

Profits Earned on Brazilian Soy

Estimates for ten top companies in the
German Supply Chain

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About this report

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Summary

The leading soy producing countries, Brazil and the US, are also the main suppliers of soy to the German market. In 2022, Germany imported a total volume of 5.9 million metric tons of soybeans, soybean meal and soybean oil. About one-third is re-exported, while 3.9 million tons of soy products were available for further use. With 3.1 million tons, meal is the main soy product. Large volumes of soymeal are used as a key source of high-quality plant protein in feed to produce animal products like poultry, pork, dairy, and eggs. Out of the 3.1 million tons of soymeal, around 1.4 million tons or 46% originated from Brazil.

Profundo has developed a methodology for calculating the profits generated on soy imported and processed in the different stages of the soy(meal) supply chain. This methodology has been applied in various studies as the best available approach when companies do not disclose the required information themselves.

The Brazilian soy supply chain in Germany is comparable to that in other European countries. The route of the soymeal leads from the farms producing soybeans via traders/crushers and logistics companies to feed manufacturers that supply livestock farmers; animal products are supplied to meat/dairy/egg processors, and from there to food retailers and food service companies at the downstream end of the supply chain. For the purpose of this analysis, ten companies from different stages of the value chain have been selected.

Crucial input data for the model are the volumes of (embedded) Brazilian soymeal, the pricing-up based on the gross margin, and the operating margin. When companies do to publish this data, Profundo's methodology is applied to calculate the profits that each investigated company generated on the Brazilian soymeal.

This analysis concludes that the group of ten companies generated a total of € 23.9 million in operating profit on embedded Brazilian soymeal and € 276.3 million in gross profit (Table 1).

Table 1 The 10 companies in the German supply chain of Brazilian soy

€ million	Supply chain stage	Soy volume (1,000 tons)	Value on soy	Gross profit on soy	Operating profit on soy
JP Müller	Logistics	508.2	0.14	0.13	0.05
MEGA (part of PHW; feed)	Feed	342.0	213.0	16.2	1.4
PHW Group (meat)	Meat	339.8	280.3	62.0	0.5
AGRAVIS	Feed	303.6	189.0	6.2	0.5
Edeka	Retail	288.0	295.5	31.5	2.9
Rewe	Retail	241.4	247.6	52.8	4.4
Lidl	Retail	208.3	213.7	57.3	9.0
Tönnies	Meat	136.2	112.3	24.6	2.1
Aldi Süd	Retail	71.0	72.8	14.3	1.7
Aldi Nord	Retail	56.3	57.8	11.3	1.3
Total			1,682.2	276.3	23.9

Source: Profundo; *) The total soy volume is not calculated as the outcome would contain double-counting. In 'value on soy', PHW and MEGA are shown as two separate entities; however, in reality, MEGA and PHW are one integrated company.

When these companies are ranked based on 'operating profit on soy' as the discriminator, Lidl ranks first and is leading a group of three food retailers. The food retailers are earning the highest operating profits on embedded soy. Tönnies ranks fourth, and the combined PHW/MEGA Group ranks fifth (Table 2).

Table 2 Ranking in operating profit earners on embedded Brazilian soy (€ million)

Position #	Company	Value on soy	Gross profit on soy	Operating profit on soy	Soy volume (1,000 tons)
1	Lidl	213.7	57.3	9.0	208.3
2	Rewe	247.6	52.8	4.4	241.4
3	Edeka	295.5	31.5	2.9	288.0
4	Tönnies	112.3	24.6	2.1	136.2
5	PHW Group total	493.2	78.2	1.9	342.0
6	Aldi Süd	72.8	14.3	1.7	71.0
7	Aldi Nord	57.8	11.3	1.3	56.3
8	AGRAVIS	189.0	6.2	0.5	303.6
9	JP Müller	0.14	0.13	0.05	508.2

Source: Profundo.

Summarizing the outcomes of the pricing-up model, the Brazilian soymeal used in Germany seems to be priced up by a factor of 1.97X versus the world market price. In the whole supply chain, the downstream companies earn the largest share of the profits. The downstream actors (animal product manufacturers, food retail) take 75.5% of the gross profits in the chain and 55.2% of the operating profit. The relative size of food retailing is eye-catching, with 40% in both profit definitions. In this context, it is not surprising that the five leading food retailers, which have a combined market share of about 76%, are the leading profit generators on Brazilian soymeal in the German supply chain.

Abbreviations and definitions

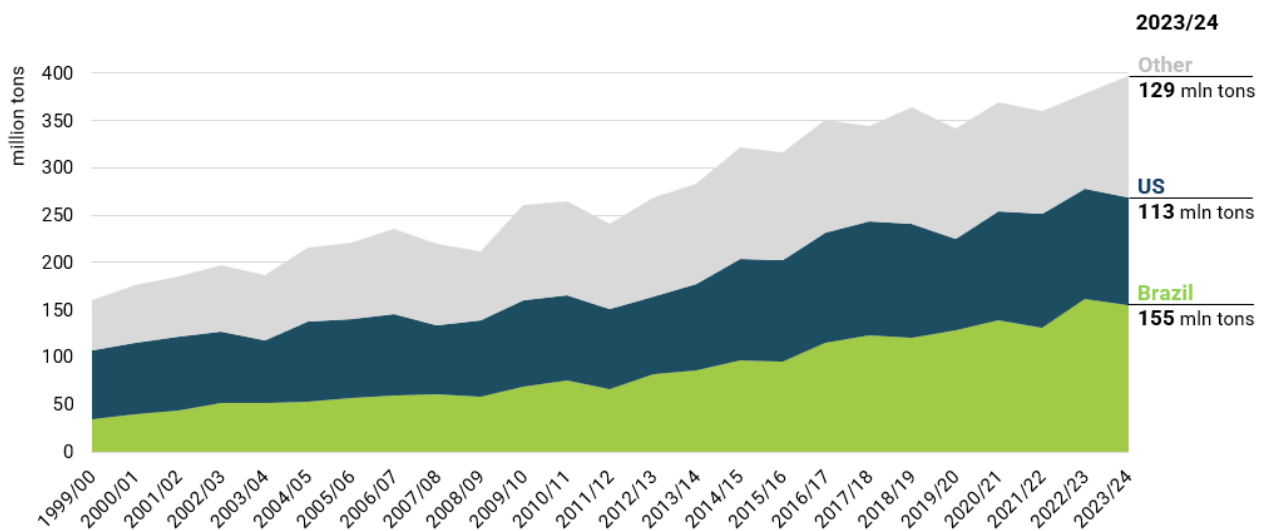
COGS	Cost of Goods Sold
Gross profit	Revenues minus costs of goods sold
Gross margin	Gross profit / revenues
Operating profit	Gross profit minus labour costs, depreciation, and other operational costs
Operating margin	Operating profit / revenues

