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# Why did the chicken cross the border? Assessing the competitiveness of broiler production in Ghana and Germany

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# 1 Introduction

In 2017, the European Union (EU-28) exported an estimated 368 thousand tons of frozen poultry meat to West Africa. Of which this represented around 71,7% of the total poultry meat exports to the region (Zamani et al. 2021). Germany is one of the EU countries that exports frozen poultry meat to west African countries. According to Zamani et al. (2021), in 2017, Germany exported around 8 thousand metric tons of poultry meat to west African countries. Of which, Benin and Ghana received the majority of those exports. In Ghana, chicken meat consumption has grown many times over in the last two decades. The per capita consumption of poultry meat grew from 1.6 kg/person in 1999 to 9.6 kg/person in 2018 (Zamani et al. 2021). However, local production has failed to keep up with the growing demand for poultry meat, particularly chicken meat (Asante-Addo and Weible 2019). Consequently, Ghana is highly dependent on frozen chicken imports as it imports an estimated 65 % of its total poultry meat supply (Asante-Addo and Weible 2019). Ghana's dependency on frozen chicken imports has resulted in the imports becoming a subject of significant criticism (Sumberg et al. 2013). This has stimulated an on-going debate about the impact of frozen chicken imports on the Ghanaian poultry sector. One of the questions in the debate is: "How is it possible that EU countries are able to export frozen chicken meat to Ghana at such low prices and still make a profit?". Matthews and Soldi (2019) explain that EU countries like Germany are able to export frozen chicken cuts to African countries at low prices because EU consumers prefer to consume chicken breasts, therefore, other parts are either exported or processed into pet food. This explanation is consistent with the statistics presented by Zamani et al. (2021) which show that 70% of the poultry meat exported to west Africa by the EU are frozen chicken cuts and offal. However, this explanation does not address why large quantities of frozen whole chickens are also exported to west Africa at a lower price than those produced locally. According to Zamani et al. (2021), frozen whole chickens account for 12% of the poultry meat exported to West Africa by the EU. Therefore, this means that there are other factors that contribute to the low cost of frozen chicken meat exports from the EU.

In this context, this study examines whether the differences in farm performance and production costs between Ghanaian and German conventional broiler farms could also explain why German full chicken (entire chicken carcass) exports to Ghana are cheaper. Often, the criticism from NGOs is that Germany and the EU export their frozen chicken meat to Ghana at very low prices and this weakens local poultry production due to these "unfair" export practices. We take up this criticism in our research and identify factors at the farm level that may be responsible for the price differences. The comparison at the farm level also gives us insights on the specific interventions that are necessary to improve the competitiveness of broiler production in Ghana. The study builds upon the farm economic analysis of Ghanaian broiler farms conducted by Chibanda et al. (2022). As part of a larger project examining the "Impact of Meat and Milk Product Exports on Developing Countries", our farm level analysis complements the analyses made with CGE and PE models (see Zamani et al. (2022)) . As these models operate at a high level of aggregation, complementary explanations at farm level help to better interpret and assess certain reactions and influences on the ground. An analysis conducted with the CGE-model MAGNET (Zamani et al. 2022) shows that

growing demand in Ghana will also lead to an increase in imports in the coming 10 years. Our baseline including policy changes and projections of macroeconomic indicators shows that growing demand is likely to be covered through additional imports and a slowly growing domestic poultry industry. With various policy scenarios, Zamani et al. (2022) were able to show that a partial ban on imports from Germany and the EU cannot stop this trend. Instead, other exporters would take over the market shares. In this paper, we expand our study (Zamani et al. 2022) by analyzing the competitiveness of typical conventional broiler farms in Ghana and Germany. More specifically, the study compares the farm performance, costs of production and profitability of the typical farms.

The paper is structured into five sections. After the introduction, Section 2 provides an overview of the Ghanaian and German chicken meat sector. Section 3 describes the typical farm approach which was used to construct and quantify typical conventional broiler farms in Ghana and Germany. Section 4 presents and discusses the results. Lastly, in Section 5, we draw some conclusions and offer some recommendations.

