ANNUAL STATISTICAL REPORT

2022

Analysis of the meat industry core variables

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1. Introduction

The National Meat Institute is making this new Statistical Yearbook available to users to maintain this already classic information tool.

In addition to including contents as broad as in the previous version and a basic analytical description of the news in the industry, an additional step was taken to simplify and make data more readily available. This was made possible by focusing on online access and pausing the printed edition of the Yearbook.

We invite you to read this document and delve into the analysis of the various topics through the Dynamic Yearbook developed in Power BI, available on INAC's website[1].

Providing the right information in the most accessible way is a huge challenge we accept for the sake of transparency and to provide value to all stakeholders in the sector.

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[1] https://www.inac.uy/innovaportal/v/19147/10/innova.front/anuario-dinamico

2. Uruguay and Global Trade

2.1. International Background

In recent years, the international trade of commodities has been dramatically hit by various shocks, some of them specific to the category and others more of a global scope, including African swine fever (ASF), avian flu, Covid-19 and the war between Russia and Ukraine. This led to high inflation in the West and poor growth in the East.

As a result, in 2022, there was a slowdown of the growth of international trade of meat products[2]. The year-on-year variation was 4%, totaling a value of 110 billion USD[3]. The increased value is due to the price increase in tons traded. This annual price increase is the average of two different facts: during the first half of the year, prices continued to rise, reaching historical values. For example, the export price of Uruguayan beef reached USD 5,700 /Ton CWE (ton carcass weight equivalent). However, in the second half of the year the Chinese market slowed down its import pace. This, together with the logistical and port problems, contributed to the slowdown in imports, with a consequent decrease in prices. This means that although some price records were reached in 2022, the figures for the last months of the year are closer to the historical average.

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[2] Cattle, sheep, poultry and pork meat and offal.

[3] The differences the reader may find compared to last year's publication are due to the fact that the European Union bloc went from including 28 countries to including just 27, after the exit of the United Kingdom, now an independent country.

Figure 1. Weekly evolution of the average export revenue from beef. In USD/Ton CWE. 2013-2022.

In terms of trade by species, the increase was driven by beef and poultry meat. The outlook for pork was less encouraging, as swine fever hit some European countries and Canada, inhibiting trade with China, the category's main market. While Europe exported USD 10.5 billion of pork to the Asian giant in 2021, this figure then dropped to USD 8.5 billion. Of the total meat products traded in 2022, 45% corresponds to beef, another 45% represents the trade of pork and poultry meat in similar parts, and the remaining 10% corresponds to the trade of sheep meat and offal.

Figure 2. Evolution of average international export revenues by species. In USD/ton. 2013 -2022.
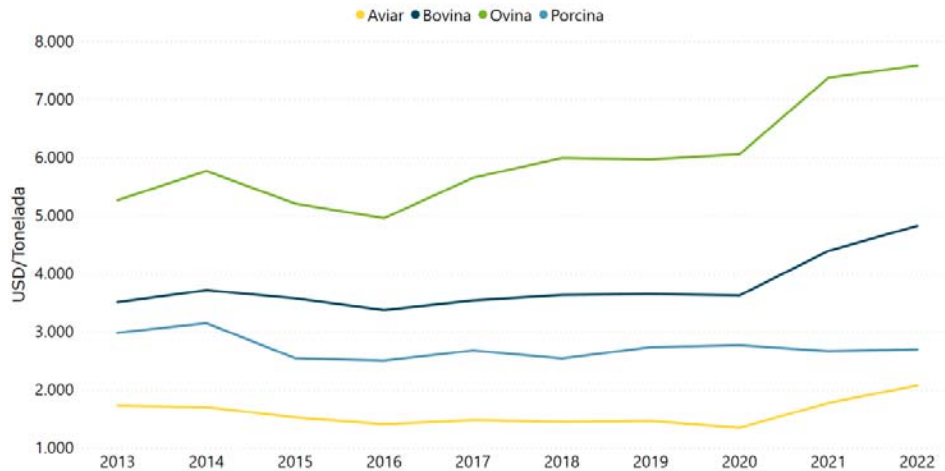
Source: Developed internally based on TDM data.

2.2. Imports Outlook

The year 2022 began with a strong demand for animal protein from Asian countries, particularly China, which once again positioned itself as the main importer of meat products. It imported a total of USD 30.8 billion, accounting for 28% of global imports. Ninety-eight percent of their imports are frozen products. Brazil was its main meat supplier. In 2022, our neighbor exported USD 10 billion; with USD 7.5 billion corresponding to beef.

The United States was the second largest meat importer globally, importing more than USD 12 billion. Inflation in the category explained a limited decline in domestic per capita consumption. However, lower domestic production and demand in international markets for U.S. meat paved the way for exports to the United States, especially including beef and pork. In 2022, the United States reached record imports and exports of these products. Imports originate from countries with deep trade agreements: Canada, Mexico and Australia. Unlike China, most of the imported products were chilled, resulting in higher prices per ton.

On the other hand, Japan and South Korea are consolidating their position as the third main cluster of meat-importing countries. Together, they imported

USD 18 billion. Pork protein is over-represented, accounting for one third of imports. The fact that they have high default tariffs means that only trading partners from countries with free trade agreements can successfully enter these markets. Thus, these countries with a deficit in animal protein production complete their supply with a relatively limited portfolio of suppliers: almost three quarters of their supply comes from North American countries, Australia and New Zealand. As a result, these countries have high import prices and are highly dependent on imports to maintain high levels of per capita consumption.

Southeast Asia countries are increasingly important on the import side. Last year they imported USD 6 billion. With the exception of China, the region showed the highest import growth in the world: in the last ten years they have tripled their meat imports[4]. Although they accounted for only 6% of global imports, this figure is expected to continue to rise. The region's per capita income is steadily growing and its natural resources are not enough to cater for its population.

2.3. Exports Outlook

On the export side, Brazilian meat exports closed 2022 with a historical record: it exported USD 23.5 billion, 30% more than in 2021, positioning itself as the main exporter of meat products. The increase in beef (39%) and poultry (18%) exports outweighed the decrease in pork exports. This growth is not the result of market diversification; it is rather due to concentration: China accounted for 70% of the growth and its relevance in the Brazilian animal protein export portfolio increased from 36% to 43% in the last year.

As indicated above, the United States achieved record exports. Despite a drop in beef production, the increase in imports meant that the volume exported did not suffer so much. In addition, the increase in the price of exported tons led to an increase in the value exported.

The European Union and Canada are the only exporters among the top 10 to show a decline in export value, a drop that can be attributed to swine fever and the impossibility of placing swine meat in China.

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[4] Note published in the INAC portal: " ASEAN: atractiva región no explorada por Uruguay".
https://www.inac.uy/innovaportal/v/20542/17/innova.front/Acceso-e-Inteligencia-de-Mercado

Australia and New Zealand together placed USD 17.5 billion of meat almost exclusively from ruminants. These are the most stable exporters both in terms of value and market portfolio.

Argentina ended the year with placements in excess of USD 4 billion. This is a 5% increase in volume and 20% in value versus last year. More than half of the value exported corresponds to beef destined to China.

2.4. Uruguay in the International Market

In 2022, Uruguay exported more than USD 3.2 billion, equivalent to 3% of the global meat trade. Of the exports, 82% corresponds to beef, 4% to offal, 3% to sheep, 1% to horse meat. The share of poultry meat in the export basket is 0.03%.

As Figure 1 shows, trade in the first half of the year was bullish: it concentrated 60% of exports of all meats, with average values per ton up to 10% higher than those of the second half of the year. However, in the second half of the year there was a contraction of international demand, and exporting countries saw their exports shrink, being Uruguay no exception.

China maintained its leading role as the main beef market, accounting for 54% of the value exported. The United States (14%) and the European Union (12%) completed the podium. This ranking has remained unchanged for 8 years. The markets of Israel, Brazil and Japan appear on another level.

As to sheep meat, the two main destinations were China and Brazil. These markets show different dynamics: the former contracted 1% in relation to 2021 and traded carcasses; while the latter increased by 31% and traded cuts.

2.5. Market Access Procedures

To succeed entering the markets, countries need to address two issues well: tariff barriers and sanitary clearances. This section presents the progress made in this area during 2022.

- As for poultry meat, although it is the most popular animal protein worldwide, Uruguay is a marginal exporter. Last year, the country exported 1 million USD, partly due to the limited animal health authorizations, a situation that is being addressed. Uruguayan poultry meat imports were

authorized by Macao and Egypt in 2022, while the national sanitary authorities keep working to open relevant markets including China, Hong Kong, United Arab Emirates and Saudi Arabia. The private sector could aspire to export to the Middle East countries mentioned above in the short term.

-Exporters received relevant news on November 4, 2022, when they were authorized the export of beef tongue to Japan, the world's main importer of this product. Since then, Uruguay has been able to compete with the United States, Australia and New Zealand[5] in this market. This opening may increase revenues by USD 20 million.

Uruguay has applied to join the Trans-Pacific Partnership Agreement (CPTPP). This would imply heavy tax breaks for access to member markets, which to date include 11 countries (Australia, Brunei Darussalam, Canada, Chile, Malaysia, Mexico, Japan, New Zealand, Peru, Singapore and Vietnam), accounting for 19% of world meat imports[6]. This would contribute significantly to the diversification of markets and the valorization of exported tons.

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[5] Note published on INAC's website: " Potencialidades para Uruguay ante un ingreso al Acuerdo Transpacífico". https://www.inac.uy/innovaportal/v/22518/17/innova.front/mercado-de-lengua-bovina-en-japon:-contexto-y-ganancia-potencial-para-uruguay

[6] Note published on INAC's website: " Potencialidades para Uruguay ante un ingreso al Acuerdo Transpacífico". https://www.inac.uy/innovaportal/v/22218/17/innova.front/potencialidades-para-uruguay-ante-un-ingreso-al-acuerdo-transpacifico

3. Stock

Figure 3. Cattle and sheep stock, as of June 30. Thousand head. 2013-2022.
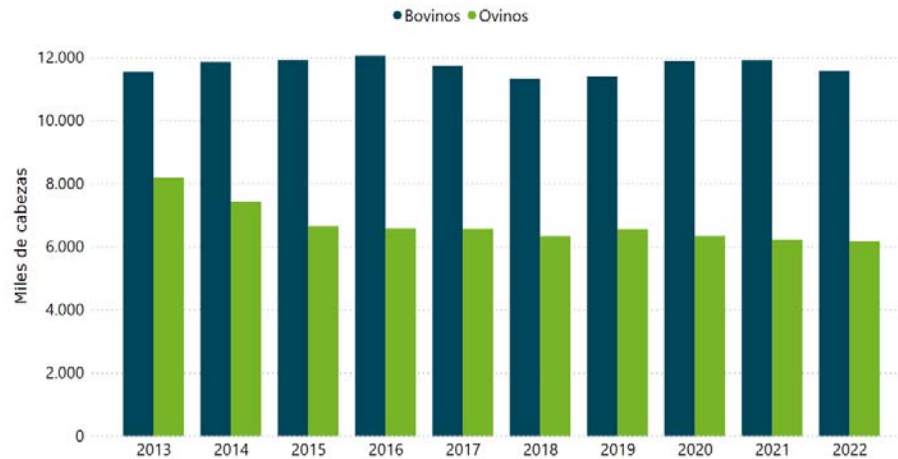
Source: Developed by authors based on MGAP/SNIG data.