Introduction

Soybeans are a very efficient source of high-quality protein, a property that has made the oilseed an important basis for the development of industrial livestock farming with high-performance animals. In line with the increasing global production of meat, dairy and eggs during the last decades, the global cultivation of soybeans has also seen a rapid growth. As one of the leading producers of animal products in Europe, Germany imports large quantities of soy from the main growing production countries in South and North America. Referred to as 'embedded soy', the crop is not physically present in the end-product but is a crucial input in the production of meat, dairy and eggs that are consumed in Germany.

Global soy cultivation is concentrated in a few large producing countries. Especially Brazil has seen a steep rise in its soy cultivation area. Since 2017, the country has been the world's top soy producer, ahead of the United States (US) (Figure 1). In 2023/24, Brazil is expected to account for about 155 million metric tons or 40% of world soy production. About 80% of its crop is exported to international destinations.¹ Important markets are countries with a deficit in vegetable protein linked to the high demand from the livestock sector, like China and European Union (EU) member states. The expansion of soy cultivation into areas of native vegetation has made soy one of the main drivers of deforestation in Brazil, both directly and indirectly.²

Figure 1 Global soy production



Source: USDA Foreign Agricultural Service (2024), "Production, supply, demand".

Most of the harvested soybeans are crushed – either in the country of production or upon arrival in the export market. Crushing soybeans results in two main products: about 78.5% soybean meal ('soybean oil-cake') and 18.5% soybean oil.^a Soybean meal is used in animal feed production, while soybean oil is used as an edible oil, in chemical processes and in biodiesel production. Unprocessed soybeans are used in food production, for example in tofu or meat and milk substitute products,^b as well as in small quantities ('full-fat soybeans') in animal feed. This study analyses the profits generated on Brazilian soy imported and processed in the German soy(meal) supply chain based on a group of ten key companies selected at different stages of the chain from midstream import to downstream retailing.

^a As well as smaller volumes of other soy derivatives and waste.

^b Soy for direct food consumption in Europe is commonly sourced from non-genetically modified production in South, Central, and Eastern Europe.

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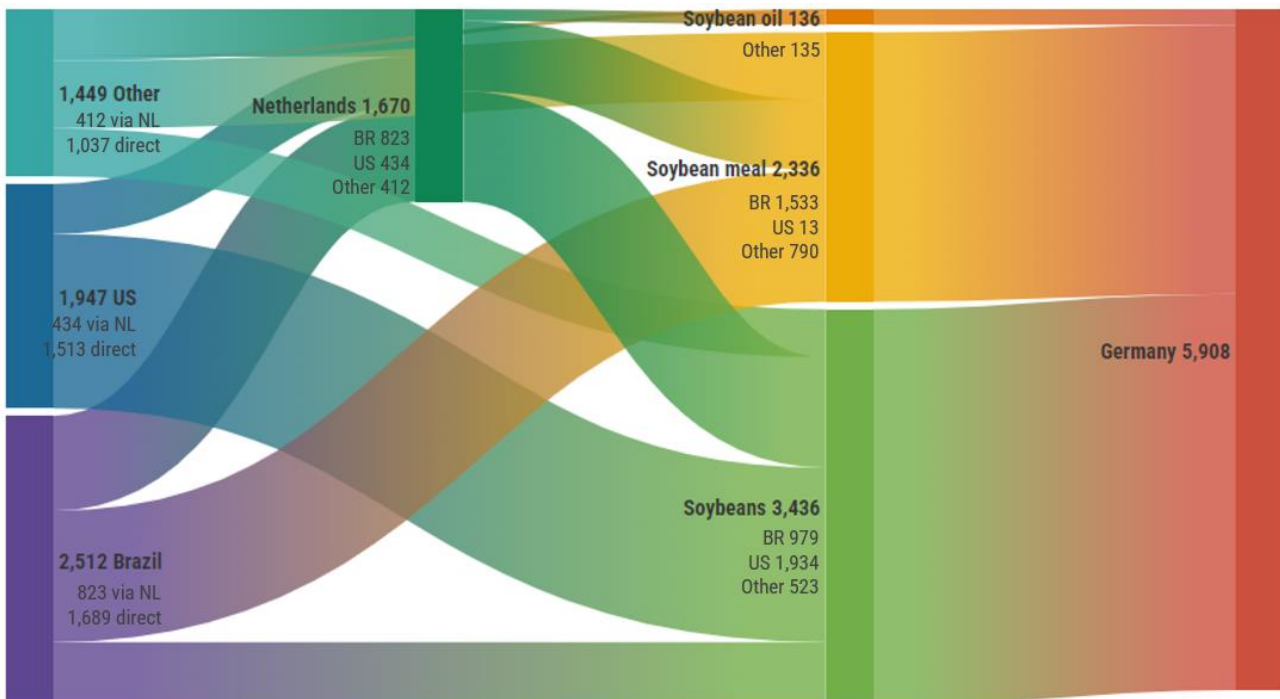
The Soy Supply Chain in Germany

The German agricultural sector uses large quantities of soy as a key source of high-quality plant protein in animal feed to produce meat, dairy and eggs. The leading soy producing countries, Brazil, and the US, are also the main suppliers of soy to the German market. Out of the 3.9 million tons of soybeans, -meal and -oil available for use on the German market in 2022, meal for use in animal feed was with 3.1 million tons the main soy product. Around 46% of this meal originated from Brazil.

