

THE BRAZILIAN MEAT SECTOR AND THEIR INTERACTIONS WITH INTERNATIONAL TRADE

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EXECUTIVE SUMMARY

The Brazilian meat complex is one of the main national agribusiness chains. The numbers make this position very clear: in 2017, the meat sector was responsible for 31% of agribusiness GDP, generating for the country R\$ 433 billion. However, although the Brazilian animal protein sector is frequently treated as a homogeneous unit (such as the previous example and at various points in this report), it is important to be clear that this productive capacity is mainly formed by three distinct segments: beef, pork, and poultry. Despite the differences, which will be detailed in the sequence, all these chains have in common an expressive representativeness, not only supplying the internal market but also making Brazil a protagonist in the international trade of these products - in both cases, contributing to stimulating the national economy.

Still considering the external market, it is important to point out that Brazil is the largest supplier of beef and poultry to the world, besides being the fourth largest exporter of pork. In this way, the meat sector, by putting itself as one of the main sector in the Brazilian export agenda, contribute to the national economy, not only generating employment and income, but also playing a decisive role in the surplus of the trade balance and in the development of reserves the country, which gives Brazil more stability in relation to external accounts.

Given the complexity of the animal protein Agro-Industrial chains, the following sections will detail the most important points of the meat complex according to its main links (agricultural or industrial) and, finally, from their interactions with the international trade, with particular emphasis on the trade balance and the trade barriers associated with each type of meat.

LIVESTOCK PRODUCTION: THE PROGRESS OF NORTH AND CENTRAL-WEST

Currently, the Brazilian meat complex places Brazil as the 2nd largest producer of beef and poultry on the planet and the 4th largest producer of pork in the world. These three animal protein chains account for 25% of the entire gross value of national agricultural production. Although this production is dispersed in practically all Brazilian regions - in more technical terms, it is a dispersed production, both in relation to the number of producers and in the number of producing regions, it is important to highlight.

- Together, between 1996 and 2016, the cattle herd grew 38% in Brazil. During the same period, the growth of the pig herd was of 37% and the chicken, 86%;
- After these years, while cattle herd were concentrated primarily in the North and Central-West regions (56% of the total), the South and Southeast regions centralized the largest fractions of the herds of pigs and chickens (67% and 72% of the total, respectively);
- However, the participation of each region in the number of animals described above does not represent a static image; over the last two decades there has been a strong expansion of these creations, even in regions that still do not lead the concentration of these "herds." In this sense, deserve emphasis, on the one hand, the growth of the cattle herd in the North region and, on the other hand, the expansion of the swine and chicken herds in the Central-West region.

INDUSTRIAL PRODUCTION OF MEAT AND THEIR DERIVATIVES: A MIRROR OF THE AGRICULTURAL PRODUCTION

In 2016, the industrial production of the meat complex reached the value of R\$ 175 billion. Decomposing this number, the industrial production of beef and beef products was responsible for the largest fraction of this income (50.4%, equivalent to R\$ 88.2 billion), followed by the production of poultry (32.3%, equivalent to R\$ 56.6 billion) and pork production (17.3%, equivalent to R\$ 30.2 billion).

All of this income was generated in Brazil through approximately 1,100 cattle slaughterers, 646 of pigs and 280 of chickens. All those enrolled under federal, state or municipal inspection. However, it is important to note that the vast majority of these establishments are federally registered, which guarantees them the ability to operate in any national market or even to direct their production to foreign markets.

The production of the meat and its derivatives follows, like a mirror, the presence of the herds. In that direction, it is not surprising that the main slaughterhouses responsible for the production of beef, pork and poultry are respectively in the states of Mato Grosso, Santa Catarina, and Paraná, precisely those units of the federation that have the largest herds of the respective animals.

FOREIGN TRADE: THE GREAT ACTOR OF THE MEAT COMPLEX

Although the meat has a significant participation in the daily Brazilians diet, the foreign market has a prominent role in the final destination given to the production of animal protein chains. Brazil

leads the world ranking of the largest exporters of beef and poultry and is the 4th largest supplier of pork on the planet. In general, agricultural markets are characterized by low concentration on both the supply side and the demand side. Even so, despite these characteristics, Brazil's share as a meat supplier for the world market is quite high (at least for agricultural market standards): Brazil is responsible for 35% of all poultry internationally traded, 19% of beef and 9% of pork.

Among the factors that contributed decisively to Brazilian beef exports gaining such a large share of the international market, deserve to be highlighted:

- The commercial opening in the 90s;
- Economic agreements between blocks and countries;
- The depreciation trend of the Brazilian currency against the dollar - at least in the current decade; and
- Favorable edaphoclimatic conditions, availability of land, incorporation of technology, and that combined generated significant gains in productivity.

COMMERCIAL BARRIERS: A WALL OF IMPOSITIONS TO BRAZIL

Currently, Brazilian meat exports reach more than 160 countries - the global demand would not be supplied if not been for the Brazilian offers. Even so, the trade barriers are strongly present for the national meat complex.

According to the numbers available from the International Trade Center (UNCTAD/WTO), it is possible to identify at least 20 barriers, both tariff and non-tariff. It is important to highlight that the expansion of the participation of Brazilian meat in the international market has been followed by an increasing number of barriers. The year 2017 was exceptionally complicated due to the unfolding of the so-called Operation Weak Meat, which alarmed the markets and had used as justification for the imposition of additional barriers to Brazil.

Despite this, the Brazilian meat complex has proved to be robust and, even with all the negative marketing coming with Operation Weak Meat, combined with the uncertainties associated with the Brazilian economy, the market shows positive signs in 2018. It is expected that the production and exports of meat will exceed the numbers recorded in 2017.

1. AGRICULTURAL PRODUCTION

1.1 AGRICULTURAL PRODUCTION

The Brazilian Gross Domestic Product (GDP) finished the year 2017 in R\$ 6.56 trillion, while the agribusiness closed in R\$ 1.42 trillion, representing 22% of the total GDP. The Brazilian meat sector, composed of swine, poultry, and beef, was responsible for 31% of agribusiness GDP in 2017, ending the year at R\$ 433 billion. Brazil is still the 4th largest producer of pork in the world and the 2nd largest producer of poultry and beef.

Despite the decline in 2016 compared to 2015, the Brazilian agricultural exports recovered and reached a record volume in 2017, representing 44% of total exports, equivalent to about US\$ 96 billion of the US\$ 218 billion exported by Brazil. The meat complex was one of the major causes of this result, as shown in Graph 1, been responsible for 7% of Brazilian exports, around US\$ 15 billion, in the fifth place in the overall ranking.

Graph 1

PARTICIPATION OF PRODUCT GROUPS OF BRAZILIAN EXPORTS IN 2017



Source: Ministry of Development Industry and Commerce – MDIC (2018) ¹.

In order to better understand the relevance of this sector, it is important to determine the mapping of meat production in Brazil, for which different databases are used information in both national and regional levels, for some cases state data are also evidenced. The production volume and value data are presented.

¹ Available at: <http://www.mdic.gov.br/index.php/comercio-exterior/estatisticas-de-comercio-exterior/series-historicas>

This observation is important, since the Brazilian meat sector needs to be presented and considered in each of its segments, beef, pork, and poultry, in a disaggregated way since the production, commercialization and industry present the data in this way. In addition, the representativeness of each of these segments for the meat sector, agriculture and the economy, in general, is quite different.

1.2 MEAT SECTOR IN THE INITIAL POINT: EFFECTIVE OF THE HERDS

In Brazil during 2016, the herds presented 218 million head of cattle, about 40 million swines, and 1.4 billion chickens, according to data indicated by the Municipal Livestock Survey (Brazilian Institute of Geography and Statistics - IBGE, 2018). The concentration of swine and chickens are herds concentrated in the South of the country, with 50% and 45% respectively, followed by the Southeast region with 17% and 27%, respectively. For cattle, this pattern changes, the region responsible for the largest herd is the Midwest with 34%, 75 million head, followed by the North region with 22%, which represents about 48 million head.

Table 1
EFFECTIVE OF HERDS (MILLIONS OF HEADS) BY TYPE AND PARTICIPATION IN THE HERD FOR THE BRAZILIAN REGIONS IN 2016

REGION	EFFECTIVE OF HERDS					
	CATTLE		SWINE		CHICKEN	
	HEADS	%	HEADS	%	HEADS	%
NORTH	47,98	22	1,44	4	50,93	4
NORTHEAST	28,47	13	5,83	15	156,26	12
SOUTHEAST	39,12	18	6,77	17	359,85	27
SOUTH	27,58	13	19,95	50	612,58	45
MIDWEST	75,07	34	5,96	15	172,67	13
BRAZIL	218,23	100	39,95	100	1.352,29	100

Source: IBGE – Municipal Livestock Research (2018) ².

² Available at: <https://sidra.ibge.gov.br/pesquisa/ppm>

Over the last decades, the number of herds has presented a significant growth rate, both in Brazil and in their regions. The most significant growth in Brazil is the number of heads of chickens that increased 86% between 1996 and 2016, followed by cattle with 38% and swine with 37%. The Central-West region had the highest growth rate of swine and chicken for the period analyzed, 150% and 263%, respectively. The North region was the most important related to the cattle herd with a growth rate of 167%.

Table 2
GROWTH RATE OF HERDS FOR THE BRAZILIAN REGIONS BETWEEN 1996 AND 2016

REGIONS	CATTLE	SWINE	GALLINACEOUS
NORTH	167%	-39%	70%
NORTHEAST	19%	-18%	31%
SOUTHEAST	7%	40%	49%
SOUTH	4%	59%	112%
MIDWEST	41%	150%	263%
BRAZIL	38%	37%	86%

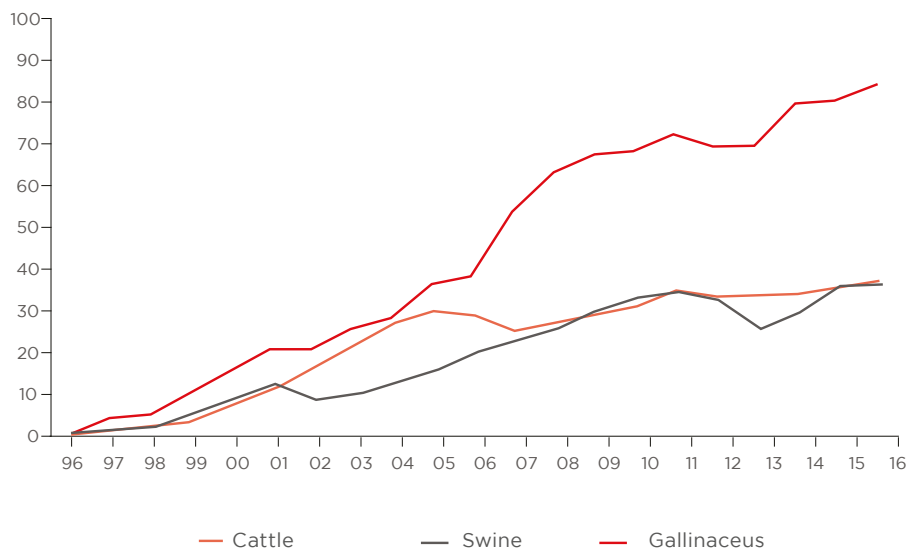
Source: IBGE – Municipal Livestock Research (2018) ³.

The evolution of the rate of this growth in Brazil is presented in the Graph 2, where it can be observed that the swine herd jumped 37% between 1996 and 2016, rising from 29 million head to 40 million. This growth was stable over the years, with falls in 2002 and 2013, where the size was 32 and 37 million head, respectively. In 2012 the main inputs for the production of swine presented an expressive increase in raising the costs of production and explaining the fall of around 2 million head between 2012 and 2013.

³ Available at: <https://sidra.ibge.gov.br/pesquisa/ppm>

Graph 2

THE CUMULATIVE GROWTH RATE OF HERDS IN BRAZIL BETWEEN 1996 AND 2016



Source: IBGE – Municipal Livestock Research⁴.

The cattle herd, which in 1996 had about 158 million heads distributed throughout Brazil, grew by 38% in 20 years, reaching 218 million head in 2016. The growth of this herd, like that of swine, has been stable over the years and reached one of its peaks in 2005, with 207 million head, a growth of 31% in relation to 1996. From 2005 the size of this herd declined in the two subsequent years and returned to its growth trajectory in 2008 and in 2010 it managed to surpass 2005 levels for the first time, reaching 210 million head, an increase of 32%.

In line with the herds already mentioned, gallinaceous also show a growth trajectory over the years, with 728 million heads in 1996, reaching 1.35 billion in 2016, a growth of 86%. In 2006 this herd reached the first mark of 1 billion head, a growth of 39% in relation to 1996. Between 2011 and 2012, it was registered their first drop for the period observed, about 23 million head, during a time that Brazilian agriculture was affected by a drought that reduced the agricultural production destined to the production of feed and bran for animal feed.

⁴ Available at: <https://sidra.ibge.gov.br/pesquisa/ppm>

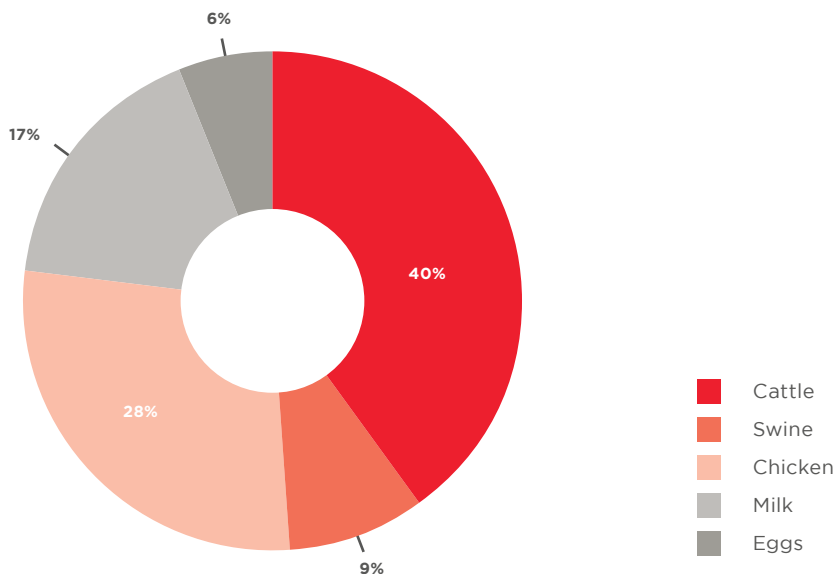
1.3 VALUE AND VOLUME OF PRODUCTION

Brazil has the largest herds of cattle, swine and chickens for slaughter in the world. Some factors contribute to these numbers: territorial extension, favorable climate and investments in agricultural research. The development of technologies for the producers as well as the agroindustry's of the sector is converted into productivity gains. The distribution of Brazilian meat production does not show a uniform distribution throughout the Brazilian regions and states. Next are presented volume and value of production, which together with the herd data compose the map of the agricultural production of meat in Brazil.

The Brazilian Gross Value of Production (GVP) ended the year 2017 at about R\$ 540 billion, livestock is responsible for 33% of this value, about R\$ 176 billion. The most significant participation in livestock is the cattle, which account for about 40% of the value, approximately R\$ 70 billion, as shown in Graph 3.