As of June 30, 2022[7] the cattle stock was 11.5 million head, 3% less than the previous year (11.9 million) and also below the decade average of 11.7 million head.

Table 1. Cattle stock by category, stocks as of June 30. Thousand head. 2020-2022.

Año Categoría	2020 Miles de cabezas	2021 Miles de cabezas	Var (%)	2022 Miles de cabezas	Var (%)
Toros	185	183	-0,7	181	-1,0
Vacas de cría	4.354	4.321	-0,7	4.224	-2,3
Vacas invernada	482	495	2,7	446	-10,0
Novillos + 3 años	415	397	-4,1	349	-12,1
Novillos 2-3 años	628	668	6,4	636	-4,7
Novillos 1-2 años	1.059	1.166	10,0	1.122	-3,8
Vaquillonas 2 años	482	482	0,1	465	-3,5
Vaquillonas 1-2 años	1.262	1.295	2,6	1.231	-4,9
Terneros/as	3.015	2.900	-3,8	2.883	-0,6
Total	**11.881**	**11.908**	**0,2**	**11.537**	**-3,1**

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[7] Preliminary data - DICOSE stock affidavit - SNIG 2022.

Source: Developed by authors based on MGAP/SNIG data.

With a certain stability in the structure, some adjustments were observed in the last year. The final figures show a total of 2.1 million steers, a decrease of 118 thousand compared to 2021, yielding -6% variation. This drop is more important in the categories of adult steers (+ 3 years and 2-3 years). Both categories total about 988 thousand head, the lowest figure in the last decade. On the other hand, 1-2 year old steers totaled 1.1 million head, which is above the average of the last 10 years.

Figure 4. Steers by age, stocks as of June 30. Thousand head. 2013-2022.
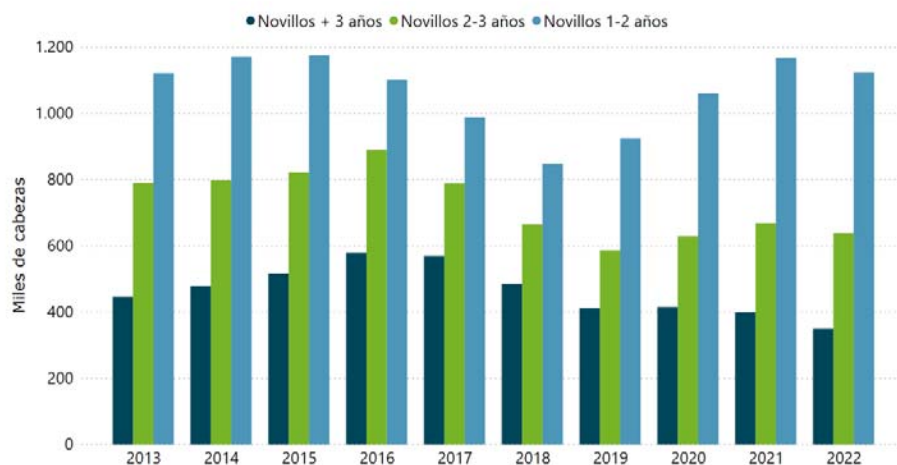
Source: Developed by authors based on MGAP/SNIG data.

The number of breeding cows (37%) - 4.2 million head- shows a certain decrease (-2%), which means 82 thousand breeding heifers as of June 30 of the previous year, slightly below the average of the last few years.

Calves totaled 2.9 million, slightly lower (-0.3%) than in 2021, but still over the previous 10-year average, as in the last 3 years.

With a slightly larger than average decrease (-4%), heifers still represent 15% of the animal stock, which is made up of 11% 1 to 2-year-old heifers and 4% unserved heifers over 2 years old.

As of June 30, 2022[8] the sheep stock was about 165 thousand head above 6 million. Compared to 2021, there is a new 1% reduction, reaching 3.3 million breeding ewes; despite a 2% reduction, they still account for 54% of the stock. Likewise, there was an increase in the different categories of lambs (+2%), totaling 1.7 million animals.

Table 2. Sheep stock by category, stock as of June 30. Thousand head. 2020-2022.

Año	2020	2021		2022	
Categoría	Miles de cabezas	Miles de cabezas	Var (%)	Miles de cabezas	Var (%)
Carneros	144	145	1,2	144	-0,8
Ovejas de cría	3.444	3.387	-1,7	3.305	-2,4
Ovejas descarte	240	212	-11,8	225	6,2
Capones	487	384	-21,2	331	-13,7
Borregas 2-4 se	443	435	-1,9	452	3,9
Corderas DL	742	794	7,0	793	-0,2
Corderos DL	575	587	2,2	639	8,8
Corderos mam.	262	284	8,5	275	-3,2
Total	**6.337**	**6.228**	**-1,7**	**6.165**	**-1,0**

Source: Developed by authors based on MGAP/SNIG data.

A different behavior was observed in the adult categories. While wethers decreased (-14%), cull ewes increased (+6%), totaling 556,000 head in both categories.

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[8] Preliminary data - DICOSE stock affidavit - SNIG 2022.

4. Slaughter

4.1. Cattle slaughter

Figure 5. Cattle slaughter per year. In head. 2013-2022.
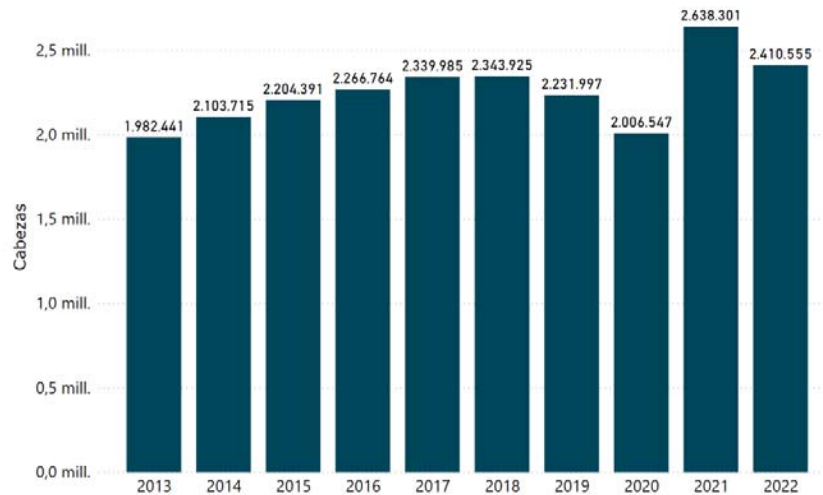
Cattle slaughter in 2022 reached 2,410,555 head, 9% less than in 2021. Although this meant a reduction of 227,746 animals, the figure remains above the last decade's average, being the third best historical record (behind 2021 and 2006).

The contraction was especially remarkable the third quarter of the year, being 29% less in head terms compared to the same period of the previous year.

If we consider the evolution of slaughtering along the year, in 2022 the third quarter again shows a correlation with the historical behavior (lower with respect to the other quarters), unlike what happened in 2021, where figures decoupled.

On the other hand, 673,978 animals were slaughtered in the first quarter, the highest figure for that quarter in the last decade.

If we analyze the share of each category and their behavior in 2022 with respect to the previous year, we see that 50% of the animals slaughtered were steers, followed by cows (35%) and heifers (13%), with few calves and bulls.

Table 3. Cattle slaughter by category per year. In head and percentages. 2013-2022.

Categoría Año	Novillos Cabezas	%	Terneros Cabezas	%	Toros Cabezas	%	Vacas Cabezas	%	Vaquillona Cabezas	%	**Total Cabezas**
2013	1.069.339	53,9%	12.569	0,6%	28.615	1,4%	688.723	34,7%	183.195	9,2%	**1.982.441**
2014	1.077.026	51,2%	15.445	0,7%	32.318	1,5%	792.155	37,7%	186.771	8,9%	**2.103.715**
2015	1.080.271	49,0%	16.129	0,7%	30.479	1,4%	842.146	38,2%	235.366	10,7%	**2.204.391**
2016	1.081.196	47,7%	15.256	0,7%	31.563	1,4%	886.175	39,1%	252.574	11,1%	**2.266.764**
2017	1.139.141	48,7%	10.903	0,5%	33.489	1,4%	871.672	37,3%	284.780	12,2%	**2.339.985**
2018	1.110.810	47,4%	17.823	0,8%	33.482	1,4%	884.958	37,8%	296.852	12,7%	**2.343.925**
2019	1.019.552	45,7%	10.234	0,5%	34.786	1,6%	861.102	38,6%	306.323	13,7%	**2.231.997**
2020	954.814	47,6%	7.515	0,4%	30.363	1,5%	734.834	36,6%	279.021	13,9%	**2.006.547**
2021	1.275.044	48,3%	12.988	0,5%	38.683	1,5%	980.380	37,2%	331.206	12,6%	**2.638.301**
2022	1.197.638	49,7%	7.699	0,3%	35.366	1,5%	846.068	35,1%	323.784	13,4%	**2.410.555**

Compared to recent years, there is an increase in the share of steers, which went from 46% to 50% from 2019 to 2022.

Conversely, at 13%, heifers are similar to the previous year but well above the value seen 10 years ago, when their share was 9%. This is largely explained by the gradual incorporation of this category into intensive finishing systems.

As for cow slaughtering, its share went down 2 percentage points, from 37% in 2021 to 35% in 2022.

Negative variations were observed in all categories and subcategories, with the exception of 2-4 teeth steers. This subcategory showed a 3% increase, equivalent to 19,609 head. In addition, in recent years there has been a significant increase in total slaughter, accounting for 29% of all animals in 2022.

On the other hand, the variation in the steers category was -6%; 77,406 animals less than in 2021, 77% (60 thousand) of which correspond to 8-tooth steers.

To be highlighted is that animals have been slaughtered at an earlier age in recent years, as a result of the increased share of intensive finishing systems in Uruguay.

Females as a whole decreased by 11%, mostly due to a 14% drop in 8-tooth cows, equivalent to 129,544 fewer animals, while the drop among heifers was smaller: 2% (7,422 fewer head).

Finally, calves and bulls also showed negative variations, falling 41% and 9%, respectively.