# 2 Literature review: Overview of the Ghanaian and German chicken meat sectors

## 2.1 Overview of the Ghanaian chicken meat sector

The Ghanaian poultry sector has gained prominence as a key contributor to agriculture growth and Gross domestic product (GDP). It is one of the sectors considered by the Government of Ghana to enhance the standard of living through poverty alleviation, food, and nutrition security. Even though poultry production is ubiquitous in Ghana, commercial poultry production is largely concentrated in Ashanti, Brong Ahafo (now Bono), the Eastern and Greater Accra regions. The main poultry species reared in Ghana are chickens, turkeys, guinea fowls, ducks, ostriches and pigeons (Aning 2006). Of which, chickens constitute the majority of the poultry species reared in Ghana (FAO 2014). Chicken meat production systems in Ghana can generally be grouped into two main categories which include the traditional free-range system and conventional broiler production systems (FAO 2014). The traditional free-range system is more prevalent in rural areas and is characterized by the production of local chicken breeds for household consumption. While conventional broiler production systems are more common in urban and peri-urban areas and rear commercial broiler breeds (e.g. Cobb 500, Ross 308, and Arbor Acres) (Chibanda et al. 2022). The conventional broiler production systems can be categorized into small-scale, medium-scale, and large-scale integrated systems (Chibanda et al. 2022). In 2015, small and medium-scale farms accounted for an estimated 32.6% and 17.0% of the total local market supply of broiler meat, respectively. While large scale farms accounted for half of the local broiler meat supply in Ghana (Amanor-Boadu et al. 2016).

Although poultry meat consumption in Ghana has significantly increased in the last two decades, domestic production has stagnated over the same period. The stagnation in production has resulted in local production failing to meet the strong demand for chicken meat (Andam et al. 2017). Therefore, Ghana is a net importer of poultry meat. The stagnation in production is mainly attributed to high production costs, competition from low-cost frozen chicken imports, limited slaughtering facilities, limited access to credit and the unreliable supply of inputs (Amanor-Boadu et al. 2016; Zamani et al. 2022; FAO 2014). The situation is believed to be a threat to the survival of the broiler industry (Etuah et al. 2019). Consequently, several poultry policies have been implemented by successive Ghanaian governments. Some of the policies include the removal of duties on imported vaccines/drugs and day-old chicks and the introduction of subsidies on feed mill ingredients, tariffs increase on imported frozen poultry products, among others. More recent policies and programs such as Rearing for Food and Jobs (RFJ), Planting for Food and Jobs (PFJ) and Broiler Revitalization Project' have been implemented to stimulate local broiler production and reduce importation (RVO 2020). Notwithstanding these attempts by the government to support increased local production over the years, increasing production cost continues to raise concerns among stakeholders about the competitive advantage of the broiler sector in Ghana (Etuah et al. 2019; Dziwornu 2014).

## 2.2 Overview of the German chicken meat sector

According to BMEL (2020) poultry products (meat and eggs) account for approximately 7% of the agricultural production value in Germany. The average value of poultry products between 2017 and 2019 was around 3.6 billion EUR and poultry meat accounted for almost 67 % of this value (BMEL 2020). The main poultry species reared in Germany include chickens, turkeys, ducks and geese. While other poultry species like guinea fowls and quails are reared in small numbers. Chickens (broilers and layers) are the most produced poultry specie in Germany. Of which, broiler farms and production in Germany is concentrated in the Lower Saxony and Bavaria federal states (Thobe et al. 2021). Similar to other EU countries, the German chicken meat sector can be broadly categorized into two production systems which include "conventional broiler production systems" and "alternative broiler production systems" (van Horne 2018). Of which, conventional broiler production systems are characterized by the rearing of fast-growing genotypes broilers and alternative broiler production systems rear slower growing genotypes. Conventional broiler production systems produce around 90% of all the chicken meat produced in Germany.

Germany is a net exporter of poultry meat. The country had an average self-sufficiency rate of around 103% for poultry meat from 2016 to 2018 (BMEL 2020). It is also one of the key producers of poultry meat in the EU and the main export destinations for its chicken meat are the Netherlands, France, Denmark, Spain and Poland (Thobe et al. 2021; van Horne 2018). Zamani et al. (2021) explain that a sizable amount of the chickens exported to the Netherlands are later reexported to west African countries like Ghana and Benin.

Although the German chicken meat sector can be considered to be well developed and competitive, it also faces several challenges. The challenges can be broadly grouped into three categories: 1). animal welfare issues, 2). food safety issues and, 3). issues related to environmental pollution (Augère-Granier 2019; Bessei 2018; van Horne 2018). The German government and the EU have implemented several policies to address these challenges. For instance, regarding animal welfare, the German government and the EU introduced welfare standards that regulate the stocking densities in broiler farms. More specifically, under the EU Directive 2007/43/EC , the maximum stocking density for broiler farms in Germany is 39 kg/m² (van Horne 2018). As far as food safety issues are concerned, the high use of antibiotics leading to antimicrobial resistance is a concern. Hence, the German government introduced a system for antibiotic monitoring and benchmarking in 2014. As part of this system, broiler farms with 10 000 birds or more per cycle are required to report information about every antimicrobial treatment the birds receive (Kasabova et al. 2021). One of the key issues regarding environmental pollution concerns litter and manure waste from broiler production. To address this issue, the EU Nitrates Directive (91/676/EC) is intended to prevent nitrates from being deposited into water sources from agricultural production. Under this directive, producers must ensure that manure disposal does not contribute to environmental pollution (van Horne 2018).

