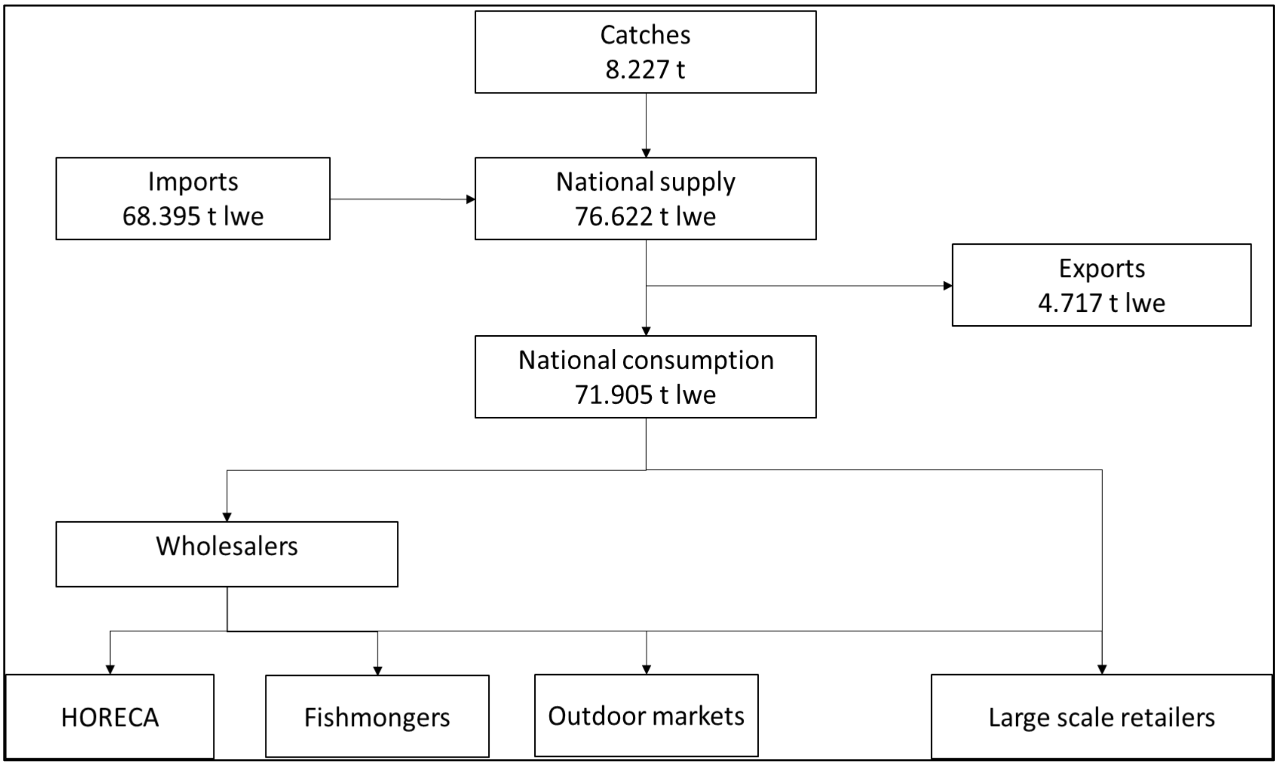
Source: EUMOFA elaboration of Eurostat-COMEXT data

Apparent consumption

The supply for octopus in Italy was 76.622 tonnes in 2017, 11% from national catches (8.227 tonnes lwe) and 89% from imports (68.395 tonnes lwe). Exports accounted for 4.717 tonnes lwe (6% of national supply). Fresh octopus accounted for 16% of the supply. Apparent consumption was therefore estimated at 71.905 tonnes lwe.

At national level, there are several channels for octopus consumption: outdoor markets, HORECA, specialised retailers / fishmongers and large-scale retailers.

Figure 7 – Octopus supply chain in Italy (data from 2017)



Sources: EUMOFA elaboration based on FAO data for catches, Comext data for trade

3.2 Characteristics of the Italian market and consumption patterns

Availability of Italian octopus is limited (11% of national supply is from national catches). Thus, Italian wholesalers and retailers use imported octopus (thawed). Fresh national octopus is considered as a small market and highly depends on the availability of the products. Among the different national origins, octopus from Sicily has a higher reputation than that from other origins (based on interviews with wholesalers in Milan).

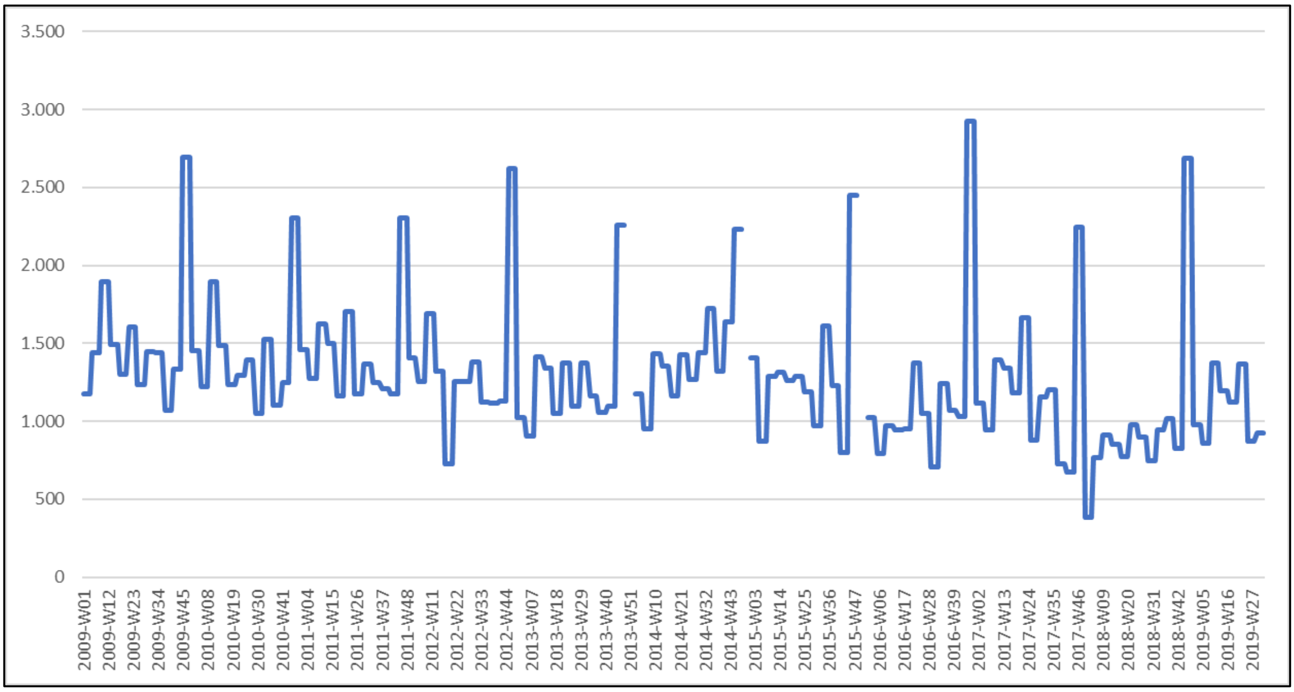
Based on stakeholder interviews, octopus frozen on board and frozen on land have different levels of quality. On board frozen octopus has higher quality and its price is 1,00 to 1,50 EUR/kg higher than that frozen on land.

In addition, octopus imported from Morocco is considered a high quality product. It is identifiable with its colour: grey and red and small suckers on tentacles.

At retail stage, at the fresh counter, fresh octopus from Italy is sold to consumers, as well as thawed octopus from imports. Data at retail stage of fresh octopus are available in EUMOFA as collected from Europanel, and refer to household consumption.

Octopus is traditionally consumed in Italy, with a peak at Christmas period. It is mostly consumed in salads or as main dish.

Figure 8 – Household consumption of fresh octopus in Italy between 2009 and 2019 (in kg)



Source: EUMOFA

3.3 Price transmission in the supply chain in Italy

3.3.1 First sale prices

First sale prices of octopus are available in EUMOFA database since October 2012, as collected from MIPAAF (Ministero delle Politiche Agricole, Alimentari e Forestali). They have been following an upward trend up to August 2019.

For common octopus, prices have increased over the last years: 6,16 EUR/kg in 2013 versus 7,55 EUR/kg in 2018.

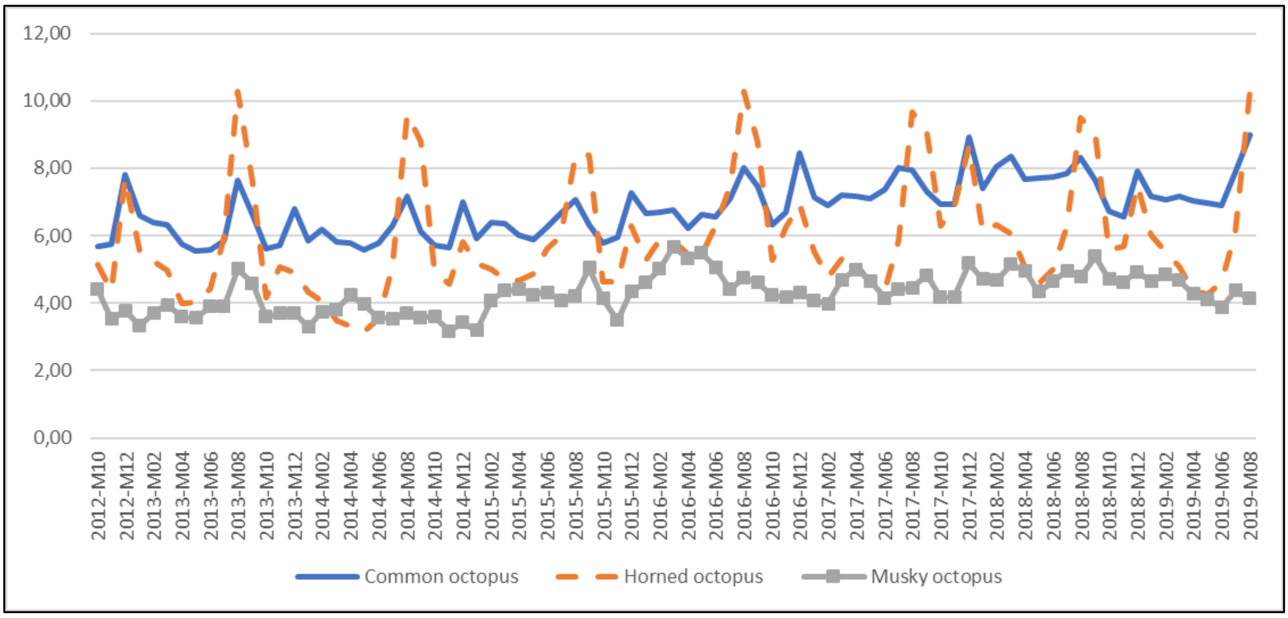
We observe a seasonality of prices with peaks in August (due to low level of volumes sold at first sales) and December (due to higher demand at Christmas period). During these peaks, prices were generally higher than 8,00 EUR/kg. The lowest prices are observed in October-November each year (between 6,00 and 7,00 EUR/kg between 2016 and 2018) and in spring (April to June, between 6,50 and 7,50 EUR/kg).

In the observed period, the highest price was registered in August 2019 at 9,01 EUR/kg, and the lowest in May 2013 at 5,55 EUR/kg.

Regarding horned octopus, average yearly price peaked in 2016 (6,26 EUR/kg) and remained under 6,00 EUR/kg since this period (5,38 EUR/kg in 2018). We observe large evolutions along the year with peaks in August each year (for instance 8,80 EUR/kg in August 2016) while volumes sold at first sale are lower. The lowest price was 3,15 EUR/kg in May 2014.

The price for musky octopus at first sale is lower than the price for other species of octopus: average yearly price between 3,59 EUR/kg and 4,79 EUR/kg. The price was 4,79 EUR/kg in 2018.

Figure 9 – First sales price of fresh octopus in Italy (EUR/kg)



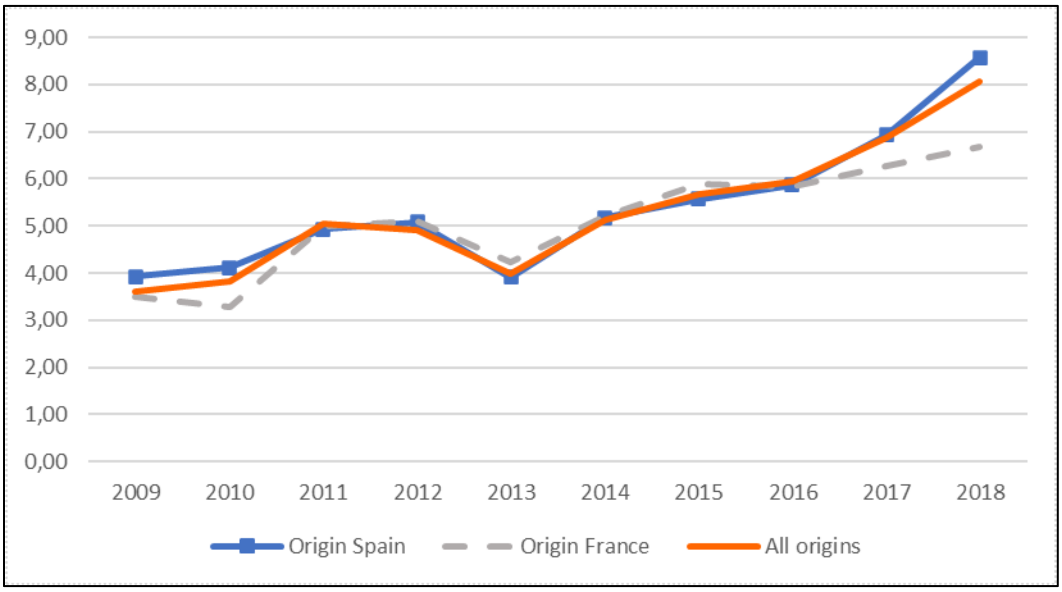
Source: EUMOFA

3.3.2 Import prices

Fresh octopus

The import price of fresh octopus has largely increased from 2009 to 2018, due to increased demand on the international market. It was 3,62 EUR/kg in 2009 and was more than two times higher in 2018, at 8,07 EUR/kg (+123%). The price increase has been constant except a drop in 2013, affected by a 20% increase in fresh octopus imports. The main Italian supplier is Spain (import price: 8,57 EUR/kg in 2018), followed by France (6,69 EUR/kg in 2018).

