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Review of High-Value Agriculture in the Philippines with Comprehensive Subsectoral Focus: Livestock Industries

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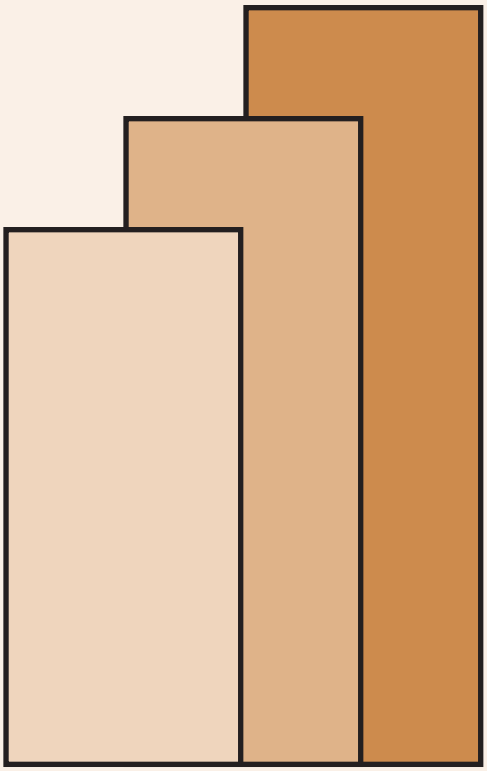

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Review of High Value Agriculture in the Philippines with Comprehensive Subsectoral Focus: Livestock Industries[1]

Abstract

Enhancing the performance of the Philippine agriculture sector remains a key input to economic growth and inclusivity. Focus of development interventions in recent years have been on crops, particularly on the major grain staples. Shifting attention to more competitive and higher value commodities like livestock would do much in enhancing the livelihoods of smallholder farmers, as well as MSMEs within the sector. While the subsector presents a glimmer of light in local agriculture, its industries are beset with production and marketing issues. The main objective of this paper is to review the status and performance of the Philippine livestock sector. This review provides discourse on the livestock subsector's performance over the years, and look into ways of bettering outputs and competitive advantages both within domestic commodity systems and beyond.

Keywords: Philippines Livestock Sector, Industry Analysis

[1] Report prepared by Sonny N. Domingo and Ma Divina C. Olaguera, Senior Research Fellow and Research Analyst II, respectively, at the Philippine Institute for Development Studies (PIDS).

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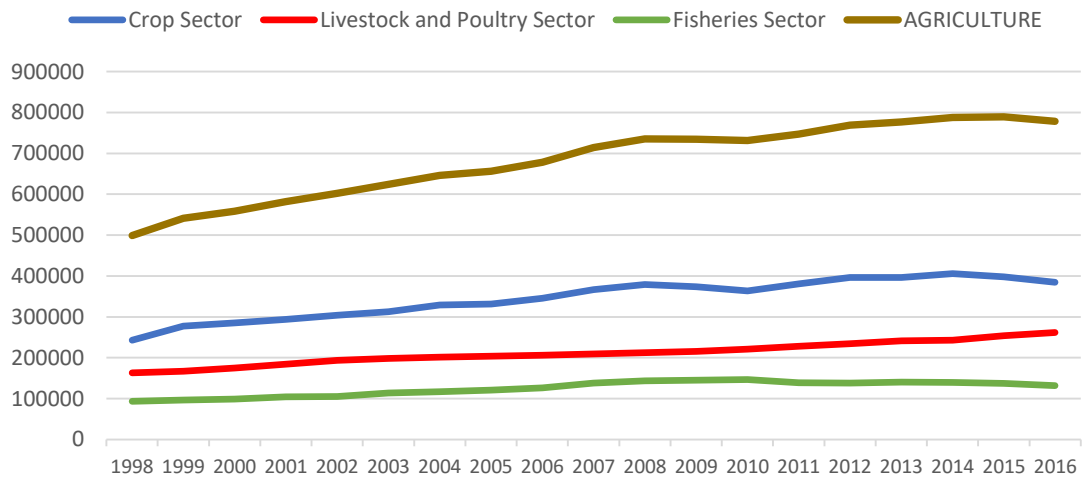
Review of High Value Agriculture in the Philippines with Comprehensive Subsectoral Focus: Livestock Industries

1.0 Introduction

Over the past decades, the Philippine livestock and poultry industry have been consistently contributing positively to the economy even with lesser support from the government compared to other agricultural commodities. There has been a slowly decreasing trend for the value of production in agriculture and its subsectors except for the combined livestock and poultry industry which is trending upwards, as shown in Figure 1.

Thornton (2010) describes livestock sector in developing countries like the Philippines as evolving to respond to rapidly increasing demand for the livestock products. The rapidly growing population of the country and increasing purchasing power of the consumers continue to drive the economic potential for these industries. The recorded per capita utilization of meat and egg products increased from 21.17 kg/year in 1990 up to 38.49kg/year in 2016 (PSA, 2017). Chatham House (2014) listed the Philippines as among the top 10 countries with fastest growing meat consumption with projected compound annual growth rate of around 30 percent for beef, pork and chicken from 2011 to 2021. Being tagged as a meat-consuming nation, livestock and poultry industry is also projected to continuously grow in the next decades.

Figure 1. Value of Production in Agriculture by Subsector in Million Pesos, 1998-2016, (2000 Prices)



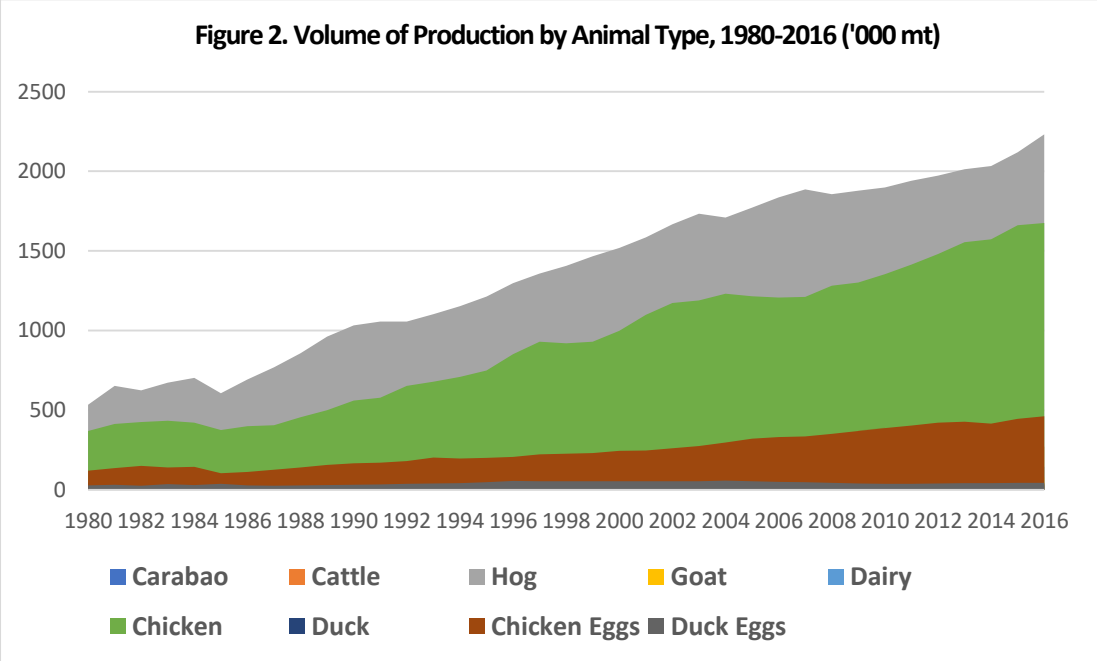
Source of basic data: Philippine Statistics Authority (PSA)

At current prices, gross value of production in livestock and poultry subsector amounted to PhP68.9 billion and PhP47.1 billion, respectively, as reported by the Philippine Statistics Authority[2]. The livestock subsector posted a 14.88 percent increase in gross value production from previous year (2016) while the poultry suffered from a 4.32 percent decline which was attributed to decrease in the prices of chicken in the previous year.

Enhancing the performance of the Philippine agriculture sector remains a key input to economic growth and inclusivity. Focus of development interventions in recent years have been on crops, particularly on the major grain staples. Shifting attention to more competitive and higher value commodities like livestock would do much in enhancing the livelihoods of smallholder farmers, as well as MSMEs within the sector. While the subsector presents a glimmer of light in local agriculture, its industries are beset with production and marketing issues. The main objective of this paper is to review the status and performance of the Philippine livestock sector. This review provides discourse on the livestock subsector's performance over the years, and look into ways of bettering outputs and competitive advantages both within domestic commodity systems and beyond.