1.1 Origins of soy imports

As one of the leading European producers of animal products like pork, poultry, dairy and eggs, Germany is also one of the largest markets for soy in the region. In 2022, the German imports of soybeans, -meal and -oil reached a combined volume of 5.9 million tons and had a total value of € 3.7 billion.³ Due to the crucial role of the Netherlands as a transshipment hub for commodities imported to the EU, around 28% of these imports reached Germany indirectly via the Dutch ports of Rotterdam and Amsterdam, either immediately or after the crushing process (Figure 2). Among the important suppliers of soymeal from Brazil to the German market are the international agri-commodity traders ADM, Bunge, and Cargill, and the Brazilian producer cooperative Coamo.^{c,4}

Figure 2 Soy flows to Germany, 2022 (est., 1,000 tons)



Source: Eurostat (2024); own calculations.

^c Shipment data for soymeal cargos directly supplied from Brazil in 2022 covers a volume of 0.5 million tons.

About one-third of the imports only pass through Germany, again partly after crushing by oilseed processors with facilities in different parts of Germany. Main destinations are in Central and Eastern Europe and Scandinavia. When considering these re-exports, a net volume of 3.9 million tons of soy products were available for further use in Germany: 3.1 million tons of soybean meal, 0.6 million tons of soybean oil and 0.2 million tons of soybeans (Table 3). While the smaller volumes of soybeans and soybean oil have various applications in food, feed and industrial applications, soybean meal can be assumed to be fully used in animal feed.

To identify the full volume of Brazilian soy used in Germany, estimates for the share of the main producing countries in indirect imports via the Netherlands were made. Assuming that the origins of soy products in exports from the Netherlands is comparable to those of Dutch imports, the relative share of Brazilian production in exports to Germany can be estimated. **In total, around 1.4 million tons of soy meal used in animal feed in Germany originated from Brazil, or 46% of the soy meal volume used in Germany (Table 3).**

Table 3 Soy balance Germany, 2022

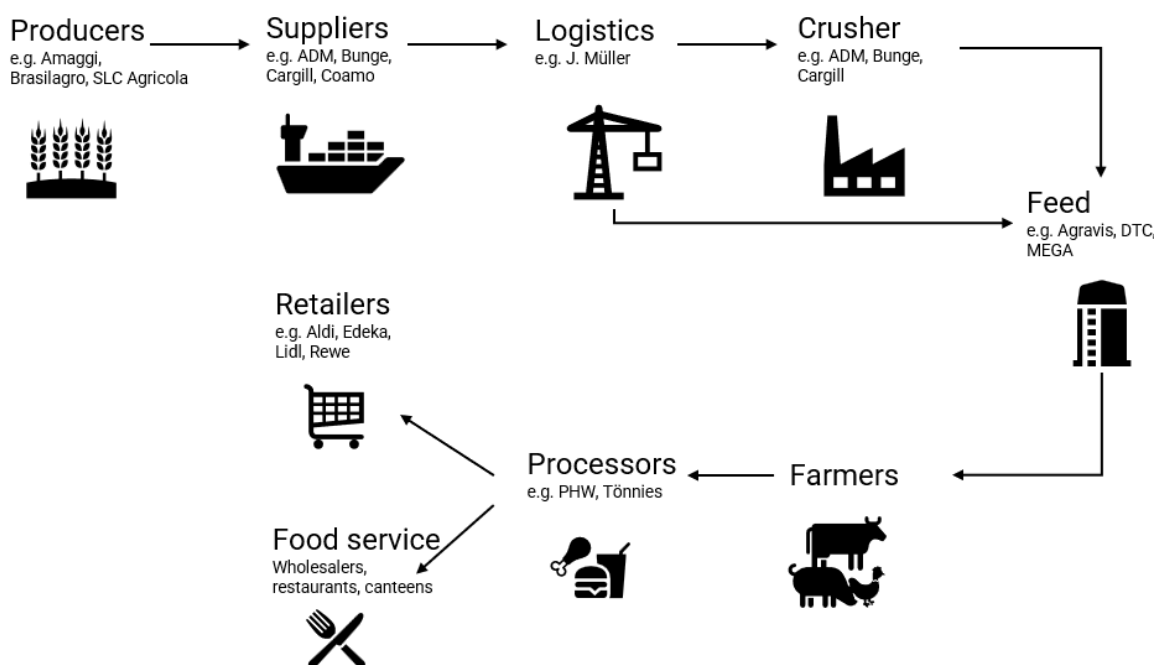
1,000 tons	Import	Crush	<i>Crush result</i>	Export	Net available volume	<i>Brazil share in net available volume</i>	
Soybeans	3,436	3,221		45	170	48	28%
Soymeal	2,336		2,529	1,749	3,115	1,430	46%
Soyoil	136		596	143	589	150	26%

Note: Estimates in *italics*. Based on an average soybean crush ratio of 78.5% meal, 18.5% oil. Net available volume calculated based on Import *minus* Crush *minus* Export for soybeans, and Imports *plus* Crush Result *minus* Exports for soybean meal and oil. Source: Eurostat (2024); Mielke OilWorld (2022); own calculations.

1.2 Key actors in the German soy supply chain

The German soy supply chain consists of several typical stages, in which a small group of main commercial actors often accounts for a large market share.