Figure 10 – Import prices of fresh octopus in Italy (EUR/kg)

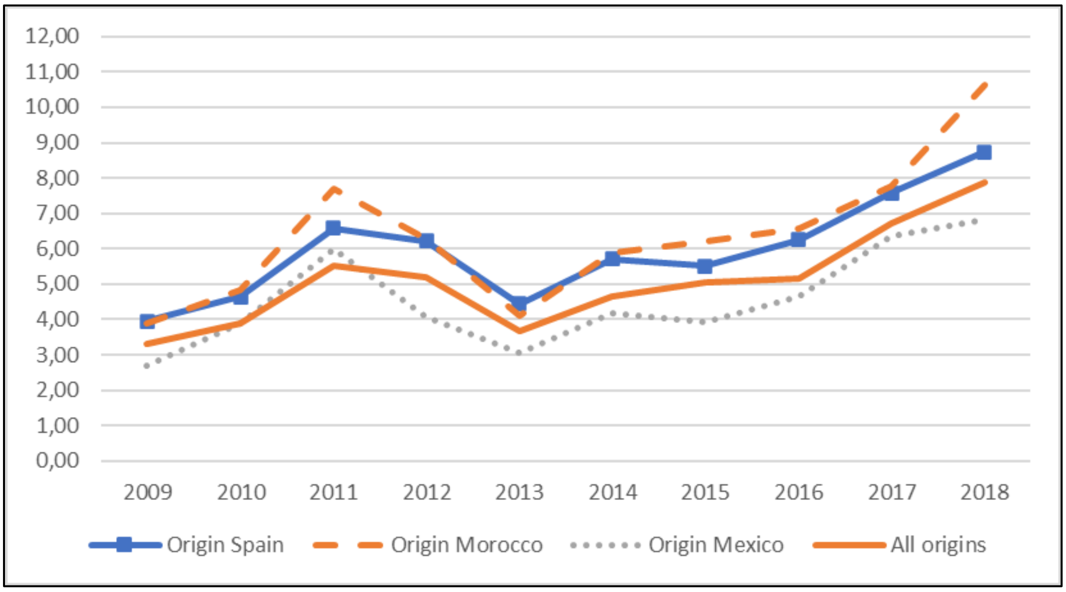


Source: EUMOFA elaboration of Eurostat-COMEXT data

Frozen octopus

The import price of frozen octopus followed a similar trend as fresh octopus one: large increase between 2009 and 2018 (+137%, 3,32 EUR/kg in 2009 vs 7,86 EUR/kg in 2018), except a drop in 2013 (3,69 EUR/kg). Main countries of origin are Spain (8,73 EUR/kg in 2018), Morocco (10,64 EUR/kg), Mexico (6,83 EUR/kg), Senegal (9,21 EUR/kg) and Indonesia (5,53 EUR/kg). The price from each origin has largely grown between 2009 and 2018, from +103% in Indonesia to +172% in Morocco.

Figure 11 - Import prices of frozen octopus in Italy (EUR/kg)



Source: EUMOFA elaboration of Eurostat-COMEXT data

3.3.3 Wholesale price

There are no public statistics for octopus prices at the wholesale stage in Italy. Prices reported in this document have been collected from operators in the Milan wholesale market.

Table 8 - Price of octopus, ex-wholesale stage (average January – June 2019)

Size	Weight (kg)	Price (EUR/kg)
3	2,0 - 3,0	11,60
4	1,5 – 2,0	11,30
5	1,2 – 1,5	10,50
6	0,8 – 1,2	9,50
7	0,5 - 0,8	8,20

Source: EUMOFA based on stakeholders' interview

3.3.4 Retail prices

Retail prices have been collected from three large-scale retailers in Milan in June 2019. We observe different prices for fresh and frozen products.

Prices ranges surveyed were the following:

- Fresh octopus at counter (common octopus - *Octopus vulgaris*):
    - from 14,90 EUR/kg to 17,00 EUR/kg for Italian octopus with no regional origin highlighted,
    - 17,90 EUR/kg for Italian octopus with specific regional origin (Sardinia).

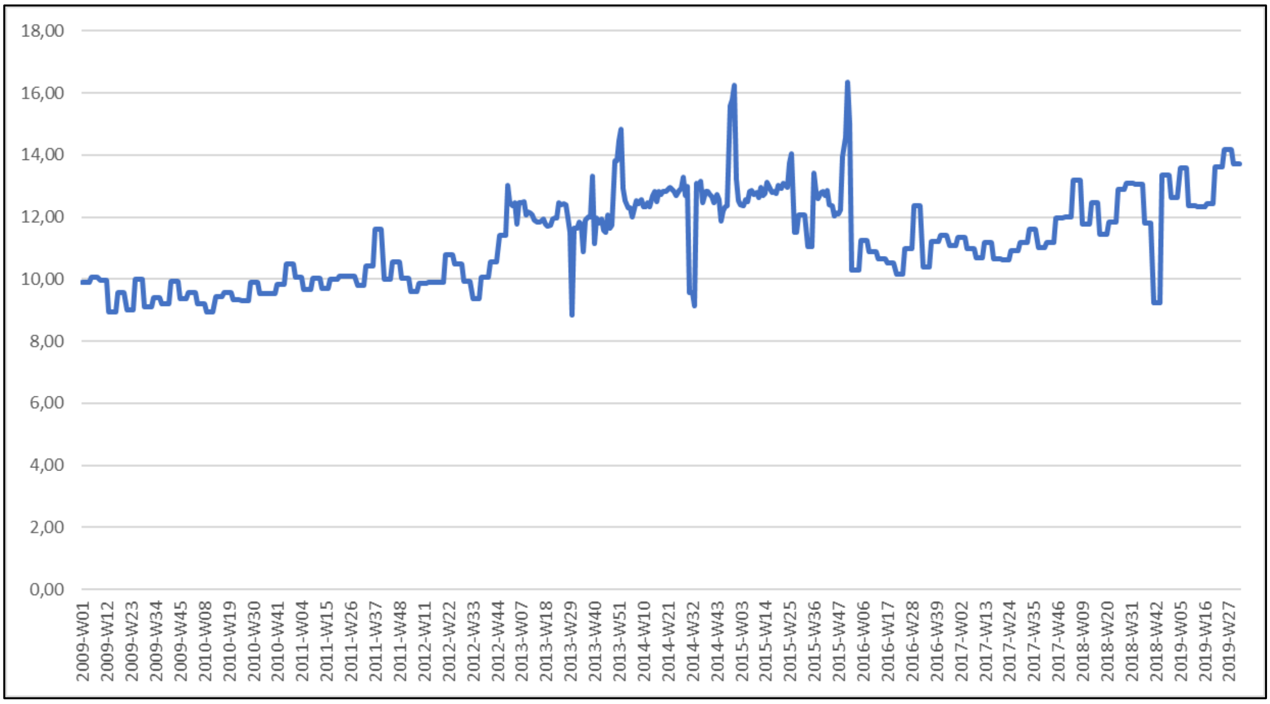
  To be noted that wholesalers interviewed indicated that octopus could be retailed between 25,00 to 32,00 EUR/kg in some large-scale retail shops.

- Thawed octopus at counter (*Octopus maya*): from 14,90 EUR/kg to 19,90 EUR/kg.

Prices in specialized shops (fishmongers) may be much higher. As observed in one shop surveyed, fresh common octopus from Italy was retailed at 32,90 EUR/kg in June 2019.

Data at the retail stage of fresh octopus are available in EUMOFA as collected from Europanel and refer to household consumption (this covers fresh octopus, loose and prepacked). The average price has increased over the last decade. It was 9,52 EUR/kg in 2009, increased until 13,00 EUR/kg in 2014-2015 (with peaks over 16,00 EUR/kg in December 2014 and 2015). Prices decreased in 2016 (the lowest point in May-June 2016 at 10,17 EUR/kg) and have been on an upward trend since 2017. In 2019, weekly prices ranged from 12,32 EUR/kg to 14,16 EUR/kg (average January-mid-August: 13,04 EUR/kg).

Figure 12 - Weekly prices of octopus in Italy between 2009 and 2019, EUR/kg



Source: EUMOFA

3.3.5 Price transmission

There are overlaps on the market between fresh and thawed octopus. Thus, we propose two price transmission analyses for Italy: one for fresh octopus from Italy; another for thawed octopus imported. Both are retailed loose at the fresh fish counter. Analyses are based on both statistics and qualitative interviews with stakeholders of the supply chain.

Fresh octopus

The analysis is based on fresh octopus fished in Italy and retailed in large-scale retail in Milan. The different stages before retail are the first sale (involving a wholesaler in the fishing area) and the wholesale (in Milan). The price at first sale is the average of those collected by EUMOFA from MIPAAF.

Table 9 – Costs and margins for fresh octopus in the large-scale retail (June 2019)

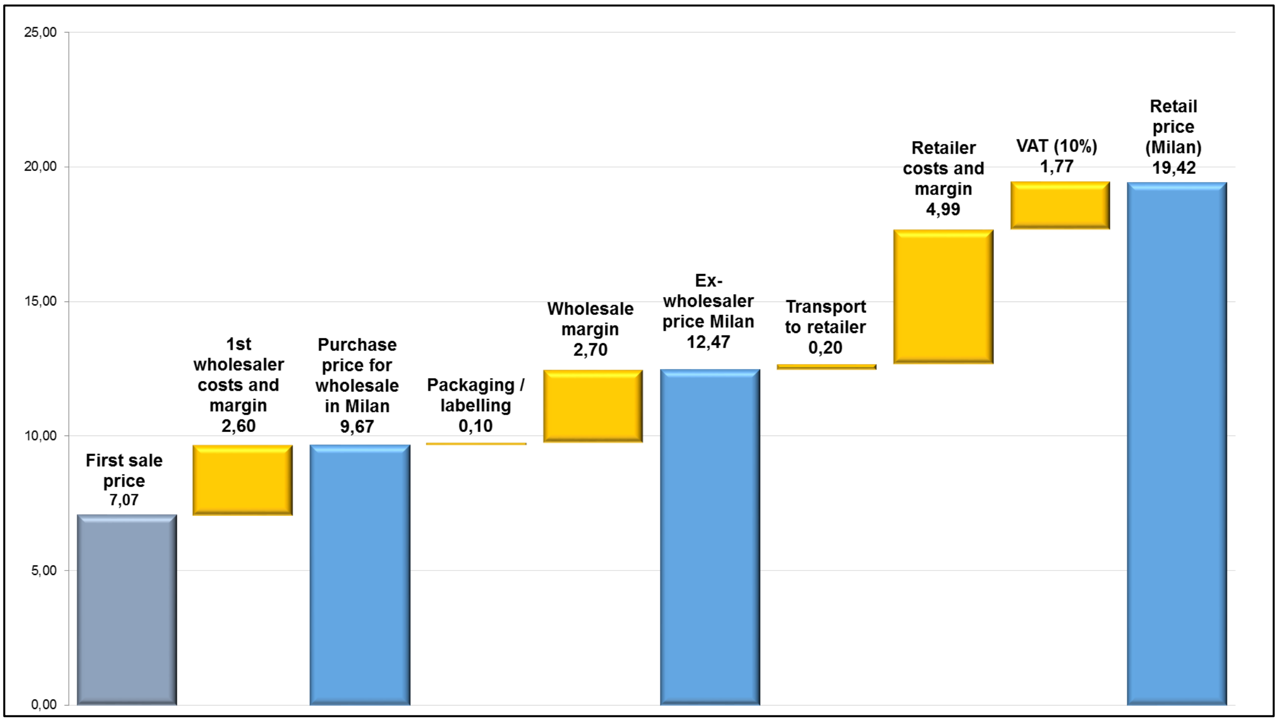
	Average price (EUR/kg)	% final price
First sale price at national level	**7,07**	**36%**
1st wholesaler costs and margin	2,40	12%
Transport to wholesaler in Milan	0,20	1%
Purchase price for wholesale in Milan	**9,67**	**50%**
Packaging / labelling	0,10	1%
Wholesale margin	2,70	14%
Ex-wholesaler price in Milan (sold to retailer)	**12,47**	**64%**
Transport to retailer	0,20	1%
Retailer costs and margin	4,99	26%
Retail price (Milano) - excl. VAT	**17,66**	**91%**
VAT (10%)	1,77	9%
Retail price in Milan	**19,42**	**100%**

Source: EUMOFA survey

The price of raw material cost is 7,07 EUR/kg and the final price for consumers is 19,42 EUR/kg (incl. VAT)[5]. The price of raw material accounts for 36% of the final price to consumer, costs and margin for wholesale in the fishing area for 13% (including transport to Milan), costs and margin for wholesale in Milan for 15%, retail costs and margin for 27%, and VAT for 9%.

[5] The price is different as the one reported by EUROPANEL in the previous section. This analysis covers fresh octopus, loose, in Milan area, while EUROPANEL covers loose and prepacked octopus at national level.