In 2022, cattle slaughter was carried out in 33 authorized abattoirs nationwide with different shares and specialization. Two of them slaughtered more than 200 thousand head: Frigorífico las Piedras S.A. and Frigorífico Tacuarembó S.A., which accounted for 10% and 9% of the total slaughter, respectively.

It should be noted that the 10 largest plants slaughtered 70% of the production, while a group of 13 plants slaughtered less than 20,000 cattle in 2022, accounting for 4%.

4.2. Sheep slaughter

Figure 6. Sheep slaughter per year. Number of head. 2013-2022.
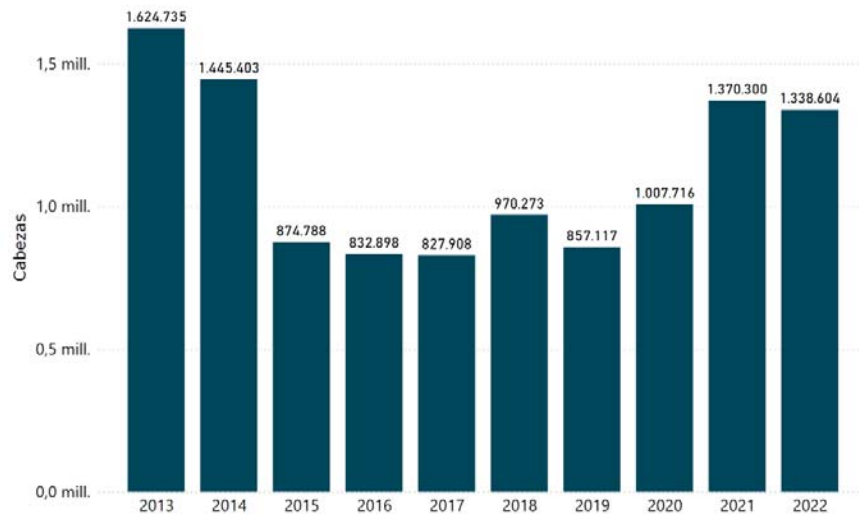
Sheep slaughtered in 2022 totaled 1,338,604 animals; that is, a 2% decrease compared to the previous year and 33% more than in 2020. Despite this reduction, it remains above the series average of 1.1 million sheep slaughtered.

The behavior seen in the first half of the year is similar to the previous year, with 42% of the total heads slaughtered and a lower seasonality, which is at an average of 36% in that semester for this decade.

Analyzing the variations by category in 2022 with respect to 2021, despite the decrease in total head slaughtered, some categories increased their share. Rams increased by 17%, yearling lambs by 13% and lambs by 3%, while wethers decreased by 36% and ewes by 1%.

In terms of the structure of sheep slaughter categories, 58% of the animals were lambs (781,895), while sheep accounted for 28% (377,316). Smaller was the share of wethers, with 8% (103,322) and hoggets accounted for 5% (65,028).

Table 4. Sheep slaughter by category per year. In heads and percentages. 2013-2022.

Categoría Año	Borregos Cabezas	%	Capones Cabezas	%	Carneros Cabezas	%	Corderos Cabezas	%	Ovejas Cabezas	%	**Total Cabezas**
2013	111.383	6,9%	203.915	12,6%	7.376	0,5%	925.685	57,0%	376.376	23,2%	**1.624.735**
2014	109.866	7,6%	134.096	9,3%	5.769	0,4%	816.634	56,5%	379.038	26,2%	**1.445.403**
2015	59.406	6,8%	88.174	10,1%	3.549	0,4%	524.405	59,9%	199.254	22,8%	**874.788**
2016	45.701	5,5%	99.443	11,9%	3.865	0,5%	533.102	64,0%	150.787	18,1%	**832.898**
2017	46.892	5,7%	101.785	12,3%	4.664	0,6%	500.743	60,5%	173.824	21,0%	**827.908**
2018	47.172	4,9%	115.271	11,9%	5.790	0,6%	594.655	61,3%	207.385	21,4%	**970.273**
2019	52.302	6,1%	123.899	14,5%	5.881	0,7%	487.124	56,8%	187.911	21,9%	**857.117**
2020	40.897	4,1%	152.226	15,1%	5.137	0,5%	603.242	59,9%	206.214	20,5%	**1.007.716**
2021	57.816	4,2%	161.772	11,8%	9.417	0,7%	760.786	55,5%	380.509	27,8%	**1.370.300**
2022	65.028	4,9%	103.322	7,7%	11.043	0,8%	781.895	58,4%	377.316	28,2%	**1.338.604**

As in 2021, there is still a high demand for adult animals. The sheep category maintains a high share in slaughter, reaching 28% for the last two years, with a 24% average value for the series.

The figures of lambs and hoggets went up by 2 and 1 percentage points, respectively, compared to the previous year, showing 8-year records for both categories and below the maximums reached in 2013 and 2014. Although rams are a marginal category (around 1%) of the total slaughtered, in 2022 they increased by 17% compared to the previous year, reaching the maximum value of the period with 11,043 head. As for wethers, they decreased by 4% compared to the previous year, reaching a 5-year low.

In 2022, sheep slaughtering was carried out in 16 authorized abattoirs nationwide. Six facilities slaughtered 91% of the animals, including Nirea S.A.

28.1%, Frigorífico Las Piedras S.A. 27.1%, Somicar S.A. 9.3%, Sidercol S.A. 9%, Bamidal 8.6% and Frigocerro 8.5%.

4.3. Average weight of livestock

4.3.1. Cattle

Over the last ten years, there has been an increase in the average weight of cattle slaughtered almost across all categories. Figure 7 shows the evolution from 2013 to 2022 for steers, cows, and heifers.

In 2022, despite the lower slaughter activity, the yield per animal increased, thus showing an increase in average weights in all categories.

Figure 7. Annual evolution of the average weight of cattle at the 4th scale by category. In kg/head. 2013-2022.
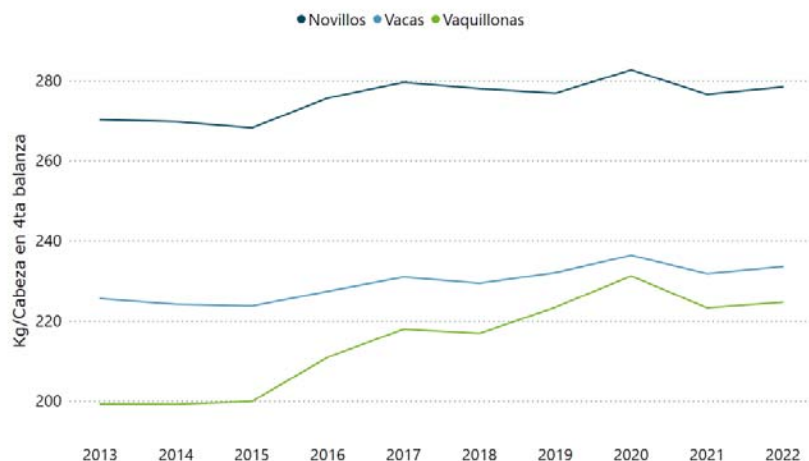
Figure 8 shows the monthly evolution of the average weight (4th scale) by category. In the case of steers, the average weight was 278.4 kg, 2 kg over the previous year. November stands out with the highest values, reaching a maximum of 291.8 kg.

The average weight recorded for heifers was 224.7 kg (higher than the 223.3 kg recorded in 2021).

There is also an increase in the 4th scale weight among cows, from 231.8 kg in 2021 to 233.6 kg in 2022 (+1.8 kg). The marked seasonality in the second half of the year is to be noted, with average weights exceeding 245 kg.

Figure 8. Monthly evolution of the 4th scale average weight of cattle by category. In kg/head. 2022.
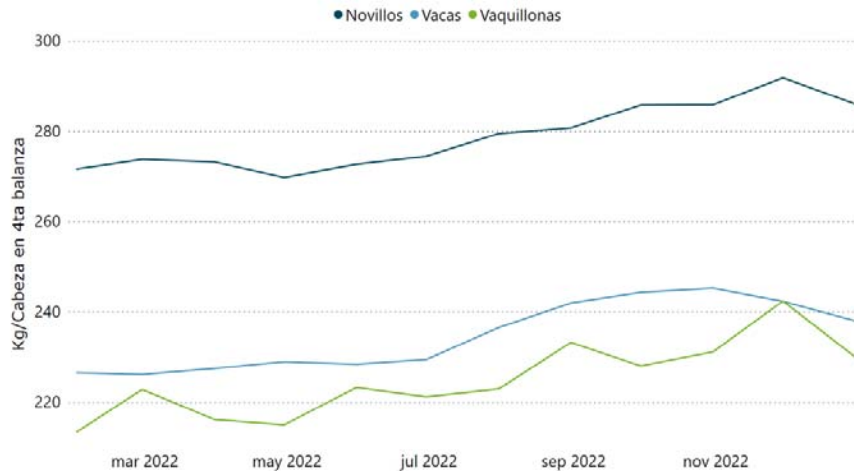
4.3.2. Sheep

The monthly evolution of hanging weight shows small variations compared to previous years. In the period considered in 2022, the maximum values that stand out correspond to hoggets (18.3 kg) and rams (28.2 kg). Slighter increases were also seen among wethers (20.9 kg) and ewes, with an average of 19.7 kg. Lambs averaged 16.6 kg, very similar to the weight seen in the last three years of the period.

Figure 9. Annual course of the average hanging weight by category. In kg/head. 2013-2022.

4.4. Feedlot

With over 160 feedlot facilities, the total number of feedlot animals slaughtered reached 373,161 in 2022, accounting for 16% of all the production (2,410,555). This value shows a 9% growth with respect to 2021 and is the highest annual value in the 10-year series that accumulates 2.6 million feedlot head slaughtered.
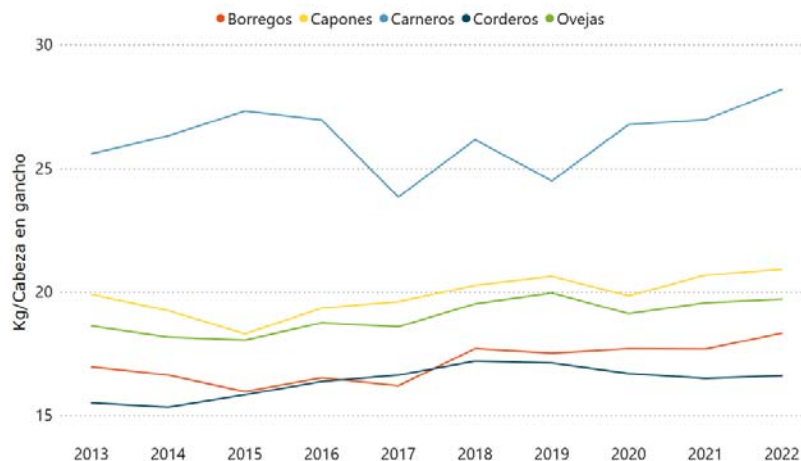
Table 5. Annual slaughter of cattle by category. In head and percentage of the category. 2013-2022.