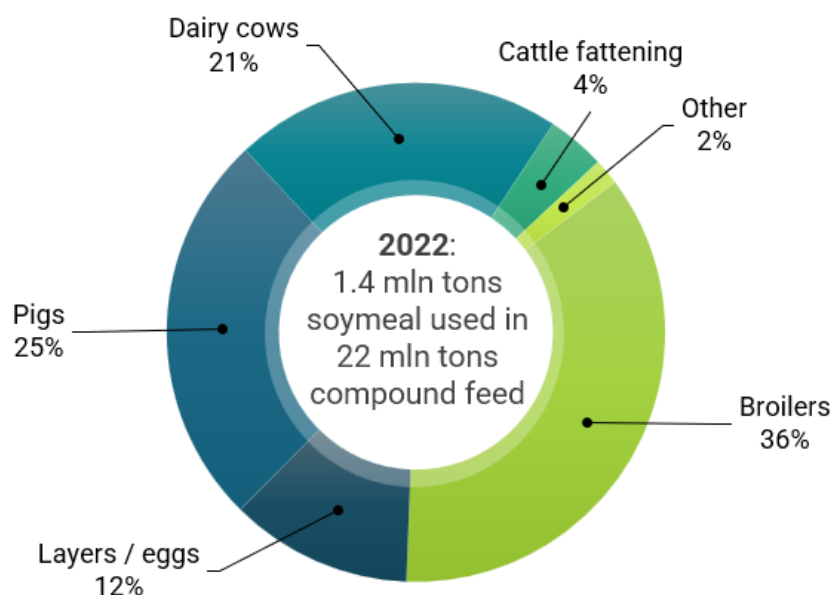
Figure 3 Key actors in the soy supply chain



Ten leading companies operating at different points in the supply chain are further investigated in this study (marked in bold):

- Most of the soy on the German market is used as soybean meal in animal feed (Table 3). Soybean oil and soybeans account for smaller volumes and are used in food, feed, and industrial applications. The crushing of beans into meal and oil as the main soy derivatives is done by oil mills that are often operated by the large agri-commodity traders. Although not part of the current research, data for Bunge and Cargill are used to calculate the pricing-up in this step.
- Brazilian soymeal arrives in Germany predominantly by sea or river transport. Logistics companies handle these imports in the port. **J. Müller** is a representative in this part of the chain. Based on shipment records for 2022, a volume of 0.51 million tons of soymeal were handled by the company in the port of Brake in Northern Germany.⁵ Since imports of Brazilian soy via Brake almost exclusively consist of soymeal, this volume equalled about 36% of the total soymeal imports from Brazil. In this calculation, we assume that all soymeal imported through Brake is used in Germany.
- From the port, soymeal is shipped to animal feed companies, which use soymeal as an important source of high-quality plant protein in compound feeds. While the soymeal ratios in different types of feed vary depending on the local farming practices and availability of other oilseeds, its share is generally highest in poultry, pig and dairy cattle feed.⁶ In 2022, around 22 million tons of compound feeds were produced in Germany, of which poultry consumed an estimated 48% of the Brazilian soymeal available for use, followed by pig feed with 25% and dairy cow feed with 21% (Figure 4).

Figure 4 Distribution of Brazilian soymeal across different types of compound feed in Germany, 2022 (estimates)



Source: FEFAC (2023), *Compound Feed production (1989-2022)*; Hoste, R. (2016), *Soy Footprint of Animal Products in Europe*, Wageningen, Netherlands: WUR; own calculations and estimates.

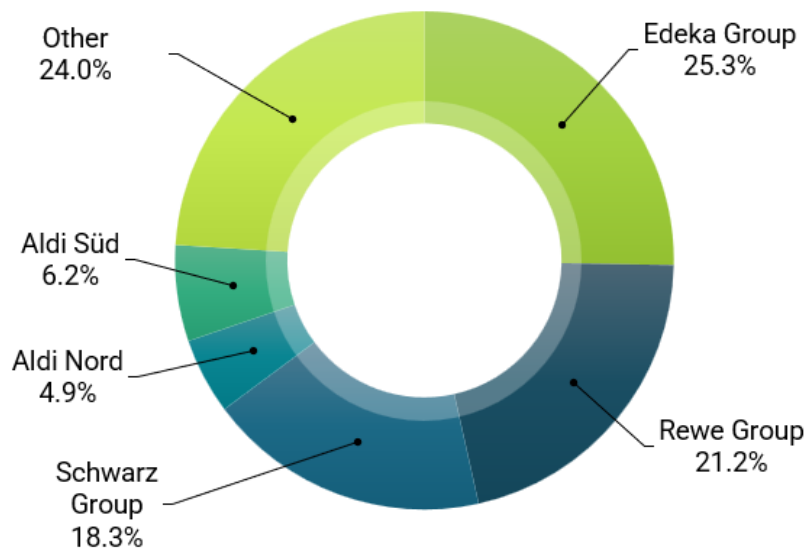
As representatives of this stage of the supply chain, **Agravis and MEGA (part of PHW Group)** are included in the analysis. For a broader vision on the pricing-up, data of Dutch animal feed manufacturer ForFarmers' activities in Germany/Poland are added to this group.

- Livestock farmers produce meat, milk and eggs. Although no individual farms are investigated in this report, the pricing up in this part of the chain is added to the analysis based on Eurostat

data. After processing the soymeal embedded in feed, the products are sent to dairy processors, slaughterhouses, and egg packers.