Graph 3

GROSS VALUE OF BRAZILIAN LIVESTOCK PRODUCTION FOR THE YEAR 2017



Source: MAPA⁵ - Prepared by FGV.

5 Available at: <http://www.agricultura.gov.br/assuntos/politica-agricola/valor-bruto-da-producao-agropecuaria-vbp>

When we consider cattle, pigs and chicken, the GVP of these segments is 135 billion reais, about 25% of Brazil's total and 77% of the total livestock, showing the relevance of this segment within the national production.

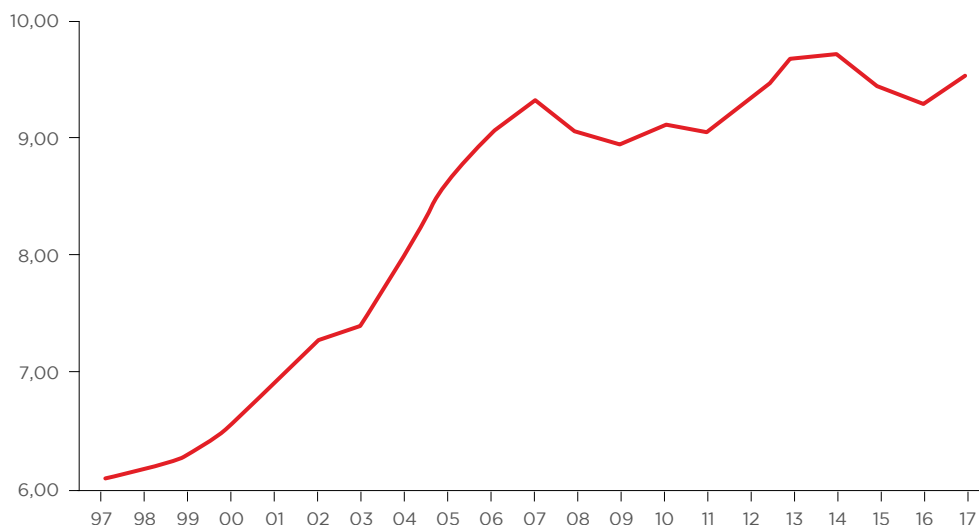
1.3.1 CATTLE

Brazil, with 218 million cattle head, is the largest herds in the world and according to data from the United States Department of Agriculture - USDA⁶ (2018), in 2017 at the second position in this ranking, behind only India. The world production of this sector is also the second largest in the world, being only behind of the United States and presenting a growth rate between 1997 and 2017 of 58%, as shown in Graph 4.

In the first decade, between 1997 and 2007 there was an expressive increase of 54%, coming from the mark of 6 million tons and reaching 9.3 million. Between 2000 and 2005 there was Bovine Spongiform Encephalopathy in Europe, also known as "mad cow disease", during which time there was greater acceptance of Brazilian beef in the foreign market, boosting production by 32% in this period. From the year 2000, the livestock sector has observed successive increases in the price of meat, which also helps to explain the observed growth rate.

Graph 4

PRODUCTION GROWTH OF BRAZILIAN BEEF IN MILLION TONS BETWEEN 1997 AND 2017



Source: USDA, 2018⁷.

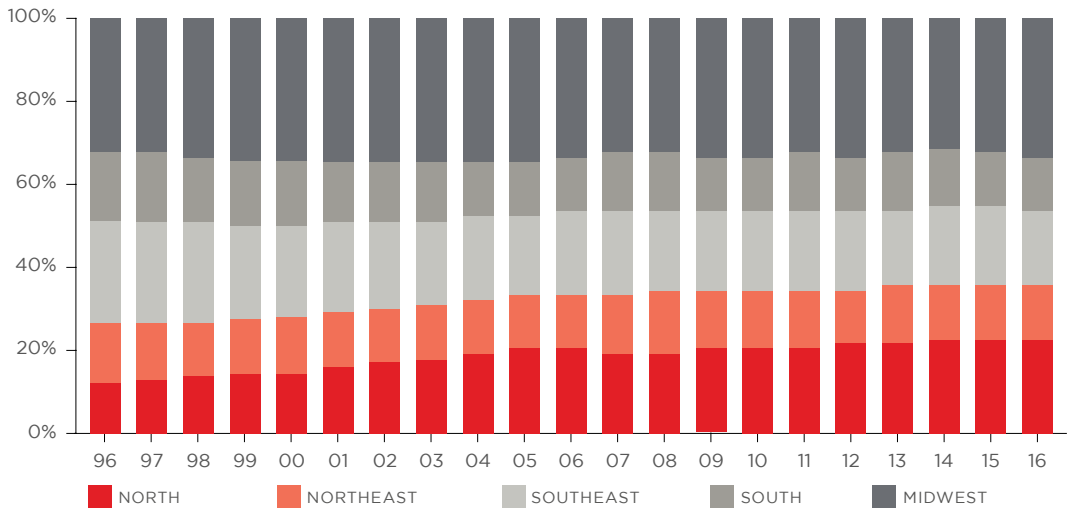
6 Available at: <http://www.agricultura.gov.br/assuntos/politica-agricola/valor-bruto-da-producao-agropecuaria-vbp>

7 Available at: <http://www.agricultura.gov.br/assuntos/politica-agricola/valor-bruto-da-producao-agropecuaria-vbp>

After 2007 the production behavior remained stable, reaching 9.55 million tons in 2017, an increase of 2.7% in the period. The production record came in 2014 with a production of 9.72 million tons. The growth of Brazilian production surpassed the growth of cattle herds. While production increased by 58%, the herd showed a growth of 38%, indicating successive productivity gains in the sector. As already mentioned, the Midwest and North regions represents 56% of the total head of the herd. However, this was not always the standard, the Midwest region, between 1996 and 2016 always responsible for about 34% of the Brazilian total, as shown in Graph 5. In 1996 this 34% represented around 53 million head, already in 2016, the part came to represent 75 million.

Graph 5

PARTICIPATION (%) OF THE BRAZILIAN REGIONS IN THE CATTLE HERD IN THE PERIOD FROM 1996 TO 2016



Source: IBGE - Municipal Livestock Research⁸.

In 1996 the Southeast was the second position, with 23% of the herd, approximately 37 million head. Over the years, the number of heads of herd in this region has increased to about 39 million head, but this number corresponds to about 18% of the total, which puts the region as the holder of the third largest herd in Brazil.

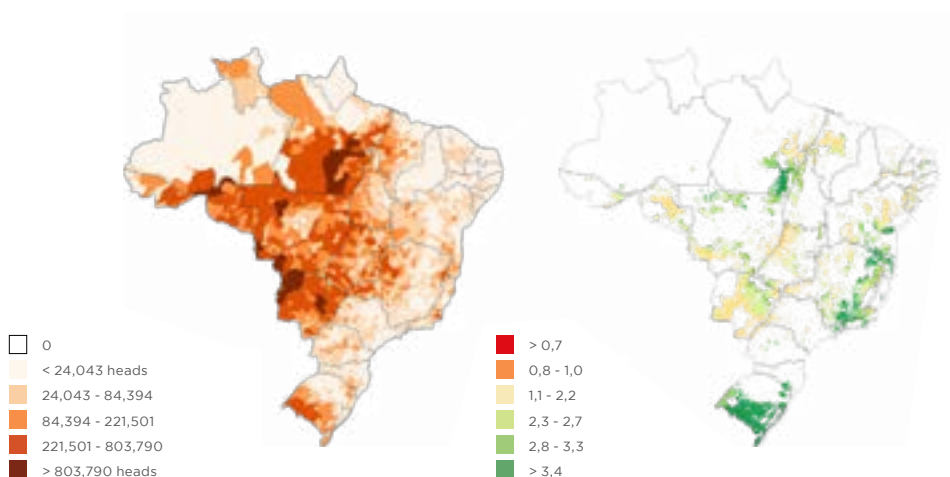
8 Available at: <https://sidra.ibge.gov.br>

The South region was responsible for 17% of the total in 1996, or about 26 million head, the herd of the region reached a total of 28 million head in 2016, but now represents 13% of the total. The Northeastern region that in the beginning held about 24 million heads, 15% of the total, in 2016 accounts for 13% or 28 million head. The most evident case is in the North region, in 1996 was responsible for 11% of the Brazilian cattle herd, about 18 million head, and in 2016 saw this size expand by 11 percentage points, reaching 22% of the total, about 48 million of heads.

The strong growth of livestock in the North began in the 1970s and 1980s, with federal government programs to expand the agricultural frontier and occupation of the Amazon. In addition, in a more recent scenario, the expansion was driven by low land prices and good water availability. The states responsible for this growth are Rondônia and Pará. Although the Northern region has a good rate of expansion, in the last decade this growth was more timid, 2 percentage points between 2006 and 2016. Figure 1 shows the concentration of the cattle herd in 2016 (left) and also the potential for intensification of livestock (right).

Figura 01

CONCENTRATION OF BRAZILIAN HERDS IN 2016 AND POTENTIAL OF BRAZILIAN LIVESTOCK INTENSIFICATION



Source: Lapig⁹ – Prepared by FGV.

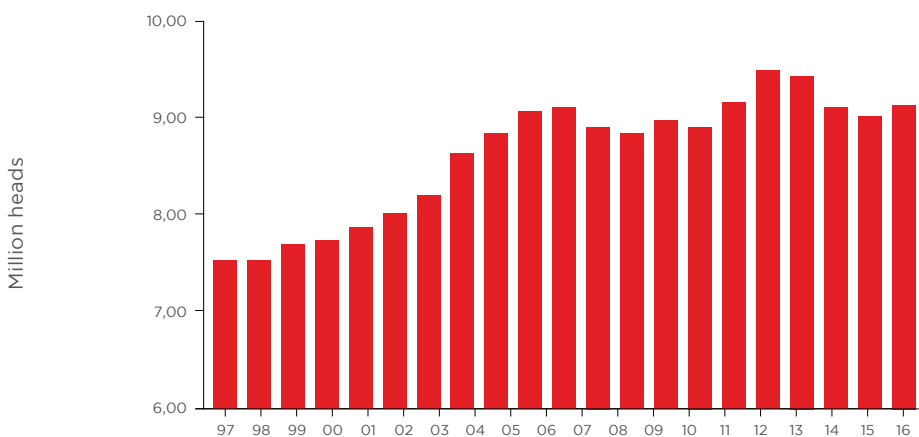
⁹ Available at: <http://maps.lapig.iesa.ufg.br>

The panel on the right in Figure 1 determines the potential for intensification of livestock measured in animal unit per hectare¹⁰. It is worth mentioning that there is still a large space for cattle raising intensification in Brazil, since historically the stocking rate of the activity is extremely low, about 1 animal unit per hectare. The Pampa biome, present only in the state of Rio Grande do Sul and with a great areas of natural pastures, stands out with great potential for intensification, followed by the state of Minas Gerais and southeastern of the Pará state. The intensification of livestock farming is one of the key pieces to promote the sustainable expansion of the sector, increasing the competitiveness of the activity and adding value in the time that promotes the conservation of ecosystems and the biodiversity of the biomes where the activity is inserted.

In addition, following the increase in the number of cattle, the slaughter in the country showed a marked increase between 1997 and 2017, as illustrated in Graph 6. Between 1997 and 2007 the number of slaughters increased year by year, jumping from 15 million heads slaughtered to about 31 million, an increase of 106%. To the detriment of the world economic crisis of 2008, with repercussions in Europe during the following years, and that directly affected the volume of exports by the sector, there was a negative variation in the number of animals slaughtered between 2008 and 2011. In addition, with the dissemination of some cases of epizootics in the herd, the sector faced obstacles and temporary restrictions imposed by some countries on meat coming from Brazil.

Graph 6

EVOLUTION OF CATTLE SLAUGHTER IN BRAZIL IN MILLIONS OF HEADS BETWEEN 1997 AND 2017



Source: IBGE - Quarterly Survey of the Slaughter of Animals¹¹.

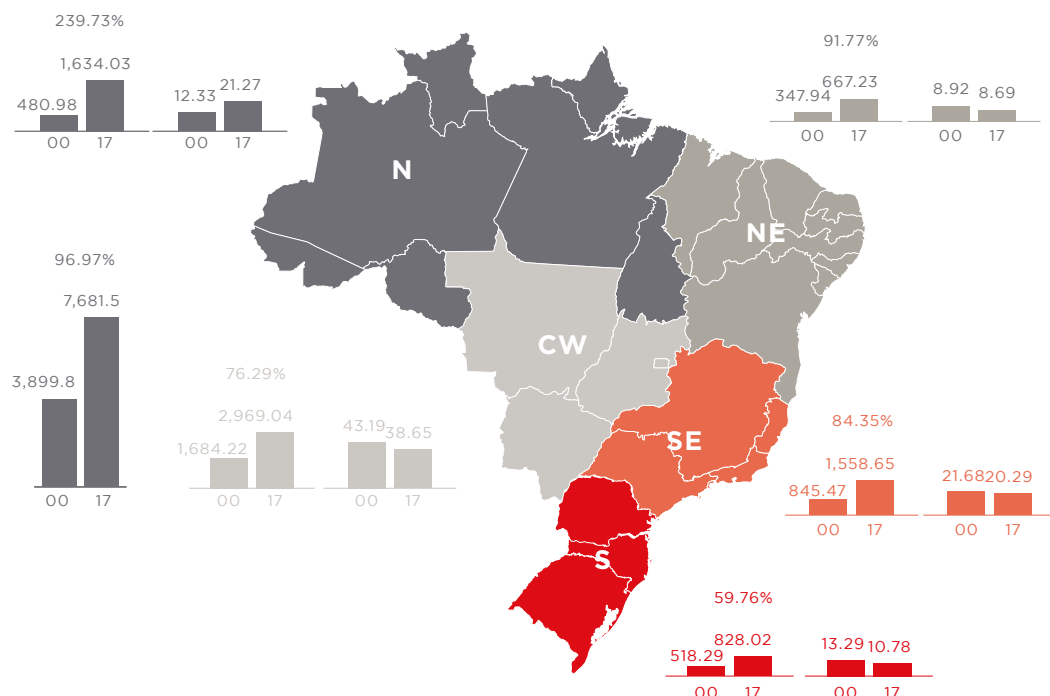
¹⁰ The potential intensification is determined by the difference between the potential carrying capacity of pastures and the rate of bovine stocking.

¹¹ Available at: <https://sidra.ibge.gov.br>

In 2012, the sector is growing again and in 2013 reaches the record number of slaughtering's for the period analyzed: 34.4 million head, a growth rate of 131% compared to 1997. However, between 2013 and 2016 there is a decrease in the slaughter rate, reaching 29.7 million heads slaughtered. This number can be explained by the economic crisis that created a reduction in domestic demand for red meat, which was partially replaced by white meat that presents a lower cost per kilo for the consumer. In 2017, the number of heads slaughtered grew 4% over the previous year, reaching 30.9 million. The slaughter by region measured in tons, as well as its growth rate between 2000 and 2017, can be visualized in Figure 2. During this period slaughtering grew 96.97% in Brazil, reaching almost 8 million tons. This rate was mostly driven by the growth of about 240% in the North region, reaching over 1.6 million tons.