# 3 Materials and Methods

The typical farm approach was used to construct and quantify typical conventional broiler farms in Ghana and Germany. The approach entails the construction of empirically grounded farm data sets 'typical farms' through the use of farm visits, semi-structured interviews and focus group discussions (Chibanda et al. 2020). Chibanda et al. (2020) and Lasner (2020) explain that a typical farm is a 'virtual' or 'synthetic' farm that represents the most common farm type within a production system. The typical farm approach was applied through a series of steps that (Chibanda et al. 2020) refer to as the *agri benchmark* Standard Operating Procedure (SOP). The steps are summarized below and illustrated in Figure 1.

**Step 1: Identifying typical broiler production regions**

This step entailed the identification of the most important regions (highest number of birds produced per year and ha) in terms of broiler production in Ghana and Germany. The most important broiler production regions in the two countries were identified through an in-depth literature review and consulting local experts (local consultants, researchers, veterinary and extension officers).

**Step 2: Identifying the most common conventional broiler production systems**

The most prevalent broiler production systems in Germany and Ghana were identified through conducting a literature review, reviewing national statistics and consulting local experts. Three

prevailing broiler production systems were identified in Ghana: large-scale integrated, medium scale and small-scale conventional broiler production systems. Conventional broiler production in Germany is generally characterized by standardized production processes that are similar over the production regions (Chibanda et al, 2020). Thus, conventional broiler production in the country can be classified as highly vertically integrated production system.

**Step 3: Data Collection**

Data was collected through the use of semi-structured interviews and focus group discussions. In consultation with local experts, the researchers selected broiler farms with characteristics representing the identified production systems. The selected farms were visited, and interviews were conducted with producers. A semi-structured questionnaire was used to collect quantitative and qualitative data farm data from the producers. A total of three farms were visited in Ghana representing three identified production systems and one farm in Germany. One farm was used to present the large-scale commercial production system in Germany.

In Ghana, focus groups were then used to construct typical farms through 'recalibrating' the individual farm data collected through the semi-structured interviews. A total of three focus groups were held, one for each of the three production systems identified (details see Chapter 3.3). Each focus group was composed of ten participants who included five poultry producers, three local experts (extension or veterinary officers) and two local researchers. Chibanda et al. (2022)provides an in-depth explanation of how the focus groups are applied within the context of the typical farm approach. However, focus groups were not used to typify individual farm data collected in Germany. Chibanda et al. (2020) explains that in some European countries such as Germany with standardized poultry production processes, it is easier to construct the typical farms through consulting poultry experts in the region where the farm is located. Therefore, in Germany, the individual farm data was recalibrated through cross-checking each value provided by the producer with a poultry expert through a semi-structured interview.

**Step 4: Data analysis and cross-checking**

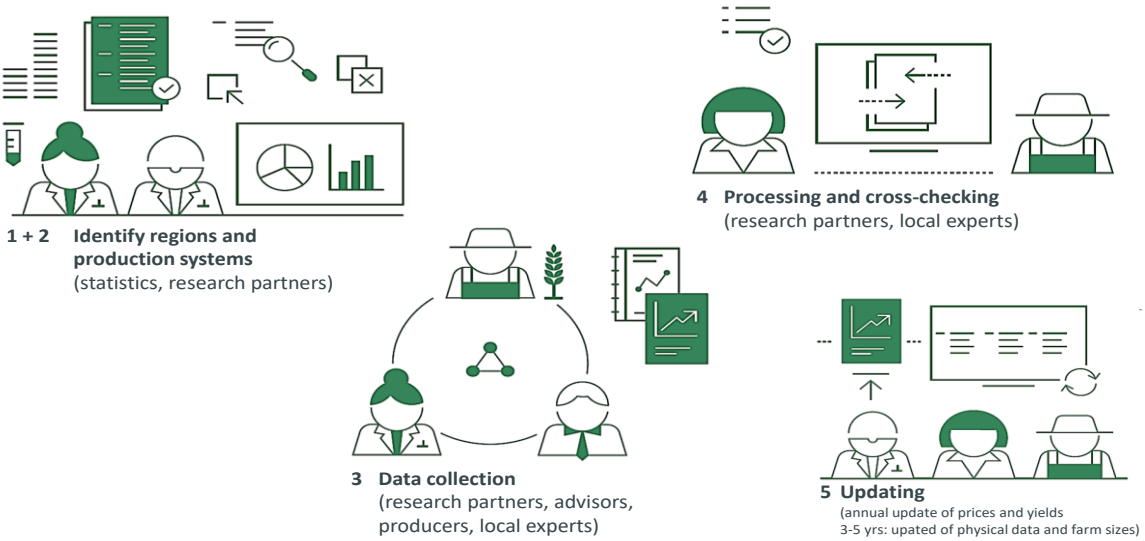
The Technology Impact Policy Impact Calculations (TIPI-CAL), a computer-based policy impact assessment tool, was used to analyze the typical farm data (Chibanda et al., 2020). The tool was used to calculate farm performance indicators, costs of production and profitability. The Feed Conversion Ratio (FCR) and Broiler Farm Economy Index (BFEI) are the most commonly used broiler farm performance indicators. FCR measures the amount of feed used per kilogram of meat produced. While the BFEI measures the overall farm broiler farm efficiency through combining several indicators (Singh et al. 2017). The formulas used to calculate the two indicators are shown below:

$$\text{FCR} = \frac{\text{Cumulative feed intake (kg)}}{\text{Total weight gain (kg)}}$$

$$\text{BFEI} = \frac{\text{Average live weight (kg)} \times \%\ \text{livability}}{\text{FCR} \times \text{growing period (days)}}$$

The results obtained from the TIPI-CAL model were then cross-checked and validated by local experts (researchers and farm managers). This was done to ensure that the results are truly representative of the typical situation in the two countries.

**Figure 1: Overview of the typical farm approach (*agri benchmark* SOP)**




Note: Step 5 was not conducted as it is can only be done after a minimum of three years.

Source: Chibanda et al. (2020)

# 4 Results and Discussion

## 4.1 Characteristics of typical conventional broiler farms in Ghana and Germany

Three typical farms representing the most prevalent conventional broiler production systems in Ghana were constructed, and one typical conventional farm for Germany. The typical farms were named according to their respective country codes and the total number of chickens they produce annually (in thousands) – GH_3, GH_12, GH_27, and DE_994. The typical farms are described below and their key characteristics are summarized in Table 1.

**GH_3:** represents a small-scale broiler farm located in Kpone Bawaleshie, in the Greater Accra region. Of which, Kpone Bawaleshie is a small peri-urban town. Asante-Addo and Weible (2019) explain that the main consumers of broiler chickens in Ghana live in urban areas. Therefore, GH_3 like most commercial broiler farms, is conveniently located close to consumers. The farm rears day-old chicks (DOCs) that are imported from the Netherlands. Producers who participated in the focus group held in Accra explained that small-scale broiler producers in and around Accra often use

DOCs that are imported from the EU. They explained that, due to their farm locations, the chicks arrive at the Kotoka International Airport in Accra then driven to their farms on the same day. The farm produces 3613 broilers per year and markets them as live birds in local communities, live bird markets and to small take-aways. Year-round labor to operate the farm is supplied by two workers (one family and one casual) with total of 3120 working hours per year.

**GH_12:** represents a medium scale broiler farm located in Dormaa in the Bono Region. Dormaa is a border town which is an important broiler production region because of its proximity to Ivory Coast. According to Andam et al. (2017), broiler farmers in Dormaa can conveniently import day-old chicks (DOCs) from Ivory Coast and market their live chickens to poultry traders from Ivory Coast. Therefore, GH_12 rears DOCs that are imported from Ivory Coast. The farm produces 12.100 broilers per year and markets them as live birds to poultry traders from Ivory Coast. The farm is operated by one family member and two permanent workers who have a total of 7872 working hours per year. The farm uses simple (none automated) feeders and water dispensers.

**GH_27:** represents a large-scale integrated broiler farm situated in Kumasi in the Ashanti Region. Kumasi is the second biggest city in Ghana. Therefore, similar to GH_3, GH_27 is conveniently located near urban consumers. As it is common in such a production system, GH_27000 operates its own hatchery. Therefore, the DOCs are hatched on the farm. The farm produces 27.000 broilers per year, slaughters them and markets them to retailers and restaurants. The farm is operated by eleven permanent workers with sum of 26.136 working hours per year.