- Food manufacturers process and package meat, produce dairy products, and pack eggs. Among the meat companies, **Tönnies** and Westfleisch are top pig slaughterers,⁷ while **PHW Group** (parent of MEGA), Rothkötter, and Sprehe Group are the biggest poultry meat producers in Germany.⁸ DMK Deutsches Milchkontor, Theo Müller Group and Hochland SE are the biggest German dairy processors.⁹ In the egg segment, Deutsche Frühstücksei is the largest producer in Germany and Europe.¹⁰ The various animal products of these companies are sold by food retailers and food service companies.
- Food retailers sell the animal products to consumers, and wholesalers sell products to food service companies like restaurants, hotels, cafés, and kiosks, from where they reach the consumer. On the concentrated German retail market, the top-5 retailers– **Edeka**, **Rewe**, **Schwarz Group** (Lidl, Kaufland), **Aldi Nord** and **Aldi Süd** – had a combined market share of 76% in 2022 (Figure 5).¹¹

Figure 5 Market shares of top retailers in Germany, 2022



Source: *Lebensmittelpraxis* (2023, March 9), "Konzentration und Bewegung".

2

Profits on Brazilian Soy

Along the soy value chain, profits on Brazilian soy are made by importers, logistic companies, farmers, food processors, and food retailers. Profundo has developed a methodology to calculate the profits generated on soy imported and processed in the soy(meal) supply chain.

2.1 Methodology

German companies use Brazilian soy to provide products and services. These products and services create value and generate profits. The easiest way to know how much profit the companies made on the Brazilian soy is by collecting this information from their financial accounts, their websites, other documents, or by asking the company for this data. However, there is no single company globally that reports the profits made on Brazilian soy. There are various reasons for this. One reason is that companies do not want to share such detailed information. However, the most important reason is that they do not have financial accounts for profits on single ingredients. This implicitly means that the companies themselves do not know how much profit they make on Brazilian soy.

Profundo has developed a methodology to calculate the profits generated on soy imported and processed in the soy(meal) supply chain. These methodologies have been peer-reviewed and applied in various studies.^d Stakeholders, including companies and/or industry associations, have accepted that the methodology is the best approach when businesses do not publish the information themselves.

Crucial steps and data in this methodology include:

- **The size of Brazilian soy volumes:** for each investigated company.
- **Pricing-up of soy(meal) and embedded soy in each level of the supply chain.** This requires knowledge of the relationship between input value (soy-in) and output value (soy-out). This indicator can be based on the gross margin approach. The gross profit is calculated by deducting the costs of goods sold (COGS) from the revenues. In each step of the value chain, soymeal is traded or processed. Consequently, value is added, and the unit of soymeal gets a higher value per ton. Companies in each level of the chain try to earn a gross margin and a gross profit. This profit is required to pay for labour costs, equipment costs, management remuneration, and interest costs. What is left are profits before tax. After the deduction of corporate tax, the remainder is for shareholders.
- **Operating margins generated on the unit of soymeal unit processed or traded.** When gross profits are adjusted for other costs, like depreciation and personnel costs, the remaining profit is named the profits from operations, or operating profit. This profit is available to pay for costs of debts (to banks), costs of equity (to shareholders), or corporate tax (to governments).

^d Kuepper, B. and G. Rijk (2020, October 12), *Who's Profiting from Brazilian Soy?*, Study commissioned by Greenpeace Nederland, Amsterdam, Netherlands: Profundo.

Quiroz, D., B. Kuepper, G. Rijk and E. Achterberg (2021, May 5), *The Sugarcane Value Chain in Latin America*, Study commissioned by CNV International, Amsterdam, Netherlands: Profundo.

The focus of this 'profit distribution analysis' is on how much each investigated company in Germany earned on the trading and/or processing of soymeal. To know whether the outcomes are realistic, the following criteria are essential:

- The investigated companies are leaders in their part of the supply chain. For instance, Lidl, Edeka, Rewe, and the Aldi companies are leaders in, and are representative of, the food retail sector in Germany.
- The outcomes are in line with the results in comparable sectors outside Germany. The reports on the profit distribution, including the pricing-up, for other countries can be used as a benchmark.

2.2 Trading and crushing

Bunge and Cargill are traders and crushers of soybeans and soymeal. They earn a margin by selling the soy products to EU and German customers. The gross margin of these companies is, on average, 9.5%, and the operating margin is 5.5%. The average global world market price of € 520.7 per ton in 2022 is priced up to € 575.4 (or by 1.11X) when the soymeal arrives with their clients in the feed manufacturing sector (Table 4).

Table 4 Traders and crushers: key financial data

€ million	Revenues	Input costs	Gross profit	Operating profit	% gross margin	% operating margin	Price per ton (€)	Pricing-up ratio (x)*
World market price							520.7	1.00
Traders								
Bunge (2023)	55,064	50,583	4,481	2,908	8.1%	5.3%		
Cargill	144,995	129,225	15,770	8,195	10.9%	5.7%		
Average					9.5%	5.5%	575.4	1.11

Source: Profundo, based on Bloomberg 2022/23 results and annual reports; *) versus the world market price.

As Bunge's and Cargill's earnings in the German Brazilian soy chain were not subject of investigation in this research, their volumes and profits have not been analysed.

2.3 Soy shipping

A part of the business of J. Müller is the handling of soy, among other commodities. The gross margin of the company is 92.5% and the operating margin is 33.3% (Table 5). However, the gross margin and operating margins are not based on the value of the commodities the company handles as the company does not 'own' the sourced materials. The margins are based on the bills that it sends to customers for the logistic services. Therefore, the profit methodology explained in the section 2.1 cannot be applied for J. Müller. There is no further pricing-up from the price level of the traders and the crushers, as the logistics costs will be included in the added value of the traders and/or of the feed manufacturers.

Table 5 J. Müller – logistics: key financial data

€ million	Revenues	Input costs	Gross profit	Operating profit	% gross margin	% operating margin	Price per ton (€)	Pricing-up ratio (x)*
Input price							575.4	1.11
Logistics								
JP Müller	16.5	1.2	15.3	5.5	92.5%	33.3%		
Average					92.5%	33.3%	575.4	1.11

Source: Profundo, based on annual report 2021; *) versus the world market price.

