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A Brief on 'Beef'

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This view was prepared by Ahmad Ashraf Ahmad Shaharudin and Siti Aiysyah Tumin, researchers from the Khazanah Research Institute (KRI). The authors are grateful for the valuable comments from Prof. Dr Jomo Kwame Sundaram, Dr Sarena Che Omar and Tan Zhai Gen. Opinions expressed are those of the author and may not necessarily represent the official views of KRI. All errors remain the authors' own.

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- *Soy: The King of Beans*
- *Sugar: A Spoonful Too Much?*

These articles are short, informative and accessible to the public. It utilises publicly available data (unless stated otherwise). They are **not** meant to study food-specific markets in-depth or make any policy recommendations.

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Views

A Brief on 'Beef'

- Despite Malaysia's per capita consumption of bovine meat is among the highest in Southeast Asia, Malaysia is one of its lowest producers in the region. Malaysia's bovine meat self-sufficiency level fell from 30% in 2010 to 22% in 2018.
- The price of local bovine meat rose by 82% between 2008 and 2018. Within the same period, the price of the cheaper option, imported bovine meat, more than doubled.
- To explain the rising price of imported bovine meat in Malaysia, the MyCC report notes the presence of dominant players in the import trade, which may have oligopolistic control over prices.
- The price of bovine meat does not seasonally vary much within a year. It also did not show any sharp increase during festive seasons, probably because bovine meat price is controlled by the government during festive seasons.
- Bovine meat is mostly imported in frozen form. In 2018, 150 thousand MT (USD498 million) of frozen bovine meat was imported mainly from India (78% share in value term) and two thousand MT (USD20 million) of fresh or chilled bovine meat were imported, of which 91% were from Australia.

Introduction

Bovine meat (meat derived from cattle or buffalo) is the third most consumed meat in the world after pigmeat and poultry meat[1]. In Malaysia, bovine meat is widely referred to as beef (see for instance pg. 69 of the latest Market Review on Food Sector report by the Malaysian Competition Commission, MyCC[2]) although semantically, this is not accurate[3]. Beef refers to cattle meat[4] whereas buffalo meat is known by various names in different countries. The visual and taste similarities of the two make it indistinguishable by most consumers. Data presented by agencies such as the Department of Veterinary Services do not distinguish between cattle meat and buffalo meat implying that they are considered the same, at least in official statistics.

Did you know?

Cattle and buffalo—some differences

Cattle (Malay: *lembu*)

Water buffalo (Malay: *kerbau*)

Cattle and buffalo belong to the subfamily of *Bovinae*. General characteristics include cloven hooves and at least males having horns.

Cattle (*Bos Taurus*) are the most common type of large domesticated ungulates (diverse group of primarily large mammals with hoofs) and are raised for meat and milk.

Buffalo may refer to several different species. However, the one commonly referred to in Southeast Asia (SEA) is water buffalo (*Bubalus bubalis*), which have been domesticated as draft animals, particularly for tilling rice fields.

In terms of physical differences, cattle can be found in many different colours such as white, black and brown, whereas buffaloes are mostly black or gray. Buffalo usually have longer horns compared to cattle. Cattle have a flap along the neck called a dewlap while buffaloes do not.

Buffalo meat is generally darker and tougher than beef. The colour of buffalo fat is white, whereas that of cattle varies from pale cream to yellowish. Buffalo meat contains less saturated fat, calories, cholesterol as well as more protein and minerals as compared to cattle beef.

Sources: Wikipedia (n.d.-a), Wikipedia (n.d.-b), Nanda and Nakao (2003) & Robertson et al. (1986)
Photo credit: See footnote [5]

[1] FAOSTAT, FAO (n.d.)
[2] Malaysia Competition Commission (MyCC) (2019)
[3] For semantic accuracy, this article refer beef and bovine meat based on their actual meanings, unless otherwise stated.
[4] Oxford Dictionaries. https://www.lexico.com/en/definition/beef
[5] Creative Commons: https://commons.wikimedia.org/w/index.php?curid=24992260 (Cattle) & https://commons.wikimedia.org/w/index.php?curid=42000193 (Water buffalo)

Bovine Meat Consumption

Globally, bovine meat consumption has steadily increased from 31.5 million tonnes (MT) in 1963 to 65.7m MT in 2013. The United States is the largest consumer of bovine meat—11.6 million (m) MT in 2013, that is 18% of the world total—followed by Brazil (7.86 m MT) and China (7.09 m MT)[6]. In terms of per capita consumption, Argentinians consume the highest quantity on average, 55.48 kg/capita in 2013, followed by Brazilians (39.25 kg/capita) and Americans (36.24 kg/capita).