2.0 Livestock Industry Performance

2.1 Volume of Production and Inventory

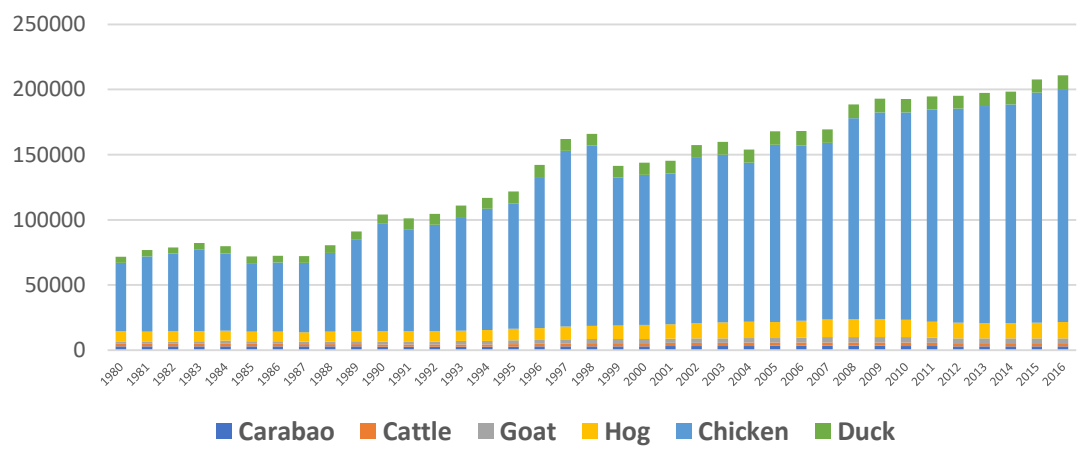


Source of basic data: Philippine Statistics Authority (PSA)

[2] Performance of Philippine Agriculture – July-September 2017 (3Q)

Among the animals under the livestock and poultry sectors, hog and chicken dominate share in the volume of production over the past four decades as shown in the figure 2. These two animals are the sources of pork, chicken meat and eggs which are now considered staple food in the country. The inventory (Figure 3) below also reflects the same findings. Chicken consistently exhibits increasing trend and dominate in terms of inventory by head from 1980 to 2016.

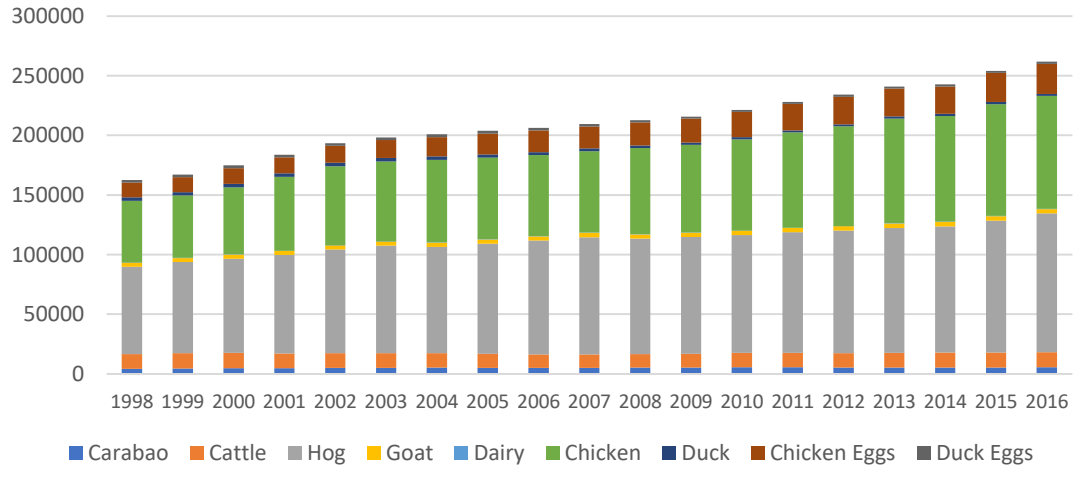
Figure 3. Livestock and Poultry Inventory by Animal Type, 1990-2015 ('000 heads)



Source of basic data: Philippine Statistics Authority (PSA)

2.2 Value of Production

Figure 4. Value of Production in Livestock and Poultry by Animal Type, 1998-2016 in Million Pesos, (2000 Prices)



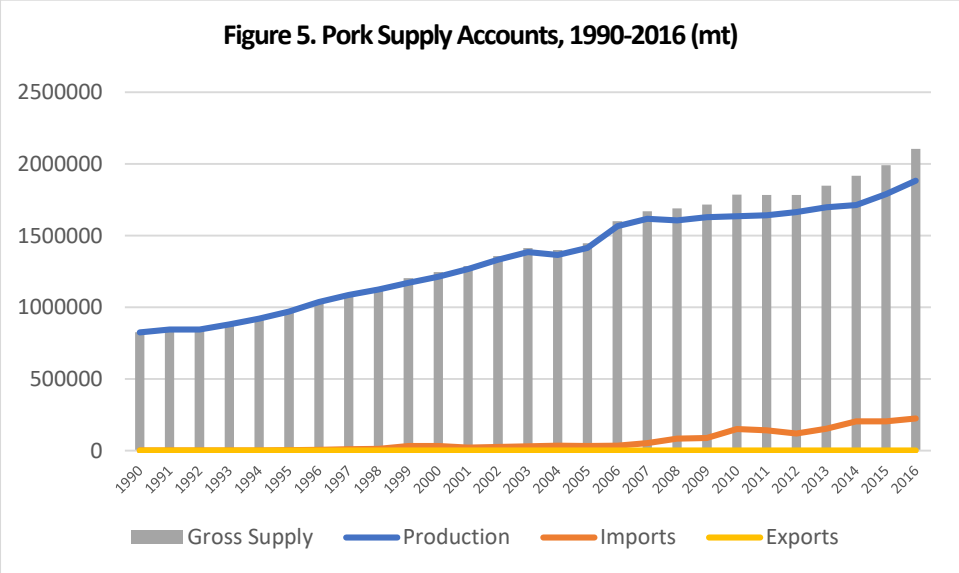
Source of basic data: Philippine Statistics Authority (PSA)

In terms of value of production, an upward trend can be observed for combined livestock and poultry industry from 1998 to 2016 (Figure 4). At constant prices (2000), it grew by 61 percent from 163B pesos to 262 B pesos during the same period (refer to Annex Table 1). Consistent to the figures above, hog and chicken also remained as biggest contributors in terms of value for the past two decades.

2.3 Livestock and Poultry: Gross Supply, Production, Import and Export

2.3.1 Swine/Hog

Marked as a P191-billion industry, swine production is the largest industry among the livestock and poultry subsectors in the country (PCAARRD, 2016), as also reflected in Figure 4. The country's swine industry is recorded to produce 1.2 million tons of pork annually (FAO, nd). There has been an upward trend for the gross domestic supply of pork (see Figure 5) from 1990 to 2016 with the majority of supply coming from local production. It can be observed, however, that there has been an increase in the volume of imports in the recent decade. In 2016, the country imported around 78,000 tons of pork posting a 33 percent increase from 2015, as reported by the AHDB (2017). The same report also listed countries namely Germany, Canada, and France as the top importers of pork in the country in 2015 and 2016.



Source of basic data: Philippine Statistics Authority (PSA)

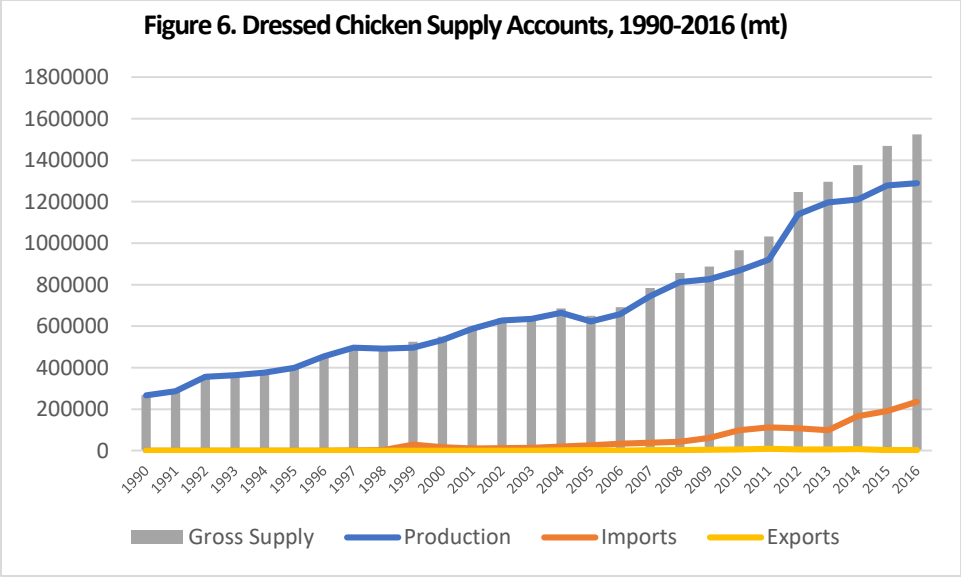
With the increasing volume of imported pork during the past years due to increasing demand, it was argued, however, that the local swine industry is capable of accommodating the said increase in the demand. Increasing the production of pork can

be done without increasing the population through proper management and increasing the slaughter weight. Moreover, local producers can compete in terms of lowering prices since they have a big margin to work with. As per record, the production cost for a live weight swine is about 84-85 pesos/kg with selling price of around 130, giving the producers some earnings of 5000 pesos/head. There is also a growing number of swine producers adopting technologies in production (e.g. molecular based selection—DNA selection).