Figure 2

EVOLUTION OF THE SLAUGHTER OF CATTLE IN THE BRAZILIAN REGIONS IN THOUSAND TONS BETWEEN 2000 AND 2017



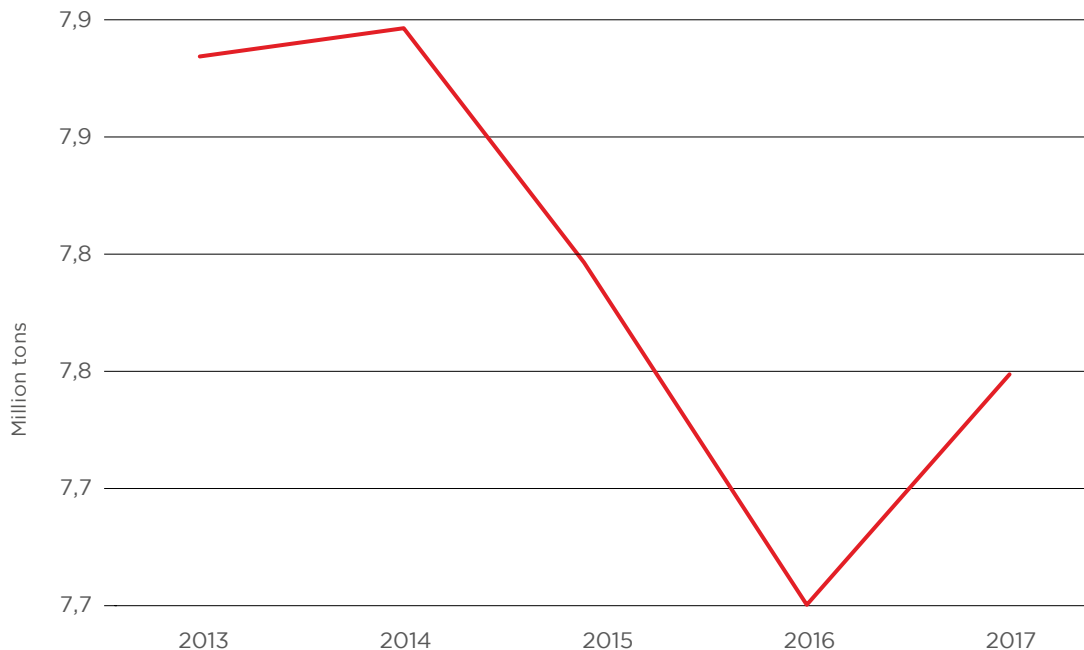
Source: Embrapa¹².

12 Available at: <https://www.embrapa.br>

Despite the expressive numbers of the evolution of the slaughter rate, in March 2017, the sector was confronted with the operation "Weak Meat" started by the Federal Police in order to investigate the irregularities in some Brazilian slaughterhouses, putting in doubt the quality of the national production. The effects of this operation, which is still in progress, may not have been fully absorbed by the sector, in addition the data for 2017, as shown in Graph 6, indicated that the sector returned to the same level of the slaughter of 2007, but is still below the record reached in 2013. The decline in internal demand for red meat occurred specifically from 2014. In 2013, as shown in Graph 7, domestic consumption was around 7.9 million tons, remaining stable in 2014 and after declining until 2016, and did not return to 2013 levels in 2017.

Graph 7

DOMESTIC CONSUMPTION OF BEEF IN MILLIONS OF TONS BETWEEN 2013 AND 2017



Source: USDA¹³

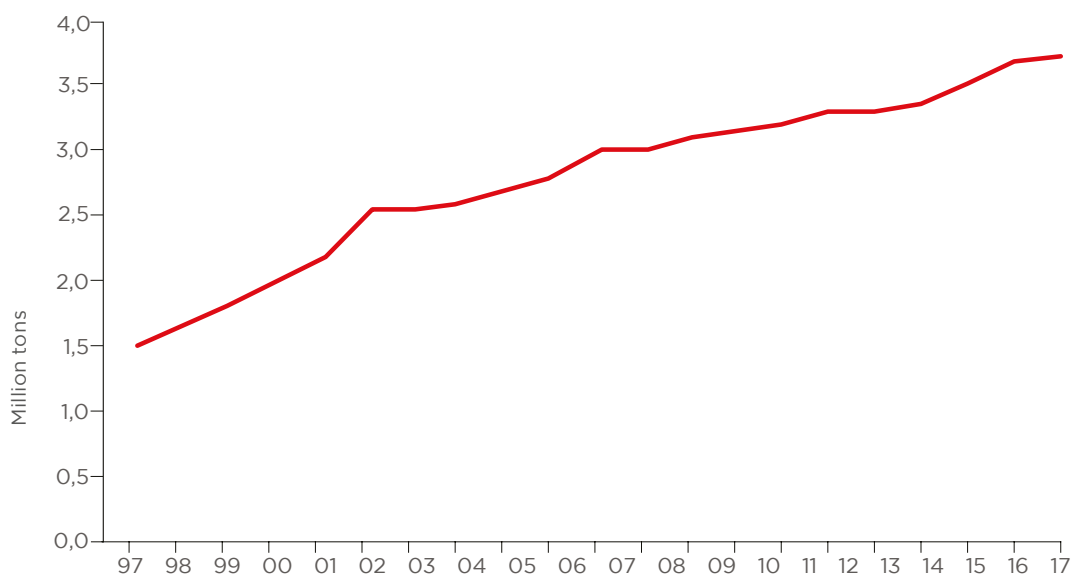
Brazil is, therefore, a country that presents advantages for the production of meat, with the availability of land and climatic conditions favorable to various production systems.

¹³ Available at: <https://apps.fas.usda.gov>

1.3.2 PORK

Brazil, with 40 million head of swine, is the fourth largest exporter in the world, according to the United States Department of Agriculture - USDA¹⁴ (2018), with the European Union in the first place, followed by the United States and Canada. The industry is also the fourth largest producer in the world behind China, the European Union and the United States. In the last 20 years, the production of the sector has been increasing, as Graph 8 shows, and between 1997 and 2017 its output jumped from 1.5 million tons to 3.7 million, a growth rate of 142%.

Graph 8
PRODUCTION GROWTH OF BRAZILIAN PORK IN MILLIONS OF TONS BETWEEN 1997 AND 2017



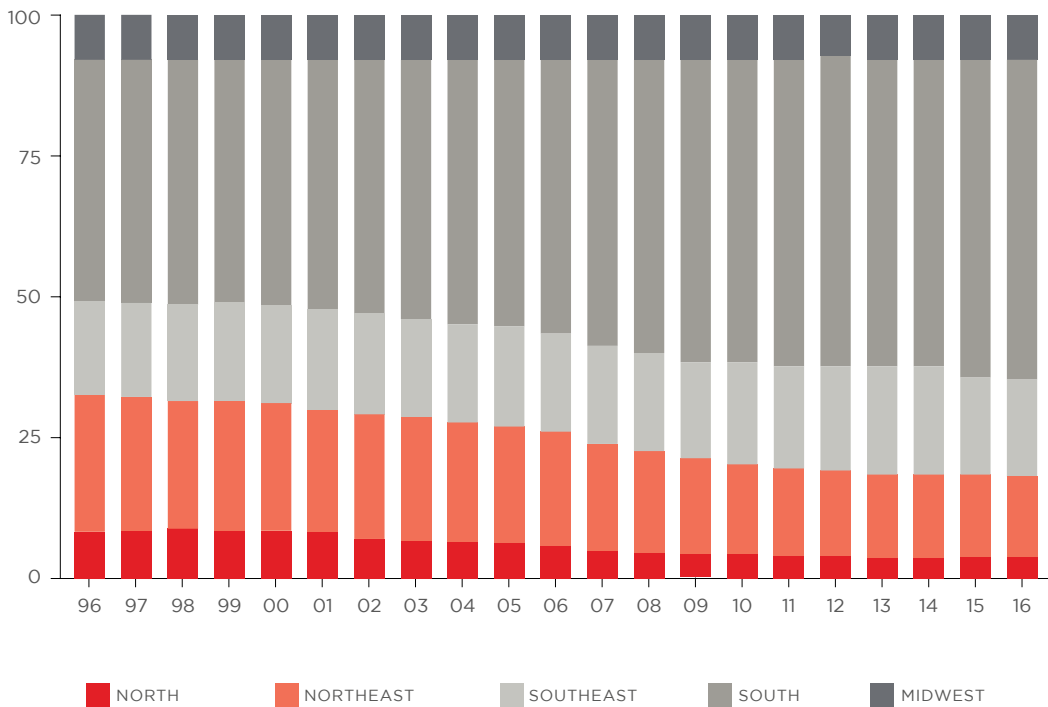
Source: USDA, 2018¹⁵.

¹⁵ Available at: <https://apps.fas.usda.gov>

The growth rate of 142% presented by pork meat production far outstripped the 31% growth of the herd in the period, showing significant gains in productivity in the sector. In 2016, as shown in Graph 9, the region with the largest swine herd is the South, which holds about 50% of the heads of this segment. In 1996 this region was responsible for 43% of the herd. The Northeast and Midwest regions deserve special mention. While the Northeast was responsible for about 24% of the herd in 1996 and in 2016 saw its parcel decline to 15%, the Midwest region was in the opposite direction. In 1996 the Midwest owned about 8% of the Brazilian herd and in 20 years saw its size double, becoming responsible for about 15% of the total.

Graph 9

PARTICIPATION (%) OF THE BRAZILIAN REGIONS IN THE PORK HERD IN THE PERIOD FROM 1996 TO 2016



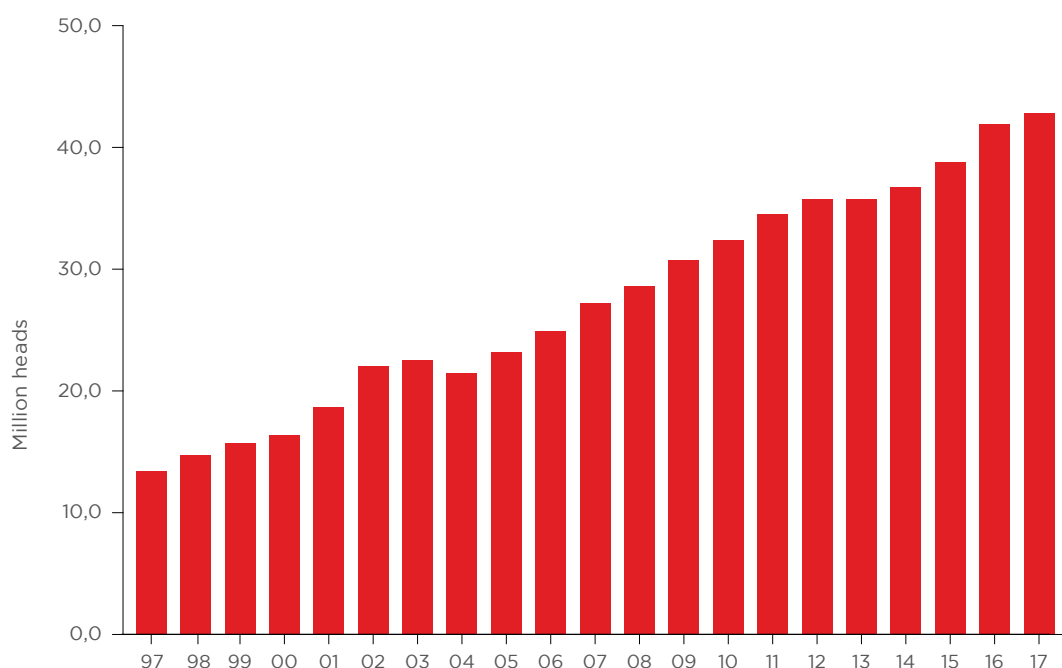
Source: IBGE - Municipal Livestock Research¹⁶.

¹⁶ Available at: <https://sidra.ibge.gov.br>

Following the growth of production, slaughtering also showed a marked increase between 1997 and 2017, as shown in Graph 10. For the analyzed period, the number of slaughters jumped from 13.6 million head in 1997 to 43.2 million in 2017, a growth rate of 217%.

Graph 10

EVOLUTION OF SLAUGHTER OF SWINE IN BRAZIL IN MILLIONS OF HEADS BETWEEN 1997 AND 2017

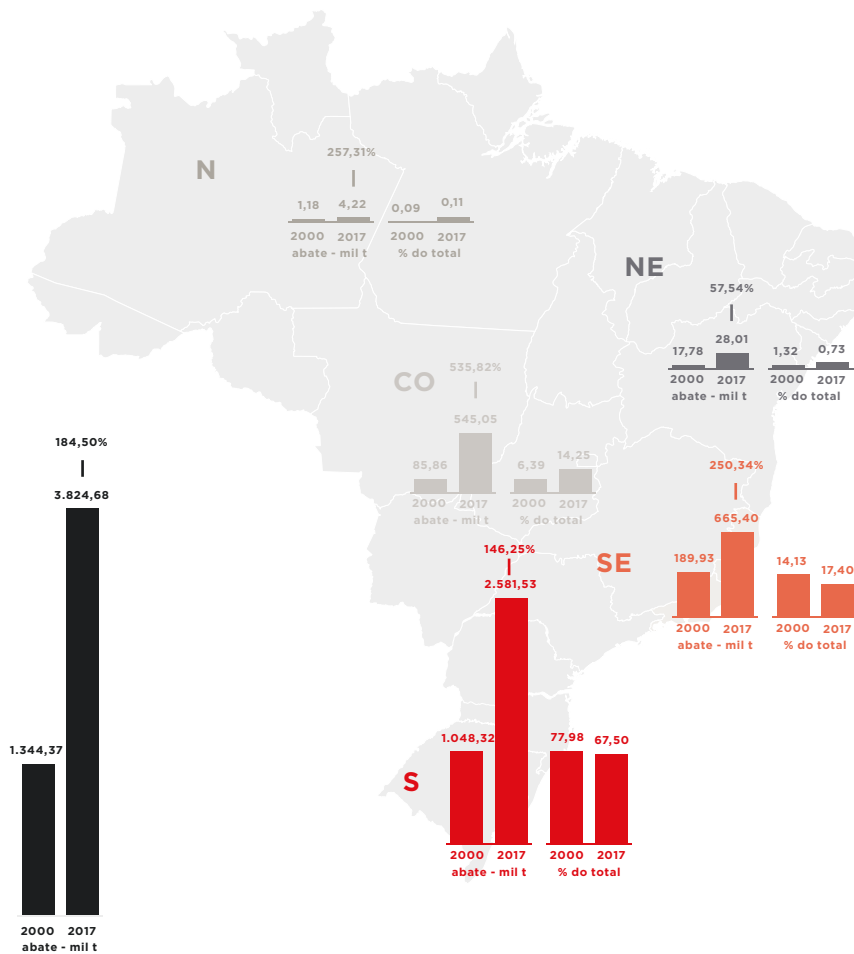


Source: IBGE - Quarterly Survey of the Slaughter of Animals¹⁷.