Figure 13 – Price transmission for fresh octopus sold in large-scale retail in Italy (June 2019), EUR/kg



Source: EUMOFA survey

Thawed octopus

The analysis is based on frozen octopus imported from Morocco, thawed by wholesaler in Italy and retailed through large-scale retailer in Milan. The price import price is collected from Eurostat-COMEXT.

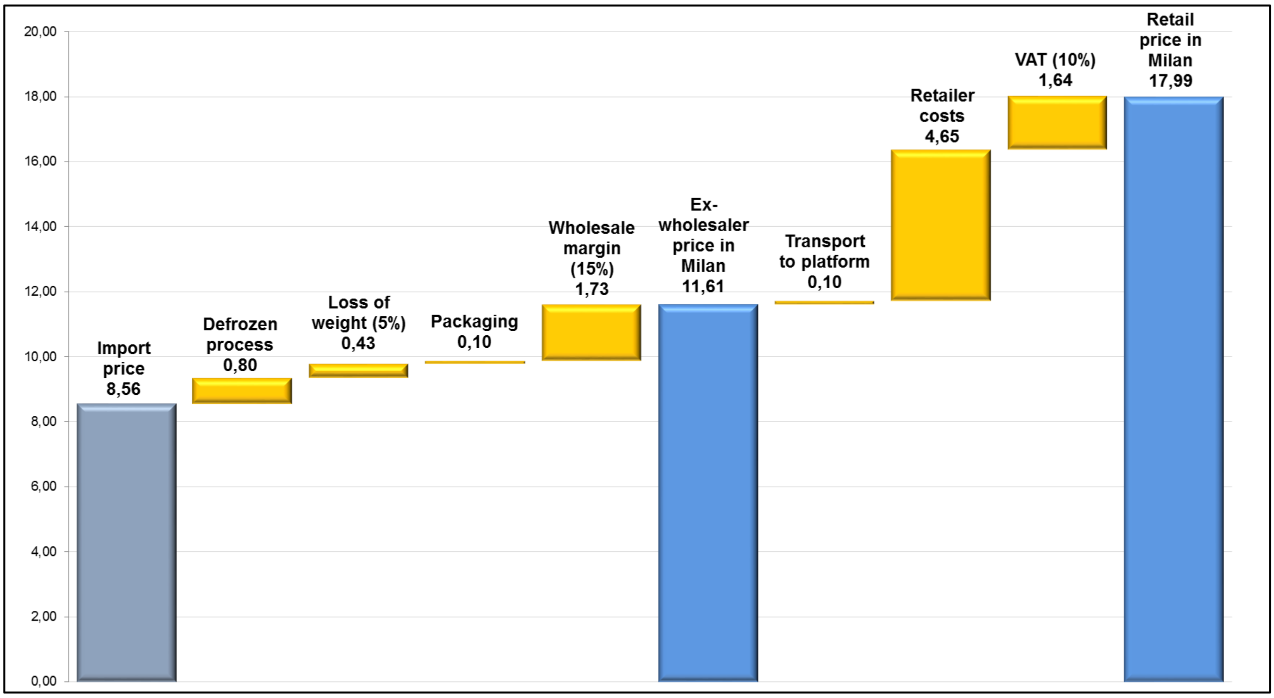
Table 10 – Costs and margins for thawed octopus in the large-scale retail (June 2019)

	Average price (EUR/kg)	% final price
Import price	**8,56**	**47,6%**
Thawing process	0,80	4,4%
Loss of weight (5%)	0,43	2,4%
Packaging	0,10	0,6%
Wholesale margin (15%)	1,73	9,6%
Ex-wholesaler price in Milan	**11,61**	**64,5%**
Transport to platform	0,10	0,6%
Retailer costs and margin	4,65	25,8%
Retail price in Milan - excl. VAT	**16,36**	**90,9%**
VAT (10%)	1,64	9,1%
Retail price in Milan	**17,99**	**100,0%**

Source: EUMOFA survey

The price of raw material cost is 8,56 EUR/kg and the final price for consumer is 17,99 EUR/kg (incl. VAT). The price of raw material accounts for 48% of the final price to consumer, costs and margin of wholesale in Milan for 17%, costs and margins at retail stage for 26% and VAT for 9%.

Figure 14 – Price transmission for thawed octopus sold in large-scale retail in Italy (June 2019), EUR/kg



Source: EUMOFA survey

4 THE SPANISH MARKET

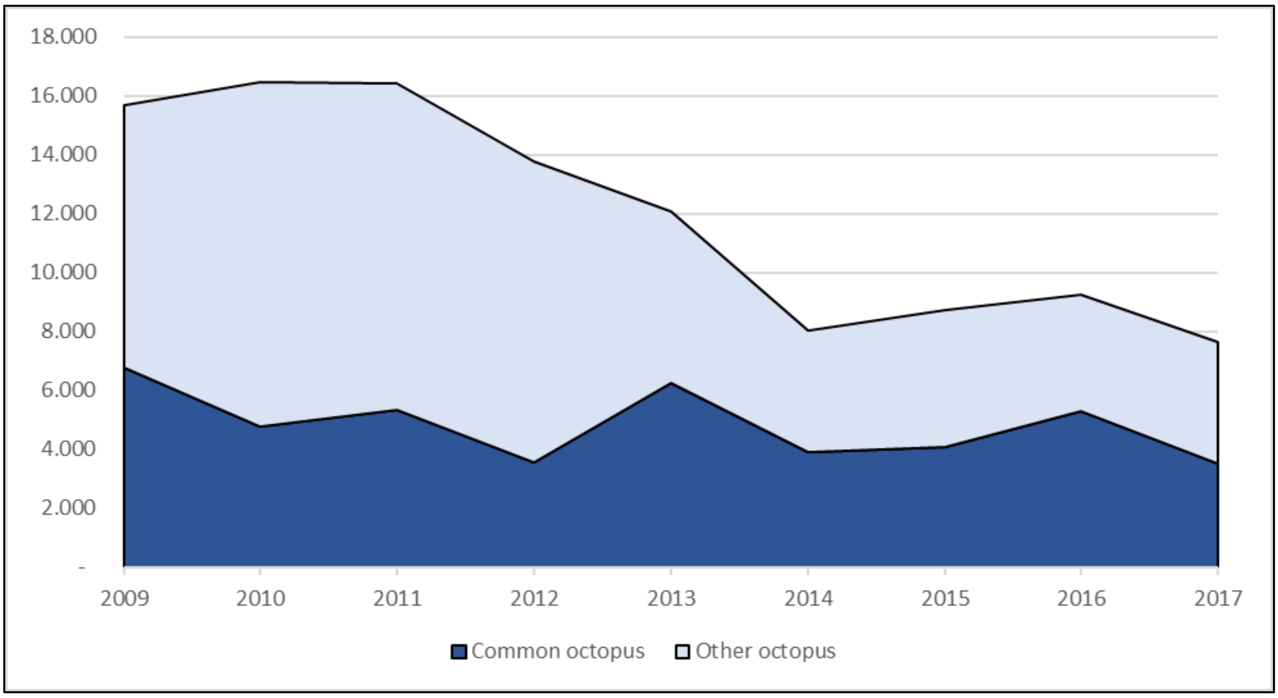
4.1 Structure of the supply chain for octopus in Spain

Production

Total catches of octopus ranged from 7.600 and 16.000 tonnes between 2010 and 2017, reaching 7.623 tonnes in 2017. We observe a strong decrease of "other octopus" between 2011 and 2013 with a 47% decrease (-5.262 tonnes).

Common octopus (*Octopus vulgaris*) accounted to almost half of the Spanish catches of octopus in 2017. Catches have decreased from 6.752 tonnes in 2009 to 3.531 tonnes in 2017. However, we can observe strong inter-annual variations, as volume of catches was over 5.000 tonnes in 2011, 2013 and 2016.

Figure 15 - Evolution of catches of octopus in Spain, in tonnes (lwe)



Source: FAO

Trade - imports

Frozen products account for 97% of imported value and 95% of volume. Other products imported are live / fresh / chilled octopus (2% of imported value and 3% of imported volume), smoked / dried / salted or in brine octopus (0,5% of imported value) or prepared / preserved octopus (0,1% of imported value).

Table 11 – Spanish imports of octopus in 2018

	Volume (Tonnes product weight)	Volume (Tonnes live weight equivalent)	Value (1.000 EUR)
Live / fresh / chilled	2.080	2.558	15.793
Frozen	55.941	71.605	647.065
Smoked, dried, salted or in brine	601	769	3.586
Prepared / preserved	149	203	1.567
Total	**58.770**	**75.134**	**668.012**

Source: EUMOFA elaboration of Eurostat-COMEXT data

Total imports increased significantly between 2012 and 2018 (+71% in volume). This is mainly due to an increase in frozen products (+24.624 tonnes between 2012 and 2018) while imports of fresh products have decreased (-1.152 tonnes). We also observe an increase of smoked, dried, salted and in brine (+101 tonnes) and prepared/preserved octopus (+124 tonnes).

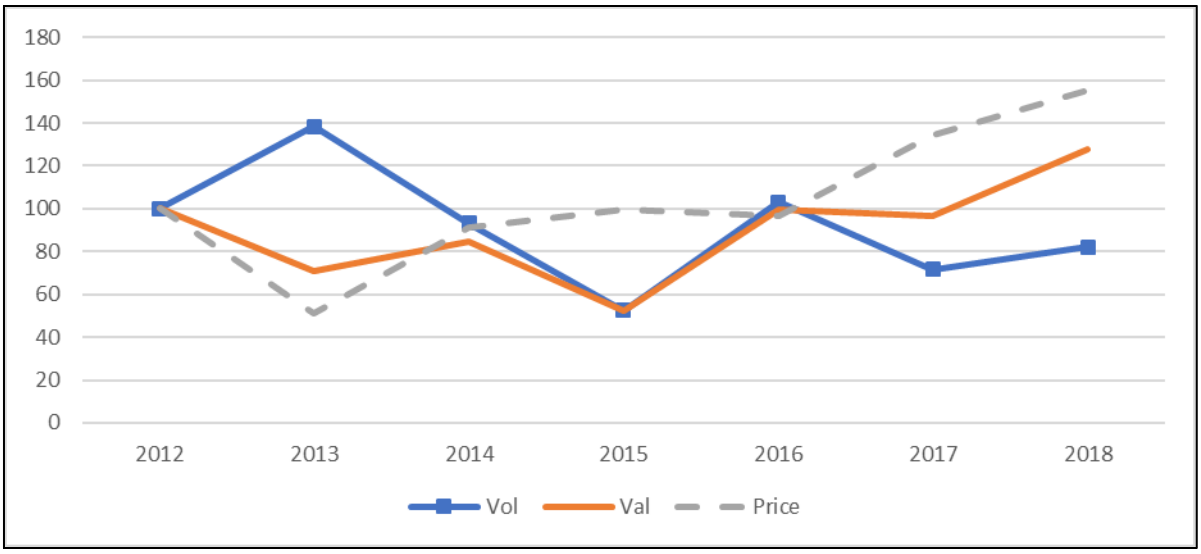
Table 12 – Spanish imports of octopus (tonnes, product weight)

Year	Live / fresh / chilled	Frozen	Smoked, dried, salted or in brine	Prepared / preserved	Total
2012	2.529	31.317	499	25	**34.370**
2013	3.499	41.283	544	38	**45.365**
2014	2.357	44.041	539	61	**46.998**
2015	1.324	55.072	478	29	**56.903**
2016	2.608	52.118	505	37	**55.268**
2017	1.814	55.688	721	166	**58.388**
2018	2.080	55.941	601	149	**58.770**

Source: EUMOFA elaboration of Eurostat-COMEXT data

We have observed increasing import price for fresh products since 2012 (+55%, from 4,89 EUR/kg to 7,59 EUR/kg), while volume has decreased by 18%. Value of imports has increased by 28%.

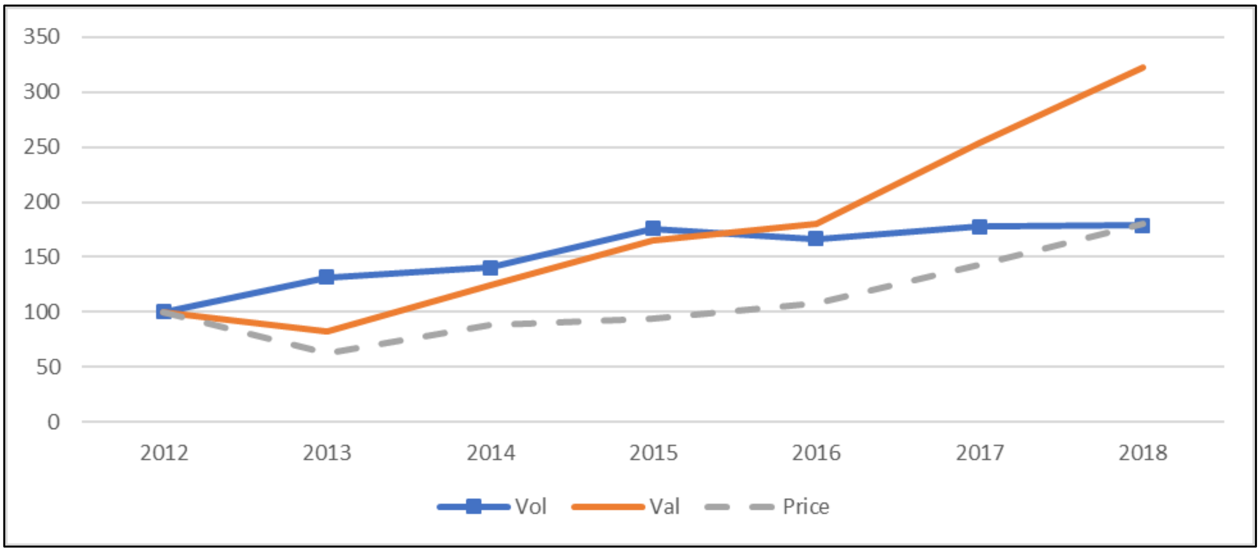
Figure 16 – Index evolution for Spanish imports of fresh octopus (base 100 = 2012)



Source: EUMOFA elaboration of Eurostat-COMEXT data

The value of imports of frozen octopus was three times higher in 2018 compared to 2012 (EUR 647 million in 2018 versus EUR 201 million in 2012). This is related to a strong increase of volume (+79%, 55.941 tonnes in 2018 versus 31.317 tonnes in 2012) and price (+80%, 11,57 EUR/kg in 2018 versus 6,42 EUR/kg in 2012).