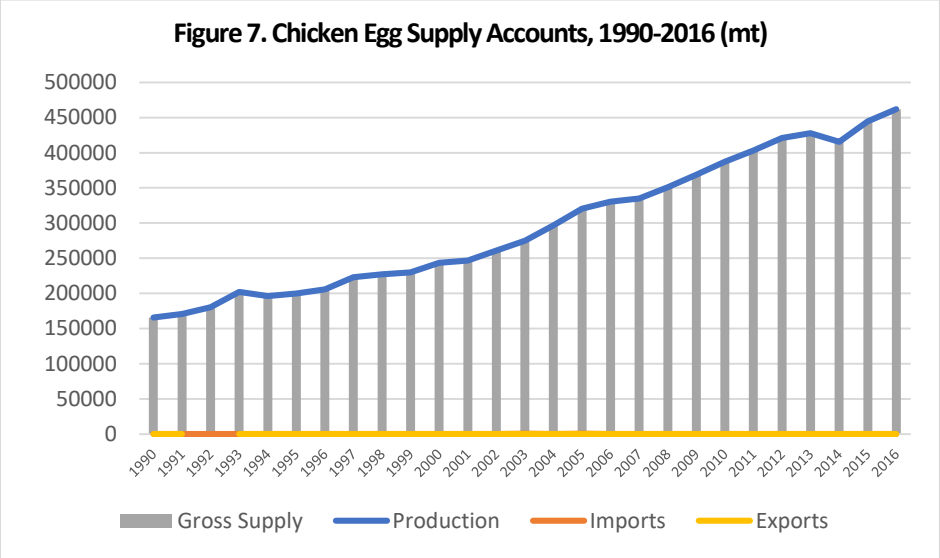
In terms of preference, the local pork consumers prefer the locally produced meat rather than imported frozen meat. The overwhelming interest for native animals from local producers and consumers has also been observed recently.

2.3.2 Poultry

Data from the Philippine Statistics Authority shows that poultry sector valued at about Php69B in 1990 soared up to PhP123B in 2016, posting a 78 percent growth making it the fastest growing animal sector in the country today. The same rapidly increasing trend can be observed in the gross domestic supply of dressed chicken as reflected in Figure 6, with majority of supply coming from local production. Similar to the case of pork, there is also an increasing volume of imports in the recent years due to continuously increasing demand. In terms of export, the country has also started exporting small volume of chicken to Asian countries like Japan and South Korea. Another major poultry product, chicken egg, was seen an increasing gross domestic supply for the past two decades with a very minimal volume of imports in the earlier years (Figure 7).

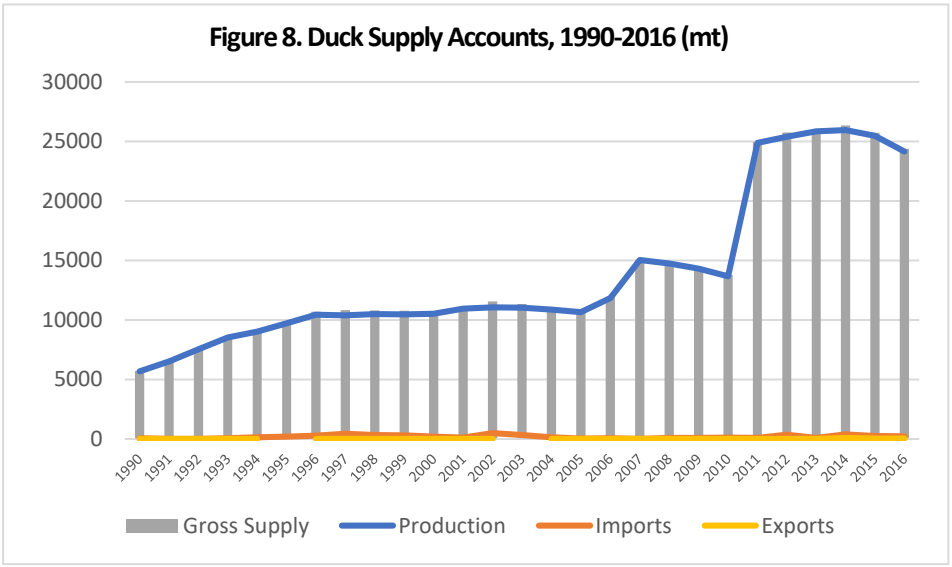


Source of basic data: Philippine Statistics Authority (PSA)



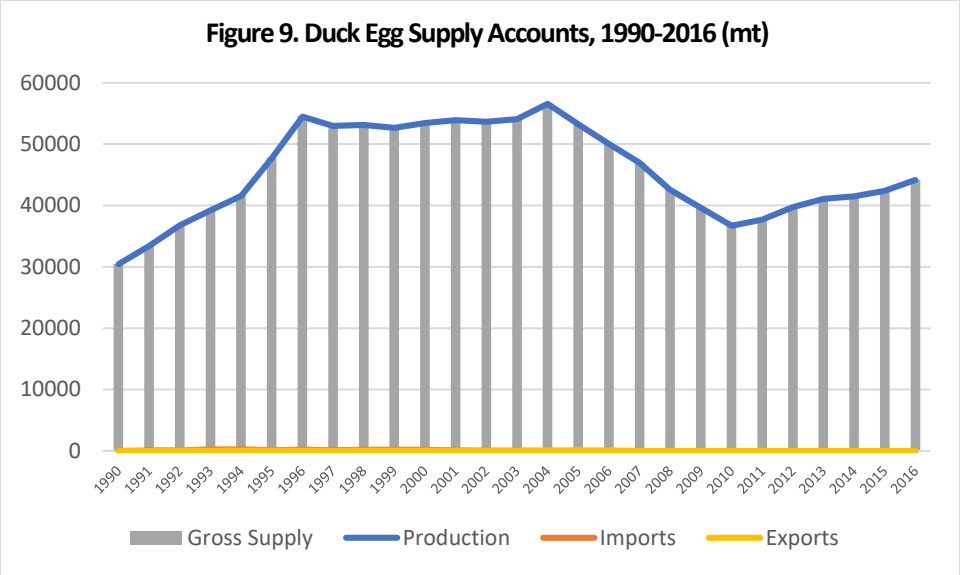
Source of basic data: Philippine Statistics Authority (PSA)

Another poultry animal that is recently gaining popularity is duck. As shown in Figure 8, there has been a sudden increase in the gross domestic supply of duck in the recent decade. Unlike other countries that produces ducks mainly for meat, the Philippines mainly utilizes duck for egg production specifically *balut* and salted egg (Chang & Dagaas, 2004). Though there has been a decline in the gross domestic supply of duck eggs in the past decade, it is already starting to slowly recover in the past few years (see Figure 9). With the government's recent intervention, *Itik Pinas*[3], the industry is projected to grow rapidly in the coming years.



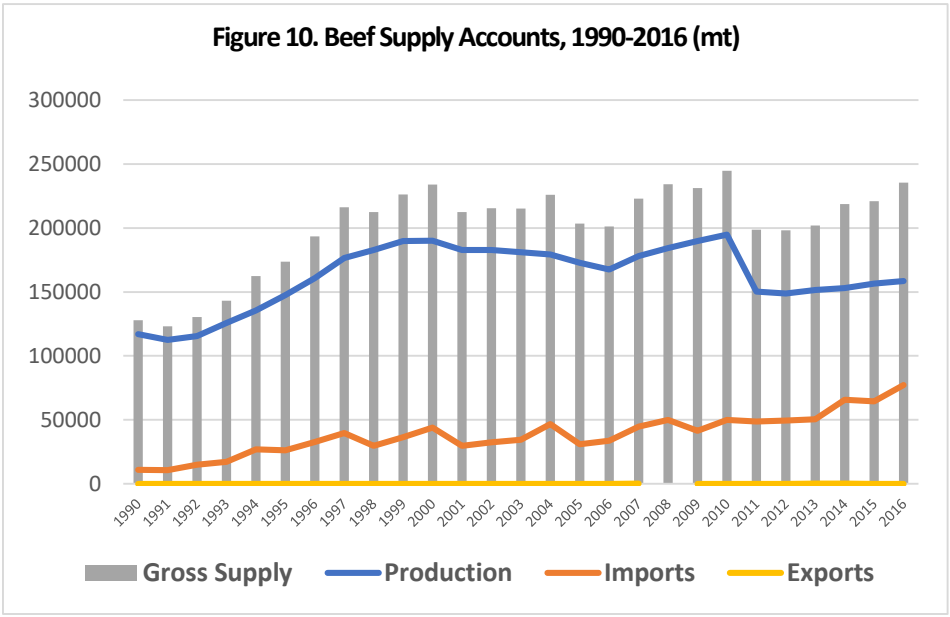
Source of basic data: Philippine Statistics Authority (PSA)

[3] Genetically superior breeder duck developed to increase egg production (PCAARRD, 2016)



Source of basic data: Philippine Statistics Authority (PSA)

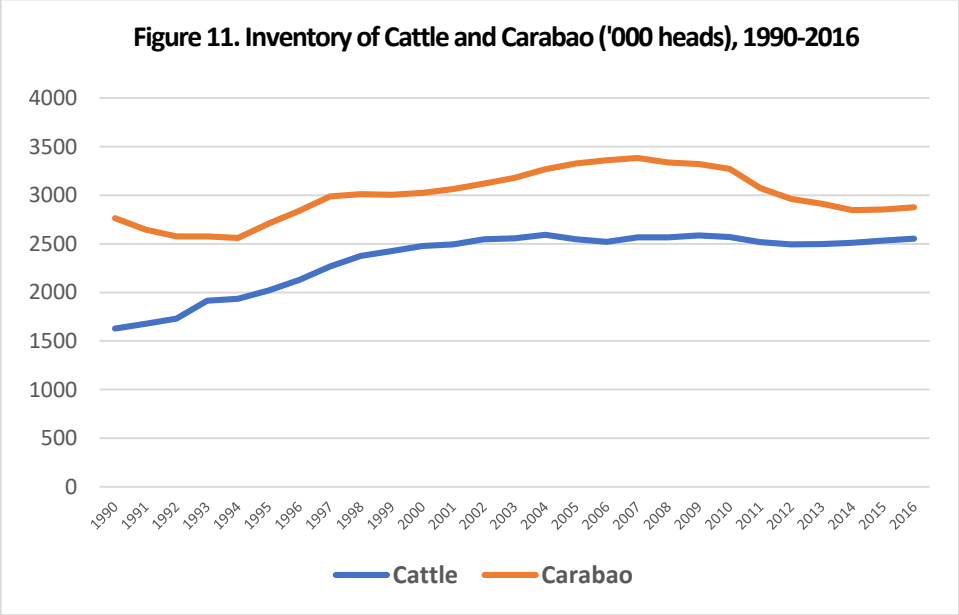
2.3.3 Beef Cattle and Dairy



Source of basic data: Philippine Statistics Authority (PSA)