Año	Nov corral	% Nov	Vaq corral	% Vaq	Faena corral	% total
2013	155.873	14,6	11.446	6,2	167.319	8,4
2014	153.473	14,2	13.622	7,3	167.095	7,9
2015	176.922	16,4	20.411	8,7	197.333	9,0
2016	181.226	16,8	40.704	16,1	221.930	9,8
2017	190.237	16,7	60.724	21,3	250.961	10,7
2018	208.320	18,8	62.659	21,1	270.979	11,6
2019	201.186	19,7	82.640	27,0	283.826	12,7
2020	223.844	23,4	71.536	25,6	295.380	14,7
2021	282.755	22,2	60.028	18,1	342.783	13,0
2022	322.062	26,9	51.099	15,8	373.161	15,5

Source: Developed by the authors based on SNIG data (up to year 2018) and INAC data since 2019.

Table 5 shows the feedlot slaughter - total and by category - showing a steady growth in absolute terms and in the proportion of the flock slaughtered each year.

However, this growth differed in several periods. Initially, since the authorization in 2012, slaughter grew in the first two years, to then remain stable between 2014 and 2017 with an average of 17.5 thousand head per month.

Growth resumed in the second half of 2017, showing a striking seasonality due to access conditions, since it was then they established the 481 quota in quarterly periods, as shown in Graph 10. This new behavior radically changed the monthly distribution of slaughtering, reaching monthly top levels in excess of 55 thousand head.

In the last five years, it went from under 10% in 2016 to 16% this year.

Figure 10. Monthly slaughtering by category. In head. 2013-2022.
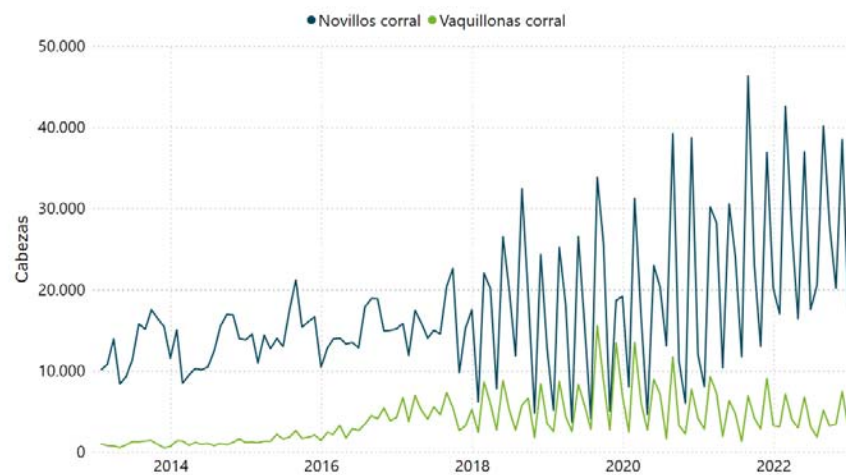
Source: Developed by the author based on SNIG (up to year 2018) and INAC sources since 2019.

Analyzed by category, steers and heifers behaved differently. Feedlot steers slaughtered went from 15% of the total slaughter of steers initially, to 27% of the steers slaughtered in 2022.

Heifers, in turn, gained momentum from 2016 onwards, reaching a peak of 27% of the heifers slaughtered in 2019 and then decreasing their share.

Figure 11 shows the feedlot slaughter by category, starting with a 93% share of steers and 7% of heifers, to the distribution observed in 2022 with 86% of steers and 14% of heifers.

Figure 11. Distribution by category of annual feedlot slaughter. In percentages. 2013-2022.
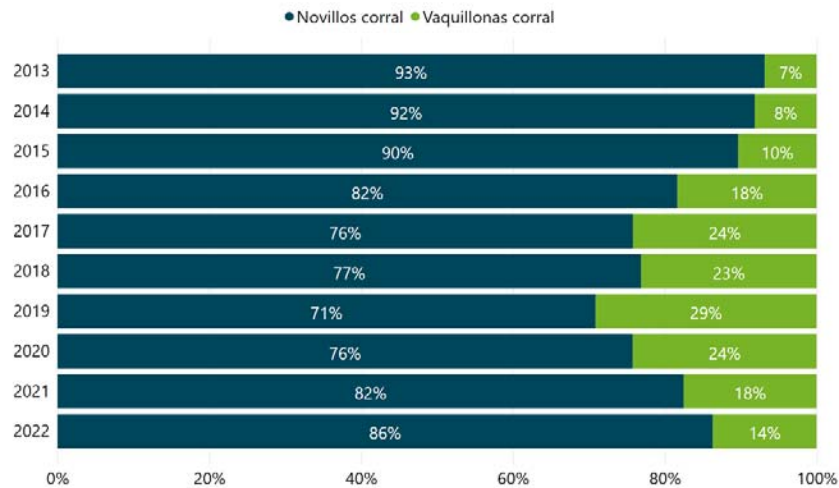
Source: Developed by the authors based on SNIG data (up to 2018) and INAC sources since 2019.

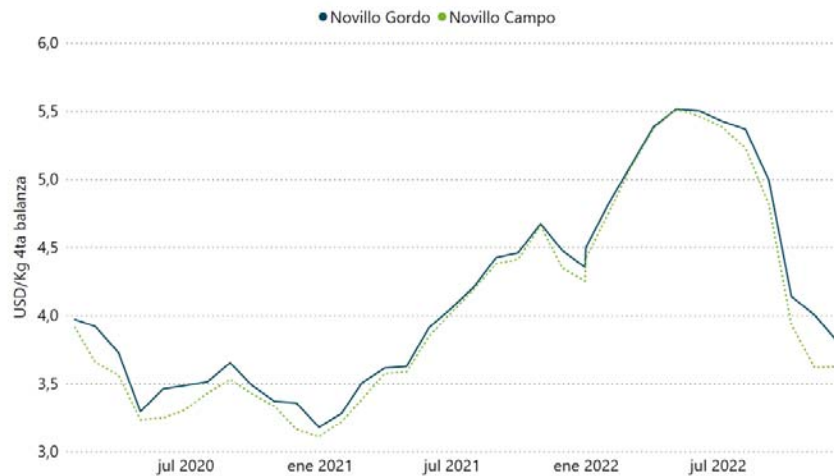# 5. Prices and Values

5.1. Fat cattle prices

Figure 12. Monthly evolution of prices of fat steer and field steer. In USD/kg 4th scale. 2020-2022.

Price Equivalent to cash value, delivered at abattoir.

Note: Cattle - Beef breeds and their crosses, fat conformation, over 380 - 370 Kilos live weight for steers and cows, respectively.

Figure 12 shows the evolution of prices of Fat steer[9] (solid line) and Field steer[10] (dotted line) in the last three years, for transactions completed at the 4th scale.

The backdrop of instability and uncertainty seen in 2020 led to a significant drop in cattle prices. The situation improved in 2021, allowing price indicators to recover their upward trend.

2022 started with very high values, maintaining the upward trend until May, when historical price records were reached: USD 5.51 and USD 5.52 per kg in 4th scale, for the Fat steer and Field steer, respectively (note that, in that month, the price of the Field steer was equal to that of the global Fat steer).

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[9] The indicator Fat steer 4th scale corresponds to steers over 380 kg live weight, of beef breeds and their crosses. It is calculated as a weighted average of the prices of all the herds registered in INAC's Electronic Meat Industry Information System (SEIIC). The "cash value" arises from deflating the price based on the number of days from purchase to payment and "delivered at abattoir" means that it includes freight.

[10] The Field Steer is calculated using the same criteria, but factoring in the source production system of the cattle. The indicator was developed to better reflect the prices of grass-fed cattle transactions; therefore, for its calculation, the operations corresponding to cattle identified as coming from feedlot facilities authorized by the SNIG are excluded.

Between June and August 2022, cattle prices remained stable with a slight downward trend; however, as of September there was an abrupt decrease, closing the year with values of USD 3.81 and USD 3.62 per kg in the 4th scale, for fat and field steers, respectively. This means variations of -15% and -18% in each case with respect to the beginning of the year.

The high volatility of prices observed in 2022 primarily affected grass-fed cattle, such that the gap between the Fat steer and Field steer indicators at times was either zero (May 2022) or widened to 5% (December 2022).

Figure 13 covers the last decade, with a broader view of the behavior of the indicators, in this case for the categories Fat steer and Fat cow[11].

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[11] The indicator Fat cow 4th scale corresponds to cows over 370 kg live weight, including beef breeds and their crosses. S is calculated as a weighted average of the prices of all herds registered in INAC's Electronic Meat Industry Information System (SEIIC). The "cash value" arises from deflating the price based on the number of days from purchase to payment and "delivered at abattoir" means that it includes freight.

Figure 13. Monthly evolution of the price of fat steers and fat cows. In USD/kg 4th scale. 2013-2022.

Price Equivalent to cash value, deliver at abattoir.

Note: Cattle - Beef breeds and their crosses, fat conformation, over 380 - 370 Kgs live weight for steers and cows, respectively.

The evolution of the indicators shows a seasonal behavior with an upward trend until May 2022, when a historical maximum was recorded not only for the steers category (as mentioned above) but also for the fat cow, reaching USD 5.20.

In December 2022, the prices were USD 3.81 for the Fat Steer and USD 3.25 for the Fat Cow, falling lower than in the early decade analyzed (January 2013).

Figure 14. Annual evolution of the fat steer/fat cow and field steer/fat cow ratios. 2013-2022.
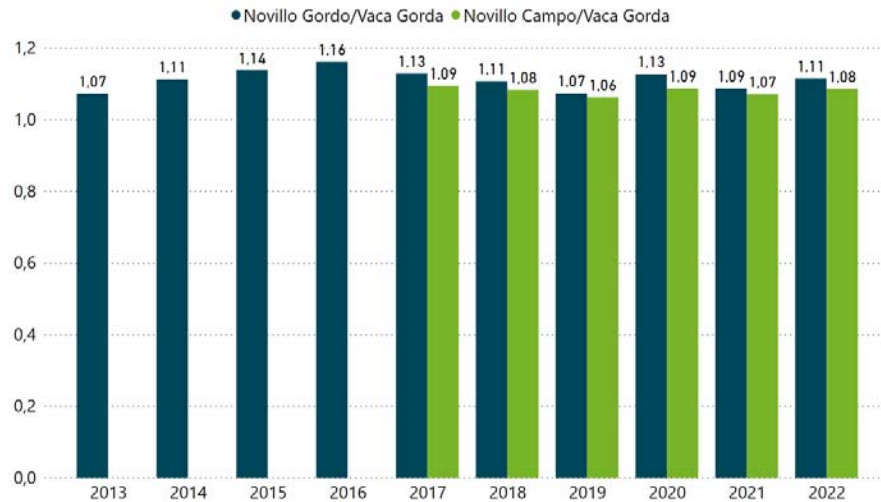

Price Equivalent to cash value, delivered to the abattoir.