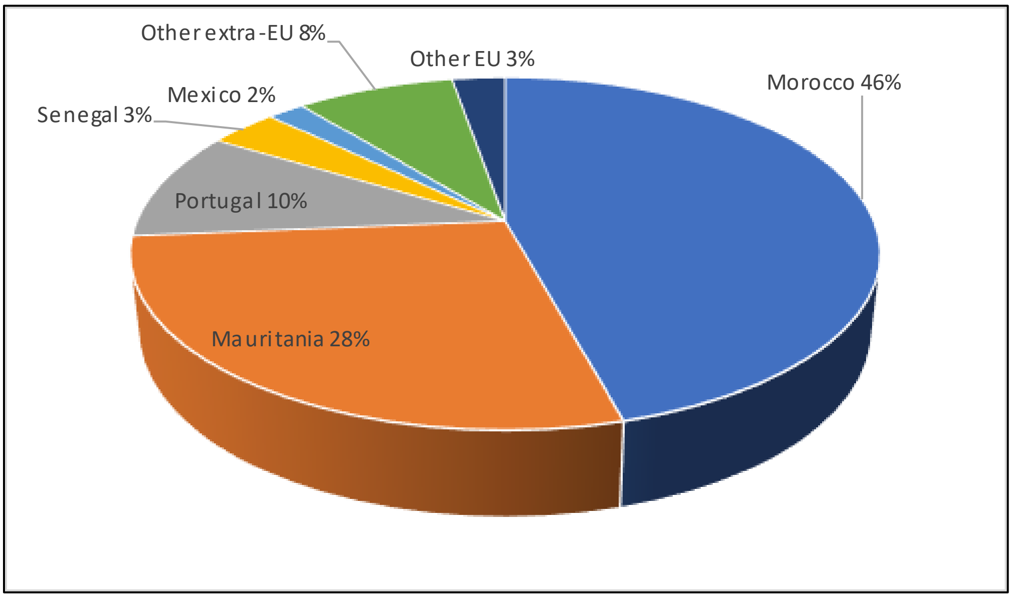
Figure 17 – Index evolution for Spanish imports of frozen octopus (base 100 = 2012)



Source: EUMOFA elaboration of Eurostat-COMEXT data

The main countries of origin for octopus imports in 2018 were Morocco and Mauritania, accounting for 74% of the imported value and 60% of imported volume. Other relevant origins were Portugal (10% of value) and Senegal (4%). The rest include both EU (3% of value) and non-EU countries (8%).

Figure 18 - Breakdown of import to Spain in value per origin (2018)



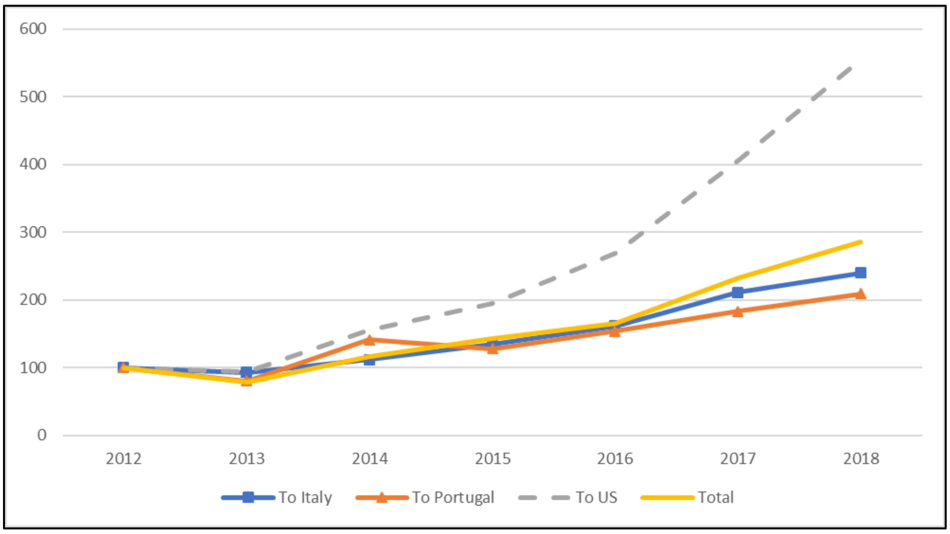
Source: EUMOFA elaboration of Eurostat-COMEXT data

Trade - exports

Spanish exports of octopus reached EUR 401 million in 2018, more than two times higher than in 2012 (+130%). Frozen products accounted for 80% of the exported value and other preservation states (fresh, prepared/preserved and unspecified) accounted each for between 6% and 8% of exports value.

Main destinations of exports are Italy, Portugal and the United States. These three countries accounted for 74% of Spanish exports of octopus in value terms in 2018. We observe a strong increase of exports in value terms to these destinations (in particular to the United States) between 2012 and 2018: +140% to Italy (+47% in volume), +109% to Portugal (+21% in volume) and +455% to the United States (+227% in volume).

Figure 19 - Index evolution of octopus exports from Spain between 2012 and 2018 (base 100=2012)



Source: EUMOFA elaboration of Eurostat-COMEXT data

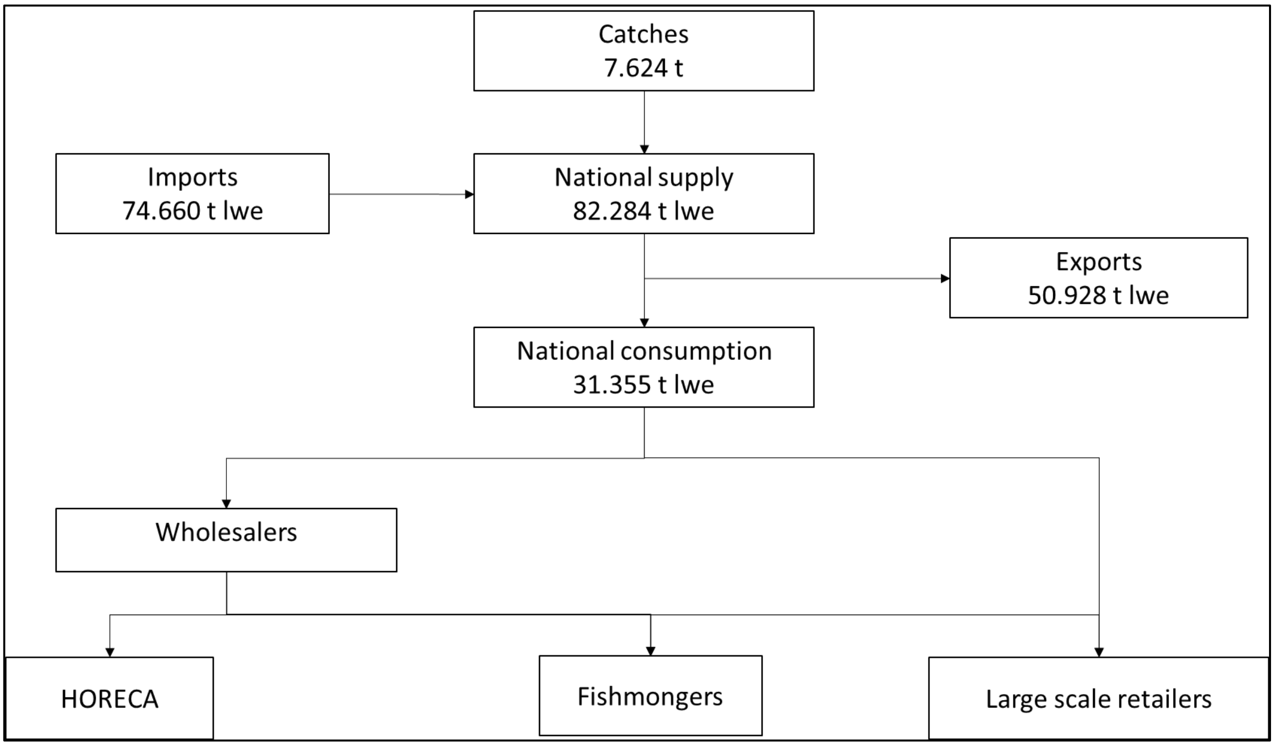
Apparent consumption

The national supply for octopus in Spain was 82.284 tonnes in 2017, 9% from national catches (7.624 tonnes lwe) and 91% from imports (74.660 tonnes lwe). Exports accounted for 50.928 tonnes lwe, representing 62% of the total national supply. Fresh octopus accounted for 14% of national supply.

National apparent consumption was estimated at 31.355 tonnes lwe in 2017.

There are several consumption channels for octopus in Spain: HORECA, specialised retailers / fishmongers and large-scale retailers. These may involve wholesalers.

Figure 20 – Fresh octopus supply chain in Spain (data from 2017)



Sources: EUMOFA elaboration based on FAO data for catches, Comext data for trade

4.2 Characteristics of the Spanish market and consumption patterns

Octopus is a very important product for the fishery sector in Spain. The annual apparent consumption averages at 30.000 tonnes (lwe), with national fresh catches accounting for about 20%. The majority of octopus consumed in Spain is thus imported. According to stakeholders, only a limited share of Spanish catches is exported (bigger sizes and niche markets[6]).

The Spanish market for octopus is segmented according to two main factors:

- **Size**: In Spain the minimum size is 1 kg for national catches. Smaller imported octopus (below 1 kg) are re-exported to less demanding markets in terms of quality. However, a share of good quality small octopus is exported to Japan. Bigger octopus (above 1,5-2 kg) are kept, aiming to supply the Spanish domestic market. Fresh octopus caught by Spanish coastal fleet and sold in Spanish auctions (mostly octopus between 1 and 2 kg) is aimed to supply local fresh markets and restaurants. Above 2 kg, the price of fresh octopus is so high (20,00-30,00 EUR/kg) that it is rather frozen and kept for export/high-end outlets.
- **Origin**: Most of octopus on the market comes as frozen/whole product from Dakhla/Morocco (industrial fleet, more than 100 vessels: shipped mostly frozen) and Mauritania (buying from artisanal fleet, very few industrial vessels). Small amounts come also from North Morocco fisheries (Mediterranean) providing fresh products to the Spanish market. Moroccan octopus is considered as the best product in terms of quality, meat yield and brine absorption rate. As a consequence, other origins such as Thailand, China, etc. reach lower prices.

With the sharp increase in price in 2018, restaurants bought more frozen/cooked legs (tentacles) as there is no waste and it is more convenient for them. Usually, restaurants prefer Moroccan/Mauritanian octopus, because Galician octopus is considered more difficult to cook (harder skin and lower meat yield) and also because it is more expensive.

Octopus is very much appreciated by Spanish consumers especially on coastal areas (firstly in Galicia and Catalonia and to a lesser extent in Andalucia). In Galicia, it used to be a common food for many households that could eat octopus once a week (prepared as *Pulpo a la Gallego* for instance). Octopus is often served in chunks grilled and in olive oil, with a light dusting of paprika powder.

Octopus is sold as different types of products, such as:

- Fresh whole raw;
- Whole raw frozen;
- Chilled and thawed;
- Cooked (whole or only the legs);
- various types of processed, value-added products (marinated, in oil, brine, or with garlic, canned, etc.).

Wholesale packages are supplied in block frozen or Individually Quick Frozen (IQF) and can be delivered in polybags of different weights (1, 2, 5, 10 or 15 kg).

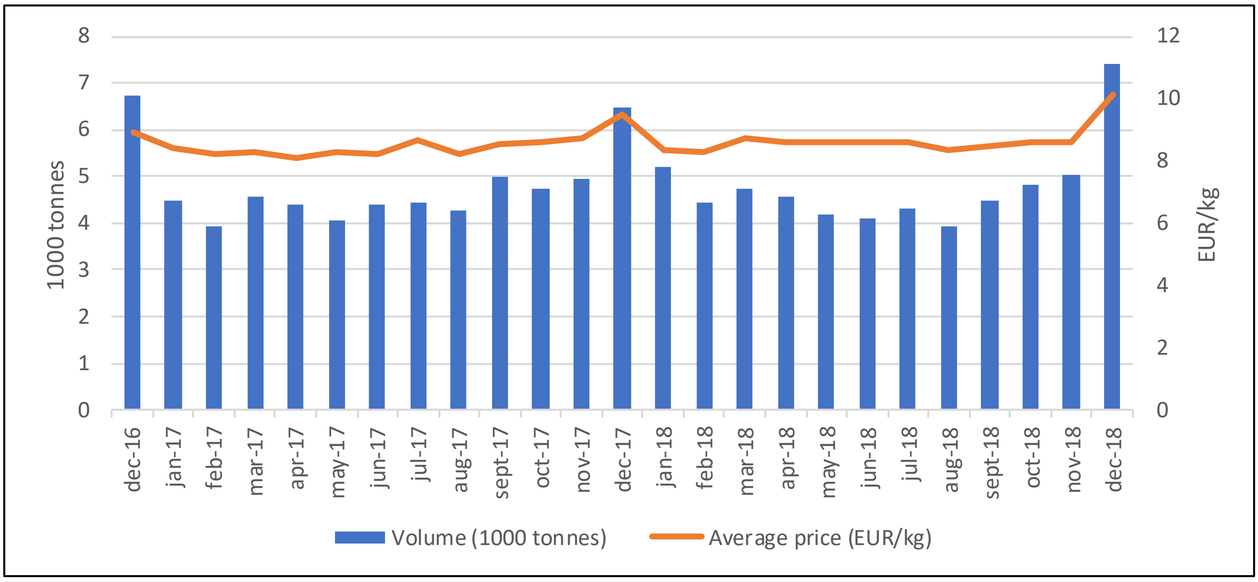
[6] The Atlantic fishery operating in the waters of Asturias in north-west Spain is made up of four Spanish fishermen's associations ('cofradias') operating 27 vessels, using artisanal traps to catch common octopus. A minimum capture weight of 1 kg is in place. The Atlantic fishery operating in the waters of Asturias in north-west Spain was the first octopus fishery to be MSC certified. The small amounts of MSC certified Asturias octopus (15 tonnes/year) are directly exported via traders to markets where the demand for eco-labelled fish products is high (Northern Europe, USA, and Switzerland). The price premium usually reaches +20-25%.