**DE_994**: represents a conventional broiler farm located in Lingen, in the Lower Saxony state. The Lower Saxony state is important in terms of broiler production because it accounts for nearly 65% of the total number of broiler chickens produced in Germany (Thobe P and Almadani 2020). DE_994. Due to the high specialization of broiler farms in such a system, farm operations are managed by two permanent workers and two family members whose work is total 3.528 working hours per year.

**Table 1:** Characteristics of the typical conventional broiler farms in Ghana and Germany

| Farm name | GH_3 | GH_12 | GH_27 | DE_994 |
|---|---|---|---|---|
| Production system | Small scale system | Medium scale system | Large scale integrated system | Highly vertically integrated system |
| Location | Accra | Dormaa | Kumasi | Lingen |
| Chickens sold/year | 3,613 | 12,086 | 27,000 | 994,826 |
| Genotype | Ross 308 | Cobb 500 | Cobb 500 | Ross 308 |
| Origin of day-old chicks | Imported from the Netherlands | Imported from Ivory Coast | Hatchery belonging to the farm | Farm has a contractual arrangement with a hatchery to supply chicks |

| | | | | |
|---|---|---|---|---|
| Biosecurity measures | Low to moderate | Moderate | Moderate to high | Very high |
| Type of housing | Open, naturally ventilated poultry houses. | Open, naturally ventilated poultry houses. | Open, naturally ventilated poultry houses. | Environmentally controlled housing (closed barns) |
| Marketing channels | Sells live birds to individuals at the farmgate or at live bird markets. | Sells live birds in live bird markets. Rarely, the birds are slaughtered and sold to fast-food shops. | Slaughters its birds and sells them to retailers and restaurants. | Birds are sold to a slaughterhouse which has a contractual arrangement with the farm |

Source: Own survey and calculations

## 4.2 Farm performance

**FCR and BFEI**

Table 2 compares the farm performance indicators of the typical conventional broiler farms in Ghana and Germany. The comparison of the FCR and BFEI show that DE_994 is more efficient than the Ghanaian farms (GH_3, GH_12, GH_27). A lower FCR as that of DE_994 implies that the farm uses less feed to produce one kilogram of meat. While a BFEI value higher than 2 indicates good overall farm management (Khan et al. 2019).

Focus groups held with the different broiler producers and extension officers revealed that the feed use inefficiency (high FCRs) of the Ghanaian farms can be attributed to various factors. For the typical small-scale farm (GH_3), with the highest FCR, the feed-use inefficiency can be attributed to the use of poor-quality feed. The small-scale producers explained, if a focus group, that they often do not usually purchase ready-made feed sold by commercial feed mills. Instead, they buy their own feed ingredients (maize, soybeans, wheat bran, fishmeal, oyster shells, etc.) and take them to "informal" feed millers who then produce customized feed mixes. Andam et al. (2017) calls these informal feed mills "service feed mills" and explain that they typically serve small-scale produces and only produce feed based on the ingredients supplied by the producers. Andam et al. (2017) further explain that the quality of feed produced by such mills cannot be guaranteed because they usually do not conduct any quality control of feed ingredients (i.e. tests for aflatoxin, moisture content, toxicity). Consequently, some of the feed used by small-scale producers is poor quality because it is produced from feed ingredients such as maize and soya beans which are either moldy, have high levels of aflatoxins or have a high moisture content. Of which, the negative effect of toxins such is aflatoxins on the FCR has long been established (Johnson et al. 2020).

In the case of medium scale farms, extension officers who participated in a focus group held in Dormaa explained that the main cause of feed inefficiency among producers in the region are poor animal husbandary practices. The extension officers highlighted that farm workers who are predominantly responsible for giving feed to the chickens often did not do this properly. The

officers explained that based on their observations, workers often put too much feed in the feeding trays which often resulted in feed wastage as some of the feed would be thrown out when it is wet. However, this feed is usually accounted by the farm owners as feed given to the chickens while in reality it is feed wasted.

In the case of large-scale producers, extension officers attributed the feed-use inefficiency to the use of poor quality locally hatched DOCs. The extension officers explained that they observed that locally hatched chicks are often characterized by poor growth and high mortalities. These observations are supported by experiments conducted by Yeboah et al. (2019) which show that locally hatched DOCs in Ghana have lower weight gains and higher mortalities in comparison to imported DOCs.

**Mortality rate**

The mortality rate is also an important farm performance indicator. Table 2 shows that DE_994 has a mortality rate of 1,80%, which is much lower than those of the Ghanaian farms. GH_3, which uses day-old chicks imported from the Netherlands, has the second-lowest mortality rate of 2,88%. While GH_27, which uses locally hatched day-old chicks, has the highest mortality rate of 10%. Focus group participants attributed the high mortality rate experienced by GH_27 to the use of locally hatched chicks that are believed to be of a lower quality. This explanation is in line with the findings reached by Yeboah et al. (2019) and FAO (2014), which highlight that the use of locally produced chicks often leads to increased mortalities because the local hatcheries are poorly monitored and regulated; therefore, they produce low-quality chicks.