Considered as one of the least developed commodities in the country for the past several years, beef cattle industry continues to rely on importation to satisfy the local demand according to PCAARRD. Figure 10 illustrates a fluctuating gross domestic supply in the past two decades with declining local production and increasing volume of imports in the recent years. One of the reasons for this is the slow and almost stagnant growth in the

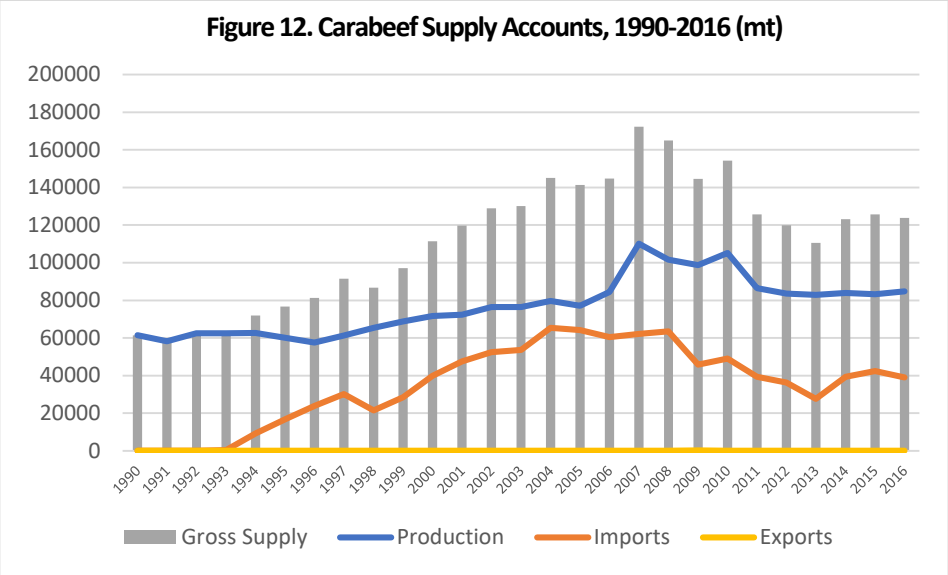
inventory of cattle locally from 1990 to 2016 (Figure 11). Availability and supply are cited issues because the production system of cattle would require extensive areas for production like remote areas; same areas that are inaccessible and has problems on peace and order. Furthermore, there was difficulty in encouraging investors to go venture into pasture development and cattle raising because of the risks. Another reason cited is the low demand for beef in the country because of its relatively higher price compared to other meat products.



Source of basic data: Philippine Statistics Authority (PSA)

Figure 11 also illustrates a declining population of carabaos in the past decade. One of the cited constraints to local carabao production is the inherently long gestation period of water buffaloes; also said to be the longest among domesticated farm animals. This makes yearly production of calves unattainable even under best conditions which then inversely affects the overall reproduction efficiency (PCC, nd). Furthermore, low productivity and high slaughter rates in response to high demand are also cited as reasons for the decline (Faylon & Roxas, 1995). Correspondingly, a decline in local production of carabeef and increased importation from 1990 to 2016 are also observed (Figure 12).

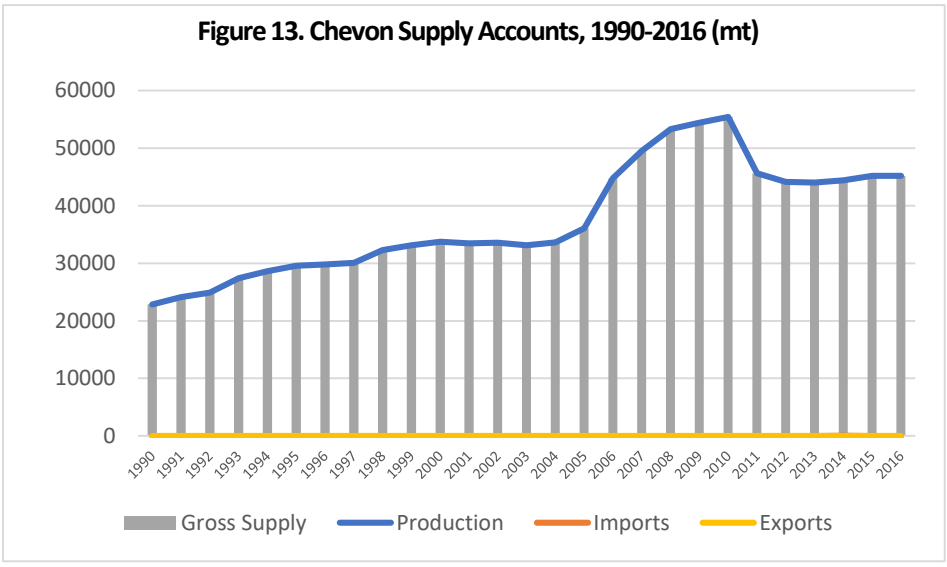
For the dairy industry, on the other hand, it has been an ancient argument that the reason why the Philippines is not able to develop its dairy local industry is because Filipinos are not milk drinkers. This was proven to be inaccurate as there are areas around the country with farmers who are traditionally producing carabao milk and with people in the community purchasing the milk products. The problem may be lies on availability and access to the product which means that Filipinos will drink milk if it is available to them.



Source of basic data: Philippine Statistics Authority (PSA)

2.3.4 Goat

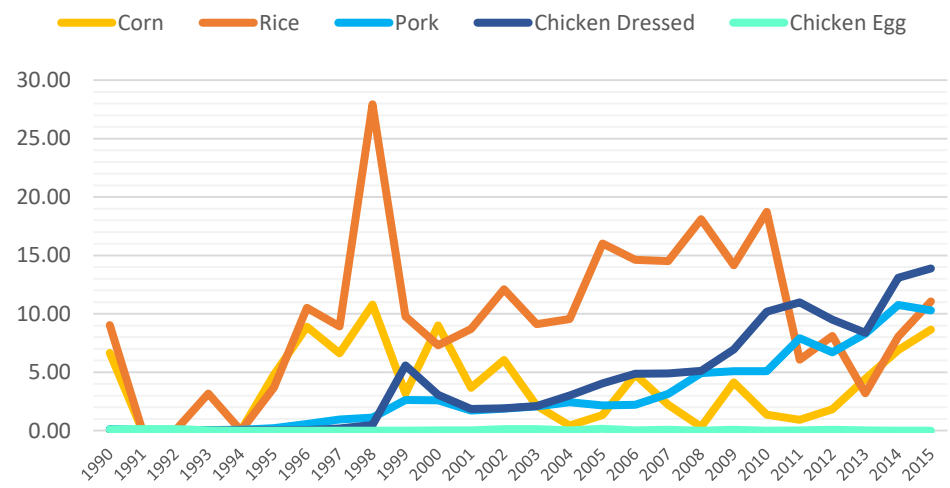
Tagged as the sunrise industry in the country because of its enterprise potential, goat population has gradually increased in the past decades but suffered a slow and almost stagnant growth for the past several years. This also reflects on the domestic supply trend for chevon with the entire supply produced locally, as shown in Figure 13. The uptake in goat production has also been decreasing because many producers discontinued operation due to losses; production cost exceeds the selling price for goat/chevon.



Source of basic data: Philippine Statistics Authority (PSA)

2.4 Import Dependency

Figure 14. Import Dependency Ratio of Selected Agricultural Commodities, 1990-2015



Over the past two decades, import dependency of livestock and poultry commodities have been slowly increasing essentially to respond to the increasing local demand for meat products (Figure 14). Compared with other agricultural commodities like rice (and earlier years for corn), import dependency of livestock and poultry commodities such as pork, dressed chicken and eggs are significantly much lower.

Among the livestock and poultry commodities listed in Table 1, carabeef and beef remained as the highly import dependent with IDR of 33.74 and 29.18 in 2015, respectively. Several reports pointed out that that there has been an increasing demand for processed meat products and canned goods brought about by increasing purchasing power of local consumers. With limited local supply of carabeef, a primary raw material in manufacturing processed meat, manufacturers opted to importing bulk volume of carabeef from India[4].

Table 1. Import Dependency Ratio (IDR) of Livestock and Poultry Commodities, 1990-2015 (by 5 years)

Commodity	1990	1995	2000	2005	2010	2015
Beef	8.51	15.08	18.75	15.14	20.45	29.18
Carabeef	0	21.73	35.72	45.42	31.76	33.74
Pork	0.14	0.22	2.6	2.17	8.46	10.22
Chevon	0	0	0	0	0	0
Chicken Dressed	0.07	0.05	3.05	4.06	10.2	13
Duck Dressed	0.93	1.91	1.77	0.37	0.72	1.01
Chicken Egg		0	0.01	0.16	0	0

Source of basic data: Philippine Statistics Authority (PSA)

[4] Sole country source of buffalo meat with around 44,388.54 mt and 39,000mt import in 2015 and 2016, respectively (BAI Meat and Importation Products Report, 2016).