At the retail stage, packaging depends on the product type. Raw frozen products are mostly packaged in polystyrene trays or plastic bags of up to 1 kg. Cooked or boiled octopus is often sold in vacuum bags, while most value-added products are sold in smaller carton boxes up to 500 grams[7].

However, with the strong increasing prices in 2018, unit prices in fishmongers could reach 15,00-20,00 EUR/kg, which was above the willingness to pay for many regular consumers. As a consequence, octopus consumption has dropped in Spanish households and the share of foodservice sector has increased. When octopus prices reach high levels, it can be substituted by other cephalopod species such as squid for both retail and food service sectors. For instance, during the first half of 2018, octopus prices hit record levels. Demand was sustained, supplies were tight, and prices increased. They went so high that buyer resistance set in, and during the last few months of 2018, prices began to fall as restaurants moved to cheaper products. Observers in the market agree that a ceiling was reached in consumers' willingness to pay[8].

In the monthly consumption data provided by the MAPA where squid and octopus products were aggregated, there is no significant drop of volumes consumed in 2018 compared to 2017 (57. 240 tonnes in 2018 against 55.670 tonnes in 2017). This may be the result of change in consumption habits, switching from octopus to squid products.

Figure 21 – Household consumption of octopus and squid in Spain (volume in 1000 tonnes and price in EUR/kg)



Source: MAPA[9]

[7] Source : https://www.cbi.eu/market-information/fish-seafood/octopus
[8] Source : http://www.fao.org/in-action/globefish/market-reports/resource-detail/en/c/1189928/
[9] Source : https://www.mapa.gob.es/images/es/20190807_informedeconsumo2018pdf_tcm30-512256.pdf

4.3 Price transmission in the supply chain in Spain

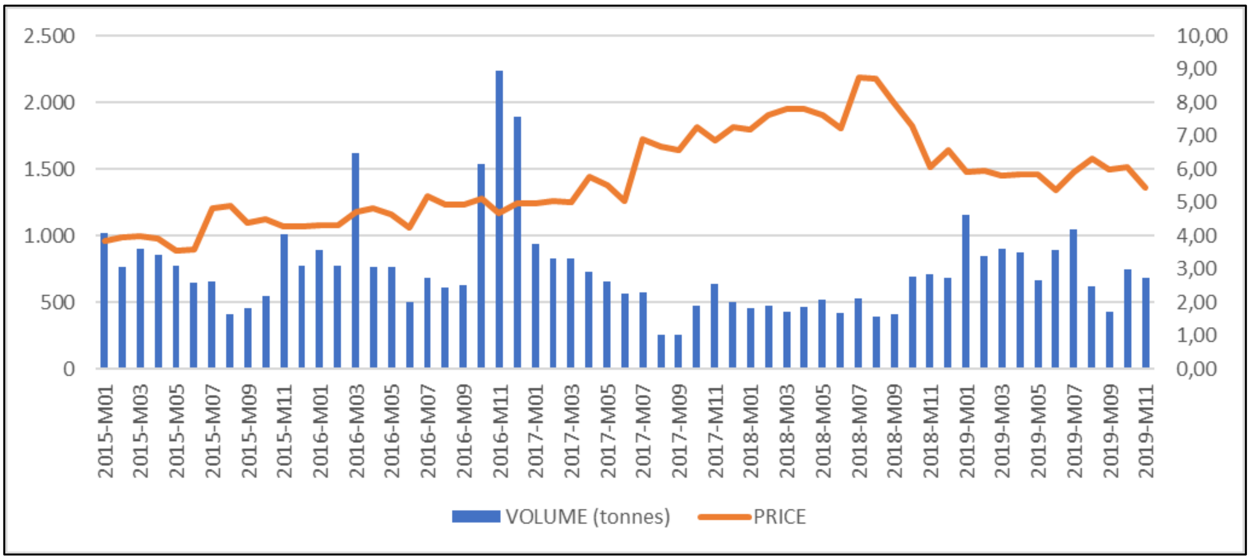
4.3.1 First sale prices

First sale prices of octopus in Spain are available from the EUMOFA database since 2015, as collected from MAPA.

Prices have peaked during a one-year period (September 2017 to October 2018) at a price over 8,00 EUR/kg (highest price in July 2018: 8,74 EUR/kg). This resulted from the tight supplies in the trade market mainly due to lower landings in Morocco[10], combined with reduction of Spanish landings and high demand. Price then decreased in 2019 and were above 6,00 EUR/kg almost each month (the exception being June and November 2019, at 5,51 EUR/kg and 5,43/EUR/kg respectively, the maximum was 6,68 EUR/kg in August 2019).

The price level in 2019 was higher than in 2015-2016, when it ranged between 4,63 EUR/kg and 5,91 EUR/kg.

Figure 22 – Monthly first sale price of fresh octopus in Spain (EUR/kg)



Source: EUMOFA

However, strong price differences (related to quality and size of octopus) exist beween Galicia and Andalusia, Galician octopus reaching higher prices.

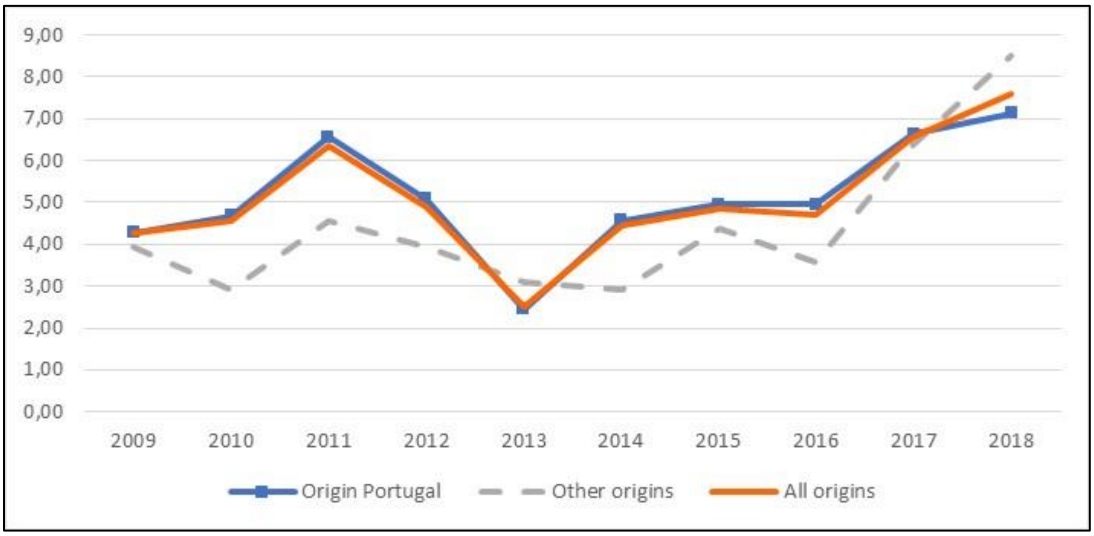
[10] Source : http://www.fao.org/in-action/globefish/market-reports/resource-detail/en/c/1156015/

4.3.2 Import prices

Fresh octopus

Portugal is the main supplier of fresh octopus to Spain as it accounted for more than 80% of the volume imported until 2016, a share which fell to 66% in 2018. Import price of fresh octopus has increased over the period, from 4,25 EUR/kg in 2009 (4,28 EUR/kg for octopus from Portugal) to 7,59 EUR/kg in 2018 (7,12 EUR/kg for Portugal and 8,51 EUR/kg for octopus from other origins). We observe a drop in price in 2013: 2,51 EUR/kg (2,45 EUR/kg from Portugal and 3,11 EUR/kg for other origins).

Figure 23 – Import prices of fresh octopus in Spain (EUR/kg)

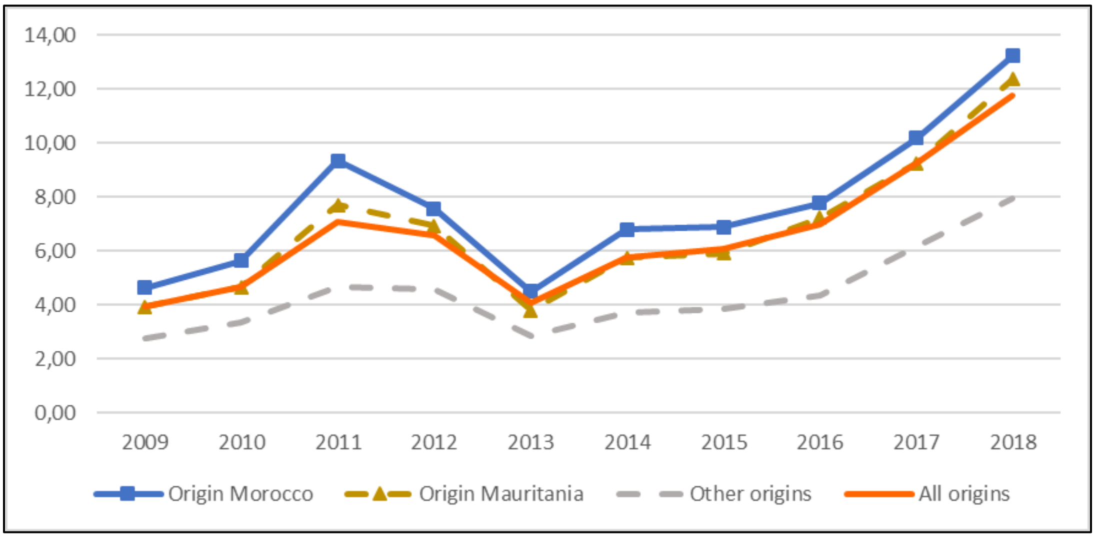


Source: EUMOFA elaboration of Eurostat-COMEXT data

Frozen octopus

The import price of frozen octopus followed a similar trend: a large increase (+199%, 3,94 EUR/kg in 2009 vs 11,76 EUR/kg in 2018), apart from a drop in 2013 (4,06 EUR/kg). The main origins are Morocco (13,24 EUR/kg in 2018) and Mauritania (12,37 EUR/kg). The price of frozen octopus from other origins was much lower, averaging at 7,95 EUR/kg. There has been a strong increase of prices of octopus from the most relevant countries of origin (+215% for Mauritania and +186% for Morocco), due to lower supplies and increasing demand on the global market.

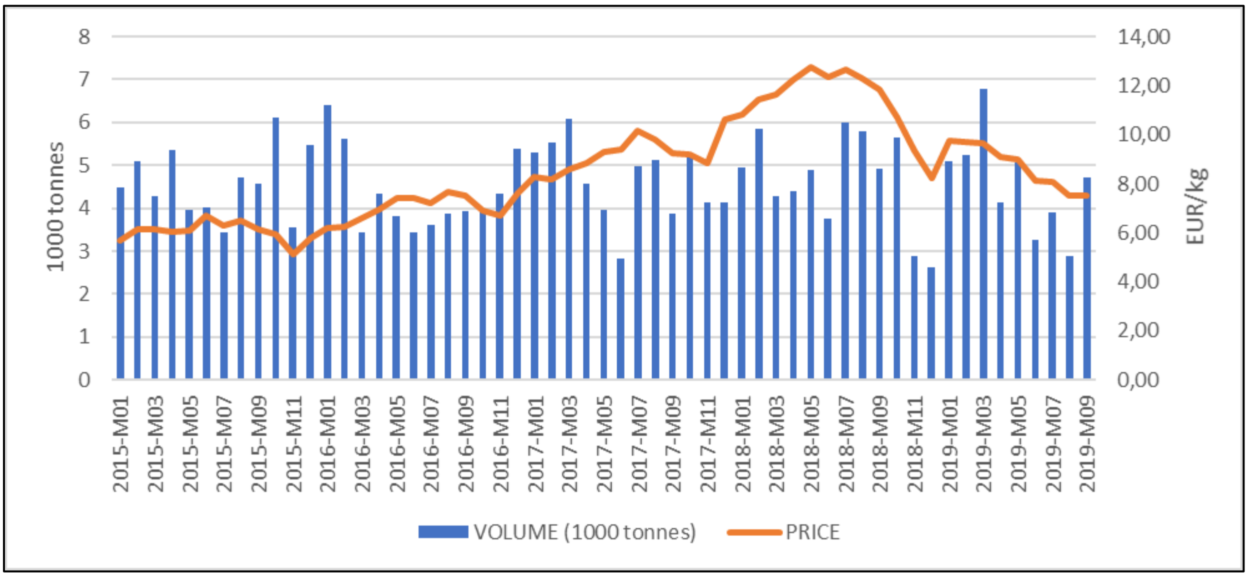
Figure 24 – Import prices of frozen octopus in Spain (EUR/kg)



Source: EUMOFA elaboration of Eurostat-COMEXT data

At the end of 2018 and in 2019, prices dropped below 5,00 EUR/kg, driven by the fact that Spanish firms specialized in these products already had unsold stocks causing a decrease of the demand. However, import prices from Morocco decreased but still averaged 10,05 EUR/kg in the first three quarters of 2019[11].