Note: Cattle - Beef breeds and their crosses, fat conformation, over 380 - 370 Kilos in weight for steers and cows, respectively.

Figure 14 shows that from 2013 to 2022, the fat steers/fat cows ratio ranged from a minimum of 1.07 in 2013 to a maximum of 1.16 in 2016. That increase is largely due to the increase of steers sent to feedlots to be finished before slaughter, which began in 2012[12] in low volume and increased steadily in subsequent years.

However, as becomes apparent in the bar chart, if we compare the price between categories of grass-fed cattle, the ratio goes down. In the last 6 years, the average Field steer/Fat cow ratio was 1.08, while for the Fat steer, which includes feedlot finished cattle, the average ratio was 1.11.

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[12] In 2012, Uruguay began to use the 481 Quota, a quota for high quality meat exported to the European Union. The regulation of this quota requires that the animals be fed at least 100 days with an energy diet with the characteristics met by feedlot finishing.

5.3. Average Export Revenue

Figure 15. Annual evolution of the average export revenue of beef. In USD/Ton CWE. 2013-2022.

The average export revenue measured in dollars per ton of carcass weight equivalent ended at USD 4,937/ton CWE for 2022. This is 15% above the average revenue for 2021, which closed at USD 4,305/ton CWE. In other words, an additional USD 632 per ton exported compared to the previous year.

Figure 15 shows that this is the highest value for the last ten years of information, which also shows growth from 2017 to 2022.

Figure 16. Annual evolution of average beef export revenue by market. In USD/Ton CWE. 2013-2022.
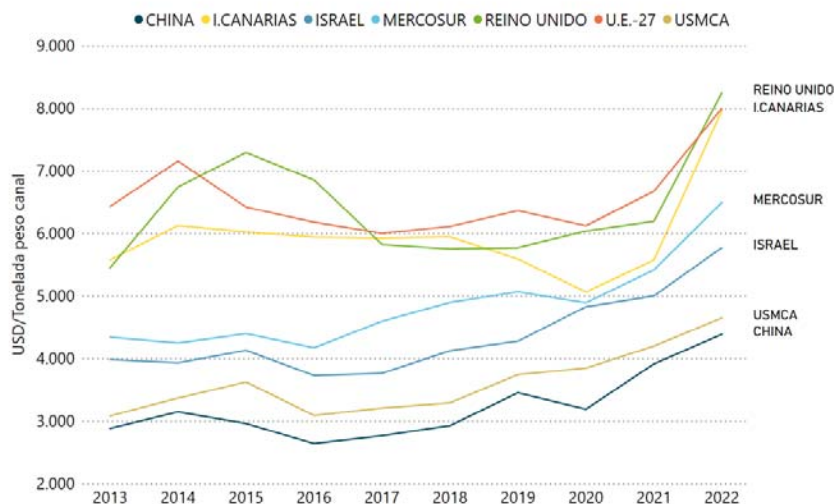
Analyzing the value for the main markets, ranking first in 2022 exports was the United Kingdom for the equivalent of an average revenue of 8,245 USD/Ton CWE, followed by the European Union with 7,996 USD/Ton CWE and in third place the Canary Islands with 7,962 USD/Ton CWE. In the case of China, the average revenue was 4,387 USD/Ton CWE.

As in the global analysis, there has been an increase in average income in recent years for the main markets.

Also to be highlighted is the comparison with the average export revenue from sheep meat. From 2013 onwards the average revenue for beef has been below that of sheep meat, with the exception of 2022, where it was paid USD 80 more per ton CWE than sheep meat.

With respect to the value by method of preservation, at the end of the year 2022, chilled meat was USD 5,013/ton CWE and the beef product was USD 3,139/ton CWE.

Despite the above analysis, it should be noted that in 2022 the average revenue had a significant decrease that started in September, and it reached an average value of 4,044 USD/Ton CWE until the last month of the year. The values recorded in the second quarter of 2022 are the highest in the last decade for the average revenue (5,330 USD/Ton CWE), being also one of the

highest periods in terms of exported volume reaching 151,381 tons CWE. As a result, the annual average is the highest in the series analyzed.

5.4. Cattle-to-exports ratio (HER)

The Herd/Export ratio is a statistical indicator obtained from data publicly available relating cattle prices to the average export revenue. This ratio reflects the impact of the average cattle value is on the average export value; when both values are equal, the ratio is 1. It is a weekly indicator calculated from weighted rolling averages (3 weeks), meant to provide transparency and relevant information to the sector.

Figure 17. Weekly Evolution of the Herd/ Exports Ratio for steers. 2013-2022.
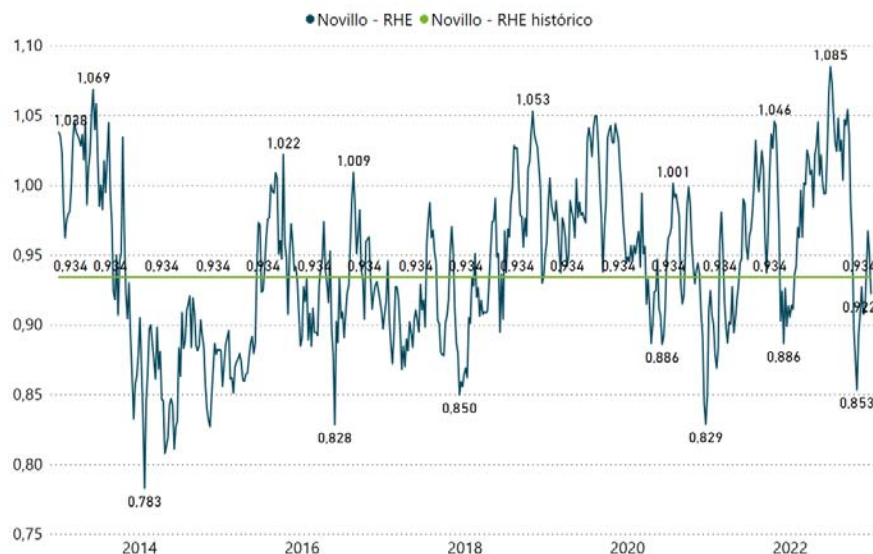
For the 2022 steer HER, there are values above 1 for several weeks and hence also exceeding the historical value calculated since 2005 (0.934) especially between March and September. The latter is a consequence of the increase in cattle prices at a higher rate of growth with respect to the average export revenue. It should be noted that during 2022 the weekly value of the indicator for steers was above the historical average for 41 weeks.

From September onwards, the value of both components of the steer HER fell and the rate of reduction in the herd is higher than the average export revenue. Consequently, the indicator falls beyond the historical values, reaching a trough of 0.853 in November. It then corrected towards the average value and reached 0.922 in the last week of the year.

Figure 18. Weekly evolution of the Herd/ Exports Ratio for cows. 2013-2022.
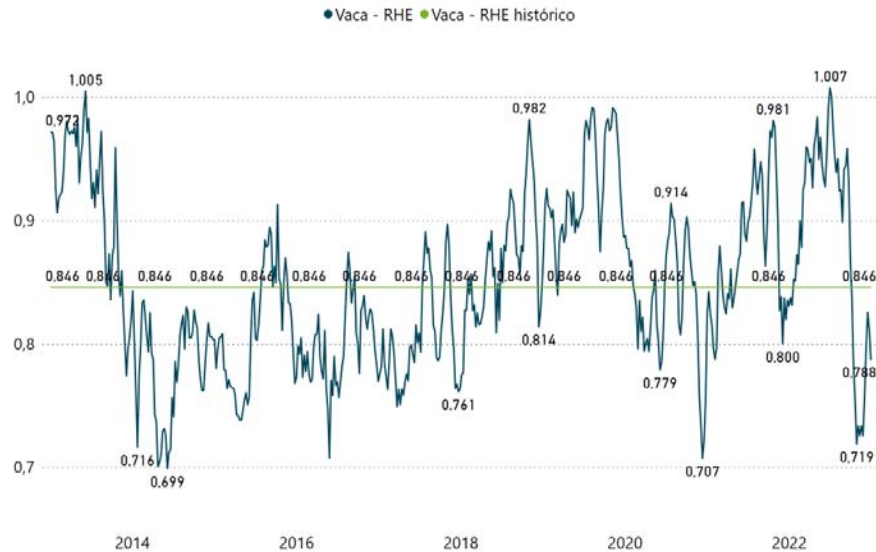
For cows, the historical HER value is 0.846, which reflects that the value per kilogram paid for this category is lower than the average of the total beef exported. All its components also soared to historical values, but unlike the steer HER, variation rates were lower. This behavior occurred most of the year (up to September), resulting in above-historical values (0.846) for 37 weeks.

5.5. Steer Type 2.0

5.5.1. Value of Steer Type 2.0

As a result of the adjustments made in the calculation of the historical indicator (Steer Type), an updated version (Steer Type 2.0) was released in January 2022, to reflect the changes seen in recent years in the production and commercial chain. Like the historical type steer, this new indicator intends to be simple and robust, to enhance the transparency of transactions among the agents of the meat chain.

The average sales value of the products[13] into which a steer is broken down after the industrial process is estimated, considering the sales abroad and in the domestic market proportionally. It is calculated using a standard steer
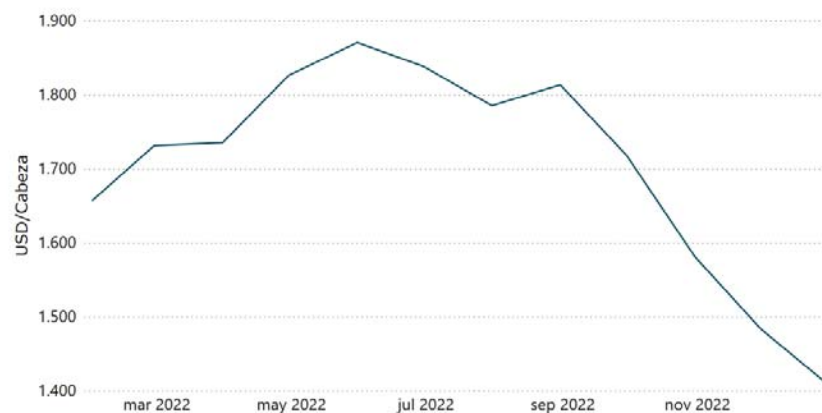
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[13] All products obtained after slaughter are valued: meat, hides, offal and by-products.

with a live weight of 520 kg, with a dressed carcass weight of 281 kg (54% yield in the 4th scale).

Figure 19 shows the monthly evolution of the Type 2.0 steer in its first year of existence.

Figure 19. Monthly evolution of the value of steer type 2.0. In USD/head. 2022.