The slaughter by region, as well as its growth rate between the years 2000 and 2017, can be seen in Figure 3. During this period slaughtering grew 184.5% in Brazil, reaching almost 3.8 million tons. This rate was mostly driven by the growth of about 146% in the South region, reaching more than 2.5 million tons of slaughtered animal.

¹⁷ Available at: <https://sidra.ibge.gov.br>

Figure 3
EVOLUTION OF SWINE SLAUGHTER IN BRAZILIAN REGIONS IN THOUSAND TONS
BETWEEN 2000 AND 2017



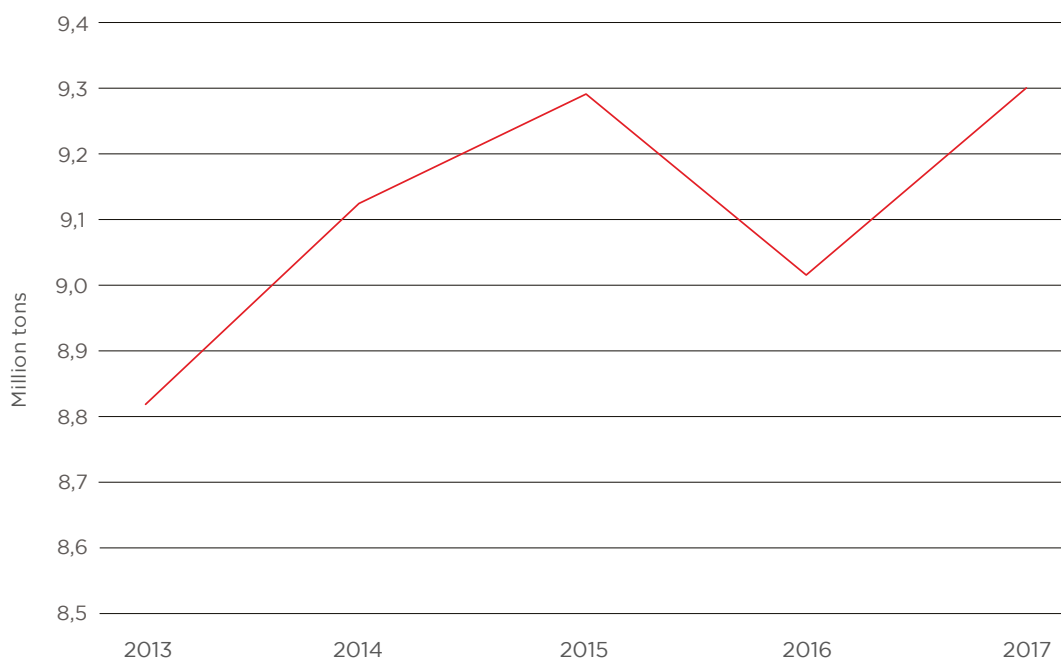
Source: Embrapa¹⁸.

18 Available at: <https://www.embrapa.br>

Domestic consumption of pork jumped from 8.8 million tons in 2013 to 9.3 million tons in 2015, a growth of about 5.5%. By 2016 the consumption dropped to 9 million tons, the year was difficult for Brazilian pig farms, production costs rose especially with corn, which strongly affected the sector, especially in the first half of 2016. In addition, the Brazilian economic crisis has reduced consumer purchasing power, weakening domestic demand, which has been increasing since then. This movement follows the consumption of beef that also decreased between 2015 and 2016, rising from about 7.78 million tons to 7.65 million.

Graph 11

DOMESTIC CONSUMPTION OF PORK IN MILLION TONS BETWEEN 2013 AND 2017



Source: USDA, 2018¹⁹.

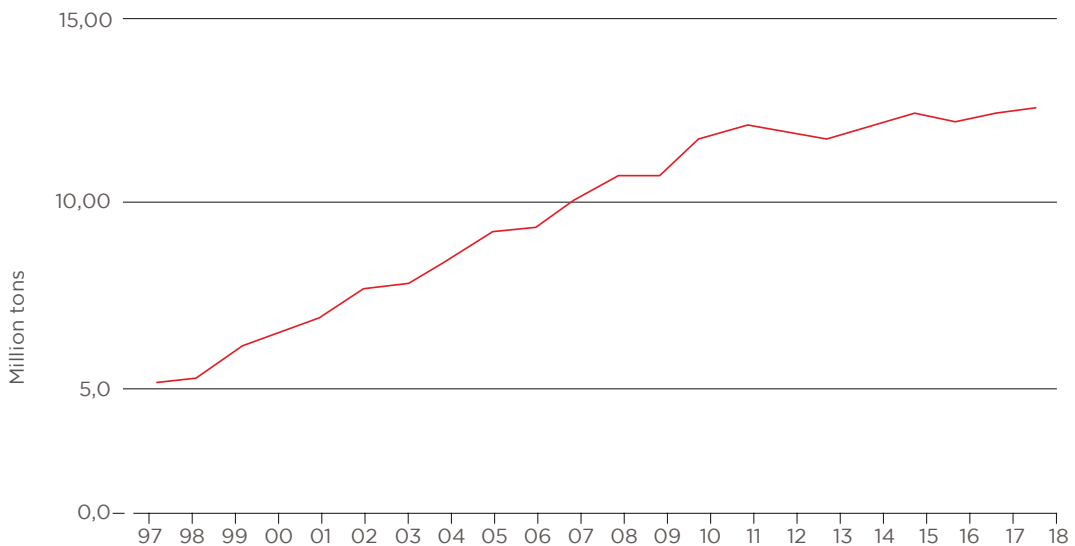
¹⁹ Available at: <https://apps.fas.usda.gov>

1.3.3 POULTRY

The Brazilian production of chicken, holding about 1.35 billion head is now among the world's top. The industry has access to technology to increase animal welfare, while adding quality and achieving productivity gains. Between 1997 and 2017 the production of this sector grew about 200% from a production of 4.5 million tons to 13.4 million. In addition, production remained stable at the beginning of all those years, with small falls seen in 2012 and 2013, given the increase in corn and soybean prices, which had a direct impact on the sector. In 2016 it was also possible to perceive the reduction that was standard for several Brazilian sectors, given the economic crisis that the country crossed.

Graph 12

PRODUCTION GROWTH OF BRAZILIAN POULTRY MEAT IN MILLIONS OF TONS BETWEEN 1997 AND 2017

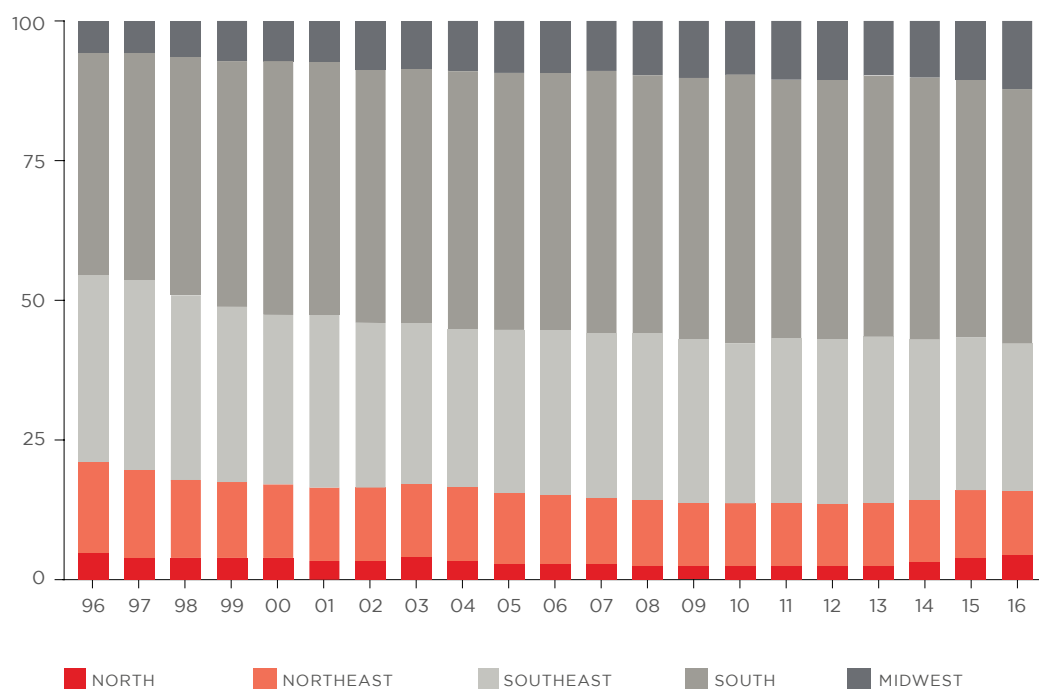


Source: USDA, 2018²⁰.

20 Available at: <https://apps.fas.usda.gov>

The main regions responsible for the national herd are South and Southeast, which together hold 72% of the Brazilian herd. The South region represents 45% of the herd, and the Northeast region accounts for 12%. Lastly, there is the North region, with only 4% of the Brazilian total. One of the regions that deserve to be highlighted is the Midwest, which initially had a participation of about 7% of this herd and in 20 years practically doubled that size, reaching about 13% of the Brazilian total. The Southeast region, despite remaining in second place, saw its share decline over the years. In 1996 it had 33% of the national herd and by 2016 there was a loss of 6 percentage points in that participation, accounting for 27% of the total.

Graph 13

PARTICIPATION (%) OF THE BRAZILIAN REGIONS IN THE HERD OF CHICKEN

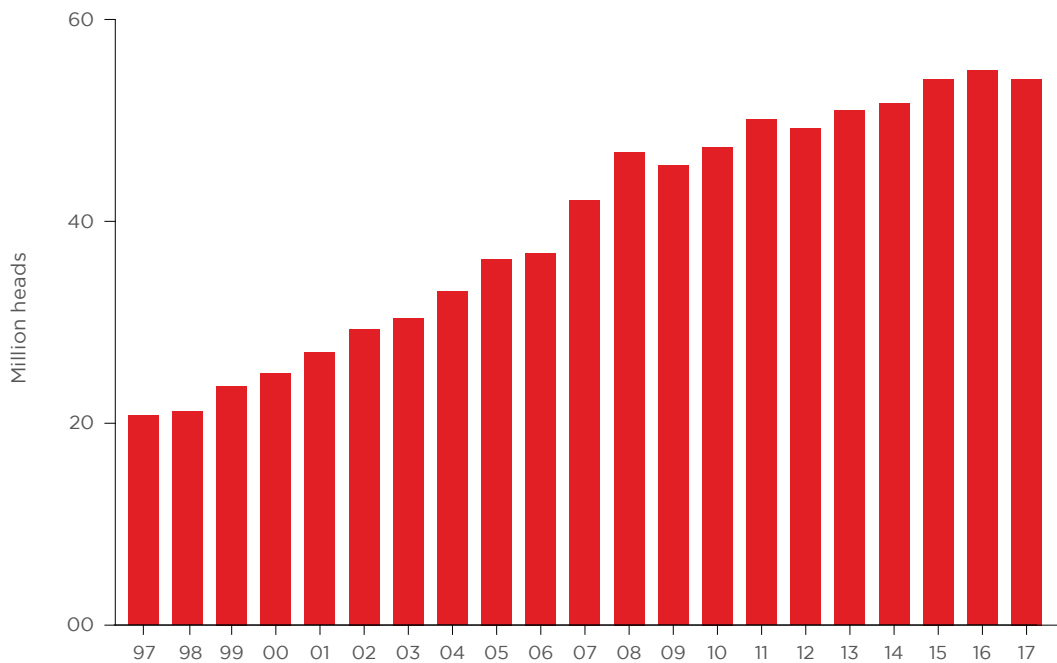
Source: IBGE - Municipal Livestock Research²¹.

21 Available at: <https://sidra.ibge.gov.br>

While the number of chicken heads has grown by about 86% over the past two decades, the slaughtering has grown by about 167%, oscillating only negatively in 2009, the year the industry was hit by the global economic crisis in 2012 and 2017. The reduction of 2017 interrupts the last four years of growth that the sector has been perceiving. The main reductions occurred in Mato Grosso, with a negative change of approximately 40.2 million head, followed by Minas Gerais with 39.8 million, Federal District with 13.7 million and Santa Catarina with 11.1 million.

Graph 14

EVOLUTION OF THE SLAUGHTER OF CHICKENS IN BRAZIL IN BILLIONS OF HEADS BETWEEN 1997 AND 2017



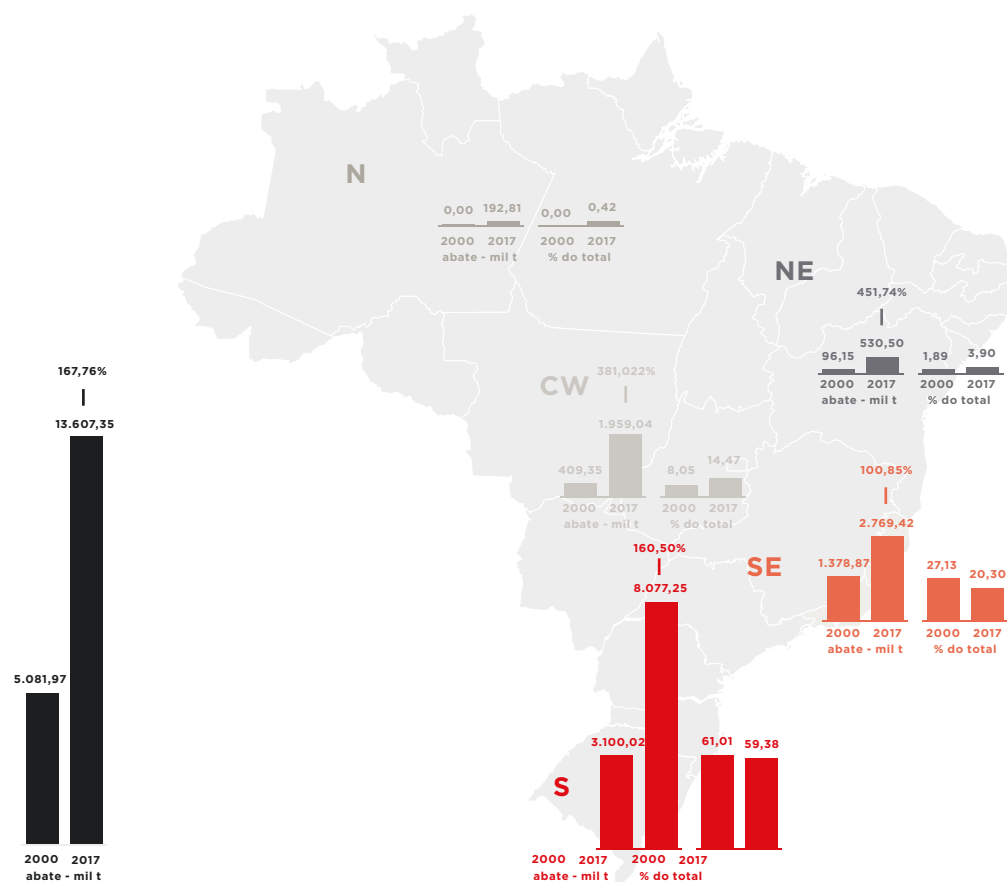
Source: IBGE - Quarterly Survey of the Slaughter of Animals²².