To calculate how much logistic companies earn on Brazilian soy handling, a revised methodology is needed.

The company does not elaborate on which part of the tonnage that it handles is generated from soy. However, the company has 200,000 tons daily unloading capacity, including soymeal and soybeans.¹² Per year, this would mean 58 million tons, assuming an 80% utilisation rate. Thus, the conservative estimate of 508,177 tons of Brazilian soy unloading per year represents a 0.9% share of its total business. The assumption is that of the logistic revenues, 0.9% comes from soy shipping, or € 0.14 million. On this revenue, the company earned € 0.13 million in gross profit and € 0.05 million in operating profit (or € 47,802) (Table 6).

Table 6 J. Müller – logistics: profits generated on Brazilian soy

€ million	Soy volume (1,000 tons)	Value on soy	Gross profit on soy	Operating profit on soy
JP Müller	508.2	0.14	0.13	0.05

Source: Profundo; 'value on soy' is based on J. Müller's revenues, multiplied by the 0.9% of J. Müller's tons shipments/unloading that is generated on Brazilian soy. The 'gross profit on soy' and 'operating profit on soy' are calculated by multiplying the 'value on soy' with the gross margin and operating margin calculated in the preceding table.

2.4 Feed producers

As the pricing-up methodology is based on a sector approach, ForFarmers' German/Polish activities have been added to this group to achieve a representative pricing-up factor. Agravis shows a gross margin of 3.3%, while ForFarmers reports a gross margin of 11.9% (for Germany/Poland). The operating margin of Agravis is also below that of ForFarmers Germany/Poland. This means that Agravis takes a relatively small part of the operating earnings in this part of the chain.

PHW Group (of which MEGA is a part) does not publish separate feed margins. It only calculates integrated margins. This is logical as PHW operates an integrated business model with all feed of MEGA shipped to farmers, which produce chicken for PHW. The assumption is that MEGA's gross and operating margin in its feed activities will be in line with that of the feed sector. Therefore, an average of Agravis and ForFarmers is applied.

The unweighted average gross margin for the group is 7.6%, and this outcome is applied to the pricing-up model. Therefore, the input price of € 575.4 per ton of soymeal is processed into a product (compound feed) in which the value of the embedded soy is upgraded to € 622.7 per ton. Consequently, the pricing-up versus the world market price of soymeal is 1.20 times (Table 7).

Table 7 Feed producers: key financial data

€ million	Revenues	Input costs	Gross profit	Operating profit	% gross margin	% operating margin	Price per ton (€)	Pricing-up ratio (x)*
Input price							575.4	
Feed producers								
AGRAVIS Raiffeisen	3,994	3,863	131	10	3.3%	0.3%		
MEGA (PHW Group)					7.6%	0.7%		
ForFarmers (DE/PL)	829	731	99	13	11.9%	1.6%		
Average					7.6%	0.8%	622.7	1.20

Source: Profundo, based on annual reports 2021 for Agravis and PHW Group/MEGA, and 2022 ForFarmers; gross margin and operating margin of MEGA is based on the average of Agravis and ForFarmers; *) versus the world market price.

Based on the supply chain research, the tons of Brazilian soy that are processed by the two feed manufacturers is known. These volumes are multiplied by the output price of € 622.7 per ton (Table 7) to calculate the value of the embedded Brazilian soy in the feed producers' end products. Subsequently, this value is multiplied with the gross and operating margins to calculate the operating profits on embedded Brazilian soymeal. These are, respectively, € 0.48 million and € 1.44 million for the two companies (Table 8).

Table 8 Feed producers: profits generated on Brazilian soy

€ million	Soy volume (1,000 tons)	Value on soy	Gross profit on soy	Operating profit on soy
AGRAVIS Raiffeisen	303.6	189.0	6.2	0.48
MEGA (PHW Group)	342.0	213.0	16.2	1.44

Source: Profundo; 'value on soy' is based on the feed manufacturers' volume in Brazilian soy, multiplied by the price per ton of the last line in the preceding table. The 'gross profit on soy' and 'operating profit on soy' are calculated by multiplying the 'value on soy' with the gross margin and operating margin calculated in the preceding table.

2.5 Farmers

As indicated above, farmers are not among the investigated companies. However, the model requires their pricing-up factor in the chain.

The German farmers in the livestock sectors have relatively low profitability margins versus their EU counterparts. EU farmers have a 13.3% gross margin, while the German farmers only achieve 3.3%. In the operating margin, the German farmers seem to be loss-making (after the deduction of a living wage component), while the EU farmers earn a 3.6% margin.¹³ Table 9 shows that the family farm income in both the EU and Germany is supported by the balance of tax and subsidies.

Table 9 Farmers: EU livestock farmers versus German livestock farmers

Data per farm in € thousand	2021	2022	margin	2019	2020	2021	margin
Region/country	EU	EU	EU	DE	DE	DE	DE
Output	159.6	187.0		316.7	307.1	354.5	
Gross profit respectively margin	15.6	29.6	13.0%	14.1	-0.1	18.7	3.3%
Living wage farmers	15.5	17.1		15.5	15.5	17.1	
Balance	0.1	12.5	3.6%	-1.4	-15.6	1.6	-1.6%
Family farm income including balance tax and subsidies	23.0	37.1	17.3%	36.3	21.5	44.0	10.4%

Source: Profundo, based on "Farm economy focus by sector – livestock", online:

<https://agridata.ec.europa.eu/extensions/DashboardFarmEconomyFocusLivestock/DashboardFarmEconomyFocusLivestock.html>. Viewed February 2024. Margins are averages for two and three-year periods for the EU and Germany (GR), respectively. For Germany, an extra year has been added due to high volatility in margins.