The value of Type 2.0 steer begins to show an increasing trend until its peak (USD 1,870 per head) in May. However, this figure is not sustained in the following months; as the graph clearly shows, it begins to fall in June, so that by December it presents the lowest value of the entire series - USD 1,407 per head - a 15% drop with respect to the beginning of the period. This behavior is mainly explained by a decrease in the value of the products of the export basket, in a similar percentage; there is also a retraction in the price of offal and by-products.

5.5.2. Cattle value and industrial aggregate

As a business monitoring tool, the Type 2.0 Steer shows the relationship between the income obtained from the commercialization of the products derived from the industrial process and the price paid for the purchase of the cattle[14]. The difference between the two corresponds precisely to the Industrial Value Added (IVA), which includes all costs and profit margins (or loss) derived from the management of the company.

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[14] The value of the cattle corresponds to the Heavy steer indicator defined by INAC.

The following graph shows the percentage share of cattle and industrial value added in the Steer Type, considering the accumulated value of the year within the period of analysis.

Figure 20. Monthly and annual share of type 2.0 steer components in percentages. 2022.
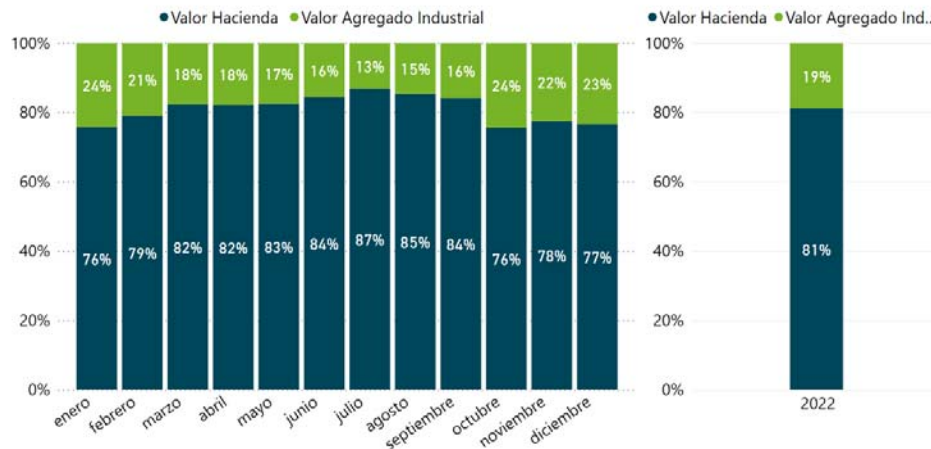
The 2022 accumulated value of the Type 2.0 steer (average weighted by head of steer slaughtered) was 1,707 USD/head with a share of 81% and 19%, cattle and value added, respectively. January and October show the highest levels of industrial value added (24%), while July shows the lowest value of the whole series (13%). This is due to variations that affected one of the components (type steer or cattle) in a more pronounced way.

In July, the low percentage of industrial value added was due to the decrease in the value of the Type Steer, while the price of cattle remained stable at record values. From September onwards, the price of cattle started a strong downward trend, allowing a certain recovery in the industrial value added.

6. Domestic market

6.1. Marketing of domestic meat

Figure 21. Evolution of the annual volume of national meat sold domestically by species. In tones of product weight. 2015-2022.
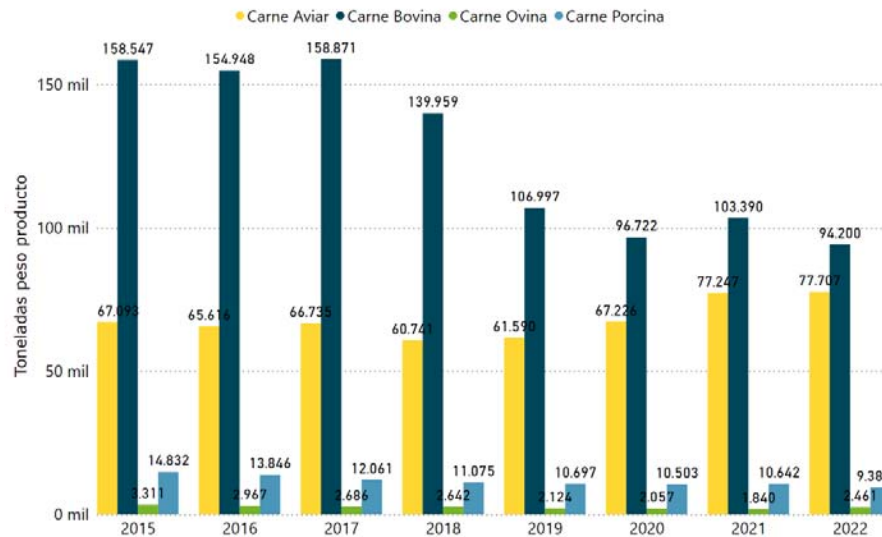
The volumes of beef and poultry meat of national origin traded in the domestic market remained stable in the period 2015-2017. However, the volumes of pork and sheep dropped in that period. From 2018 to 2020, there is a pronounced drop in the volumes of beef shipped, with a slight recovery in 2021. A new drop is observed again in 2022, reaching the lowest figure in the series.

Although poultry showed a sharp drop in 2018, the trend reverted from 2019 and until the end of the series.

After an increase in marketing volume in 2021, there was a 5% decrease in 2022 compared to the previous year. This behavior is mainly explained by the decrease in cattle and swine volumes.

It should be noted that the main destination of meat of national origin is domestic slaughter.

6.2. Meat imports

Figure 22. Evolution of the annual volume of meat imports by species. In tons of product weight. 2014-2022.
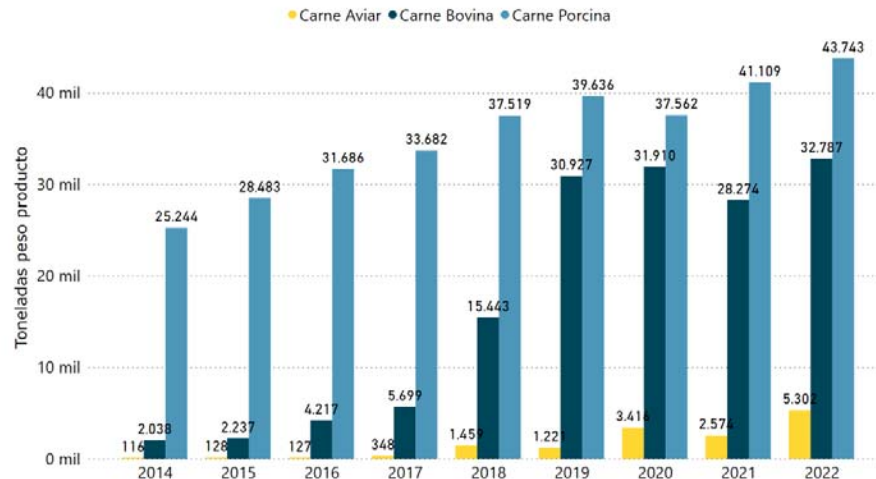
Source: Developed by the author based on URUNET data.

There was a sustained growth in meat imports of all species until 2020, while in 2021 there was a slight decrease with respect to the previous year due to the drop in the volume of beef and poultry, despite the increase in pork.

In 2022, the maximum volume of imports of all species was reached, totaling 81,832 tons. Compared to 2021, there was a 14% increase, explained by the increase in the volume of poultry (106%), beef (16%) and pork (6%).

6.3. Consumption

Table 6. Meat consumption by type. In kg/inhabitant/year. 2015-2022.

Especie	2015	2016	2017	2018	2019	2020	2021	2022
Carne bovina	53,5	53,2	54,6	52,7	47,9	45,7	46,0	45,1
Carne aviar	19,8	19,4	19,8	18,3	18,5	20,8	23,7	24,5
Carne porcina	16,0	16,9	16,5	18,4	19,9	18,3	19,3	20,5
Carne ovina	3,7	3,2	2,9	2,8	2,5	2,5	2,2	2,4
Total	**93,0**	**92,7**	**93,8**	**92,2**	**88,8**	**87,3**	**91,2**	**92,5**

In 2022, the estimated total consumption of meat protein reached 92.5 kg/inhab/yr, which implies a 1.3 kg growth versus the previous year, as a result of a higher demand for pork, poultry and sheep meat, partially neutralized by a decrease in the demand for beef. There has been a consecutive reduction of meat consumption since 2018, a situation that reversed in 2021 and 2022; an accumulated increase of 5.2 kilos was observed in those two years.

Beef consumption reached 45.1 kg/inhab/yr in 2022, a decrease from the previous year.

The second most consumed meat in Uruguay is poultry, which has maintained an upward trend over the last three years, with its steepest growth in 2021 (2.9 kg/inhab/yr). In 2022 the increase was 0.8 kg/inhab/yr.

After a drop in pork consumption in 2020, an upward trend was observed in 2021 and 2022, with 1.0 and 1.2 kg/inhab/yr increases, respectively.

The consumption of sheep meat grew in 2022. The magnitude of the increase is due to both an increase in the domestic volume and in its main component (farm slaughter).

Figure 23 shows the evolution of the proportion of each type of meat consumed, showing a trend towards a decrease in the consumption of meat from ruminants and, consequently, an increase in the share of meat from monogastric animals. Indeed, beef and sheep meat together go from 62% in 2015 to 51% in 2022. Poultry and pork, on the other hand, went from 39% to 47% in the same period.

Figure 23. Distribution of annual meat consumption by type. In percentages. 2015-2022.
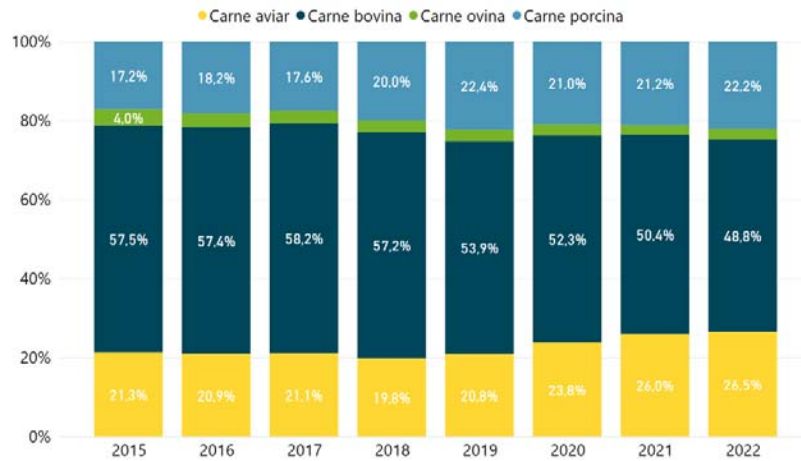
6.4. Consumer Price Index

Figure 24. Monthly evolution of the consumer (retail) price index by species. 2015-2022.
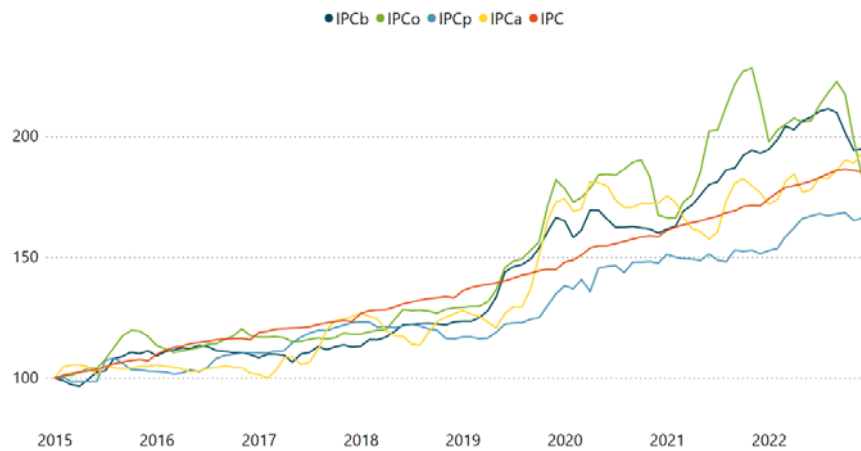
Note: The indices are based on January 2015 current pesos.