3.0 Government Programs and Interventions

The contribution of combined livestock and poultry industry to country's output is bigger than other agricultural commodities although the sector is private driven with no or little support from the government. There are currently no direct financial infusions to the sector. Furthermore, it was acknowledged that the private sector progresses with less help from the government which probably an indicator as to how good the industry is performing.

Below are the livestock and poultry industry-related government initiatives and programs gathered from agencies and key informant interviews:

Research and Development Agenda: The Bureau of Agricultural Research (BAR) crafted their R&DE agenda anchoring on researchable areas for commodities and covered the whole value chain: inputs, production, postharvest, marketing, and policy. The agenda was further enhanced to incorporate the policy objectives of the newly appointed Department of Agriculture (DA) Secretary: (1) to produce food; (2) to explore market development for the benefits of farmers and fisher folks; and (3) resilience to climate change.

For poultry and livestock subsectors, goals & strategies include increase of production, improve productivity, enterprise development, and ensure compatibility of practices within environmental standards and global competitiveness.

Breeding Program: One of the key programs under the DA that is being implemented for decades now is the breeding program for carabaos and small ruminants that is intended to increase productions. On the process of accreditation of farms outside the country, an established a network is being utilized wherein the farms from a system accredited country will automatically be accredited as a source. People were sent to validate but there is no need to assess the farms. Breeders from the Philippines may request for performance level and genetic traits from these pools of accredited source.

Proven to be a better livelihood opportunity, DOST-PCAARRD has included dairy in their list of priorities. The breeds that are currently available in the country are low-producing in terms of milk but with proper government programs and technology roll-out there is chance for improvement. Focusing on the three (3) dairy species that we have now namely buffalo, cattle and goat, development would be easier in terms of utilization of their product. For example, the rich characteristics of the milk of the buffalo would suit to the processing of mozzarella cheese, higher end processed products (*kesong puti*, butter, etc.); cattle have better quality of liquid milk; and goat's milk for vanity products and specialty milk products for lactose intolerant individuals).

Introduction of improved management and practices: Price of milk products locally have gone really high (e.g. DTRI products) over the past years because of lower productivity of buffalos which can be attributed to combination of genetics and management. PCAARRD has an on-going project that introduces improved management to farmers. The target is to add 2 more liters in

the currently 5-6 liters daily milk production and prevent wastage due to spoilage. Short term preservation of milk through the *Mamang Sorbetero* technology is being introduced in an implementation site in Isabela. Portable milking machines are also made available and common milk barns are being established. Another project as a component of the program is establishing the data set that would lead us to a policy that would now set the pricing of milk based on quality.

Consultations with private sector: Since the livestock and poultry industry is private-driven, government agencies such as Bureau of Animal Industry (BAI), Bureau of Agricultural Research (BAR), and Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD) are regularly conducting consultation meetings with the private sector to gather insights and recommendations. The Philippine Council for Agriculture and Fisheries (PCAF) an attached agency of DA with main function of convening the public and private sector, farmer's representatives and people organizations serves as the private sector link in agriculture. Consultations are regularly conducted specially during crafting of programs and budget proposals.

Recently, PCAARRD organized a forum and consultation with the private sector focusing the discussion on how to actually implement the practices on the ground and strategies to produce the number of animals needed to meet the volume of milk production.

Assisted reproduction or Embryo Transfer: PCAARRD's role is to support the (private) industry by providing requested technology. One of the technologies that is currently being implemented is the improvement of productivity through changing genetics by importation and assisted reproduction or Embryo Transfer (ET). The main reason why they opted to do importation through embryos is for calves to start the adaptation process at the uterus of the surrogate mother. It would start from nutrition; what the mother naturally eats and if it can tolerate the nutritional balance. If the calf survives up to weaning, that would give them idea on the adaptability of the breed in our local conditions (disease challenge, climate etc.). Through this, the calf can be evaluated and observed better. Another reason for importing pedigreed embryo is to cut cost, as exporting live ones is more expensive.

Program on Native Animals: With PCAARRD's program on native animals, it was observed that farmers now are risk takers and more aggressive than before. There are increases in the number of people expressing interests and vast increases in the number of attendees in organized fora or paid seminars. On market point of view, consumers are also becoming aware of the health aspect. One of the visions for native animal market is to export in the local market which means selling the products in areas that area frequented by foreign tourist. This will help motivate producers as well.

One of the advantages of raising native and backyard animals is easier management and significantly lower cost of production compared to commercial breeds. BAR's R&D is looking into the optimal volume or amount or combination of different low-cost inputs that can be given to the native animals for their optimal growth; somehow incorporating science into traditional

practices. The reason why younger generations venture into native animal production is the increasing market demand and lower risks for their investments. Farmers now are also getting more open minded and easier to convince when it comes to putting science in their production activities. There is a big local demand for native animals but the supply is insufficient. It was emphasized that there is a need for interventions to improve the capacity and productivity of those involved and to establish market structure.

Innovations*:* There is a technology currently developed for *balut*: vending machines that would keep the quality of the *balut* for a week with cold storage and warmer targeting buildings, convenience stores and areas that are normally not accessed by *balut* vendors. This is one of innovations under the *Itik Pinas* program. It was anticipated that with the increasing interest in joining the program and raising *Itik*, there is a need to widen also the market. Another thing that is being looked into is the salted egg market through product innovations (e.g. salted egg chips). Studies on extending the shelf life of salted eggs up to 6 months is also being conducted.

Social media and online platform also play important roles in terms of delivering and spreading information. PCAARRD is commissioning/funding a project that would develop the e-system or e-commerce for pigs with android application; buying and selling of breeder pigs can be done online. Quality can still be assured because it required for the sellers to be an accredited breeder farm before enrolment to the e-commerce site. Feedback mechanism would also be made available.

Feed Cost Reduction: One of the areas being highlighted under the BAR's agenda for poultry and livestock subsectors is the reduction of the cost of feeds as it constitutes a significant portion (around 30-40%) on the cost of production. The current secretary is looking at new ways to reduce the cost and BAR is tasked to look for certain alternatives to incorporate in feeds particularly for large and small ruminants. An on-going project, in partnership with several institutions, is assessing alternatives such as banana stalks and water lily: possible sources, digestibility, etc.

Animal Health: In terms of animal health, majority of vaccines used in the country are manufactured outside the country. Understandably, these vaccines are not produced, formulated and cultured under a tropical condition like our country. It was believed that efficacy and even the mode of administering the vaccines would be greatly influenced by the different climatic conditions of a country. In connection to this, there is a current partnership project between BAR and UK Biotechnology Technological Science Research, with the goal of producing diagnostic kits or vaccines locally to address priority economic diseases in the Philippines as identified by the Bureau of Animal Industry (BAI). Trainings, package of technology, IEC materials will be provided to Filipino researchers.

Community-based Participatory Action Research (CPAR): One avenue of research that is being coordinated at BAR is the Community-based Participatory Action Research (CPAR), an on-farm research wherein the package of technology is directly brought to the farmers with the idea of

looking at the total cultural management. It was recognized that location sensitivity of certain technology should also be taken into primary consideration aside from the development of the technology itself. There are observed benefits on having a package of technology that would cover interaction of genetics and environment; as performance would be determined by these two.

Climate Change: The Department of Agriculture has introduced big initiatives in mainstreaming climate change in all it programs and projects, as reflected on its budget. Aside from the BAR's RDE agenda mentioned above, a separate agenda for climate change was also crafted to specifically address the needs of the different sectors. To guide the agenda, a logical framework of course anchored on food security and level of productivity as a result of climate change was crafted. Basically, the objective is to look for an encompassing program that would redound to community-based resiliency by mainstreaming protocols and technologies that would be adopted probably in the policy level; local regulatory policies for sustainability.

Dairy Roadmap: One of the major projects of the current DA secretary is on the dairy industry and is expected to take off soonest. The reason behind this is that around 99 percent of our dairy requirements is imported and there were also issues before that our source of our milk is probably compromised or contaminated. It was reported that DA is releasing a dairy industry roadmap targeting 10 percent in 2022. PCAARRD's role is to take the research and development component of the said roadmap and develop the technology. He added that it would not be possible and senseless for us to target self-sustainability.

Farm to Market Linkage: BAR in partnership with SEARCA is currently funding a study entitled "Linking Farmers to the Market: Towards Transforming Subsistence Farms to Commercial Farms" aimed to improve farm-to-market linkage in the Philippines. Another major project of the current secretary is to intensify the proper use and utilization of *Bagsakan* center facilities.

Related Policies: As committed by the Philippines to the WTO, Minimum Access Volume (MAV) was allocated for imported agricultural commodities to lessen safeguard duties. MAV allowed for chicken is 23,500mt and 54,000mt for pork. There is no limitation as long as the products are imported from accredited country and plant. Those who will import outside of the MAV will pay 40 percent duties for both pork and chicken. There are no restrictions when it comes to volume as long as the importer is willing to pay extra duties and tax. Moreover, the non-tariff restriction when it comes to importation is the Sanitary Phytosanitary Agreement which covers regulatory programs on health aspects and assurance of safety of the products. BAI's responsibility include issuance of clearance that the products came from accredited country and plants. In terms of exportation, there are no limitations except for ban for endangered species without clearance from the Department of Environment and Natural Resources (DENR).

One of the recent developments in the livestock sector is the issuance of executive order imposing zero (0) tax duties from 3 percent on importing breeding animals except for horse and dogs. For BAI, it was a good development because there is a need to infuse new and imported

blood to local farms to prevent degeneration of good characteristics. An immediate impact of the policy is that farmers will be encouraged to buy good breeder stock to further improve what they have now. This policy may also result to a more accessible source of good breeder stock at a much lower price compared to before.