**Production cycles**

Table 2 also shows that DE_994 runs 7,45 production cycles per year which is more than double the number of production cycles that the Ghanaian farms run. A fully operational conventional broiler farm that maximizes its asset utilization in Ghana is expected to run about 6.5 production cycles per year (Amanor-Boadu et al., 2016). Therefore, our results suggest that all three typical farms in Ghana are not maximizing their asset utilization. Focus group participants revealed that due to the low-priced frozen chicken imports, locally produced broiler meat is only readily marketable during three festive seasons (Christmas, Easter and Eid Al-Fitr). They explained that they can market their chickens during the festive seasons because there is a significant increase in demand for live chickens. These findings are supported by Amanor-Boadu et al. (2016) who conclude that broiler production in Ghana is seasonal as production is done mostly for the festive holidays.

**Table 2:** Farm performance indicators

| | GH_3k | GH_12k | GH_27k | DE_994k |
|---|---|---|---|---|
| Feed conversion ratios (FCR) | 2.43 | 2.08 | 2.33 | 1.56 |
| Broiler Farm Economy Index (BFEI) | 1.90 | 2.01 | 2.03 | 3.99 |

| | | | | |
|---|---|---|---|---|
| Mortalities (%) | 2.88 | 4.08 | 10.00 | 1.80 |
| Feeding period (days) | 63.00 | 45.50 | 42.00 | 42.00 |
| Final live weight (g) | 3,000 | 2,200 | 2,000 | 2,672 |
| Number of cycles per year | 3.72 | 3.00 | 3.00 | 7.45 |

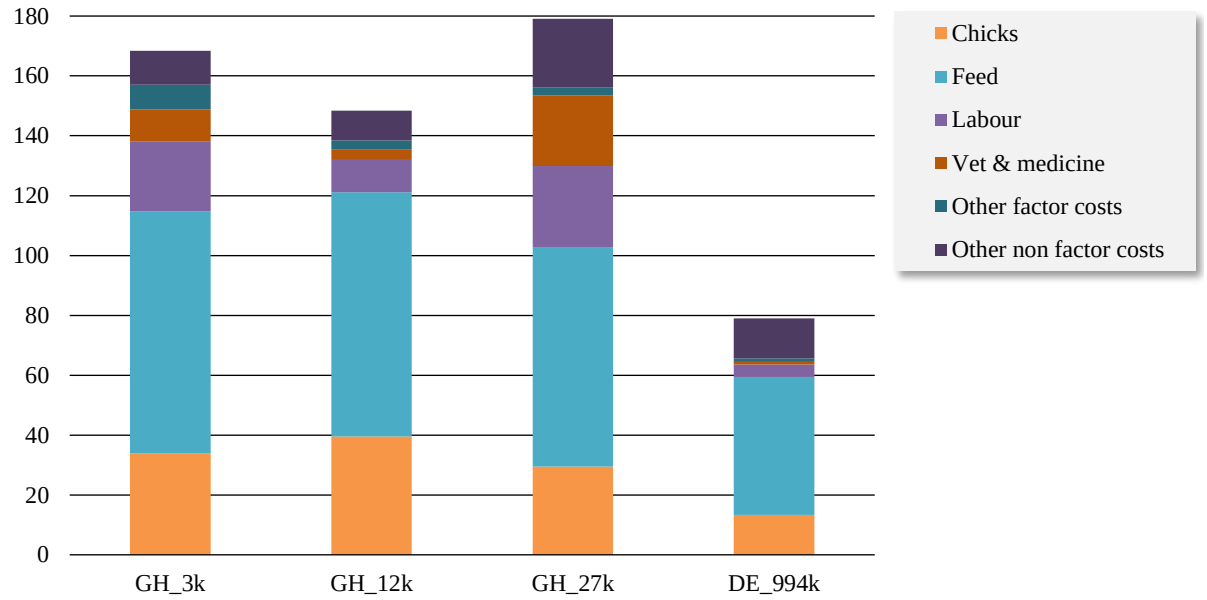
Source: Own survey and calculations

As demonstrated by the comparison of the farm performance indicators, the typical German conventional broiler farm (DE_994) is a better managed and more efficient farm than Ghanaian typical broiler farms (GH_3, GH_12 and GH_27). Of which, the low performance of Ghana's farms is generally attributed to the rearing of poor-quality chicks, use of low-quality feed, and poor poultry husbandry practices.