Source: Developed by the authors based on INAC/INE data.

The evolution of retail prices is presented in Figure 24 through the consumer price indices (CPIs) of beef (bCPI), poultry (pCPI), swine/pork (swCPI), and sheep (shCPI) and their relationship with the CPI.

Until early 2019, the price indices of the different meats were relatively aligned and evolved below the CPI. From then on, there was a decoupling of the variables.

The beef and sheep meat price indices evolved surpassing the CPI until the end of the series, unlike the swine meat price index, which evolves below the CPI and the other indices throughout the series.

The poultry meat price index evolved above the CPI from October 2019 to March 2021, when it started to behave above or below the CPI.

Considering the year 2022, it is noteworthy that the poultry meat index evolved below that of beef and sheep meat, in addition to showing a behavior aligned with the CPI. Beef and sheep meat reached their highest values in September 2022, and ended the series with a significant decrease.

7. Exports

7.1. Total meat sector

Table 7. Evolution of the volume of exports of the meat sector by product. In tons of shipment weight. 2013-2022.

Toneladas peso embarque	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CARNE BOVINA	241.852	248.876	264.254	298.929	309.638	331.785	332.259	310.858	423.199	392.813
CARNE DE ANIMALES DE CAZA MENOR	197	151	130	86	106	111	99	75	80	72
CARNE DE AVE	11.682	14.508	5.202	3.749	2.881	2.917	2.214	956	464	606
CARNE EQUINA	4.678	5.663	6.005	5.216	6.216	6.314	6.361	5.493	8.119	7.727
CARNE OVINA	18.934	17.244	9.415	8.650	11.306	12.351	12.654	14.897	21.987	17.430
CARNE PORCINA					0	1		2	12	13
MENUDENCIAS	26.636	28.930	29.417	32.295	33.725	34.263	33.842	31.621	43.658	38.575
PRODUCTO CARNICO GENERICO					0	0	0	0	1	2
PRODUCTO CARNICO PARA ALIMENTACION ANIMAL	564	1.253	1.050	544	1.263	592	479	967	2.672	3.154
SUBPRODUCTO INDUSTRIALIZADO	49.144	48.959	53.773	64.715	57.704	50.910	38.728	34.893	49.908	43.246
SUBPRODUCTO PRIMARIO PARA USO INDUSTRIAL	50.634	49.161	63.094	54.826	59.995	57.529	57.825	61.183	79.159	100.489
SUBPRODUCTO RESIDUAL COMESTIBLE	14.912	32.307	22.220	37.592	53.663	65.502	75.540	72.980	92.121	87.858
Total	419.234	447.052	454.561	506.603	536.497	562.274	560.003	533.927	721.380	691.984

In 2022 Uruguay shipped 691,984 tons; that was the total amount of products from the meat sector, being 4% lower than in 2021.

While beef went down 7%, sheep meat -21%, and offal -12%, by-products for industrial use increased 27%.

This volume exported by the meat industry yielded a total income of US$3.21 billion, an all-time record for foreign currency income by the meat sector, surpassing the 2021 figures, the highest amount registered to date.

This represented an increase of US$163.1 million in revenues, compared to 2021, indicating a 5% variation (66% compared to 2020).

Table 8. Evolution of the amount of meat sector exports by product. In thousands of dollars FOB. 2013-2022.

Miles USD	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CARNE BOVINA	1.338.093	1.471.930	1.464.183	1.474.673	1.542.062	1.670.176	1.823.262	1.592.627	2.463.798	2.634.621
CARNE DE ANIMALES DE CAZA MENOR	1.406	1.157	1.096	717	915	876	752	546	535	402
CARNE DE AVE	22.747	29.933	7.362	4.528	3.361	3.444	2.516	1.019	465	1.049
CARNE EQUINA	18.964	23.142	23.299	20.447	24.528	27.591	24.920	20.026	32.674	33.392
CARNE OVINA	91.949	95.077	54.979	46.850	60.858	69.174	69.766	75.753	124.258	98.503
CARNE PORCINA						1	3		11	46	53
MENUDENCIAS	85.787	103.804	95.830	92.172	102.502	112.780	108.876	89.155	148.694	133.744
PRODUCTO CARNICO GENERICO						1	1	0	0	3	8
PRODUCTO CARNICO PARA ALIMENTACION ANIMAL	1.254	3.592	3.042	1.626	3.581	1.335	717	814	2.376	3.085
SUBPRODUCTO INDUSTRIALIZADO	54.682	52.368	46.115	40.560	37.372	39.805	36.483	36.108	53.986	67.294
SUBPRODUCTO PRIMARIO PARA USO INDUSTRIAL	40.664	35.924	30.686	27.004	33.822	28.380	30.132	40.485	71.863	118.234
SUBPRODUCTO RESIDUAL COMESTIBLE	14.805	32.985	22.883	32.812	48.115	63.061	89.172	79.773	148.392	119.847
Total	1.670.349	1.849.912	1.749.475	1.741.388	1.857.118	2.016.627	2.186.596	1.936.317	3.047.091	3.210.232

In terms of shares, 82% of the income came from beef, followed by offal, which accounted for 4% and sheep meat 3%.

A comparative analysis with respect to the previous year shows that the main variations were 7% in beef (an additional US$170.8 million), 21% in sheep meat (US$25.8 million less) and 10% in offal (US$15.0 million less).

As to destinations, with US$1,767,3 M China accounted for 55%, followed by USMCA[15] with 15% (US$485.1 million), the European Union 12% (US$383.4 million), Mercosur 6% (US$180.4 million) and Israel 3% (US$84.0 million).

The main variations were seen in China with a 3% reduction; USMCA, the European Union and Mercosur grew by 35%, 10% and 23%, respectively.

Mainly associated with the demand for beef, other markets show positive variations in the contribution of foreign currency compared to the previous year: United Kingdom 18%, and Canary Islands 26%.

[15] USMCA: United States, Mexico and Canada

7.2. Beef

In 2022, beef exports reached USD 2,634.6, representing 82% of total foreign exchange and remaining the main item in the industry. In terms of CWE volume, the 533,631 tons shipped meant 7% less than the previous year (572,254 tons).

If we look at the last ten years of information, again the foreign exchange generated is higher than all the values of the series, surpassing the maximum value attained in 2021, this difference represents an additional US$170.8 million, as mentioned above. This growth is partly explained by the increase in export prices. In the case of tons CWE for 2022, it is only surpassed by the previous period, being the second highest value considering all periods. It was in these last two years that beef products ranked 500 thousand tons.

Figure 25. Annual evolution of beef export volume. In tons CWE. 2013-2022.
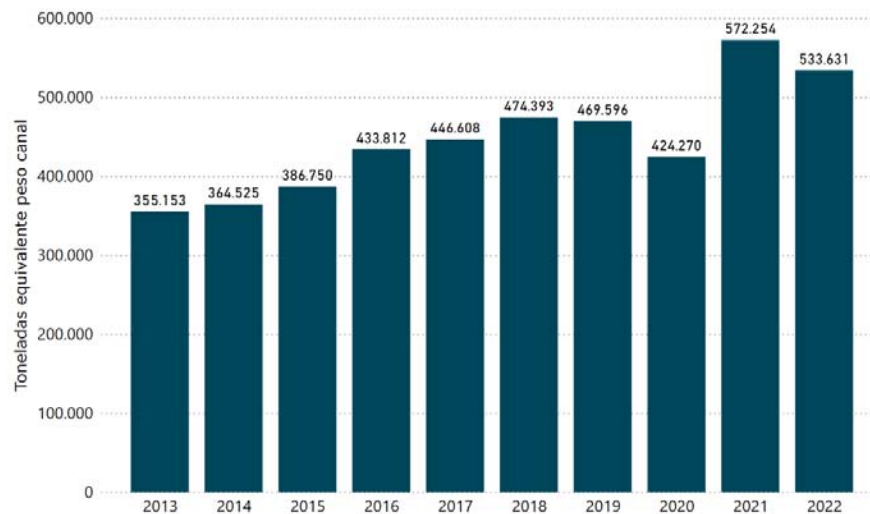
The average export revenue for 2022 ended up being US$4,937 per tons CWE; with US$632 per ton exported above the average value of the previous period; this represents a 15% increase.

In terms of destinations, 63% of the exported volume went to China (the main destination), reaching 338,166 tons CWE; this means there was a 9% negative variation with respect to 2021. Yet, placement levels remain high for this destination, as in recent years. Ranking second, with a share of 17%, USMCA reached 90,916 tons that year; this means an increase of 11%

compared to the previous period. Third came the European Union with 39,239 tons CWE, 7% of the total; this meant a decrease of 1,922 tons compared to 2021. These three markets account for 87% of the total CWE volume exported.

On the other hand, Mercosur completed 18,016 tons CWE (-8%) and although the number of tons exported is lower than in the previous year, there is a recovery compared to recent years, albeit not reaching the 2013 and 2014 levels. Within the bloc, 9,366 and 8,649 tons were exported to Brazil and Chile, respectively.

Other destinations to highlight are Israel with 14,272 tons CWE (-18%), less tons than the previous year, but showing a recovery compared to 2019 and 2020 which were the lowest in the last decade. The share of that destination for the period analyzed is 3% over the total; Japan 8,560 tons CWE (-13%); United Kingdom 3,824 tons CWE (-12%); Canary Islands 3,256 tons CWE (-12%) and South Korea 950 tons CWE (-74%). These destinations account for 6% of the total volume in the market structure.