Figure 25 - Import prices of whole frozen octopus in Spain (EUR/kg)



Source: EUMOFA elaboration of Eurostat-COMEXT data

4.3.3 Wholesale prices

The Barcelona wholesale market Mercabarna provides price data for octopus products. The evolution of average prices of frozen octopus at wholesale level followed the evolution of import prices, with a sharp increase in early 2018 and a significant drop in late 2018 and 2019.

However, the analysis of the evolution of prices is not easy as it does not take into account the significant stocks of frozen products especially stored by Spanish traders and processors. It means that a drop of landings in main supplying countries such as Morocco or Mauritania may not affect immediately prices in the consumption market in Spain because of frozen stocks used to buffer price fluctuations. The table below provides the most frequent prices observed in Mercabarna.

Table 13 – Most frequent wholesale prices of octopus in Mercabarna (EUR/kg)

Preservation	Product	2017	2018	2019
Frozen	Pulpo tipo gallego	13,91	17,61	12,93
Frozen	Pulpo thailandes	3,98	4,56	4,60
Fresh	Cooked	21,54	26,65	23,95
Fresh	Octopus, whole	4,92	4,89	4,54
Fresh	Octopus thawed and chilled	6,12	5,84	5,68

Source: Mercabarna

[11] Source : https://www.undercurrentnews.com/2019/10/07/octopus-prices-continue-to-dive-on-slow-spanish-purchasing/

4.3.4 Retail prices

For octopus products sold at retail stage in Spain, there is a wide price range depending on the final presentation, preparation, size, origin and gear. The frozen raw octopus price averages 12,00 – 15,00 EUR/kg whereas chilled cooked whole octopus reaches 30,00 EUR/kg.

The table below provides examples of retail prices for different octopus products sold in Spain in 2016 and 2018.

Table 14 – Examples of octopus retail prices in Spain (EUR/kg)

Product	2016	2018
Frozen octopus	10,95	10,95
Whole raw octopus	8,99 - 11,06	11,06 - 13,99
Whole cooked octopus	22,95	22,95
Cut octopus packed in a paper box	27,96	26,52

Source: Globally Cool, 2018[12]

The table below provides retail prices collected in two different supermarkets in Spain in May 2019. Canned and prepared products are not reported.

Table 15 – Retail prices observed in Spanish supermarkets (EUR/kg) in May 2019

Product	Eroski (mid class)	El Corte Inglés (mid-high class)
Whole frozen octopus	15,00	8,50 – 18,50
Whole fresh octopus	12,00	not available
Whole cooked octopus (chilled)	20,00 - 30,00	25,00 - 35,00

Source: EUMOFA survey in Zaragoza, May 2019.

[12] Source : https://www.cbi.eu/market-information/fish-seafood/octopus

4.3.5 Price transmission

This section focuses on the supply chain of:

- medium octopus ([1-1,5 kg] landed fresh in Spain and sold frozen in the Spanish supermarkets;
- cooked medium octopus imported from Morocco sold chilled in the Spanish supermarkets;

Analyses are based on qualitative interviews with stakeholders of the supply chain, collection of price data along the supply chains and literature review.

The margins in the value chain vary a lot from low-end to high-end products. For low-end products, margins can be as low as 5% for processor/trader, with a retail margin as low as 10%. For high-end products, these margins can be as high as 20-25% for fishermen and processors, and 100% for importers and retailers[13].

Frozen Spanish octopus

The analysis is based on fresh octopus landed in Spain and sold frozen in retail in Spanish supermarkets. The different stages before retail are the first sale involving a wholesaler/processor in the fishing area (Galicia), selling directly to the retailer's platform.

For octopus landed in Spain, the average price to the consumer (sold frozen) is about twice the first sale price. Costs and margins added by the wholesaling/processing stage represent 40-42% of the first sale price. In the present analysis, the processor is a trader/wholesaler performing operations of wholesaling, thawing, gutting and tenderizing. The waste loss due to thawing is estimated at 5%. The waste due to gutting and tenderizing is estimated at 20% of the product weight. The cooking process generates a 30% weight loss.

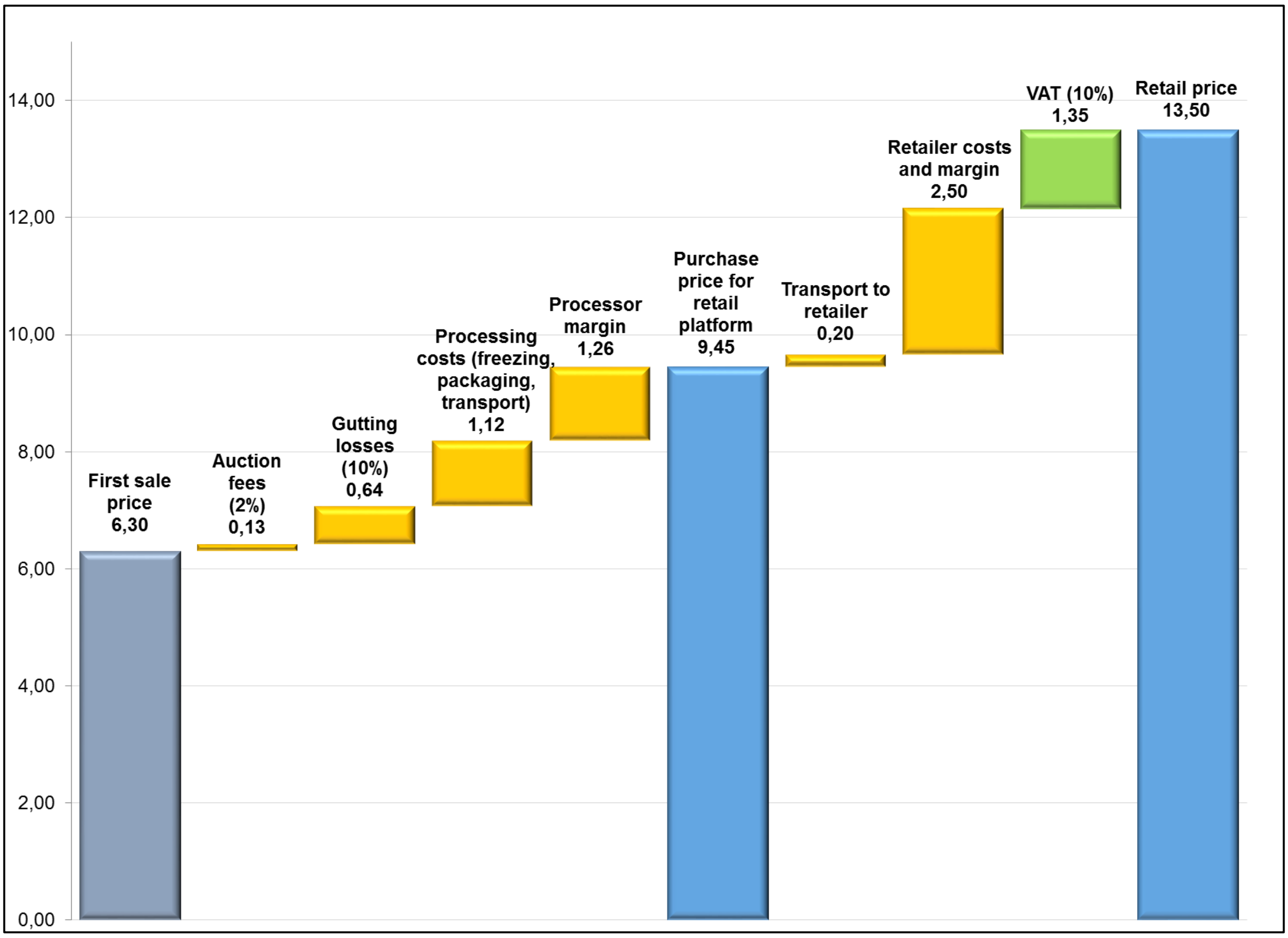
[13] Source : https://www.cbi.eu/market-information/fish-seafood/octopus

Table 16 – Costs and margins for frozen Spanish octopus in the large-scale retail in 2019 (EUR/kg)

	Average (EUR/kg)	% final price
First sale price	**6,30**	47%
Auction fees (2%)	**0,13**	1%
Gutting losses (10%)	**0,64**	5%
Processing costs (freezing, packaging, transport)	**1,12**	8%
Processor margin	1,26	9%
Purchase price for retail platform	**9,45**	
Transport to retailer	0,20	1%
Retailer costs and margin	2,50	19%
VAT (10%)	1,35	10%
Retail price	**13,50**	100%

Source: EUMOFA survey

Figure 26 – Price transmission for octopus landed fresh in Spain and sold frozen in large-scale retail in Spain (2018)



Source: EUMOFA survey

Octopus imported frozen, sold cooked and chilled

The analysis is based on frozen octopus imported from Morocco, thawed, gutted and cooked by wholesaler/processor in Spain and sold chilled through large-scale retailer in Spain.

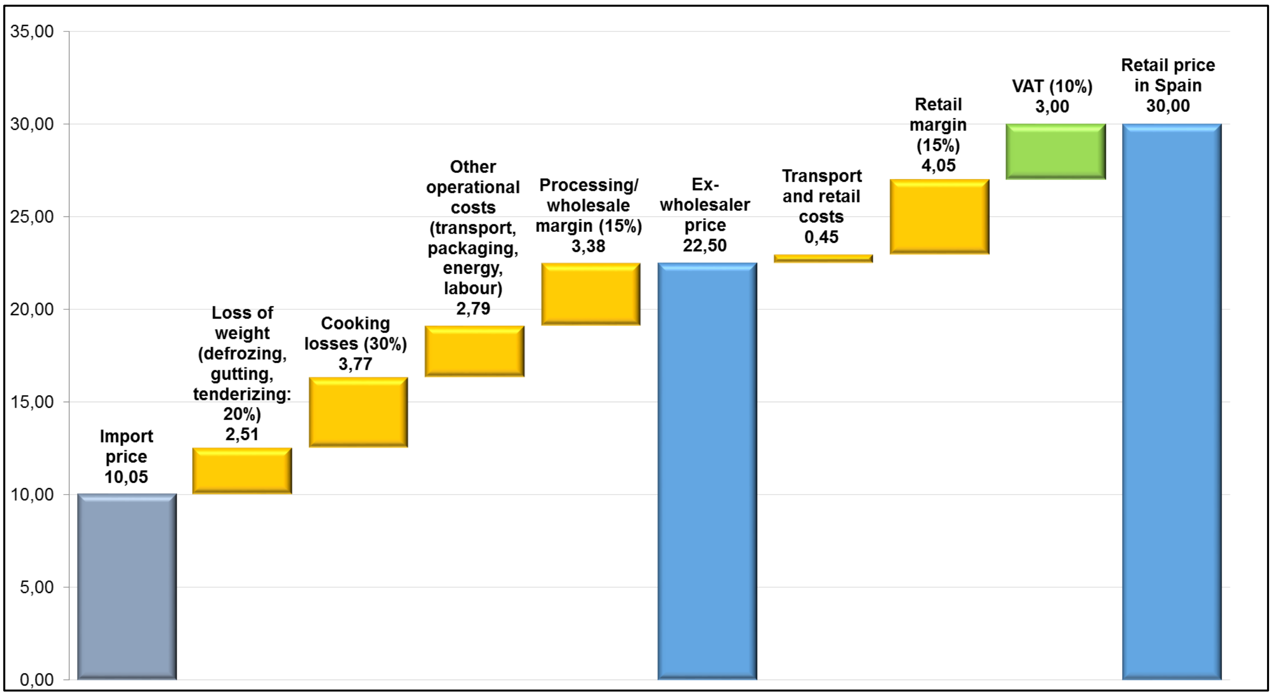
Table 17 – Costs and margins for cooked octopus sold as chilled in the large-scale retail in Spain (2019)

	Average (EUR/kg)	% final price
Import price	**10,05**	**34%**
Loss of weight (defrozing, gutting, tenderizing: 20%)	2,51	8%
Cooking losses (30%)	3,77	13%
Other operational costs (transport, packaging, energy, labour)	2,79	9%
Processing/wholesale margin (15%)	3,38	11%
Ex-wholesaler price	**22,50**	**75%**
Transport and retail costs	0,45	2%
Retail margin (15%)	4,05	14%
VAT (10%)	3,00	10%
Retail price in Spain	**30,00**	**100%**

Source: EUMOFA survey

Due to the preservation and presentation states of the octopus cooked product (product already packaged and labelled), the costs and margins which occur at the distribution stage represent only 20% of the ex-processor price.