4.0 Issues, Challenges, Key Insights and Recommendations[5]

4.1 Institutional Arrangement and Issues

- Limited access and lack of strong link between the government and the private sector make it difficult to comprehensively assess the livestock industry. Private sector is not cooperative when it comes to providing data and information. There were cases when the private owners did not report diseases and restricted government veterinarians to enter their farms and assess the real situation.

- Agency like BAI has no supervision over the local government and is only limited to providing link. There is a government program in place that is supposed to be a reporting system between the local government (MAO, municipal veterinarian, etc.) and national agencies. Though farm veterinarians are also required to report to BAI, they do not have the power to really impose since there are no penalties in place for such violations.

- Though the industry is private-led, there has to be a strong guidance and a functional enabling facility from the government. While the swine and poultry are big now, they could have been bigger and at par with neighboring countries if only the government has done its part.

- Private sector involvement is important in terms of having an inclusive way of dealing with a vast number of stakeholders. The public sector sometimes is very keen on looking at what it perceives is right or best for the sector but the private sector is actually the one on the battleground facing the real threats and challenges. Suggestions from the private sector should be seriously considered when crafting agenda, projects and programs.

4.2 Policy

- The land use policy encroaching on production areas disallowing production of poultry and swine is currently one of the main threats in the industry. Different LGUs have different policies concerning this. There is a need to focus on augmenting policy in terms

[5] Gathered from interviews and discussions with key agencies

of land conversion. There should be an instruction for the local government to not hasten the conversion of land. It can be concluded that the growth of swine industry is actually countered by certain provisions of local policy.

- Opening up importation for international markets will not kill the local industry. The local industry will only lose if we cannot compete in terms of prices. But the prices in the international market right now is increasing. There is a common misconception on part of local producers that the national government is much in favor of the importers by allowing them to enter the local market. They have to understand that this is part of the agreement with the WTO and the national government has nothing to do with it.

- One of the problems with our policies is that oftentimes it would not hold water during scrutiny because of lack of basis. People who are proposing the law are not doing proper research. There is a need for serious and deliberate efforts on part of (more) technical people that when they implement R&D projects, they should gather as well data that can be used as policy inputs.

- There is a need to highlight biosecurity as a matter of policy. It was mentioned that one of our competitive edges compared to our ASEAN counterparts is that we are able to maintain avian flu-free and FMD-free because of our geographic location.

- Budget for the industry needs augmentation; smaller compared to other agricultural products.

4.3 Industry Players

- The industry players in livestock and poultry sector are somehow more vocal and more empowered compared to others. These players are aware of their economic importance and perhaps even their influence on food availability. (E.g. Swine industry threatening government of a pork holiday which is possible if they serious about it and that fact that there are organized groups within the sector)

- There are currently two national associations or industry groups in which majority of swine commercial farms are members of which give them the privilege to actually lobby. Some local politicians are also players in the industry. This is probably the reason why the livestock sector is in a better place compared to the crop sector in terms of contribution and resiliency.

- Livestock entrepreneurs are also learning. They are one step ahead and offering and lobbying to reclassify and to designate the areas as agro-industrial zone. Industry players now are also thinking progressively in such a way that if they will be forced to move out the area they will consider it as an opportunity to redesign better animal shelters in other places, for example.

4.4 General Sentiments

- The increasing number of social groups that are advocating against consumption of animal products (specifically for health reasons) is not considered a major threat at the moment but it is creating a negative impact on the industry. In terms of advocacy, it causes a problem when great communicators who are non-technical advocate against a certain product/practice/technology.

- Research in our country concentrates too much on hardcore technologies. For example, rice-related programs in the country focuses more on sufficiency, productivity, improvement of variety and technologies without emphasizing the serious implications, for example, of having quantitative restrictions on imports and other related issues.

- Target food security not self-sufficiency; around 15 percent of the Filipino population need milk more critically than the others: preschool and senior citizens. If something would happen in the international trade of milk, we should be able to produce local milk supply at least enough to sustain the needs of the vulnerable group. With the target production of catering to 15 percent of the demand, we are currently at the 1 percent level.

- Beef cattle industry is currently surviving but prospects are a bit dim compared to the other subsectors. To invigorate this subsector, there is a need to create interventions which can only happen through partnership between government and private sector.

- Threats on the industry are actually quite manageable. Although there is the threat of climate change, the industry is very quick at adapting by instituting mechanisms (E.g. tunnel ventilation and temperature control).

4.5 Opportunities

- Given the current local production, it is possible for us to export if the government would be able to put the necessary systems that would support exportation.

- Standardization of products is also considered. The standards that we have now for meat products are only in terms of cuts but there is none when it comes to quality. The local consumers are not demanding better standards so the producers are not offering as well. Standardization is not tackled as an issue right now because most of our meat product are consumed fresh. We should start introducing standards in relation to safety then gradually increasing quality standards.

- Significant differences on the behavioral patterns among generations pose a great opportunity for the livestock industry. It was observed that younger generations (or millennials) are risk takers, impulsive decision makers and are getting more interested into entering the agricultural sector. The motivations for these young people, according to him, is the potential income and that technologies are available now to help promote or somehow boost the chance of making money.

5.0 References

Agriculture and Horticulture Development Board (AHDB). (2017). *Increasing Philippines Pig Meat Imports.* Website Article. https://pork.ahdb.org.uk/prices-stats/news/2017/may/increasing-philippines-pig-meat-imports/, (accessed on December 12, 2017).

Bailey, R., Froggatt, A. & Wellesley, L. (2014). Livestock – Climate Change's Forgotten Sector Global Public Opinion on Meat and Dairy Consumption. *Chatham House Royal Institute of International Affairs.* https://goo.gl/VzGdyf , (accessed on December 13, 2017).

Bureau of Animal Industry (BAI). (2017). Meat and Importation Products Reports. http://www.bai.da.gov.ph/index.php/stakeholders-corner/importation-data, (accessed on December 13, 2017).

Chang, C. & Dagaas, C. (2004). The Philippine Duck Industry: Issues and Research Needs. Working Paper Series in Agricultural and Resource Economics. University of New England. http://ageconsearch.umn.edu/record/12904/files/wp040001.pdf , (accessed on December 12, 2017).

Faylon, P.S. & Roxas, D.B. (1995). The Philippine livestock industry: The Research and Development Agenda. Paper presented to the Global Agenda for Livestock 1995. https://goo.gl/NP4vGk, (accessed on December 13, 2017).

Food and Agriculture Organization (n.d.) *Livestock in food security in the Philippines.* Retrieved from http://www.fao.org/docrep/003/x6627e/x6627e10.htm, December 12, 2017

Philippine Carabao Center (PCC). (nd). Constraints to Local Carabao Production. Website Article. Retrieved from http://www.pcc.gov.ph/industry.php?page=Local_Carabao_Prodution, December 13, 2017

Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD). (2016). *Philippine pork to the world.* http://www.pcaarrd.dost.gov.ph/home/portal/index.php/quick-information-dispatch/2681-philippine-pork-to-the-world , (accessed on December 12, 2017)

Philippine Statistics Authority (PSA): *CountrySTAT Philippine 2017.* http://countrystat.psa.gov.ph/, (accessed on December 12, 2017).

Philippine Statistics Authority (PSA). (2017). Performance of Philippine Agriculture September 2017(3Q).https://psa.gov.ph/sites/default/files/attachments/ird/pressrelease/PAR_July_to_September_2017_0.pdf, (accessed on December 11, 2017).

Thornton, P. K. (2010). Livestock production: recent trends, future prospects. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *365*(1554), 2853–2867. http://doi.org/10.1098/rstb.2010.0134 , (accessed on December 13, 2017).

6.0 Annex

A.Table 1. Value of Production in Agriculture by Subsector in Million Pesos, 1998-2016,(2000 Prices)

Year	Crop	Livestock and Poultry	Fisheries	Agriculture
1998	242864.87	162691.49	93542.7	499099.07
1999	277624.76	167207.59	96536.41	541368.76
2000	284931.22	174906.16	98656.74	558494.12
2001	293879.29	183895.36	104036.77	581811.43
2002	303844.91	193524.47	104864.19	602233.57
2003	312525.17	198376.72	113370.63	624272.52
2004	328688.85	201044.75	116759.1	646492.7
2005	331388.83	203816.67	121003.59	656209.09
2006	345457.76	206243.7	126381.12	678082.59
2007	366459.36	209497.76	137913.62	713870.74
2008	379318.17	212668.14	143650.54	735636.86
2009	373552.31	215813.9	145340.98	734707.2
2010	363718.21	221232.43	146538.27	731488.91
2011	380905.92	228058.59	138388.74	747353.24
2012	396341.51	234177.07	138317.65	768836.23
2013	396200.05	241049.28	139928.32	777177.65
2014	405582.58	242701.82	139322.91	787607.3
2015	397545.99	254203.45	137390.86	789140.32
2016	384397.08	261977.14	131692.52	778066.72

Source: Philippine Statistics Authority (PSA)

A.Table 2. Volume of Production by Animal Type, 1980-2016 ('000 mt)