Between 2000 and 2017, the slaughtering rate grew 184.5%, driven by the growth of all the Brazilian regions, with emphasis on the Midwest region, which registered a growth rate of 534% for the period, and the North region with 257%. The only region that grew below the national rate was the Northeast, with the accumulated 57% between 2000 and 2017.

22 Available at: <https://sidra.ibge.gov.br>

Figure 4

EVOLUTION OF SLAUGHTER OF CHICKEN IN THE BRAZILIAN REGIONS IN THOUSAND TONS BETWEEN 2000 AND 2017



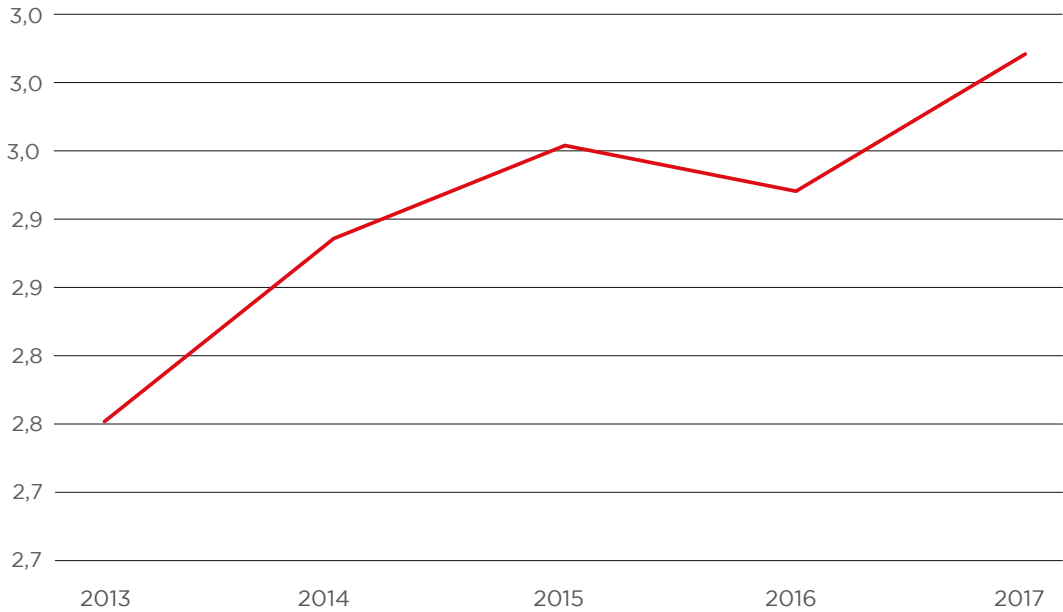
Source: Embrapa²³.

The Brazilian consumption of chicken meat accompanied the crisis movement, even though it was shown as a substitute for beef and pork, which on average presented a lower final price, there was a small negative variation in the consumption of chicken meat in Brazil. Between 2015 and 2016 there was a decrease of 1%. But like the other segments of the beef complex, the industry has recovered this fall and already presents growth for the year 2017.

23 Available at: <https://www.embrapa.br>

Graph 15

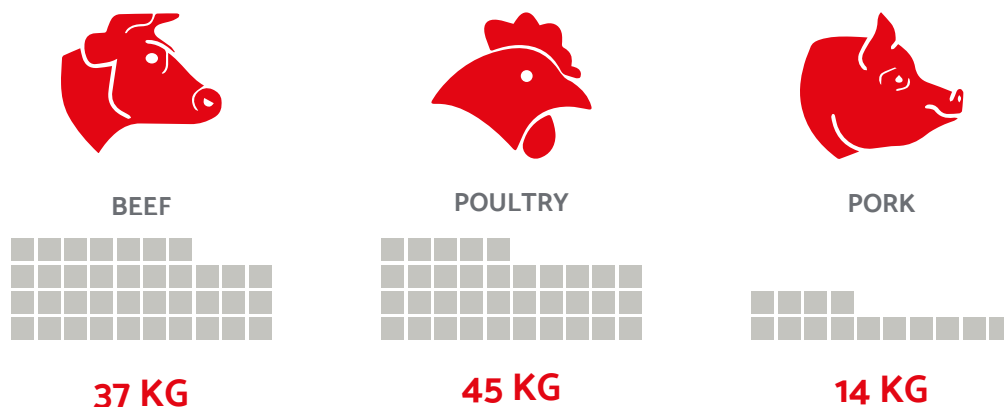
INTERNAL CONSUMPTION OF POULTRY MEAT IN MILLIONS OF TONS BETWEEN 2013 AND 2017



Source: USDA²⁴.

Considering also the per capita consumption of meat in Brazil, the poultry meat is the most expressive. While the Brazilian consumes on average, in a year, 14 kg of pork and 37 kg of beef, the consumption of poultry for the same period is 45 kg. Further the poultry meat presenting itself as a healthier protein, its price is also more affordable relative to the other two categories, boosting its consumption per capita.

24 Available at: <https://apps.fas.usda.gov>

BRAZILIAN CONSUMPTION OF MEAT PER CAPITA IN 2017, IN KG/INHABITANT/YEAR

Source: Embrapa²⁵.

Therefore, on average, each Brazilian consumed 96 kg of meat in 2017.

1.4 INDUSTRIAL PRODUCTION OF MEAT

The Annual Industrial Survey Company (PIA - Company) made available by IBGE becomes a starting point for the size of the Brazilian meat industry. In the first quarter of 2018, participated as informants of the Slaughter Quarterly Survey 1,100 beef slaughterhouses, 646 pork's and 280 poultry.

Currently the largest animal protein production company in Brazil is BRF with a portfolio of more than 800 products, most notably Sadia, the most valuable food brand in Brazil and Perdigão, which makes up 80% of the categories of the processed food segment. The companies BRF, JBS and Aurora control 50% of all pork slaughtered in Brazil, while BRF and JBS control 52% of Brazilian poultry slaughter and two thirds of Brazilian exports of poultry.

1.4.1 BEEF

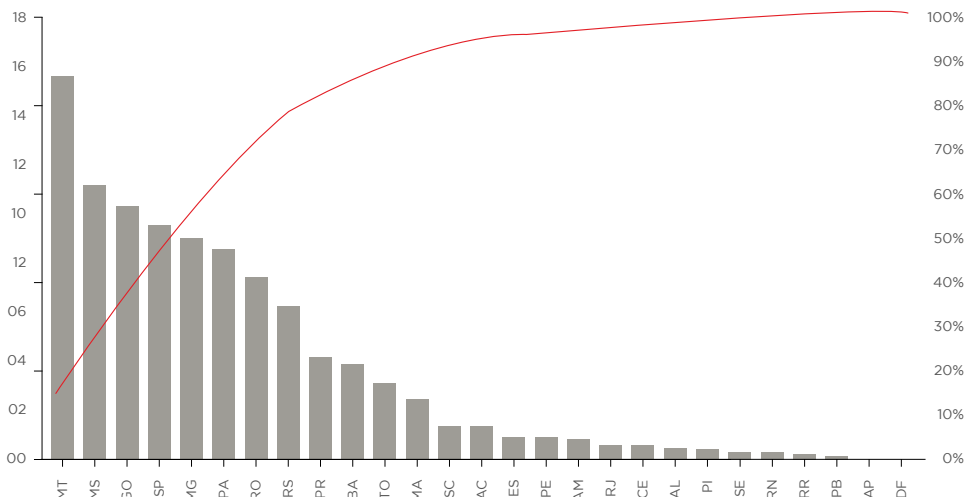
From the 1,100 slaughterhouses informants in the Quarterly Slaughter Survey in the first quarter of 2018, 194 are under federal, 374 state and 542 municipal inspections. The slaughterhouses under federal sanitary inspection, having the Federal Inspection Seal (SIF),

²⁵ Available at: <https://www.embrapa.br>

are authorized to operate in the whole national market or even send to foreign markets and are responsible for 74% of the slaughtered heads in the first quarter of 2018, about 7.7 million and 77% of production with 1.5 billion tons of meat. During the year 2017, the federal slaughterhouses also accounted for about 74% of total slaughtering, about 22.7 million head, and 77% of production with 5.9 billion tons of meat.

There are also two other types of inspection in addition to the SIF, the Municipal Inspection Service (SIM), which allows the meat trade only in the territory of the municipality where the slaughterhouses is located, and the State Inspection Service (SIE), which allows trade only within the limits of the state. Regardless of the type of inspection to which the Brazilian slaughterhouses were subjected, the Brazilian states that most slaughtered cattle in 2017, as shown in Chart 16, were those that make up the "Central Brazil Livestock". Mato Grosso state led the national slaughtering ranking with 15.6% of the total, about 4.8 million head, followed by Mato Grosso do Sul with 11.1% or 3.4 million head, Goiás with 10.3% , 3.2 million and heads, São Paulo with 9.5%, 2.9 million and heads and Minas Gerais with 9%, about 2.8 million head. Together these states account for more than 55% of the total.

Graph 16
RATE OF SLAUGHTER OF HEADS OF CATTLE BY THE SLAUGHTERHOUSES OF THE BRAZILIAN STATES IN 2017



Source: IBGE - Quarterly Survey of the Slaughter²⁶.

26 Available at: <https://sidra.ibge.gov.br>

In order to continue the production process, all animals that are sent to the slaughterhouse are healthy. From there the slaughterhouses purchases the raw material, separates live animals by lot, slaughter and prepares different parts to market. The boning procedure, or "disassembly line" separates the different types of meat cuts and distributes them to the industry, adding more value to the product.

The value of industrial production of beef and beef products in 2016 reached R\$ 88 million, fresh and chilled and frozen meat account for 94% of this total, about R\$ 83 million, manufacturing.

Table 03
VALUE OF INDUSTRIAL PRODUCTION OF BEEF AND DERIVATIVES IN 2016

PRODUCT	VALUE PRODUCED (R\$ BILLION)	PARTICIPATION (%)
FROZEN MEATS	17,48	19,81
MEAT, FRESH OR CHILLED	65,57	74,33
EDIBLE OFFAL, FRESH, CHILLED OR FROZEN	1,45	1,64
PRODUCTS OF SAUSAGE OR OF SALAMI AND OTHER PREPARATIONS	1,09	1,23
MEAT AND EDIBLE MEAT OFFAL, DRIED, SALTED OR SMOKED	2,63	2,98
TOTAL	88,22	100

Source: IBGE - - Annual Industrial Survey - Product²⁷.

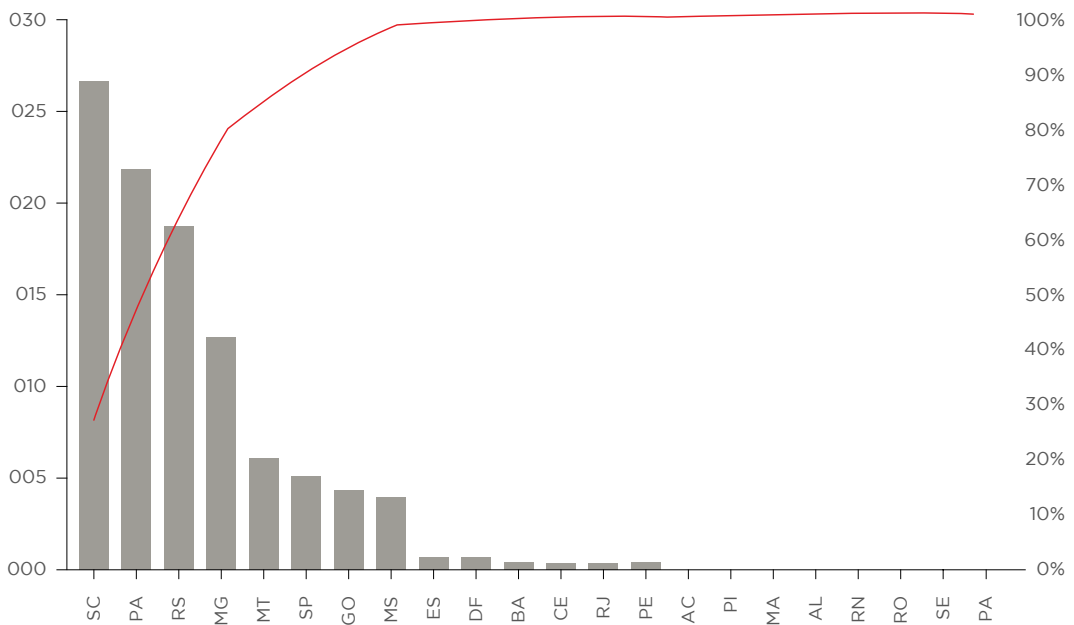
27 Disponível em: Fonte: IBGE - Pesquisa Industrial Anual - Produto

1.4.2 PORK

Brazil, with data for the first quarter of 2018, has 646 pork slaughterhouses, 101 of them federal inspection, 228 state inspections and 317 municipal inspections. Most of these slaughterhouses, 26.6%, are located in the state of Santa Catarina. The Paraná state has 23.3% of the total, followed by Rio Grande do Sul with 18.6%. Therefore, about 67% of pig slaughterhouses are located in the southern region of the country. The fourth state in this ranking is Minas Gerais, responsible for 12.6% of the total. These four states together account for about 79% of total slaughter in Brazil.

Graph 17

RATE OF SLAUGHTER OF HEADS OF SWINE BY THE SLAUGHTERHOUSES OF THE BRAZILIAN STATES IN 2017



Source: IBGE - Quarterly Survey of the Slaughter²⁸.

They are produced in Brazil R\$ 30.2 million in pork products, as presented in Table 4. The main products are sausages and salami products and other preparations of pork (except ready-to-eat), with a share of 35.19%, meat of frozen pork with 34.7% and fresh or chilled pork with 20.34%. Together these products are responsible for 90.3% of the industrial value produced.

²⁸ Available at: <https://sidra.ibge.gov.br>

Table 04

VALUE OF INDUSTRIAL PRODUCTION OF PORK AND DERIVATIVES IN 2016

PRODUCT	VALUE PRODUCED (R\$ MILHÕES)	PARTICIPATION (%)
FROZEN PORK MEATS	10,49	35,19
PRODUCTS OF SAUSAGE OR OF SALAMARIA AND OTHER PREPARATIONS OF MEAT OF SWINE (EXCLUDING READY-MADE DISHES)	10,63	34,74
MEAT OF SWINE, FRESH OR CHILLED	6,14	20,34
MEAT AND EDIBLE OFFAL OF SWINE, DRIED, SALTED OR SMOKED	1,72	5,68
BACON, LARD, TALLOW AND OTHER PIG FAT, WHETHER OR NOT FUSED	1,00	3,30
EDIBLE OFFAL OF FRESH, CHILLED OR FROZEN PIGS	0,23	0,76
TOTAL	0,20	100

Source: IBGE - Annual Industrial Survey – Product²⁹.