Figure 27 – Price transmission of octopus imported in Spain from Morocco, sold cooked and chilled in large-scale retail in Spain (EUR/kg, 2019)



Source: EUMOFA survey

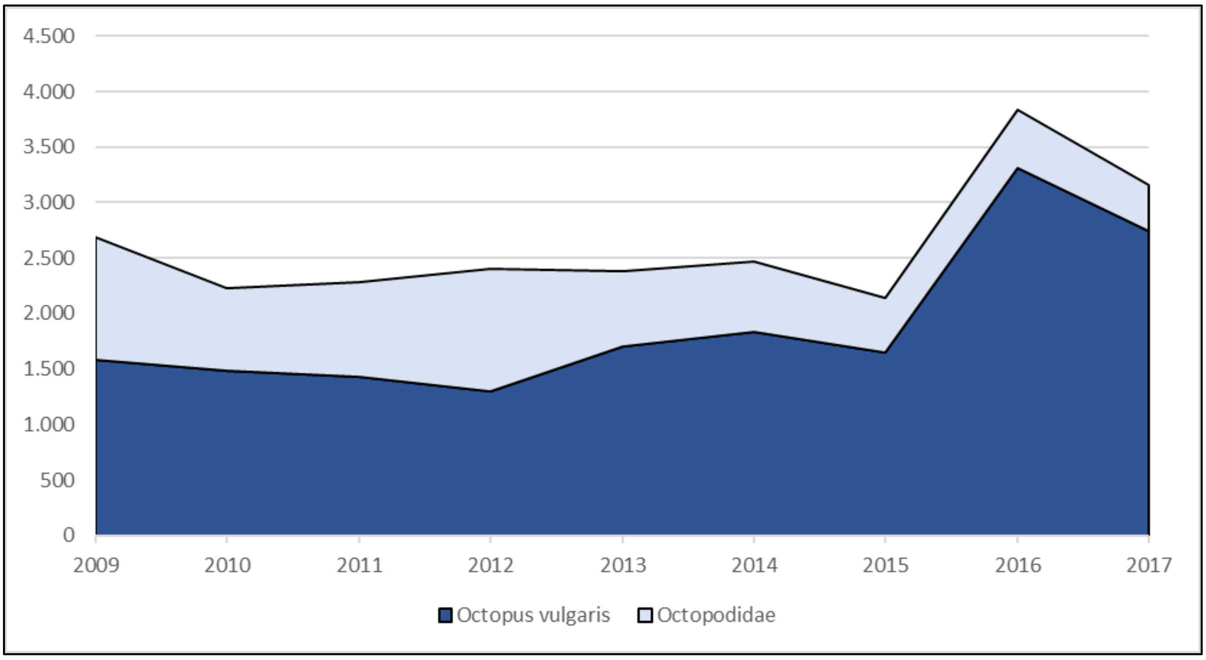
5 THE GREEK MARKET

5.1 Structure of the supply chain for fresh octopus in Greece

Production

The Greek production of common octopus (*Octopus vulgaris*) increased in the last years, rising from around 1.500 tonnes per year in the period 2009-2015 to 2.741 tonnes in 2017. If we include the horned and musky octopuses (357 tonnes in 2017), the production of octopus exceeds 3.000 tonnes.

Figure 28 - Evolution of catches of octopus in Greece



Source: FAO

The production is mainly located in the north of the country: Strymonikos Gulf and Gulf of Kavala, coasts of Thasos and Thracian Sea (1.308 tonnes of common octopus in 2017) and Thermaikos Gulf and Gulf of Chalkidiki (438 tonnes); these fishing areas represent 64% of the total production of common octopus.

Import-export

In 2018 Greece imported EUR 44 million of octopus products and exported less than EUR 9 million. Imports are dominated by frozen octopus which accounts for more than 92% of total octopus imports in both volume and value.

Table 18 – Greek imports of octopus in 2018

Preservation state	Volume (tonnes product weight)	Volume (tonnes live weight equivalent)	Value (1000 EUR)
Live/fresh/chilled	112	138	399
Frozen	4.807	6.153	40.590
Smoked, dried, salted or in brine	260	332	2.650
Prepared/preserved	35	48	401
TOTAL	**5.214**	**6.671**	**44.040**

Source: EUMOFA elaboration of EUROSTAT-COMEXT data

Imports of fresh octopus are limited, counting for less than 1% of total octopus imports in value. They experienced a significant increasing trend in the last two years but remain at a low level.

Table 19 – Greek imports of fresh octopus (tonnes, product weight)

Year	2012	2013	2014	2015	2016	2017	2018
Volume (tonnes)	8,0	1,9	12,2	20,1	13,4	66,7	112,1

Source: EUMOFA elaboration of EUROSTAT-COMEXT data

In 2018 the largest supplier of fresh octopus to Greece was the United Kingdom (95 tonnes), followed by Spain (9 tonnes). Frozen octopus makes up the bulk of imports with around 5.000 tonnes per year. Exports of fresh octopus are negligible (8 tonnes in 2018).

Table 20 – Greek imports of frozen octopus (tonnes, product weight)

Year	2012	2013	2014	2015	2016	2017	2018
Imports (tonnes)	5.037	5.864	5.666	5.390	5.727	4.806	4.807

Source: EUMOFA elaboration of EUROSTAT-COMEXT data

The major suppliers of frozen octopus to Greece are Indonesia (1.729 tonnes in 2018), Spain (698 tonnes), Italy (400 tonnes), Mauritania (348 tonnes), Mexico (340 tonnes) and Morocco (270 tonnes). Some exports/re-exports exist (850 tonnes in 2018), mainly destined for the neighbouring countries (Italy, Cyprus) and Germany.

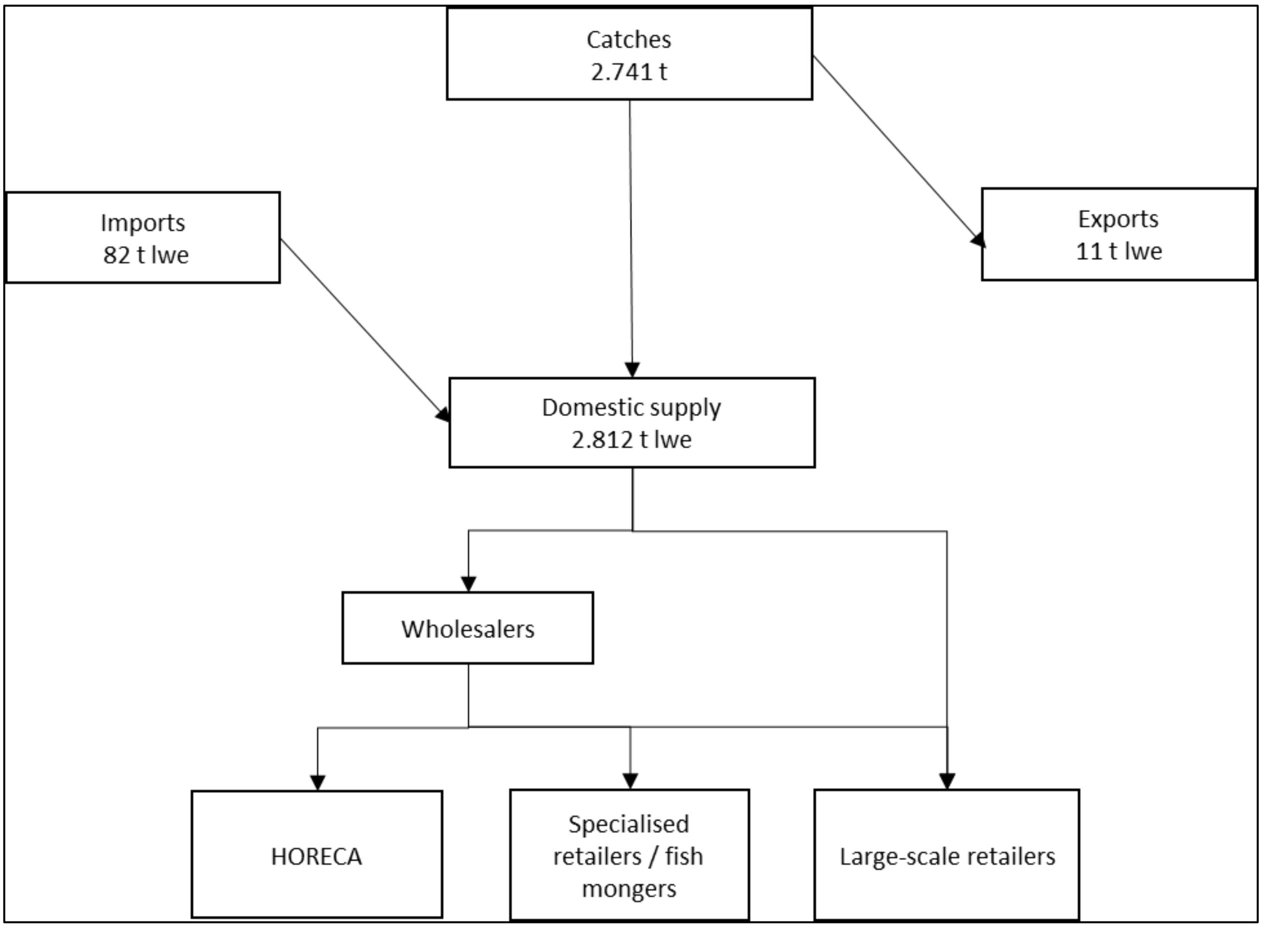
Apparent consumption

The Greek apparent consumption for octopus (all preservation states included) amounts to approximately 9.000 tonnes in live weight equivalent, of which 3.500 tonnes for fresh (almost 40%) and 5.400 tonnes for frozen (60%).

In recent years the market for fresh octopus increased thanks to good catches while the market for frozen products, fully dependent on imports, showed a decreasing trend.

The following figure focuses on the supply chain for common octopus (2.741 tonnes of catches in 2017, i.e. 87% of total octopus catches in Greece).

Figure 29 – Fresh octopus supply chain in Greece (data from 2017)



Sources: EUMOFA elaboration based on FAO data for catches, Comext data for trade

5.2 Characteristics of the Greek market and consumption patterns

Octopus is present on all the coasts of Greece, but only a few companies are organized and have the capacity to deal with octopus in Greece, mostly located in the north of the country (Kavala, Thessaloniki, Alexandroupoli). The main companies trading octopus are:

- AFENTOULIS (Kavala),
- LAZARIDIS (Thessaloniki),
- HATZISOTIRIOU (Nea Michaniona),
- GENFROCO (Aspropyrgos).

The Greek fleet provides about 30% of the consumption, the rest being imported. According to the stakeholders met, the Greek consumer does not distinguish between common octopus (*Octopus vulgaris)* and other species such as Mexican four-eyed octopus (*Octopus maya)* or big blue octopus (*Octopus cyanea)* but is interested to have a local product rather than an imported item.

Most of the fresh octopus is sold loose in the fresh counters of supermarkets and fishmongers or in the market stands. But sales of prepacked octopus have been developing in the last years.

Table 21 – Calibration for octopus in Greece

Size category	kg/piece
T1	+4 kg
T2	3-4 kg
T3	2-3 kg
T4	1,500 – 2 kg
T5	1,200 – 1,500 kg
T6	0,800 – 1,200 kg
T7	0,500 – 0,800 kg
T8	0,330 – 0,500 kg

Source: EUMOFA survey

Octopus is quite common in Greek cuisine and there are many dishes based on octopus. Some of the most popular include grilled fresh octopus, octopus with pasta, as well as roasted or marinated octopus.

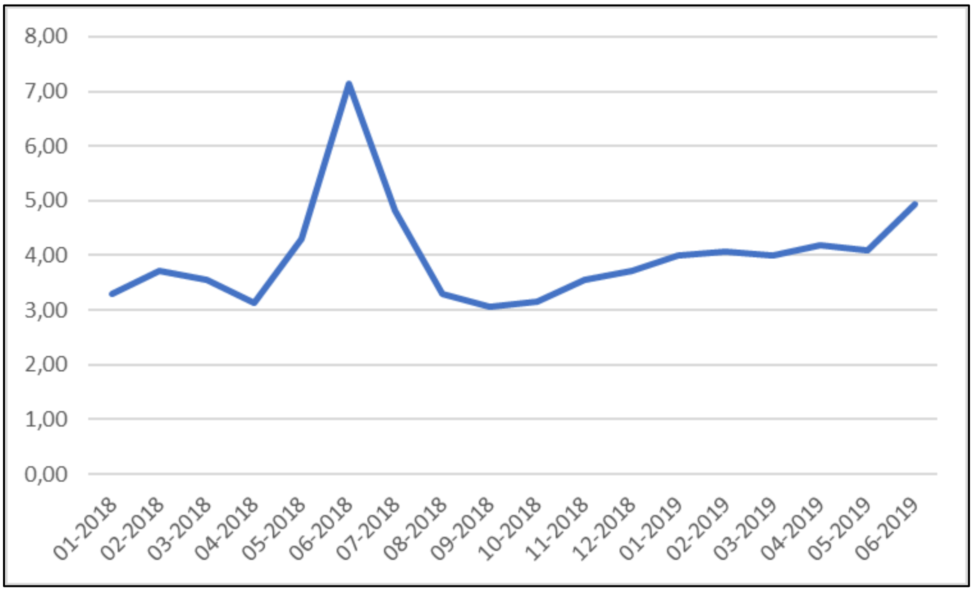
5.3 Price transmission in the supply chain in Greece

5.3.1 First sale prices

First sale prices of fisheries products in Greece are collected from the Greek Ministry of Rural Development and Food and are available in EUMOFA database since January 2018. They followed an upward trend in the reporting period.

The highest monthly prices observed (7,13 EUR/kg in June 2018 and 4,94 EUR/kg in June 2019) correspond to the lowest volumes landed. For the two years under review in Figure 30, the landing volumes are indeed very low in June (8 t in June 2019 compared to 43 t in May, and 8 t in June 2018 compared to 36 t in May). This sudden drop in landings explains the price increase.