Year	Carabao	Cattle	Hog	Goat	Dairy	Chicken	Duck	Chicken Eggs	Duck Eggs	Livestock	Poultry	Livestock and Poultry
1980	68.81	131.85	534.06	22.19	0	369.76	44.46	119.34	26.94	756.91	560.5	1317.41
1981	63.44	131.73	653.19	24.84	6.66	413.32	53.28	135.56	31.7	879.86	633.86	1513.72
1982	68.7	127.87	623.49	32.82	6.66	426.05	63.96	148.84	26.14	859.54	664.99	1524.53
1983	63.23	114.02	671.57	36.9	6.71	433.12	55.73	140.18	35.94	892.43	664.97	1557.4
1984	69.49	123.17	702.49	36.11	6.73	421.71	48.66	144.36	29.6	937.99	644.33	1582.32
1985	71.74	139.5	605.88	42.68	14.42	375.2	34.44	104.4	36.32	874.22	550.36	1424.58
1986	88.7	151.3	692	44.3	14.76	399.93	29.2	112	28.17	991.06	569.3	1560.36
1987	98.5	161.4	768.38	49.62	15.27	404.1	31.13	125.3	26.11	1093.17	586.64	1679.81
1988	112	160	858	53	17.41	455.08	32.35	139.99	27.1	1200.41	654.52	1854.93
1989	120.23	166.42	962.42	56.95	17.36	498.88	34.1	155.41	28.75	1323.38	717.14	2040.52
1990	106.53	169	1031.12	54.78	19.19	559.65	35.84	165.7	30.45	1380.62	791.64	2172.26
1991	101.2	162.06	1056.92	57.71	18.89	577.88	35.83	170.81	33.4	1396.78	817.92	2214.7
1992	108.6	166.91	1056.98	59.67	15.42	651.99	39.09	180.52	36.75	1407.58	908.35	2315.93
1993	108.34	181.71	1101.52	65.59	14.35	678.76	41.66	202.1	39.2	1471.51	961.72	2433.23
1994	108.69	195.55	1152.68	68.56	13.92	709.46	44	196.04	41.57	1539.4	991.07	2530.47
1995	103.96	213.08	1213.1	70.71	12.11	747.85	47.37	199.91	47.69	1612.96	1042.82	2655.78
1996	99.24	232.34	1296.47	70.18	11.5	851.81	50.95	205.59	54.46	1709.73	1162.81	2872.54
1997	106.14	251.48	1357.78	70.86	10.22	929.68	50.77	222.62	52.96	1796.48	1256.03	3052.51
1998	113.05	260.81	1406.59	71.95	9.24	919.45	51.29	227.04	53.1	1861.64	1250.88	3112.52
1999	118.96	271.24	1466.68	73.9	9.85	929.16	51.23	229.87	52.65	1940.63	1262.91	3203.54
2000	123.97	271.56	1517.79	75.18	10.21	997.82	51.49	243.38	53.46	1998.71	1346.15	3344.86
2001	125.14	261.17	1584.52	74.59	10.8	1098.79	53.52	246.7	53.91	2056.22	1452.92	3509.14
2002	132.41	261.06	1667.76	74.79	11	1173.74	54.11	260.83	53.63	2147.02	1542.31	3689.33
2003	132.38	258.45	1733.09	73.83	11.25	1188.74	53.9	274.81	54.04	2209	1571.49	3780.49
2004	138.05	255.98	1709.4	74.98	11.61	1231.79	53.2	296.58	56.59	2190.02	1638.16	3828.18
2005	133.52	246.75	1771.28	77.28	12.34	1215.67	49.38	320.32	53.23	2241.17	1638.6	3879.77
2006	130.41	238.27	1836.14	74.82	12.79	1205.95	45.99	330.29	50.03	2292.43	1632.26	3924.69

Year	Carabao	Cattle	Hog	Goat	Dairy	Chicken	Duck	Chicken Eggs	Duck Eggs	Livestock	Poultry	Livestock and Poultry
2007	136.96	236.87	1886	76.56	13.23	1211.62	42.46	335.1	46.99	2349.62	1636.17	3985.79
2008	140.42	239.16	1855.73	78.01	13.81	1281.34	39.21	350.79	42.56	2327.13	1713.9	4041.03
2009	140.91	245.1	1877.34	77.38	13.91	1300.9	35.93	368.46	39.62	2354.64	1744.91	4099.55
2010	148.02	251.74	1898.16	78.45	15.86	1353.13	32.98	387.34	36.68	2392.23	1810.13	4202.36
2011	147.52	256.26	1940.35	78.2	16.46	1414.29	33.15	403.43	37.68	2438.79	1888.55	4327.34
2012	142.73	253.98	1973.62	75.66	18.49	1479.44	33.85	421.06	39.75	2464.48	1974.1	4438.58
2013	141.48	258.45	2012.17	75.42	19.53	1555.07	34.46	427.69	41.07	2507.05	2058.29	4565.34
2014	143.03	261.32	2032.3	76.1	19.73	1571.76	34.61	415.65	41.51	2532.48	2063.53	4596.01
2015	142.04	266.9	2120.33	77.48	20.39	1660.81	33.94	444.55	42.4	2627.14	2181.7	4808.84
2016	144.68	270.42	2231.66	77.45	21.16	1674.5	32.22	461.72	44.16	2745.37	2212.6	4957.97

Source: Philippine Statistics Authority (PSA)

A.Table 3. Livestock and Poultry Inventory by Animal Type, 1990-2015 ('000 heads)

Year	Carabao	Cattle	Goat	Hog	Chicken	Duck
1950	1903	698	355	3899	25235	709
1955	3279	806	459	5289	44584	1696
1960	3696	1110	617	6573	52335	2231
1965	3346	1560	606	6938	56929	1478
1970	4432	1679	772	6456	56999	2132
1971	4556	1795	924	7050	56512	2352
1972	4711	1933	1083	7742	50103	2600
1973	4937	2099	1248	8627	49965	2906
1976	2724.68	1736.62	785	6489.2	45671	4104.43
1977	2897.39	1723.36	1104	5696.43	45289	4227.67
1978	2958.72	1820.21	1290	6909.9	58892	5395.2
1979	2803.26	1833.21	1374	7444.7	49320	5337.91
1980	2870.27	1911.86	1691	7933.63	52568	4724.76
1981	2849.94	1939.95	1696	7758.12	57724	4782.74
1982	2908.45	1941.65	1783	7801.55	59718	4710.7
1983	2946.15	1937.52	1859.39	7983.95	62253	5267.46
1984	3021.41	1848.95	2362.01	7612.08	59161	5761.16
1985	2982.78	1786.39	2190.75	7303.98	52399	5221.16
1986	2984.24	1814.46	2176.93	7274.83	53007	5207.86
1987	2865.26	1746.85	2015.51	7038.48	53248	5252.32
1988	2890.03	1700.01	2120.11	7580.52	60321	5833.27
1989	2841.85	1681.65	2212.25	7908.5	70016.51	6500.51
1990	2764.95	1629.74	2136.19	7999.99	82302.12	7356.27
1991	2646.84	1676.79	2158.66	8079.34	78239.95	8267.69
1992	2576.84	1730.57	2306.38	8021.9	81525.21	8348.29
1993	2575.76	1914.86	2562.36	7953.67	87157.52	8706.78
1994	2559.66	1936.05	2632.96	8226.53	93201.01	8186.88
1995	2707.83	2021.05	2828.09	8941.2	96215.72	9072.2
1996	2841.28	2128.46	2981.9	9025.95	115782.4	9469.69
1997	2987.78	2266.28	3024.98	9752.18	134962.8	8923.5
1998	3013.19	2377.1	3085.46	10210.47	138520.7	8823.57
1999	3005.99	2425.93	3050.96	10397	113789	8613.65
2000	3024.4	2478.85	3151.47	10710.69	115187	9264.66
2001	3065.81	2495.58	3214.76	11063.14	115606.5	9986.8
2002	3122.03	2547.82	3293.9	11652.7	126831.1	9911.27
2003	3179.54	2557.04	3270.44	12364.3	128515.5	9807.09
2004	3269.98	2593.29	3357.62	12561.69	122010.2	10211.31
2005	3326.83	2547.96	3535.2	12139.69	136003.4	10438.74
2006	3360.68	2519.74	3735.82	13046.68	134332.9	11146.74

Year	Carabao	Cattle	Goat	Hog	Chicken	Duck
2007	3383.62	2565.85	4048.55	13459.33	135640.2	10161.58
2008	3338.57	2566.49	4174.25	13701.02	154272	10508.2
2009	3320.97	2586.39	4222.23	13596.4	158663.1	10577.4
2010	3270.41	2570.88	4177.72	13397.79	158984.3	10268.01
2011	3075.26	2518.41	3881.5	12303.1	162812.9	10126.36
2012	2963.98	2493.16	3715.23	11863.02	164192.3	10011.48
2013	2912.84	2497.91	3694.02	11843.05	166386.3	10134.88
2014	2847.44	2512.18	3695.63	11801.66	167671.1	9885.78
2015	2854.84	2534.24	3674.19	11999.72	176469.1	10066.73
2016	2877.09	2553.75	3663.06	12478.71	178792.8	10518.54
2017	2881.89	2547.64	3710.64	12427.79	175316.9	10843.29

Source: Philippine Statistics Authority (PSA)

A.Table 4. Value of Production in Livestock and Poultry by Animal Type, 1998-2016 in Million Pesos, (2000 Prices)

Year	Crop	Livestock and Poultry	Fisheries	Agriculture
1998	242864.87	162691.49	93542.7	499099.07
1999	277624.76	167207.59	96536.41	541368.76
2000	284931.22	174906.16	98656.74	558494.12
2001	293879.29	183895.36	104036.77	581811.43
2002	303844.91	193524.47	104864.19	602233.57
2003	312525.17	198376.72	113370.63	624272.52
2004	328688.85	201044.75	116759.1	646492.7
2005	331388.83	203816.67	121003.59	656209.09
2006	345457.76	206243.7	126381.12	678082.59
2007	366459.36	209497.76	137913.62	713870.74
2008	379318.17	212668.14	143650.54	735636.86
2009	373552.31	215813.9	145340.98	734707.2
2010	363718.21	221232.43	146538.27	731488.91
2011	380905.92	228058.59	138388.74	747353.24
2012	396341.51	234177.07	138317.65	768836.23
2013	396200.05	241049.28	139928.32	777177.65
2014	405582.58	242701.82	139322.91	787607.3
2015	397545.99	254203.45	137390.86	789140.32
2016	384397.08	261977.14	131692.52	778066.72