1.4.3 POULTRY

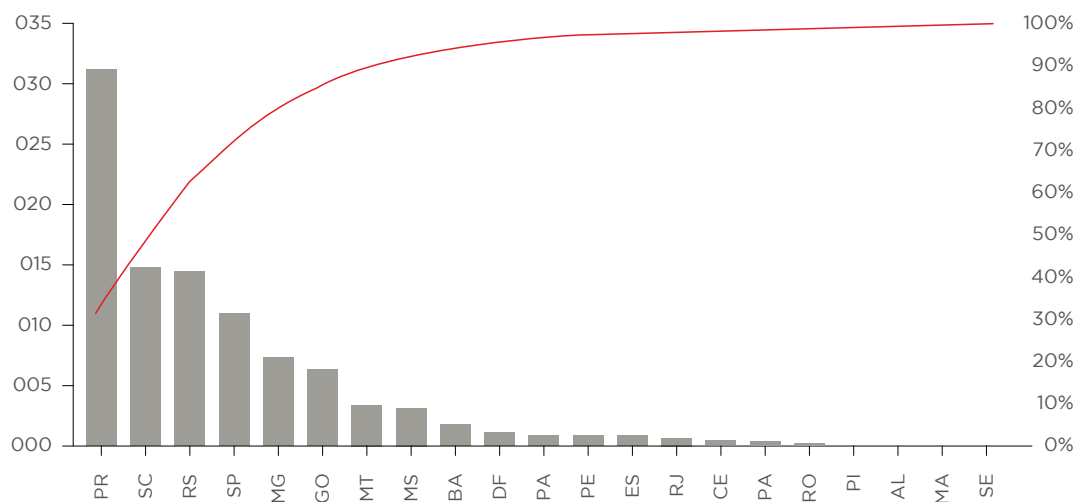
The poultry industry in Brazil presents an integrated relationship between slaughterhouses and breeders, through an "integration system" where slaughterhouses advance chicks, rations and medicines to the farmers. So a contract is thus established in which those producers undertake to market the chickens ready for slaughter exclusively with the company which supplied the raw material. In addition the industry still provides technical assistance and not only buy as they have the chicken get the property of the integrated. Discounted production costs, the farmer is finally paid by the industry.

In Brazil, during the first quarter of 2018, 280 slaughterhouses were responsible for the slaughter of chickens, 48% of them were federally inspected, 33% had state inspections, and 20% had municipal inspections. In addition, Paraná accounts for 32% of Brazilian chicken slaughter, followed by Santa Catarina with 14.7%, Rio Grande do Sul with 14.5% and São Paulo with 11%. Together these four states are responsible for 72% of the Brazilian poultry slaughter.

²⁹ Available at: <https://sidra.ibge.gov.br>

Graph 18

RATE OF SLAUGHTER OF HEADS OF CHICKEN BY THE SLAUGHTERHOUSES OF THE BRAZILIAN STATES IN 2017



Source: IBGE - Quarterly Survey of the Slaughter ³⁰.

Table 05

VALUE OF INDUSTRIAL PRODUCTION OF POULTRY AND DERIVATIVES IN 2016

PRODUCT	VALUE PRODUCED (R\$ BILLION)	PARTICIPATION (%)
MEAT AND OFFAL OF FROZEN POULTRY	43,86	77,43
MEAT AND OFFAL OF POULTRY, FRESH OR CHILLED PRODUCTS OF SAUSAGE OR OF CALAMARI AND OTHER PREPARATIONS OF	7,33	12,93
PRODUCTS OF SAUSAGE OR OF CALAMARI AND OTHER PREPARATIONS OF	5,46	9,63
TOTAL	56,64	100

Source: IBGE - Annual Industrial Survey - Product ³¹

³⁰ Available at: <https://sidra.ibge.gov.br>

³¹ Available at: <https://sidra.ibge.gov.br>



THE TRUCK DRIVERS'S STRIKE AND THE MEAT SECTOR

The month of May 2018, Brazil was marked by the truck drivers' strike movement. Although in a decentralized way, the movement reached several points of the country with the blockade of roads and impediment of the transport of inputs and products. The agricultural sector, which is extremely dependent on the road transportation sector, has seen vulnerable to the effects of this crisis, being one of the most affected.

The Institute for Applied Economic Research (IPEA) estimate a decline of 1% in agricultural GDP, although the sector expanded by 2.6% in June, this result was not enough to avoid a decline of 1.9% in the first quarter. The Brazilian Association of Animal Proteins (ABPA) estimates that this strike generated total impacts of R\$ 3,150 billion on the poultry, pork, egg and genetic material producer and exporter sector. According to ABPA, 64 million adult chickens and chicks died from lack of feed. The justification is that the producers do not work with large stocks of feed, being supplied, on average, every three to five days.

As the strike occurred at the end of the harvest of the grass, before the dry season, when the sector is usually programmed to sell the fat cattle and buy animals for replacement.

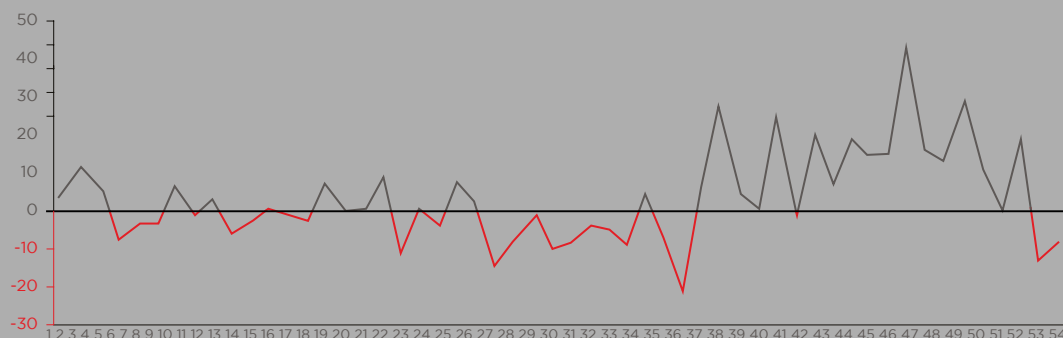
For two weeks the animals could not be sent for slaughter because the slaughterhouses were without purchase and sale movement. For the producer, the cost of keeping cattle is also high. The supplementation, confinement or semi-confinement had to be maintained until the slaughterhouses were regularized, which had to work with an elongated slaughtering scale.

Predictions have still been made, data collection and analysis of the impact of the truckers' strike have still been made, an event that is still relatively uncertain in the most diverse segments of Brazilian agriculture. Livestock production is expected to reduce by 2.5% in 2018, moreover there is the whole period that the producer takes time to get back to the previous level of production. In order to elucidate this discussion, Graph 19 below shows the monthly variation of the industrial dairy production index from January 2013 to June 2018, and it is possible to observe the negative variation in May, the month of the truck drivers' strike.

Graph 19

INDEX VARIATION OF INDUSTRIAL PRODUCTION OF MEAT

Base: same month as previous year = 100



Source: PIM IBGE (2018)³².

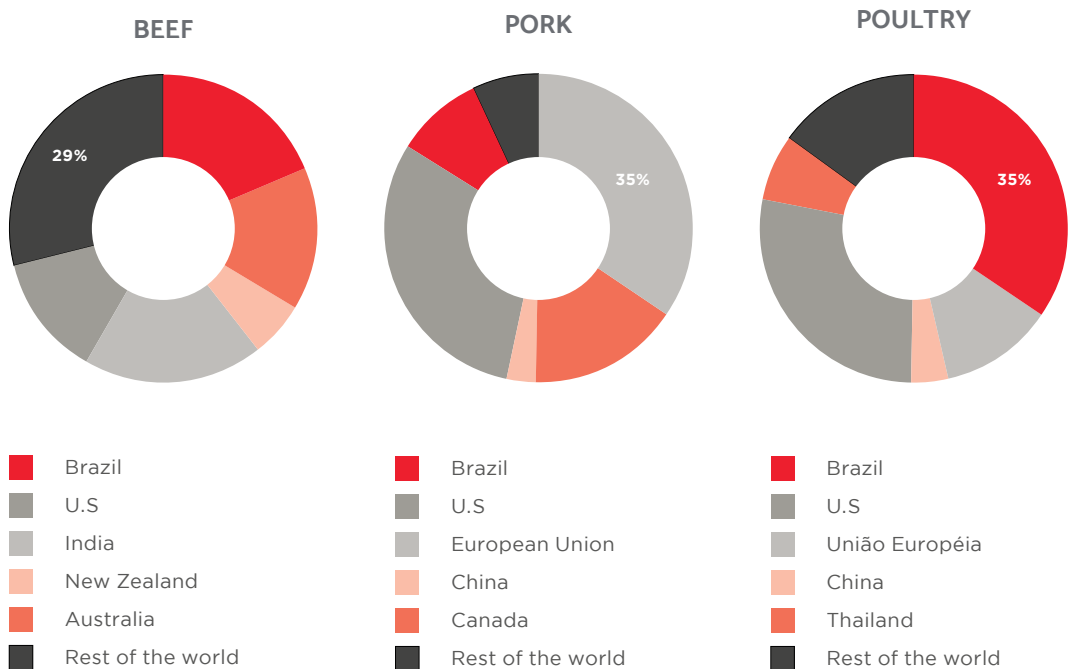
It is important to emphasize that the index presented in Graph 19 always refers to the same month of the previous year. Thus, it can be seen that in most of the months of 2014 the monthly variation of the index was negative, which means that in comparison to 2013 the production of meat was in reduction. The situation got worse in 2015, and despite the slight improvement in the second half of 2015, the index had a strong reduction in 2016 following the recession of the entire Brazilian economy. The impact of the truck drivers' strike is evidenced by the May 2018 which result shows a 13.2% reduction compared to the same period of the previous year (which was positive, see May 2017). The definitive results will still come in the coming months, but they have already begun to be felt throughout the agricultural and livestock sector, so it is possible to infer that logistical vulnerability and dependence on a single modal represent one of the fragile points of this chain.

32 Available at: <https://sidra.ibge.gov.br/pesquisa/pim-pf-brasil>

2. TRADE BALANCE OF THE BRAZILIAN BEEF SECTOR

Brazil, besides being a great meat producer, is also very expressive in the foreign market of this segment. Worldwide it occupies the top positions in beef and poultry exports and is the fourth largest exporter of pork, as shown in Graph 20.

Graph 20
GLOBAL MEAT EXPORTS IN 2017



Source: USDA¹.

Brazil is responsible for 19% of total exports of beef, 9% of pork and 35% of poultry. The European Union ranks first in pork exports, followed by the United States and Canada.

¹ Available at: <https://apps.fas.usda.gov>

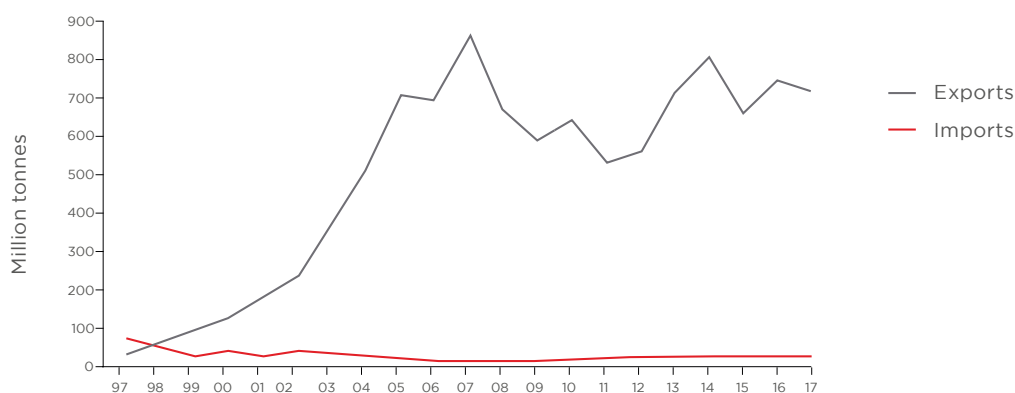
Brazilian foreign trade saw their policies suffered major changes in the 1990s, when a process of trade liberalization began that directly and indirectly affected several sectors of the national economy. During this period, economic agreements were consolidated between blocks and countries. In addition to trade liberalization, the exchange rate still had an influence on Brazilian meat exports, making this chain more competitive, with a devaluation of the Brazilian currency, which boosted agribusiness exports. However, during the overvaluation of the currency during the Real Plan there was less profitability in the export of these products. Internally it was possible to observe a more intense competition in the meat market with increase in the production and consumption of poultry and pork. Against this situation, the livestock farmers began a process of productive gains in order to compete externally.

2.4.3 BEEF

Between 1997 and 1998, Brazil changed from the category of importer for exporter of beef and since then remained in that position. In 1997 Brazil exported some 31 million tons of beef, as shown in Graph 21, while importing about 69 million, closing with the deficit of the trade balance of this sector. Between 1997 and 1998 the largest exporters of beef were Australia, the USA, the European Union and New Zealand, Brazil was ranked only seventh in this list.

Graph 21

BRAZILIAN EXPORTS OF BEEF, MILLION TONS BETWEEN 1997 AND 2017



Fonte: Comex Stat (2018)².

² Available at: <http://comexstat.mdic.gov.br/pt/geral>

Between 1997 and 2002, Brazilian exports jumped more than 600%, from 31 million tons to 233 million, making Brazil the fourth position in the beef exporter ranking at that time and in 2005, with 696 million tons exported Brazil became the world leader in this sector.

The "mad cow" crisis faced by the European Union since 1996, aggravated in 2001; outbreaks of foot-and-mouth disease in the Argentinian herd in 2000; and the severe drought that affected Australia in the end of 2002 and 2003 and the appreciation of the Australian dollar are among the external factors that contributed to the Brazilian rise. Besides that, since 1992 Brazil has already implemented the National Foot-and-Mouth Disease Program (PNFA), in order to expand the zones free of foot-and-mouth disease, which has been gaining strength over the years. In 2005, Brazilian beef exporting companies also used the internationalization strategy to increase access to markets such as the United States and the European Union.

In 2007 the Brazilian exports had already reached 847 million tons, the biggest volume during the analyzed period, but for the first time they lost their breath and fell to 665 million tons in 2008. This variation can be explained by the temporary embargo of the fresh beef by the European Union due to the lack of traceability of the animals. In 2009 the country faced another year of declining sales, reinforced by the economic crisis that devastated the world. The reduction in Brazilian exports continued until 2011, reaching 528 million tons, in the same levels seen in 2004. Meanwhile, after 2011 the exports increased again and reached 800 million tons in 2014. In 2015, due to economic problems in Russia, one of the main buyers markets in Brazil, the volume exported reduced again and reached 651 million tons, but grew in 2016 reaching 738 million.

In 2017 an internal issue affected the sector's exports, the Operation Meat Weak. In the monthly comparison of results, during March, the month of the Operation Meat Weak, and April, the drop in sales was 25%, but the sector was solid and the decrease in total volume was just under 4%, reaching a volume of 710 million tons exported this year. For the year 2018, until the month of July, 768 million tons of beef have already been exported. With this volume, Brazil has already surpassed the mark of 3 billion reais in beef exports. Therefore, Brazilian exports have already exported 58 million tons beyond 2017 and the sector is quite robust, even though it has been a problem such as Operation Meat Weak.

The total beef exports hit a record in July, up 24% from the same month in 2017. The competitive exchange rate for exports, the strong international market demand and the high availability of meat in the domestic market are factors that drive these increases, creating the expectation that not only July, but the entire year of 2018 will consist of records for the Brazilian beef exports.