As the gross margin is relevant in the pricing-up analysis for the German market, the German outcome of 3.3% is applied. Consequently, the value of embedded soymeal is upgraded from € 622.7 per ton to € 644.2. This is the input price of embedded soy for the meat sector (see 0). The pricing-up factor, which was 1.20X at the level of feed producers, moves up to 1.24X at the level of German livestock farmers.

The low margin in farming compared to EU counterparts might result from the (in)balance of power in the whole food retail chain, with discounters putting high pressure on costs. This high focus on 'low prices' in retail has an impact on the negotiations and pricing in the whole chain. The lack of negotiation power by small individual farmers versus larger corporations results in below-average earnings in the German livestock farming sector.

2.6 Downstream: meat

Tönnies generates an operating margin of 1.9%. Its gross margin is based on the sector average as Tönnies does not publish this margin. PHW realizes a gross margin of 27.9% and an operating margin of 0.7%. For the sector-wide pricing up model, Westfleisch is added to the list. Westfleisch has a 21.9% gross margin and a 1.2% operating margin.

It should be noted that PHW's margins are based on an integrated model. In section 2.4 an estimate was made for the gross profit and operating profit of PHW's feed subsidiary MEGA. In 0, a distinction is made between the PHW Group as a whole and its meat activities, based on Profundo's assumptions for the meat and feed division in earnings. The adjusted gross margin for the meat activities amounts to 21.9%, which is in line with competitors, and the adjusted operating margin for PHW meat is 0.1%.

The unweighted average of the gross margin for the group of companies (21.9%) is applied for the pricing-up model. This leads to a further pricing-up of an embedded ton of soymeal from € 644.2 to € 824.8. The pricing-up factor versus the world market price moves up to 1.58X. The operating margins in this part of the German downstream sector are relatively low versus other countries. Again, this might be due to the balance of power in the German food chain with a large position for discounters.

Table 10 Meat producers: key financial data

€ million	Revenues	Input costs	Gross profit	Operating profit	% gross margin	% operating margin	Price per ton (€)	Pricing-up ratio (x)*
Input price							644.2	
Animal product producers								
Tönnies	6,066	4,740	1,326	115	21.9%	1.9%		
PHW Group	2,244	1,618	626	15	27.9%	0.7%		
PHW - meat					21.9%	0.1%		
Westfleisch	3,009	2,351	658	35	21.9%	1.2%		
Average					21.9%	1.1%	824.8	1.58

Source: Profundo, based on annual reports 2021 for Tönnies and PHW Group/MEGA, and 2022 for Westfleisch; gross margin and operating margin of PHW meat is based on an analysis of feed and meat margins by Profundo. Gross margin of Tönnies is based on group average; *) versus the world market price.

The gross and operating profits on embedded soymeal for the two companies are presented in Table 11.

Table 11 Meat producers: profits generated on Brazilian soy

€ million	Soy volume (1,000 tons)	Value on soy	Gross profit on soy	Operating profit on soy
Tönnies	136.2	112.3	24.6	2.1
PHW Group, including feed	339.8	280.3	78.2	1.9
PHW - meat		280.3	62.0	0.5

Source: Profundo; 'value on soy' is based on the feed manufacturers' volume in Brazilian soy, multiplied by the price per ton of the last line in the preceding table. The 'gross profit on soy' and 'operating profit on soy' are calculated by multiplying the 'value on soy' with the gross margin and operating margin calculated in the preceding table.

2.7 Downstream: food retailing

Lidl has no separate margin publication within the Schwarz Group, so the group's margin has been applied. This considers that the profit distribution methodology (see section 2.10) applies the second-best solution when companies refuse to disclose their margins and profits for specific divisions or commodities.

Aldi Nord and Aldi Süd do not publish results for gross and operating profit. This means that gross margins and operating margins cannot be calculated. Therefore, unweighted averages of the three other companies have been applied (again, the second-best solution). Edeka's gross margin is relatively low compared to Rewe, Lidl (Schwarz Group), and large European food retailers such as Ahold Delhaize (Netherlands) and Carrefour (France). Rewe's 21.3% gross margin is more in line with European counterparts.

The average gross margin of the food retailer group of 19.6% is applied in the pricing-up model. Consequently, the € 824.8 input price of embedded soymeal per ton for supermarkets, is further priced up to € 1,025.9 per ton. The pricing-up factor versus the world market price amounts to 1.97X (Table 12).

Lidl/Schwarz's operating margin is 4.2%, while Rewe and Edeka's operating margins are lower, at 1.8% and 1.0%, respectively.

Table 12 Food retailers: key financial data

€ million	Revenues	Input costs	Gross profit	Operating profit	% gross margin	% operating margin	Price per ton (€)	Pricing-up ratio (x)*
Input price							797.9	
Food retailers								
Aldi Nord					19.6%	2.3%		
Aldi Süd					19.6%	2.3%		
Edeka	47,046	42,037	5,009	468	10.6%	1.0%		
Rewe	77,210	60,741	16,469	1,363	21.3%	1.8%		
Lidl	67,029	49,046	17,983	2,834	26.8%	4.2%		
Average					19.6%	2.3%	1,025.9	1.97

Source: Profundo, based on annual reports 2022 for Edeka, Rewe, and Lidl/Schwarz (2021). Aldi gross margin and operating margin are based on averages of the group; *) versus the world market price.

Assuming that all imported soymeal ends up in the food retail and food service sector in Germany, the share of modern retail in meat sales, and the market shares of the various food retailers in modern food retail are the basis for calculating their use of soymeal. Modern retail has a share of about 80% in meat sales.¹⁴ Within food retail, Aldi Nord has a 4.9% share, Aldi Süd 6.2%, Edeka Group 25.3%, Rewe 21.2%, and Lidl/Schwarz Group 18.3% (Figure 5).¹⁵

Based on the preceding table and the volumes of embedded soymeal analysed in the supply chain part of the report, Lidl is the food retailer that earns the most on embedded Brazilian soymeal due to its higher margins (Table 13).