Figure 30 – First sale prices of fresh octopus in Greece (EUR/kg)



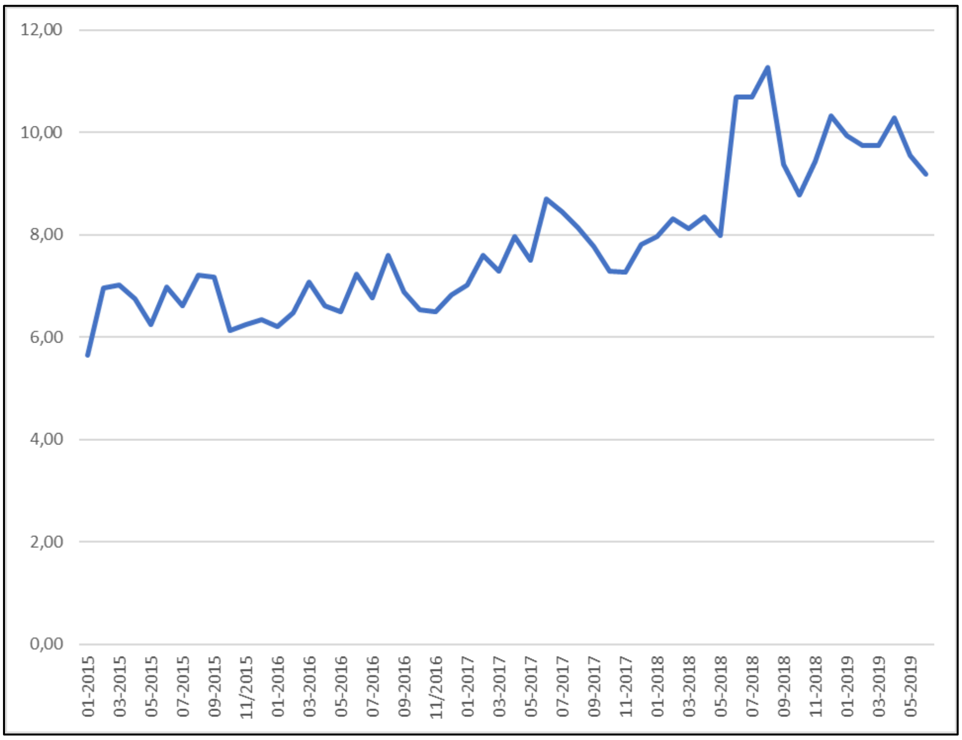
Source: EUMOFA

5.3.2 Wholesale prices

The following figures display wholesale prices of fresh octopus in the Piraeus market.

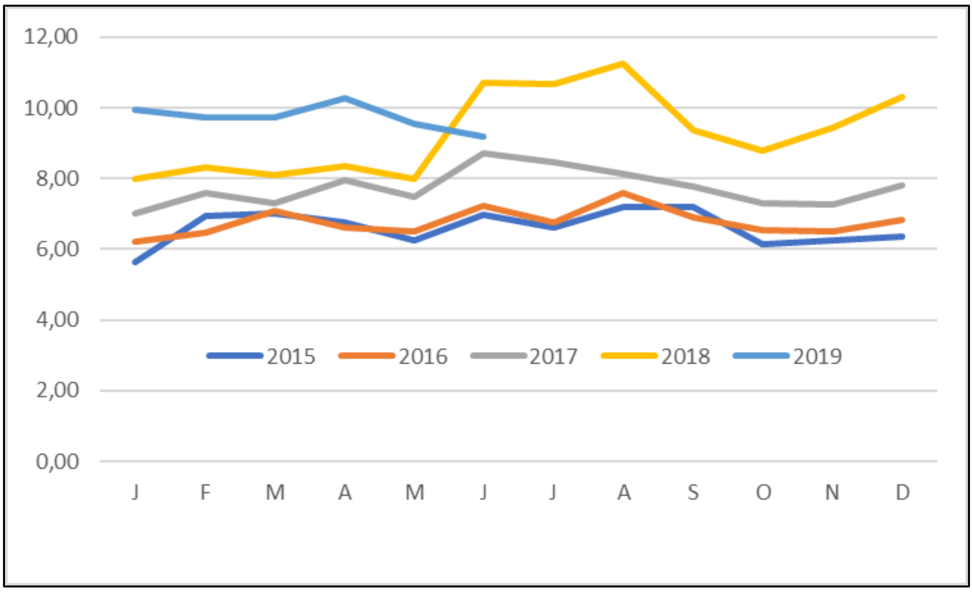
In 2016 prices were very similar to those of 2015. From 2017 onwards prices increase significantly: the average yearly price rose from 6,78 EUR/kg in 2016 to 7,73 EUR/kg in 2017 (+14,0% over the previous year) and 8,99 EUR/kg in 2018 (+16,3%). In the first six months of 2019, the price increased at the same pace (+15,3% over the first semester of 2018).

Figure 31 – Wholesale prices of fresh octopus in Greece – Piraeus Market (EUR/kg)



Source: EUMOFA

Figure 32 – Yearly evolution of monthly wholesale prices of fresh octopus – Piraeus Market (EUR/kg)



Source: EUMOFA

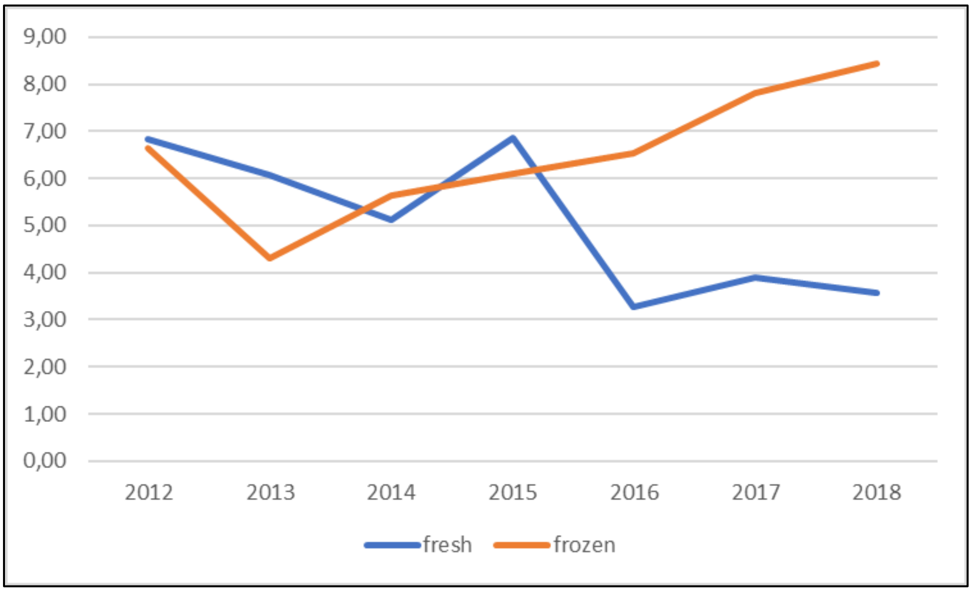
5.3.3 Import prices

Import prices can be monitored in the EUMOFA database.

Due to the low volumes of fresh octopus imported (less than 20 tonnes/year in the period 2012-2016), prices of fresh octopus are hardly comparable with those of frozen octopus (5.000 tonnes/year).

The average import price of frozen octopus was 8,44 EUR/kg in 2018, with significant price differences in relation with the species concerned: prices are much higher for common octopus imported from Mauritania (13,04 EUR/kg) and Morocco (12,11 EUR/kg) than for Mexican four-eyed octopus imported from Mexico (7,32 EUR/kg) or big blue octopus imported from Indonesia (6,48 EUR/kg).

Figure 33 – Import prices of fresh and frozen octopus in Greece (EUR/kg)



Source: EUMOFA

5.3.4 Retail prices

The following table displays retail prices for fresh octopus surveyed in the Greek retail channels.

Table 22 – Offer of fresh octopus in Athens at retail level (EUR/kg) on 5 June 2019

Product	Species	Origin	Presentation	Price (EUR/kg)	Retailer
Whole octopus	*Octopus vulgaris*	Greece	Loose	17,50	AB (large-scale retailer)
Whole octopus	*Octopus vulgaris*	Greece	Pre-packaged	18,50	AB (large-scale retailer)
Whole octopus	*Octopus vulgaris*	Greece	Loose	9,98-18,80	Varvakios Market[14]

Source: EUMOFA: survey

[14] Athens central market

5.3.5 Price transmission

This section focuses on the supply chain of fresh octopus, caught, landed and sold in Greece.

Analyses are based on qualitative interviews with stakeholders of the supply chain.

The average selling price to the consumer is about twice the first sale price. Costs and margins added by the wholesaling/processing stage represent 40-42% of the first sale price. The processor is here a trader (wholesaler) who performs operations of wholesaling, gutting and tenderizing. The cost of processing (gutting + tenderizing) is 0,50 EUR/kg and the waste due to these operations is about 20% of the product weight.

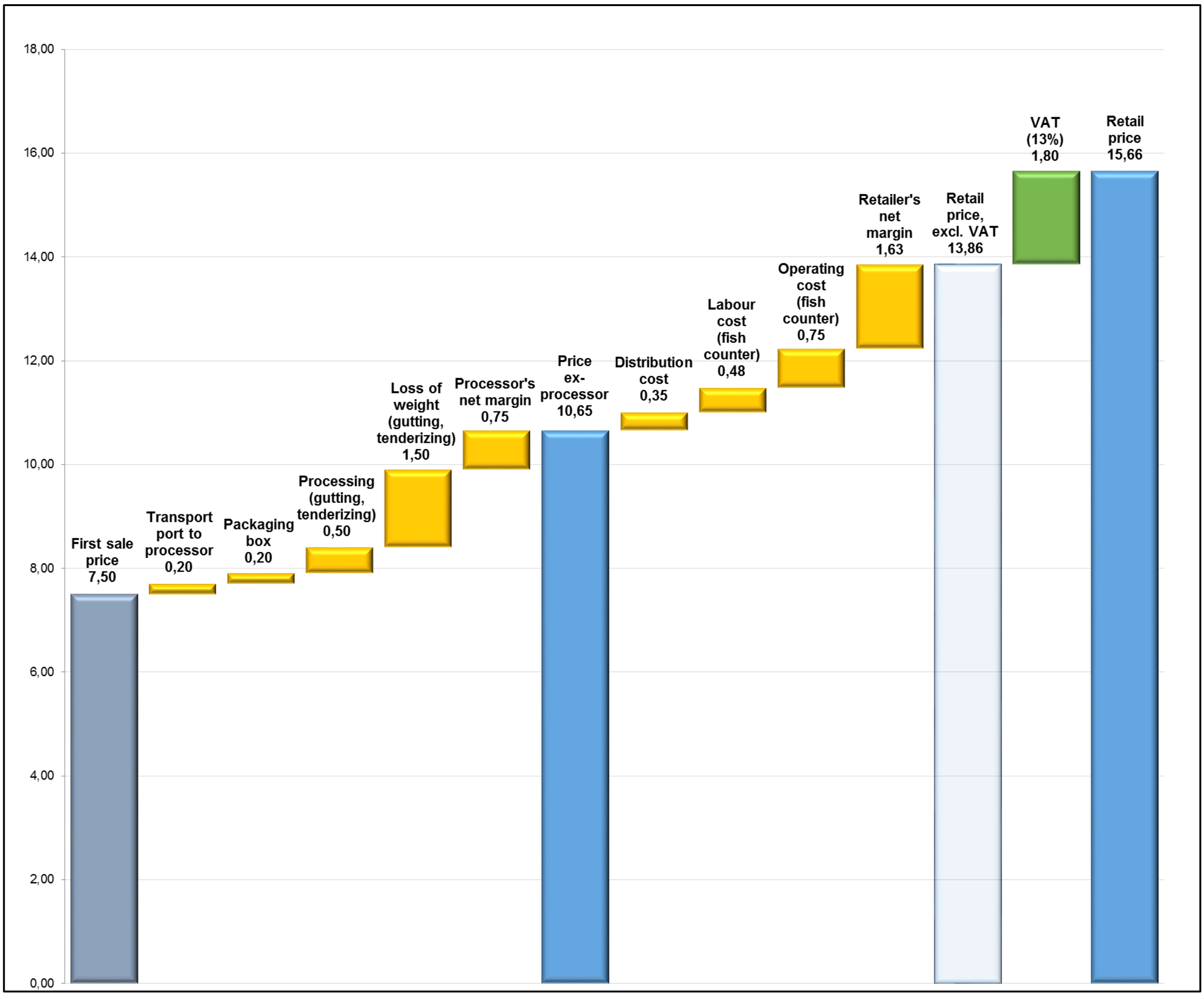
Table 23 – Costs and margins for fresh octopus in the large-scale retail (June 2019)

	Average price (EUR/kg)	% final price
Purchase price (to the producer)	**7,50 - 8,50**	**47%**
Transport port -> processor	0,20	1%
Packaging (box)	0,20	1%
Processing (gutting, tenderizing)	0,50	3%
Waste due to gutting/tenderizing	1,50 - 1,70	10%
Processor's net margin	0,75 - 0,85	5%
Price ex-processor	**10,65 - 11,95**	**68%**
Distribution cost (processor -> platform)	0,15	1%
Distribution cost (platform -> supermarket)	0,20	1%
Labour cost (fish counter)	0,48	3%
Operating cost (fish counter)	0,75	5%%
Net margin (retailer)	1,63 - 1,80	12%
Average selling price, exclusive of VAT	**13,86 - 15,33**	**89%**
VAT 13%	1,80 - 1,99	12%
Average selling price (supermarket)	**15,66 - 17,32**	**100%**

Source: EUMOFA survey

Costs and margins at the distribution stage represent 28-30% of the ex-processor price. The main item at this stage is the net margin of the retailer, which is about 15% of the ex-processor price.

Figure 34 – Price transmission for fresh octopus sold in large-scale retail in Greece (June 2019), lower value of costs and margins as displayed in the table above



Source: EUMOFA survey

6 INTERVIEWS

The following contacts have been made in the context of the study:

Italy

- Wholesaler in Milan wholesale market
- Fishmonger in Milano

Spain

- Marine Stewardship Council in Spain
- Sustainable Fisheries Partnership
- Galician wholesalers/processors

Greece

- Hellenic Statistical Authority (ELSTAT)
- OKAA: Central Markets and Fishery Organisation
- The MART Cash & carry (wholesaler, cash & carry)
- Trader-wholesaler-processor
- Sklavenitis (large-scale retailer)
- AB: Alfa Beta Vassilopoulos (large-scale retailer)

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