Part of all this increase is driven by sales growth in markets such as China, Egypt and Chile that by the middle of 2018 have already surpassed their meat demands when compared to the year 2017. In addition, the global beef trade should grow as a whole, driven mainly by the demands of China and Hong Kong, which are currently the largest Brazilian buyers, as shown in Table 6.

All the Brazilian beef volume was exported for 89 countries in 2017 and has already reached 92 in 2018. In 2017 Brazil exported about US\$ 2.8 billion in beef, equivalent to 710 million tons. The main importers were Hong Kong, China, Russia and Iran, responsible for 60% of the volume exported by this sector, about 429 million tons. In 2018 the sector has already hit the 2017 mark, exporting US\$ 3.04 billion and 768 million tons. The main buyers of Brazilian meat are Hong Kong, China, Chile and Egypt, with 53% of the total volume, about 408 million tons.

Table 06

BRAZILIAN BEEF EXPORTED, IN MILLIONS OF TONS, FOR THE YEARS 2017 AND 2018

REGION	2017		2018*		
	VOLUME	%	VOLUME	%	
HONG KONG	171	24	HONG KONG	165	21
CHINA	110	15	CHINA	123	16
RUSSIA	86	12	CHILE	69	9
IRAN	63	9	EGYPT	51	7
REST OF THE WORLD	281	40	REST OF THE WORLD	360	47
TOTAL	710	100		768	100

*Values from January to July.

Source: Comex Stat, 2018³.

Considering only the first quarter of 2018, exports represented 50% of the total marketed until the month of July, about 385 million tons. In the second quarter it is necessary to consider a new milestone in terms of perspective for the meat industry: the truck drivers' strike.

3 Disponível em: <http://comexstat.mdic.gov.br/pt/geral>

With the stoppage of the supply of inputs for the production and transportation of the sector were compromised, the volume of exports was reduced to 238 million tons, about 31% of the total. In July, the sector had a new energy and exports of this month were the highest recorded in 2018, representing 19% of the total volume of 675 million tons.

The Brazilian beef exports in recent years were basically composed of 14 product differentiations (described in Appendix 1) categorized by the Mercosur Common Nomenclature (NCM Code), which represented in 2017 and 2018 for 100% of the products exported by the sector.

From the point of view of demand, Brazil has imported, mainly from Paraguay, Argentina, Uruguay and Australia. For the last 10 years these countries accounted for at least 97% of Brazilian imports, in many years they accounted for 100%.

The first half of 2018 similar movements were observed to the same period of 2017 in relation to the movement of prices of the bullock. Based on the average monthly values of the ESALQ/BM&FBovespa Cattle Indicator (state of São Paulo), deflated by the IGP-DI of May 18, consecutive declines have been observed since the beginning of 2018.

In May 2018, the bullock market registered a weak phase in the first weeks of May, and was caught in the second fortnight of the month, before the truck drivers' strike. The average indicator of the ESALQ/BM&FBovespa Cattle indicator was R\$ 140.59, the lowest in real terms since August 2017. In June, the accumulated index fell 1.83% and ended at R\$ 139, 40. For July, the accumulated index of the month increased by 1.7% and ended at R\$ 141.70. Although it is a small elevation, it is the biggest one verified so far for 2018. The average Cattle indicator ESALQ/BM&FBovespa was R\$ 140.59, the lowest level, in real terms, since August 2017. In June, the accumulated recorded a fall of 1.83%, and ended at R\$ 139.40. For July, the accumulated index of the month increased by 1.7% and closed at R \$ 141.70. Although it is a small elevation, it is the largest level verified so far for 2018.

Based on the average monthly values of the ESALQ/BM & FBovespa Cattle Indicator (state of São Paulo), deflated by the IGP-DI of May/18, it is possible to observe consecutive falls since the beginning of 2018. Therefore, in the index accumulated in the first half, the indicator dropped 9.23%. In 2017 the same trend was observed, when the accumulated fall from January to June was 11.55%. For the previous years, the movement was different, with a high of 0.62% in the first half of 2016, a 2.2% decrease in 2015 and an increase of 5.65% in 2014.

In 2017, the operation "Meat Weak", the plea of the largest Brazilian meat industry (which resulted in a strong reduction in the purchase of animals by this large player) and the resumption of the Funrural discount discouraged the businesses made by cattle fattening

farmers. In 2018, since January, what happened was a weak pace of business, with slaughterhouses acquiring lots only when there was a greater need.

In addition, exports performed well in the first quarter of the year, and declined sharply after April, with the volume of meat available on the domestic market increasing and the price of arroba declining, as the domestic market was unable to absorb all the volume. Added to this scenario the productivity of Brazilian livestock has grown in recent years, a scenario that increases the availability of meat.

The main categories of products sold abroad, according to Table 7, are frozen boneless meats, which made up in both 2017 and 2018 more than 75% of the volume exported by Brazil.

Table 07
BRAZILIAN BEEF EXPORTS VOLUMES BY CATEGORY, IN MILLIONS OF TONS, FOR THE YEARS 2017 AND 2018

DESCRIPTION	2017		2018*	
	VOLUME	%	VOLUME	%
BOVINE MEAT, FROZEN, FROZEN	558	78,6	581	75,65
BONELESS MEAT OF BOVINE ANIMALS, FRESH OR CHILLED	66	9,28	99	12,82
OTHER EDIBLE OFFAL OF BOVINE ANIMALS, FROZEN	66	9,37	64	8,38
OTHER CATEGORIES	20	2,76	24	3,14
TOTAL	710	100	768	100

*Values from January to July.

Source: Comex Stat (2018)⁴.

4 Available at: <http://comexstat.mdic.gov.br/pt/geral>

2.4.4 PORK

The export of pork has been contributing for more than two decades contributing for the surplus of the agricultural trade balance, as shown in Graph 22.

The record levels of 2016, with export volume of 396 million tons, contributed to support the sector in 2016, after facing high costs with corn acquisition and weak domestic demand, the sector saw themselves vulnerable.

Graph 22
BRAZILIAN EXPORTS OF PORK, MILLION TONS BETWEEN 1997 AND 2017



Source: Comex Stat, 2018⁵.

Brazil reached its record level with pork exports in 2016. The push came mainly from shipments to China, which increased the volume exported from 1 million tons in 2015 to about 54 million tons in 2016, as shown in Table 8. Despite the increase in Chinese demand, the main importers of Brazilian pork are Russia and Hong Kong.

⁵ Available at: <http://comexstat.mdic.gov.br/pt/geral>

Table 08

BRAZILIAN PORK EXPORTED, IN MILLIONS OF TONS, FOR THE YEARS 2017 AND 2018

REGION	2015		2016		2017	
	VOLUME	%	VOLUME	%	VOLUME	%
RUSSIA	130	47,3	134	33,8	158	41,2
HONG KONG	59	21,4	94	23,7	79	20,6
CHINA	1	0,2	54	13,7	29	7,5
SINGAPORE	16	5,9	19	4,9	18	4,8
ARGENTINA	6	2,0	11	2,7	18	4,8
URUGUAY	11	4,1	15	3,7	17	4,4
ANGOLA	19	7,0	17	4,2	16	4,2
CHILE	4	1,6	13	3,2	12	3,1
GEORGIA	4	1,5	5	1,3	5	1,4
UNITED ARAB EMIRATES	3	1,2	5	1,3	4	1,2
REST OF THE WORLD	22	7,9	30	7,6	27	6,9
TOTAL	275	100	396	100	384	100

Source: Comex Stat⁶.

The main products marketed by the Brazilian exporting are: Other frozen pork, responsible for about 84% of the sector's exports in both 2017 and 2018 and Other frozen edible offal of pork, responsible for about 10% of sales in 2017 and 11% in 2018, according to Table 9.

6 Available at: <http://comexstat.mdic.gov.br/pt/geral>

Table 09

BRAZILIAN PORK EXPORTS VOLUMES BY CATEGORY, IN MILLIONS OF TONS, FOR THE YEARS 2017 AND 2018

DESCRIPTION	2017		2018*	
	VOLUME	%	VOLUME	%
OTHER MEAT OF SWINE, FROZEN	323	84,1	227	84,3
OTHER EDIBLE OFFAL OF SWINE, FROZEN	38	9,9	30	11,0
HAMS, SHOULDERS AND CUTS THEREOF, OF BONE, FROZEN	13	3,5	9	3,3
CARCASES AND HALF-CARCASES OF SWINE, FROZEN	6	1,4	2	0,7
OTHER PRODUCTS	4	1,1	2	0,7
TOTAL	384	100	269	100

*Values from January to July.

Source: Comex Stat⁷.

7 Available at: <http://comexstat.mdic.gov.br/pt/geral>

2.4.5 POULTRY

At the present, Brazilian poultry meat reaches more than 150 markets, with about 2 billion tons shipped annually, in addition to the technological advances that promote significant productive advances for the sector.

Like the pork segment, the poultry industry also hit export records in 2016 with strong sales rhythm to several markets in Asia, Europe and the Americas, especially China.

Graph 23

BRAZILIAN EXPORTS OF POULTRY, MILLION TONS BETWEEN 1997 AND 2017



Source: Comex Stat⁸.

In recent years, in terms of volume, Saudi Arabia, Japan and China have been the largest buyers of Brazilian chicken meat and in 2017 accounted for about 37% of Brazilian exports, equivalent to 838 million tons, as shown in Table 10.

8 Available at: <http://comexstat.mdic.gov.br/pt/geral>

Table 10

VOLUME OF PORK EXPORTED BY BRAZIL, IN MILLION TONS, BETWEEN 2015 AND 2017

REGION	2015		2016		2017	
	VOLUME	%	VOLUME	%	VOLUME	%
SAUDI ARABIA	439	19,89	441	18,51	373	16,39
J APAN	227	10,30	236	9,92	239	10,47
CHINA	181	8,19	303	12,73	226	9,92
SOUTH AFRICA	139	6,29	141	5,91	184	8,08
UNITED ARAB EMIRATES	173	7,85	182	7,62	168	7,38
HONG KONG	138	6,26	147	6,18	148	6,49
EGYPT	45	2,06	62	2,60	102	4,49
KUWEIT	71	3,21	72	3,02	71	3,13
RUSSIA	55	2,49	55	2,31	58	2,53%
IRAQ	24	1,07	36	1,49	55	2,40
REST OF THE WORLD	714	32,40	707	29,70	654	28,70
TOTAL	2205	100	2381	100	2278	100

Source: Comex Stat⁹.

In 2017, the volume of the sector closed with a decrease compared to 2016. Despite the decrease in volume, the export revenue of the sector accumulated a high of 5.7%. The reduction in exported volume contributed to the internal availability of the meat during 2017 and with that the domestic prices of the cutting poultry accumulated monthly drops almost consecutive.

Already in 2018 the scenario has been different. Brazilian poultry exports fell 8.5% in the January- May period, with the world's largest exporter being hit by commercial embargoes imposed by the European Union following a corruption investigation into the sector. The volume of poultry exported in the period was 1.6 million tons, compared to 1.75 million in the same period of 2017. Shipments to the European Union reduced by more than 40%.

9 Disponível em: <http://comexstat.mdic.gov.br/pt/geral>

Brazil sold 92.5 thousand tons to the EU in the period, below the 51.8 thousand tons in 2017. The European Union suspended imports of Brazilian proteins, mainly poultry, in April in a decision that affected 20 units in the country. Brussels related the prohibition to the "deficiencies detected in the Brazilian official control system" after an investigation by local companies and health authorities found that they conspired to cheat quality and safety checks. Just in May, there was a drop of 4.7% in the volume of poultry shipped outside Brazil to 333.2 thousand tons.

The Brazilian export products in this segment are made up of cuts and offal, frozen roosters and chickens, and frozen, uncut pieces of poultry, which together have been responsible for almost 100% of the shipments of recent years, as shown in Table 11.

Table 11

BRAZILIAN PORK EXPORTED, IN MILLIONS OF TONS, FOR THE YEARS 2017 AND 2018

DESCRIPTION	2017		2018*	
	VOLUME	%	VOLUME	%
POULTRY CUTS AND OFFAL, FROZEN, FROZEN	1.535,3	67,39	1.231,3	71,68
MEAT OF CHICKENS, NOT CUT INTO PIECES, FREEZE	742,4	32,58	486,4	28,31
CHUNKS AND CUTS OF POULTRY, FRESH/CHILLED	0,7	0,03	0,1	0,00
TOTAL	2.278,4	100	1.717,8	100

*Valores de Janeiro a Julho.

Fonte: Comex Stat¹⁰.



3. BARRIERS TO THE COMMERCIALIZATION OF THE MEAT IN BRAZIL

In 1947, the General Agreement on Tariffs and Trade (GATT) was created to promote trade liberalization, with the establishment of international economic law norms aimed at regulating international trade. The GATT over the years did not focus on agricultural products, so there was a gap to the big economies, such as the European, could give different treatment to the agricultural sector related to the industrial sector, leading to the Common Agricultural Policy, the CAP. This policy isolated the European producers from external competition, creating mechanisms of import restrictions, subsidies to imports, which differed from those established by the GATT.

Agriculture only effectively entered the GATT agenda with the Uruguay Round, through the action of a group of developed and developing countries, among them Brazil, that aimed at the liberalization of agricultural trade. The Uruguay Round led to the creation of the World Trade Organization (WTO) and agriculture managed to find institutional space in the Agreement on Agriculture, which initiated a process of change in international agricultural trade. For the purpose of expanding its exports, Brazil, with the support of public and private initiatives, began a process of changes and adaptations to meet the demands of the foreign market. In 1992, it implemented the National Program for the Eradication of Foot-and-Mouth Disease (PNEFA). Since then, institutions have been created to expand the free zones of foot-and-mouth disease. In 1998, it was recognized the first free zone of foot-and-mouth disease with vaccination was established, consisting of the states of Rio Grande do Sul and Santa Catarina. In 2001, there was an expansion of the free foot-and-mouth disease zone with vaccination, with recognition of the states of Bahia, Espírito Santo, Mato Grosso do Sul, Rio de Janeiro, Sergipe, Tocantins and part of Goiás, Mato Grosso, Minas Gerais and São Paulo. In 2003 the recognition was extended to the State of Rondônia. However, in 2005, the free foot-and-mouth disease free zone was suspended in most of the Brazilian states, this situation was only regularized in 2007. In order to give more credibility to the system and promote transparency in the origin of the product, it was created the Bovine and Bubaline Production Chain Traceability Service (SISBOV).