In Malaysia, total meat consumption, which includes poultry meat, pig meat, bovine meat and mutton, has increased almost threefold in half a century, from 91 kcal/capita/day in 1963 to 266 kcal/capita/day in 2013. The share of bovine meat in total meat consumption has increased by over one percentage point from 7.7% to 9.0% over the same period. Malaysians favour consumption of poultry over other meat (Figure 1).

Southeast Asian (SEA) countries, with the exception of Brunei (and Singapore, as data is unavailable), have been consuming less bovine meat than the world average (Figure 2). Despite the three-fold increase in the consumption of bovine meat since 1963 in Malaysia, per capita consumption of bovine meat in 2013 was about half the world average—6.52 kg/capita/year versus 12.15 kg/capita/year. Nevertheless, Malaysian per capita consumption of bovine meat was still among the highest in the SEA region.

Figure 1. Share of meat consumption (kcal/capita/day), by type of meat, Malaysia, 1961 – 2013 (%)

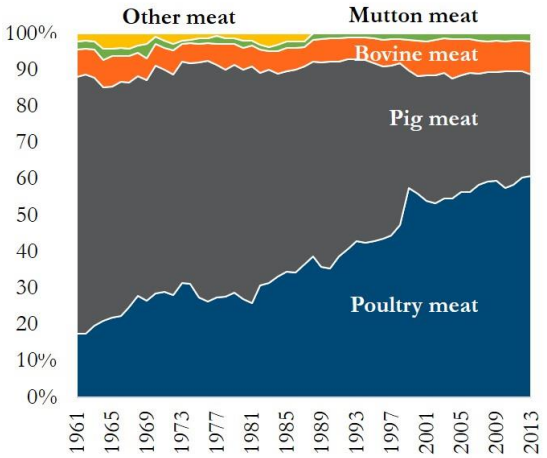
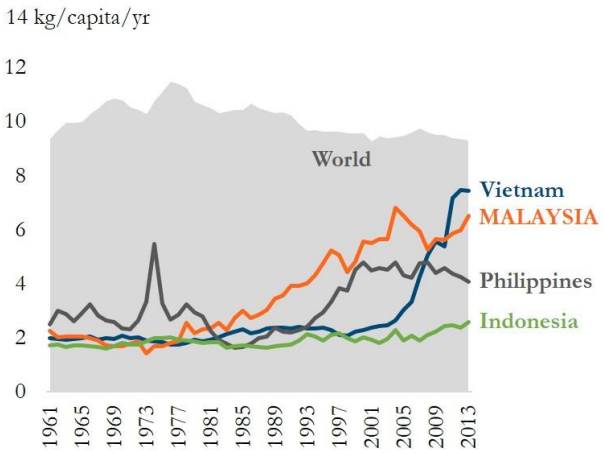


Figure 2. Consumption of bovine meat, selected Southeast Asian countries, 1961 – 2013 (kg/capita/year)



Source: FAOSTAT, FAO (n.d.). Charts by authors.

[6] FAOSTAT, FAO (n.d.)

Did you know?

In May 2019, **Beyond Meat**, a company producing **plant-based meat-substitutes** raised USD3.8 billion for its initial public offering, the largest in the United States since 2000. The company is one of several companies emerging to produce alternatives to meat products, responding to rising demand for plant-based diets. This stems from shifting preferences away from meat, especially beef, considering its harmful effects on the environment. Meat substitute products are typically made from soybeans, gluten or peas, attempting to recreate the taste and texture of meat. This often involves significant research and development (R&D), but funding and expertise remains limited.

Plant-based burger by Beyond Meat

Source: Dolgin (2019), Murphy (2019) & Strom (2019)
Photo credit: See footnote[7]

Bovine Meat Production

The United States, Brazil and China are the largest bovine meat producers. Indonesia is the largest producer in Southeast Asia, followed by Myanmar and Vietnam (Figure 3 & 4).

Malaysia's meat-producing cattle & buffalo and bovine meat production increased by 32% and 206% respectively from 1967 to 2017. These increments are still smaller than the growth registered by other countries, as shown in Figures 3 & 4. Malaysia remains one of the smaller producers of bovine meat in the SEA region. The country's bovine meat self-sufficiency level increased from 18% in 2004 to 30% in 2010, before dropping to 22% in 2018[8].