## 4.3 Production costs

Figure 2 shows that production costs are much lower for DE_994k than they are for the Ghanaian farms. More specifically, the results show that it only costs DE_994k 79,01EUR to produce 100 kg live weight chicken. In comparison, it costs GH_3k 163,37EUR; GH_12k 148,38EUR; and GH_27k 197,07EUR to produce 100 kg live weight of chicken. This means that producers in Germany are producing chickens at around half the cost of what producers in Ghana are spending. Non-factor costs comprise energy, water, transport, maintenance, insurance and taxes. These cost items are more relevant to the large-scale integrated system represented by GH_27k. Due to the low quality of locally hatched chicks reared by GH_27, producers apparently apply more intensive medical treatment to control the mortality, which explains the relatively higher veterinary and medicine cost compared with other two farms in Ghana. Veterinary inputs used in broiler farms in Ghana are mostly imported. For this reason, costs of veterinary and medicine in all Ghanaian typical farms are higher than that for the German farm.

**Figure 2:** Comparison of production costs (€/100 kg live weight)




Source: Own calculations

Figure 2 also shows that the costs of feed and DOCs are the most important cost items for typical conventional broiler farms in Ghana and Germany. The proportion of feed costs is higher for DE_994k as compared to the Ghanaian typical farms. More specifically, feed costs represent 68% of the total cash costs for DE_994k. While they represent 56% for GH_3k; 62% for GH_12k and 42% for GH_27k. Additionally, typical broiler farms in Ghana spend significantly more on DOCs than DE_994k. Price of DOC as purchased by DE_994K is Euro 0,35. However, Chicks reared by small-scale producers (GH_3k), which are imported from Europe (i.e., the Netherlands), cost 180% more than the chicks used by German producers. While those used by medium-scale producers, which are often imported from Ivory Coast, cost 114% more than the chicks used by German producers. The locally hatched DOCs reared by GH_27k cost 66% more than the German chicks. This implies that the reliance on imported DOCs by Ghanaian producers has significantly contributed to the high production costs.

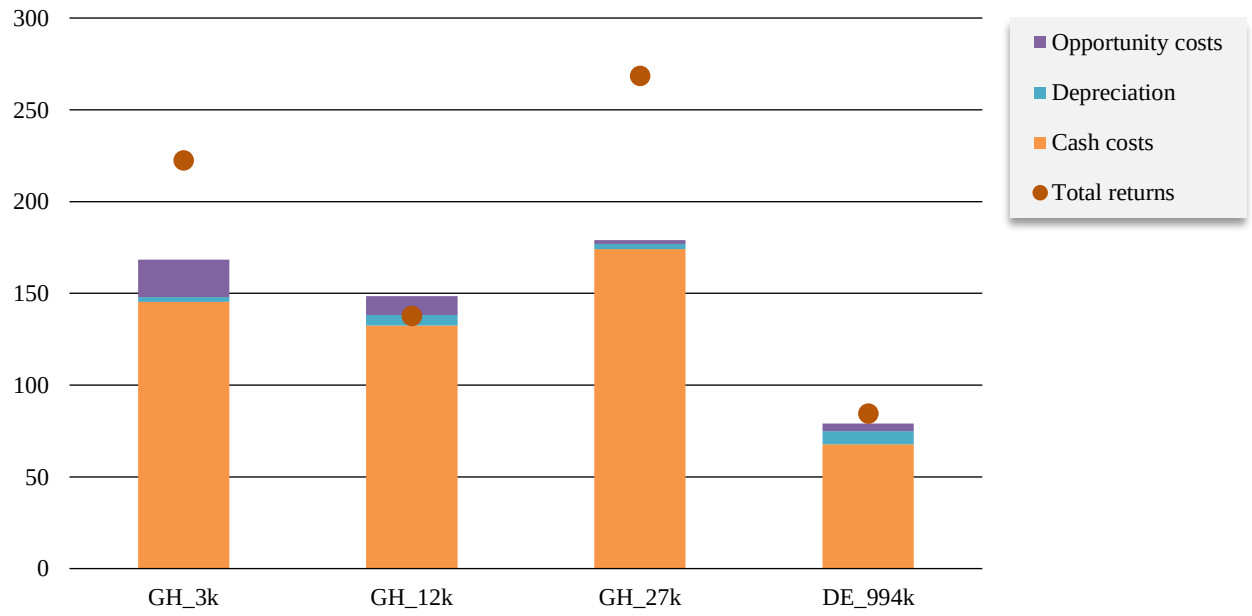
Based on van van Horne (2018), slaughtering and shipping birds from EU countries is relatively inexpensive. Therefore, even taking these costs into account, the whole birds exported from Germany to Ghana are still expected to be cheaper than the domestically produced ones. According to a snapshot of chicken meat retail prices in Ghana conducted by Chibanda et al. (2022), whole chickens imported from Ukraine and Brazil were cheaper than those imported from Ghana. Although the snapshot did not include chicken meat from Germany, it gives us clues regarding the cost differences between imported whole chickens and domestically produced whole birds.