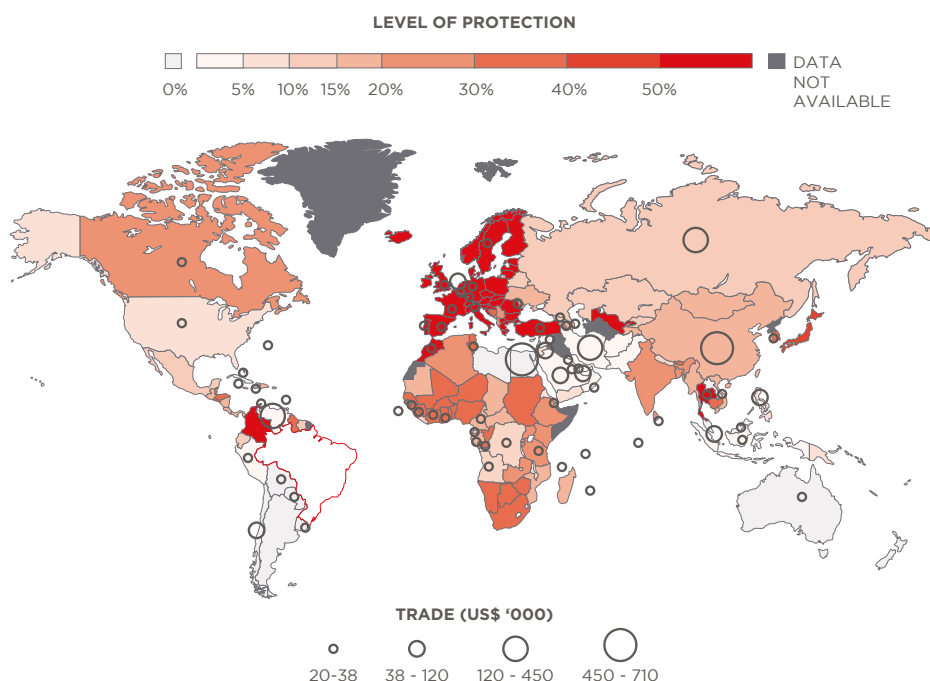
Despite all the Brazilian efforts, in a survey conducted by the National Confederation of Industry (CNI), it is possible to identify at least 20 trade barriers against Brazilian products abroad. The Brazilian slaughterhouse sector suffers from several protectionist measures from foreign markets.

Although Brazil exports animal protein to 160 open markets and stands out for its sanitary status, in the first semester of 2018, embargoes on poultry and Brazilian pork dropped sales of these products abroad. Figures 6, 7 and 8 below present the barriers imposed on Brazilian meats.

Europe as a whole applies tariff barriers above 50% to Brazilian beef, presenting the most restrictive continent.

Figure 06

PROTECTION LEVELS APPLIED TO BRAZILIAN BEEF IN THE INTERNATIONAL MARKET

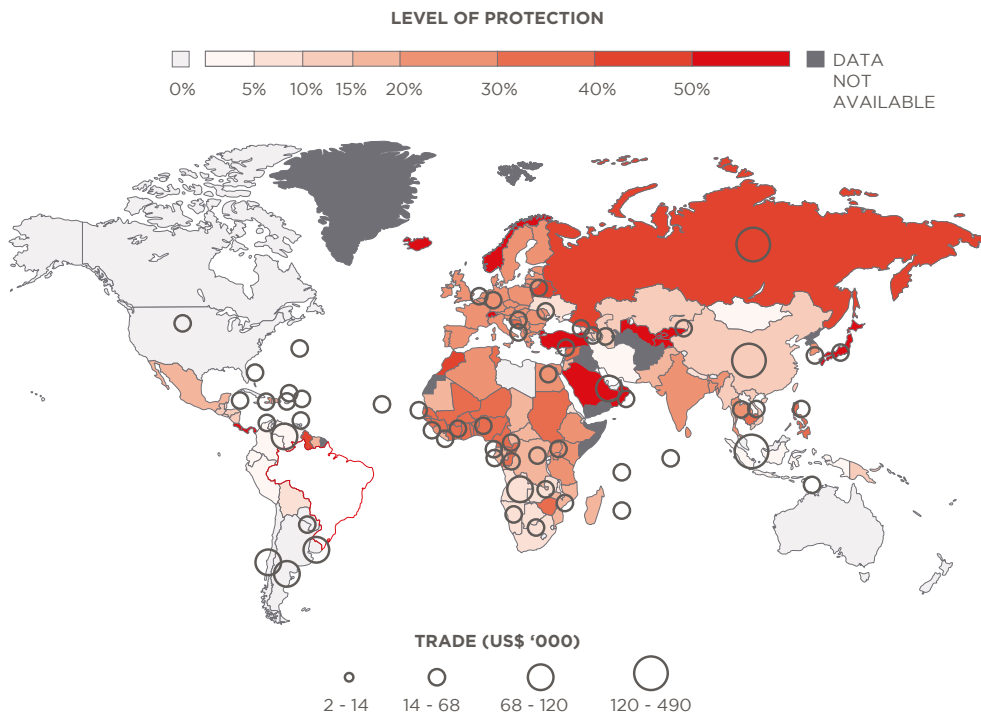


Fonte: Source: Adapted from Macmap (2018)¹.

¹ Available at: <http://www.macmap.org/QuickSearch/FindTariff/FindTariff.aspx>

Russia, one of the main importers of Brazilian pork, imposes high levels of protection, including under the allegation that it has found a substance that is not allowed in imported products. Some countries in Europe, Africa and North America also have high rates. Almost the entire Asian continent, European and African applies commercial barriers to Brazilian pork.

Figure 07
PROTECTION LEVELS APPLIED TO BRAZILIAN PORK IN THE INTERNATIONAL MARKET



Source: Adapted from Macmap (2018)²

The Brazilian poultry meat suffers from the tariff barriers of several places in the world. With the exception of Oceania and South America, the poultry sector has a large number of Brazilian continents.

In addition to the tariff barriers, Brazil can currently export up to 21.6 thousand tons of raw poultry without taxes to the European Union

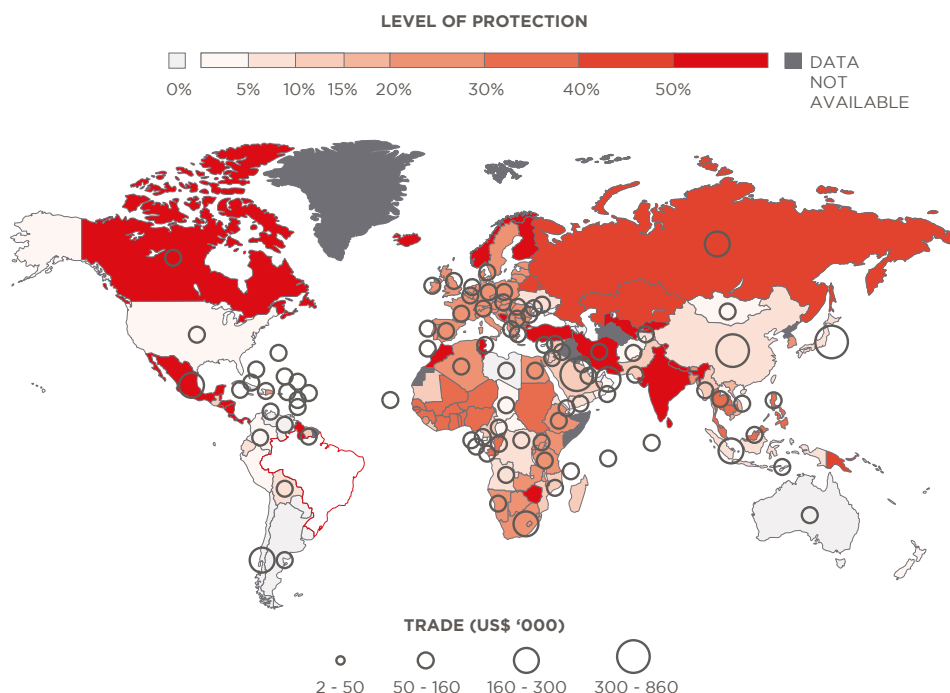
² Available at: <http://www.macmap.org/QuickSearch/FindTariff/FindTariff.aspx>

In addition to this quota, the country can also export 170,800 tons of poultry in natura with an addition of 2% of salt. On these products, 15.4% of taxes are charged and there is a requirement that they do not present 2,600 types of salmonella. The requirement may fall for just two types of bacteria in a case is paid an extra fee of 1,024 per ton.

In the case of China, the Asian country claimed that the entry of poultry meat was hampering local production, and in the first half of 2018 began to apply a surcharge. India has adopted similar measures to China. With the economic growth of the country, the Indians began to consume more animal protein. Thus, there is great potential for poultry meat. The rate applied to the product coming from Brazil is higher than that of other nations, reducing competitiveness.

Figure 08

PROTECTION LEVELS APPLIED TO BRAZILIAN POULTRY IN THE INTERNATIONAL MARKET



Source: Adapt from Macmap (2018)³

³ Available at: <http://www.macmap.org/QuickSearch/FindTariff/FindTariff.aspx>

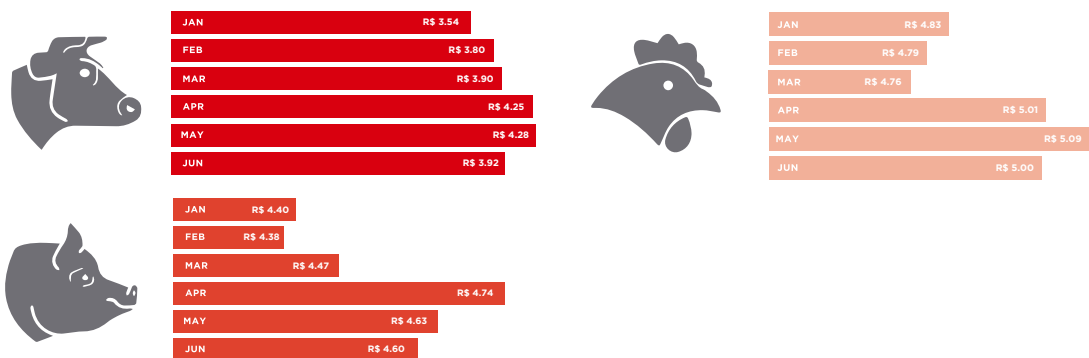
In addition to facing strong export barriers and all negative marketing coming from Operation Weak Meat, the industry also faces internal difficulties. Changes in the external market, such as demand reduction, directly impact the domestic market with increased supply pulling down the final price and thus the price paid to the producer.

In the case of cattle, the slaughterhouses only work with the dead weight, which usually corresponds to between 50% and 55% of the live weight of the animal, but only after slaughtering is certain. The cattle then go to slaughter and then go to the production line, where the parts that are not counted in the weighing are removed. After this stage, called cleansing, are the carcasses, formed only by bones and flesh. In the balance room, the cattle farmer is able to follow the end of the process of slaughtering and weighing the balance. Only then can he know, in practice, how much he will receive for the animals that have just died.

The price paid to the farmer during 2018 in Rio Grande do Sul oscillated over the months and ended June negative for all segments of the meat complex, as shown in Graph 23. In addition, climatic factors such as the absence of rainfall contributed to the increase of the costs of livestock farmers.

Graph 24

KILOGRAM OF LIVE BOVINE AND PORK PAID AND KILOGRAM OF SLAUGHTERED CHICKEN PAID TO THE PRODUCER IN RIO GRANDE DO SUL IN 2018



Source: Cepea⁴

4 Available at: <https://www.cepea.esalq.usp.br>.



EFFECTS OF THE OPERATION WEAK MEAT

The year 2017, which began with a reduction in consumption due to the economic recession, won episodes worthy of threatening the Brazilian leadership in the animal protein segment. Still recovering from the problems caused by Operation Weak Meat and the award-winning JBS delusion, the industry wants to clean the house and return to the growth heights that have lifted it to the

On March 17th, 2017, the Operation Trappa was set off by the Federal Police. The Operation Weak Meat complied 309 court orders. The move has shaken the entire industry, although investigators are not sure how much fraud is involved, how widespread the sale of uneven foodstuffs is, or where they have been marketed, but say they have discovered a system that is at risk of harm to health. The adulterated plan scheme involved public officials responsible for inspection and this operation undermined the credibility of the sector on the international scene.

By the end of March, when the Federal Police made public investigations of irregularities in slaughterhouse inspection, poultry meat shipments were up 12% and pork almost 40% compared to the first half of 2016. After the initial shock, with temporary embargoes, Brazilian industries were able to resume the main import markets, such as Asia and Europe. Only five countries, with little expression, have maintained the suspensions: Albania, Saint Lucia, Zimbabwe, Benin and Congo.

ATTACHMENT 1

PRESENTATION AND DESCRIPTION OF PRODUCTS ANALYZED ACCORDING TO ITS SOUTHERN COMMON NOMEXATURE - NCM

CÓDIGO NCM	DESCRIÇÃO
02011000	Carcases and half-carcases of bovine animals, fresh or chilled
02012010	Non-deboned bovine fresh forequarters, fresh / chilled
02012020	Boneless, boneless bovine hindquarters, fresh / refrigerated
02012090	Other cuts of bone in, fresh or chilled
02013000	Boneless meat of bovine animals, fresh or chilled
02021000	Carcasses and half-carcasses of bovine animals, frozen
02022010	Forequarters, boneless, of bovine animals, frozen
02022020	Boneless, boneless bovine hindquarters
02022090	Other cuts, boneless, of bovine animals, frozen
02023000	Bovine meat, frozen, frozen
02031100	Carcases and half-carcases of swine, fresh or chilled
02031200	Carcaças e meias-carcaças de suíno, frescas ou refrigeradas
02031900	Carcases and half-carcases of swine, fresh or chilled
02032100	Carcases and half-carcases of swine, frozen
02032200	Hams, shoulders and cuts thereof, of bone, frozen
02032900	Other meat of swine, frozen
02061000	Edible offal of bovine animals, fresh or chilled
02062100	Tongue of bovine, frozen
02062200	Bovine livers, frozen
02062910	Beef steaks, frozen
02062990	Other edible offal of bovine animals, frozen
02063000	Edible offal of swine, fresh or chilled
02064100	Frozen pork livers

CÓDIGO NCM	DESCRIÇÃO
02064900	Other edible offal of swine, frozen
02071100	Meat of chickens, not cut into pieces, fresh/ chilled
02071200	Meat of chickens, not cut into pieces, freeze
02071300	Chunks and cuts of poultry, fresh/ chilled
02071400	Poultry cuts and offal, frozen, frozen
02101100	Legs / shovels, pork, bone-in, salted, etc.
02101200	Bellies and breasts, interspersed, pork, salted, etc.
02101900	Other meat of swine, salted or in brine, dried, etc.
02102000	Meat of bovine, salted / in brine / dried / smoked

ATTACHMENT 2

LIST OF ABBREVIATIONS

ACRÔNIMO	DESCRIÇÃO
CCPR	Cooperative Central of Rural Producers of Minas Gerais
CEPEA	Center for Advanced Studies in Applied Economics
CNA	Confederation of Agriculture and Livestock of Brazil
EMBRAPA	Brazilian Agricultural Research Corporation
UE	European Union
GATT	General Agreement on Tariffs and Trade
GDP	Gross Production Value
GVP	Gross Value of Production
IBGE	Brazilian Institute of Geography and Statistics
MAPA	Ministry of Agriculture, Livestock and Food Supply
MT	Millions of tons
NCM	Southern Common Nomenclature
PIA	Annual Industrial Survey Company



EUROPE
PROJETOS

RIO DE JANEIRO

Praia de Botafogo 190/6º andar
Tel.: +55 21 3799.5498
Fax.: +55 21 2553.8810

SÃO PAULO

Av. Paulista 1294/15º andar
Tel.: +55 11 3799.4170
Fax.: +55 11 3262.3569

www.fgv.br/fgvprojetos