In summary, except for USMCA, where there was an increase of 9,291 tons over the previous year, fewer tons CWE were exported to the main destinations.

Figure 26 shows the percentage market share for the last decade.

Figure 26. Distribution of annual beef exports by destination. In tons CWE. 2013-2022.
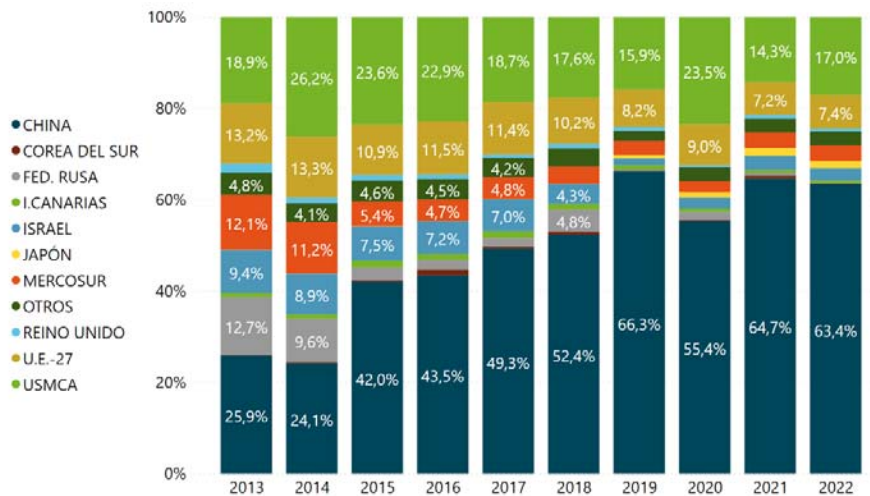
Note: The E.U. market is grouped by current destinations for all years.

Considering bone-in meat and boneless meat, the share of the former remains at 13% of the total, 67,708 tons CWE, with China being the main destination for this type of product. On the other hand, 87% corresponds to boneless meat, with 465,923 tons.

Classified in terms of preservation method, refrigerated meat represents 96% (511,911 tons CWE) of the total volume, with 457,010 (89%) frozen and 54,901 (11%) chilled meat.

7.3. Sheep meat

In 2022, sheep meat exports showed a 16% drop in volume expressed in CWE, with 20,278 tons, 3,796 tons less than the previous year.

*Figure 27. Annual evolution of sheep meat export volume. In tons CWE. 2013-2022.*
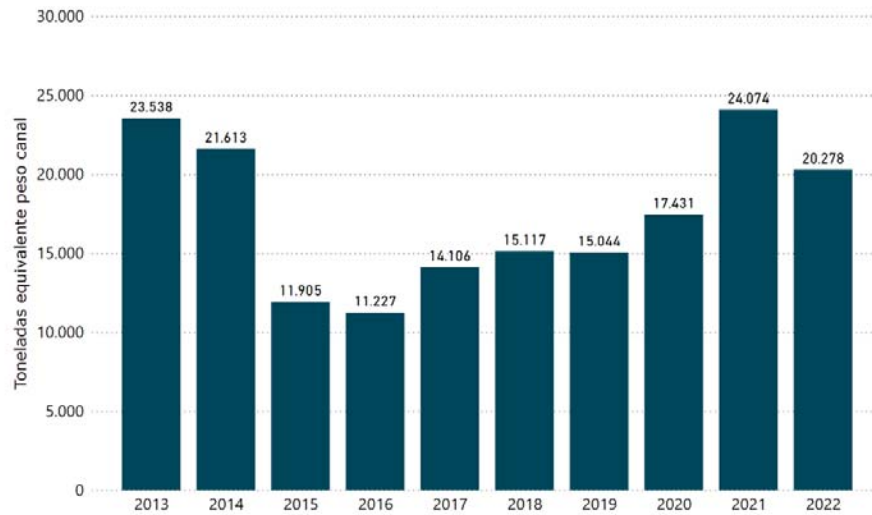
Revenue from sheep meat was US$98.5 million, 21% lower than the previous year; it represented 3% of the sector's total income.

In 2022, the average value of exported sheep meat was USD 4,857 per tons CWE, 6% lower than the peak reached in 2021 and placing it second for the period analyzed.

Regarding destinations, Figure 28 shows the evolution of the share in the main markets. Although China had been showing growth in the last six years of the series, in 2022 its figures went from 80% to 48% of the CWE volume. This means a 49% reduction, reaching 9,760 tons CWE. Second is Mercosur, represented entirely by Brazil, with a 21% share and 4,216 tons CWE. Third is USMCA, with a 7% share of 1,485 tons CWE, and an increase in volume of 11% over the previous period. The European Union, with a 7% share (1,369 tons CWE), but it should be noted that the volume placed increased almost 5 times over the previous year.

Figure 28. Distribution of annual sheep meat exports by destination. In tons CWE. 2013-2022.
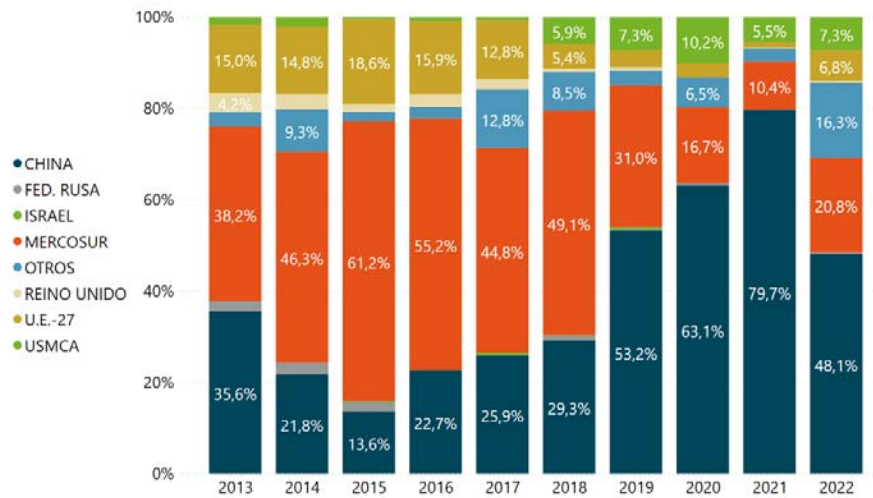
Note: The E.U. market is grouped by current destinations for all years.

It should be noted that in 2022, other markets increased their imports of this product, including the Arab Emirates, Kuwait and Oman. These three stand out with an 11% share in total exports; together they total 2,164 tons CWE.

7.4. Export of live cattle

Figure 29 shows the evolution of the live cattle exported, showing significant variations with a cumulative figure of more than 2.5 million head (an annual average of 256 thousand head) for the period; a value equivalent to one year's slaughter.

Figure 29. Annual evolution of live cattle exports. Head. 2013-2022.
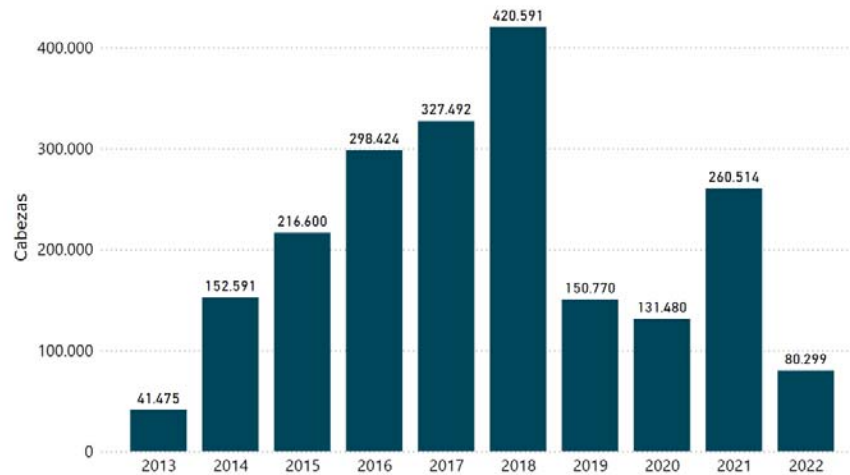
Source: Developed by the author based on DNA

In 2022, 80,299 head were exported, a 70% drop compared to 2021, the fourth lowest record of the decade.

As a result, there will be a decrease in foreign currency income, reaching a total of US$75.8 million, 65% less than in 2021.

The average of the last ten years shows live export rates of 9.2% in relation to slaughter and 1.8% in relation to stock. In 2022, those figures were 7.0% for slaughter and 1.6% for stock.

As for export destinations, there have been changes throughout the period, with a very important predominance of Turkey; in 2014 it considerably reduced its share and in some years (2016-2019) it accounted for more than 90% of placements.

Figure 30. Distribution of annual live cattle exports by market. In percentages. 2012-2023.
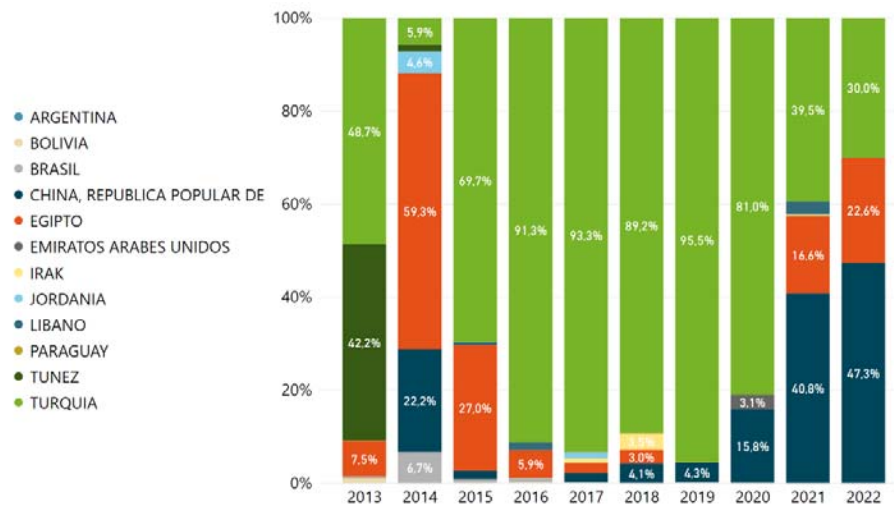
Source: Developed by the authors based on DNA

In 2022, China consolidated its position as the main destination with a 47% share of total head exported, followed by Turkey (30%) and Egypt (23%).

As to the purposes declared for the exports, there have also been some changes in the last three years, in relation with the new destinations. Forty per cent of the animals were exported for finishing, and 60% (mainly females) for breeding, pulled by the Chinese demand.

In terms of age, most of the animals exported are young, being under 2 years of age. Thirty-eight per cent of all are under 1 year old and 52% are between 1 and 2 years old.

In terms of breeds, the information shows that in 2022, 89% corresponded to meat breeds and 11% to dairy breeds.