Source: Philippine Statistics Authority (PSA)

A.Table 5. Livestock Supply Accounts, 1990-2016 (mt)

Year	Beef				Chevon				Carabeef				Pork			
	Production	Imports	Gross Supply	Exports	Production	Imports	Gross Supply	Exports	Production	Imports	Gross Supply	Exports	Production	Imports	Gross Supply	Exports
1990	116993	10881	127874	0	22858	0	22858	0	61446	0	61446	0	824577	1177	825754	383
1991	112407	10685	123092	0	24097	0	24097	0	58289	0	58289	0	845213	742	845955	308
1992	115595	14859	130454	0	24911	0	24911	0	62409	0	62409	0	845250	794	846044	8
1993	125894	17218	143112	0	27387	0	27387	0	62409	424	62833	0	880945	418	881363	22
1994	135506	26977	162483	0	28628	0	28628	0	62672	9165	71837	0	921761	696	922457	0
1995	147463	26195	173658	0	29556	0	29556	0	60069	16681	76750	0	969862	2183	972045	22
1996	160826	32663	193489	0	29783	0	29783	0	57467	23828	81295	0	1036517	6073	1042590	0
1997	176636	39609	216245	0	30070	0	30070	0	61312	30147	91459	0	1085544	10369	1095913	0
1998	182723	29783	212506	0	32262	0	32262	0	65304	21382	86686	0	1123773	12593	1136366	0
1999	189934	36371	226305	0	33142	0	33142	0	68713	28456	97169	0	1171759	31650	1203409	0
2000	190159	43883	234042	0	33723	0	33723	0	71613	39787	111400	0	1212536	32338	1244874	0
2001	182886	29569	212455	20	33467	0	33467	0	72279	47426	119705	0	1265888	22022	1287910	0
2002	182813	32549	215362	0	33550	0	33550	0	76471	52453	128924	0	1332347	25637	1357984	0
2003	180967	34355	215322	0	33118	0	33118	0	76448	53621	130069	0	1384575	29429	1414004	0
2004	179229	46768	225997	0	33634	0	33634	0	79720	65389	145109	0	1365606	34083	1399689	0
2005	172759	30829	203588	0	36088	0	36088	0	77105	64170	141275	0	1415041	31315	1446356	0
2006	167473	33696	201169	0	44786	0	44786	0	84346	60404	144750	0	1564957	35551	1600508	0
2007	178041	44821	222862	53	49532	0	49532	0	110202	62128	172330	0	1616715	52384	1669099	116
2008	184363	49837	234200		53319	0	53319	0	101616	63439	165055	0	1605807	83014	1688821	0
2009	189707	41541	231248	0	54427	16	54443	0	98653	45864	144517	141	1628839	87284	1716123	0
2010	194754	50062	244816	1	55428	0	55428	0	105251	48995	154246	0	1635756	151143	1786899	50
2011	150193	48642	198835	0	45614	0	45614	0	86459	39250	125709	0	1641587	141129	1782716	0
2012	148859	49333	198192	2	44135	1	44136	0	83652	36340	119992	0	1664351	118801	1783152	12
2013	151480	50452	201932	49	43990	3	43993	0	82920	27608	110528	23	1696865	152372	1849237	948
2014	153160	65692	218852	39	44390	25	44415	0	83832	39370	123202	0	1713841	203690	1917531	308
2015	156429	64446	220875	0	45194	0	45194	0	83251	42401	125652	0	1788077	203606	1991683	0
2016	158491	77112	235603	0	45179	0	45179	0	84800	38955	123755	0	1881959	224091	2106050	0

Source: Philippine Statistics Authority (PSA)

A.Table 6. Poultry Supply Accounts, 1990-2016 (mt)

Year	Chicken Eggs				Duck Eggs				Dressed Chicken				Duck			
	Production	Imports	Gross Supply	Exports	Production	Imports	Gross Supply	Exports	Production	Imports	Gross Supply	Exports	Production	Imports	Gross Supply	Exports
1990	165700	0	165700	0	30450	0	30450	1	267513	190	267703	0	5665	53	5718	0
1991	170810	218	171028	0	33400	56	33456	1	286874	34	286908	82	6513	6	6519	0
1992	180520	238	180758		36750	104	36854	5	356398	41	356439	0	7537	9	7546	0
1993	202100	11	202111	0	39200	212	39412	5	364481	113	364594	0	8531	61	8592	0
1994	196040	6	196046	0	41570	219	41789	5	376607	199	376806	0	9009	151	9160	0
1995	199910	8	199918	0	47690	158	47848	8	399551	191	399742	0	9701	189	9890	
1996	205590	0	205590	0	54460	176	54636	15	455097	200	455297	0	10433	261	10694	1
1997	222870	0	222870	0	52956	156	53112	10	496686	966	497652	0	10394	422	10816	1
1998	227038	0	227038	0	53103	168	53271	15	491227	2417	493644	0	10481	330	10811	0
1999	229873	11	229884	0	52649	172	52821	10	496429	29388	525817	0	10472	302	10774	0
2000	243381	16	243397	0	53465	161	53626	11	533118	16790	549908	6	10520	190	10710	0
2001	246700	26	246726	0	53913	106	54019	10	587067	11154	598221	25	10940	118	11058	0
2002	260830	344	261174	0	53633	23	53656	6	627105	12176	639281	25	11059	490	11549	0
2003	274813	373	275186	0	54044	6	54050	6	635131	13640	648771	22	11018	324	11342	
2004	296576	101	296677	0	56593	0	56593	105	664878	20546	685424	1244	10874	139	11013	0
2005	320322	505	320827	0	53232	0	53232	90	623502	26210	649712	3599	10657	40	10697	0
2006	330288	101	330389	0	50027	2	50029	73	658041	33629	691670	419	11833	70	11903	0
2007	335104	251	335355	0	46990	0	46990	0	745395	38336	783731	3585	15043	18	15061	0
2008	350789	0	350789	0	42559	0	42559	0	812324	43758	856082	3267	14732	85	14817	0
2009	368464	345	368809	0	39617	0	39617	1	826677	61444	888121	4548	14306	80	14386	0
2010	387335	0	387335	0	36676	0	36676	0	868583	98004	966587	5505	13674	99	13773	0
2011	403433	0	403433	0	37678	0	37678	0	920061	112109	1032170	9902	24865	73	24938	0
2012	421057	303	421360	0	39747	0	39747	0	1139165	107258	1246423	5800	25385	357	25742	1
2013	427686	15	427701	0	41071	0	41071	0	1197404	98727	1296131	6084	25842	98	25940	0
2014	415652	0	415652	0	41510	0	41510	0	1210257	166605	1376862	8405	25959	384	26343	75
2015	444550	0	444550	0	42404	0	42404	0	1278826	190529	1469355	3700	25455	259	25714	26
2016	461719	0	461719	0	44160	0	44160	0	1289369	235770	1525139	2398	24162	214	24376	27

Source: Philippine Statistics Authority (PSA)

A.Table 7. Import Dependency Ration of Selected Agricultural Commodities, 1990-2015

Year	Corn	Rice	Cassava	Pork	Chicken Dressed	Chicken Egg	Milkfish
1990	6.65	9.04	0.00	0.14	0.07	0.11	0.00
1991	0.00	0.00	0.00	0.09	0.01	0.13	0.00
1992	0.02	0.02	0.00	0.09	0.01	0.13	0.00
1993	0.02	3.17	0.00	0.05	0.03	0.01	0.00
1994	0.02	0.00	0.00	0.08	0.05	0.00	0.00
1995	4.80	3.69	0.00	0.22	0.05	0.00	0.00
1996	8.90	10.51	0.00	0.58	0.04	0.00	0.00
1997	6.63	8.93	0.00	0.95	0.19	0.00	0.00
1998	10.78	27.95	0.00	1.11	0.49	0.00	0.00
1999	3.16	9.77	0.00	2.63	5.59	0.00	0.16
2000	9.01	7.31	0.00	2.60	3.05	0.01	0.00
2001	3.66	8.71	0.00	1.71	1.86	0.01	0.01
2002	6.05	12.11	0.00	1.89	1.90	0.13	0.01
2003	2.12	9.12	0.38	2.08	2.10	0.14	0.00
2004	0.42	9.55	0.74	2.44	3.00	0.03	0.01
2005	1.33	16.02	0.00	2.17	4.06	0.16	0.00
2006	4.81	14.62	0.18	2.22	4.86	0.03	0.02
2007	2.21	14.53	0.00	3.14	4.91	0.07	0.01
2008	0.33	18.11	0.00	4.92	5.13	0.00	0.00
2009	4.13	14.17	0.00	5.09	6.96	0.09	0.01
2010	1.36	18.73	1.15	5.09	10.20	0.00	0.01
2011	0.94	6.09	0.57	7.92	10.97	0.01	0.04
2012	1.82	8.11	0.00	6.71	9.51	0.07	0.19
2013	4.43	3.20	0.67	8.31	8.39	0.01	0.11
2014	6.89	8.06	0.41	10.75	13.09	0.00	0.03
2015	8.65	11.07	0.00	10.29	13.88	0.00	0.03

Source: Philippine Statistics Authority (PSA)