Table 13 Food retailers: profits generated on Brazilian soy

€ million	Soy volume (1,000 tons)	Value on soy	Gross profit on soy	Operating profit on soy
Aldi Nord	56.3	57.8	11.3	1.3
Aldi Süd (2022)	71.0	72.8	14.3	1.7
Edeka (2022)	288.0	295.5	31.5	2.9
Rewe (2022)	241.4	247.6	52.8	4.4
Lidl (28/2/22)	208.3	208.3	57.3	9.0

Source: Profundo; 'value on soy' is based on the feed manufacturers' volume in Brazilian soy, multiplied by the price per ton of the last line in the preceding table. The 'gross profit on soy' and 'operating profit on soy' are calculated by multiplying the 'value on soy' with the gross margin and operating margin calculated in the preceding table.

2.8 The outcome and the ranking of German companies

The analysis suggests that the group of ten companies generated a total of € 23.9 million in operating profit on embedded Brazilian soymeal and € 276.3 million in gross profit.

Table 14 The 10 companies in the German supply chain of Brazilian soy

€ million	Value on soy	Gross profit on soy	Operating profit on soy	Soy volume (1,000 tons)
JP Müller	0.14	0.13	0.05	508.2
AGRAVIS	189.0	6.2	0.5	303.6
MEGA (PHW Group; feed)	213.0	16.2	1.4	342.0
Tönnies	112.3	24.6	2.1	136.2
PHW Group (meat)	280.3	62.0	0.5	339.8
Aldi Nord	57.8	11.3	1.3	56.3
Aldi Süd	72.8	14.3	1.7	71.0
Edeka	295.5	31.5	2.9	288.0
Rewe	247.6	52.8	4.4	241.4
Lidl	213.7	57.3	9.0	208.3
Total	1,682.2	276.3	23.9	

Source: Profundo, based on preceding tables; *) the total soy volume is not calculated as the outcome would contain double-counting. In 'value on soy', PHW and MEGA are shown as two separate entities; however, in reality, MEGA and PHW are one integrated company.

When these companies are ranked from one to nine, with 'operating profit on soy' as the discriminator, Lidl ranks first and is leading a group of three food retailers. The food retailers are earning the highest operating profits on embedded soy. Tönnies ranks fourth, and the combined PHW/MEGA ranks fifth.

Table 15 Ranking in operating profit earners on embedded Brazilian soy (€ million)

Position #	Company	Value on soy	Gross profit on soy	Operating profit on soy	Soy volume (1,000 tons)
1	Lidl	213.7	57.3	9.0	208.3
2	Rewe	247.6	52.8	4.4	241.4
3	Edeka	295.5	31.5	2.9	288.0
4	Tönnies	112.3	24.6	2.1	136.2
5	PHW Group total	493.2	78.2	1.9	342.0
6	Aldi Süd	72.8	14.3	1.7	71.0
7	Aldi Nord	57.8	11.3	1.3	56.3
8	AGRAVIS	189.0	6.2	0.5	303.6
9	JP Müller	0.14	0.13	0.05	508.2

Source: Profundo, Table 14.

2.9 The pricing-up model results – summary for Germany

Summarising the pricing-up model, the soymeal used in the animal product sector in Germany seems to be priced up by a factor of 1.97X versus the world market price. This is lower than the results for the Dutch soy supply chain analysed in 2020.¹⁶ The reason for the pricing-up of ‘only’ two times in Germany might be due to the structure of the soy supply chain, including the balance of power, the competition in various levels of the chain, and/or the focus on low prices for the end-buyer/the consumer.

The consequence of these characteristics for the pricing-up model is that low gross margins lead to a low pricing-up of (embedded) soymeal. Therefore, the value enhancement in each part of the chain is relatively low. Multiplying a low value in the chain with a low operating margin in each part of the chain leads to a low operating profit per ton.

The margins of the investigated companies and the additional companies which were required for a representative pricing-up model are shown in Table 16.

Table 16 Summary: the margins in the crucial level of the supply chain

%	Gross margin	Operating margin
Traders	9.5%	5.5%
Logistics	92.5%	33.3%
Feed producers	7.6%	0.8%
Farmers	3.3%	-1.6%
Animal product manufacturers	21.9%	1.1%
Food retailers	19.6%	2.3%

Source: preceding tables for every chain level.

The data of the gross margins and the operating margin were applied to the index levels of the pricing-up model.

Table 17 The pricing-up index and index-based profit

One unit soy	Index	Gross profit (based on index)	Operating profit (based on index)
World market price soy/ton (index)	100		
Traders	111	10.5	6.0
Logistics	111	0.03	0.01
Feed producers	120	9.1	1.0
Farmers	124	4.1	-2.0
Animal product manufacturers	158	34.7	1.7
Food retailers	197	38.6	4.6
Total		97.0	11.4

Source: preceding tables for every chain level to calculate the gross profit and operating profit versus the index levels of the first column.

From Table 17, the division in gross profits and operating profits is calculated. **The downstream actors (animal product manufacturers, food retail) take 75.5% of the gross profits in the chain and 55.2% of the operating profit. The relative size of the food retail is eye-catching with a 40%-share in both profit definitions (Table 18).**

Table 18 The division of profits between the various chain levels

%	Share in gross profit	Share in operating profit
Traders	10.8%	53.0%
Logistics	0.03%	0.1%
Feed producers	9.3%	8.9%
Farmers	4.3%	-17.2%
Animal product manufacturers	35.7%	14.9%
Food retailers	39.8%	40.3%
Total	100.0%	100.0%

Source: preceding tables for every chain level; the Brazilian farmers have not been considered in this analysis

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