## 4.4 Profitability

Figure 3 compares the farms' profitable by displaying total returns and costs in one bar. Total returns represent the selling price of produced broilers per 100 kg live weight. The figure indicates that broiler chicken meat from the Ghanaian farms is sold at a much higher price than from the German farms. More specifically, the findings reveal that the selling prices of live-weight chickens at the farmgate are 106%-250% higher in Ghana than in Germany. A comparison of the Ghanaian farms shows GH_12k has a significantly lower selling price than the other farms. This is because it sells its live chickens to poultry cross-border traders from Ivory Coast who purchase at a price similar to the Ivorian market which is lower than the Ghanaian market. A producer has emphasized during the focus groups discussion that broiler chicken demand at the local market in CH_12k region is not that high to absorb a production that exceed 500 birds per cycle.

Figure 3 also shows that all typical conventional broiler farms in Ghana and Germany are profitable in the short-term level, which consider only cash costs. However, GH_12k is not profitable at the mid-term level (considering cash costs and depreciation) or at the long-term level (including all cash, depreciation and opportunity costs). The results show that although DE_994k has the lowest costs of production, it has the lowest profit per 100 kg live-weight chicken. This is because the selling price (85€/100 kg live weight) is much lower than that of the Ghanaian farms. In comparison, GH_27k has the highest profit per 100 kg live-weight chicken. Although the Ghanaian farms (GH_3k, GH_12k and GH_27k) have higher costs of production, the costs are counterbalanced by higher selling prices which enable them to generate more profit per 100 kg live-weight chicken.

**Figure 3:** Comparison of total returns and profitability (€/100 kg live weight)




Source: Own calculations

# 5 Conclusion and recommendations

In this study, we investigated whether differences in farm performance and production costs between Ghanaian and German conventional broiler farms could also explain why German full chicken exports to Ghana are cheaper. The farm economic analysis revealed that the typical German conventional broiler farm (DE_994k) has better farm performance than the Ghanaian farms. More specifically DE_994k has the lowest Feed Conversion Ratio (FCR) , highest Broiler Farm Economy Index (BFEI), lowest mortality rate and highest number of production cycles per year. A number of factors contribute to the poor farm performance of the Ghanaian broiler farms, including poor-quality day-old chicks, low-quality feed, and poor poultry husbandry practices.

The study also determined that the costs of production for a typical conventional broiler farm in Germany are significantly lower compared to the Ghanaian farms. More specifically, the typical conventional broiler farm from Germany produces whole chickens at around half the cost of what producers in Ghana require. Of which, the high broiler production costs in Ghana are driven by high feed and day-old chicks (DOCs) costs.

Therefore, the results suggest that German exporters may be able to export frozen whole chickens to Ghana at a much lower price than that of domestic chickens in Ghana because of lower costs of production. This hints that the price of whole chickens exported to Ghana may actually not be “dumping” prices. In fact, farm performance, cost of production and profitability lead to differences in the performance of German and Ghanaian farms. In combination with other factors (like agricultural and trade policies) that promote the international competitiveness of European poultry production, trade between Germany and Ghana is stimulated.

Based on our findings, we can draw some recommendations. Firstly, broiler farms in Ghana will need to reduce their costs of production so that locally produced chicken meat can compete with frozen chicken imports in terms of prices. More specifically, feed and DOCs costs will have to be reduced. Of which, the costs of feed could be reduced by supporting maize and soya producers to boost local production. While the costs of DOCs could be reduced by promoting and supporting the rearing of domestically hatched DOCs. However, the quality of locally produced DOCs would have to be improved. Of which, the quality of locally produced DOCs may be improved by rigorous monitoring and regulation of hatchery operations.

Although this study provides insights on farm competitiveness which has a direct impact on prices of whole chickens it does not address the issue of why chicken piece ‘cuts’ exports are much cheaper. Hence, future research may focus on how consumer preference for breast meat in Germany affects the pricing of other chicken pieces that are then exported to African countries.

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