[7] Creative Commons: https://commons.wikimedia.org/w/index.php?curid=56920530
[8] Department of Veterinary Services (DVS) (2014) & Department of Veterinary Services (DVS) (2018)

Figure 3. Producing animals/slaughtered, cattle and buffalo, selected Southeast Asian countries, 1961 – 2017 (million head)

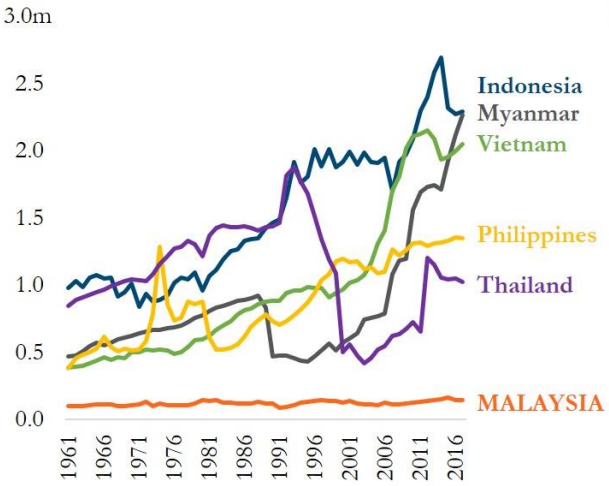
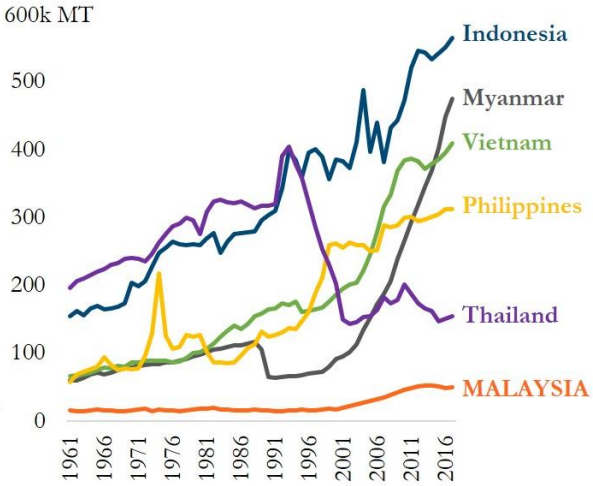


Figure 4. Production, bovine meat (cattle & buffalo), 1961 – 2017 (thousand MT)



Source: FAOSTAT, FAO (n.d.). Charts by authors.

Land area is one factor determining bovine meat production, at least in the SEA region. As shown in Figure 5, countries with larger land size, such as Indonesia and Myanmar, produce a larger quantity of bovine meat. However, some countries produce more with less land size, as seen by comparing production per land area (MT/sq km) in Figure 6. A notable example is Vietnam. Even though Vietnam has a similar land size to Malaysia and Thailand, the country produced 2.7 times more bovine meat than Thailand and 8.3 times more than Malaysia in 2017.

Figure 5. Land area versus bovine meat production, Southeast Asian countries, 2017

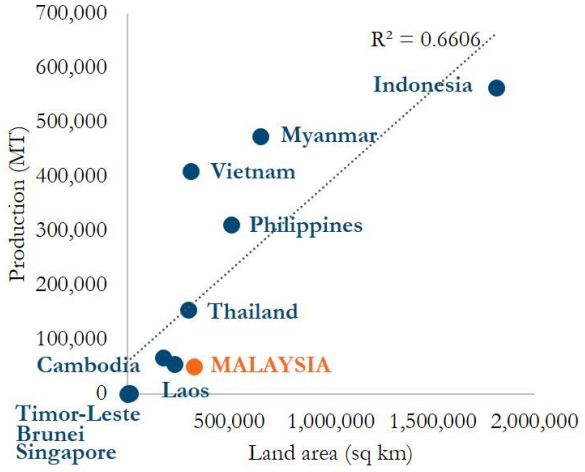
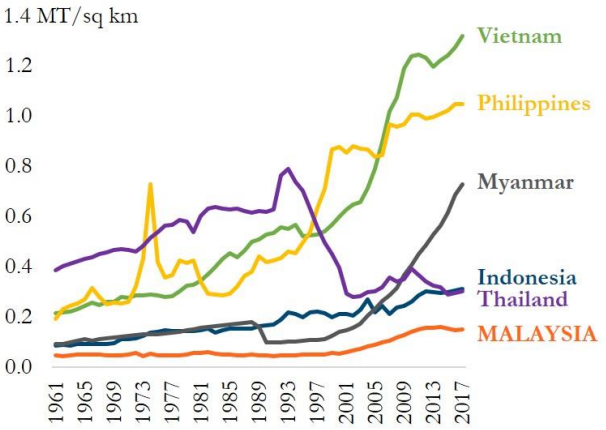


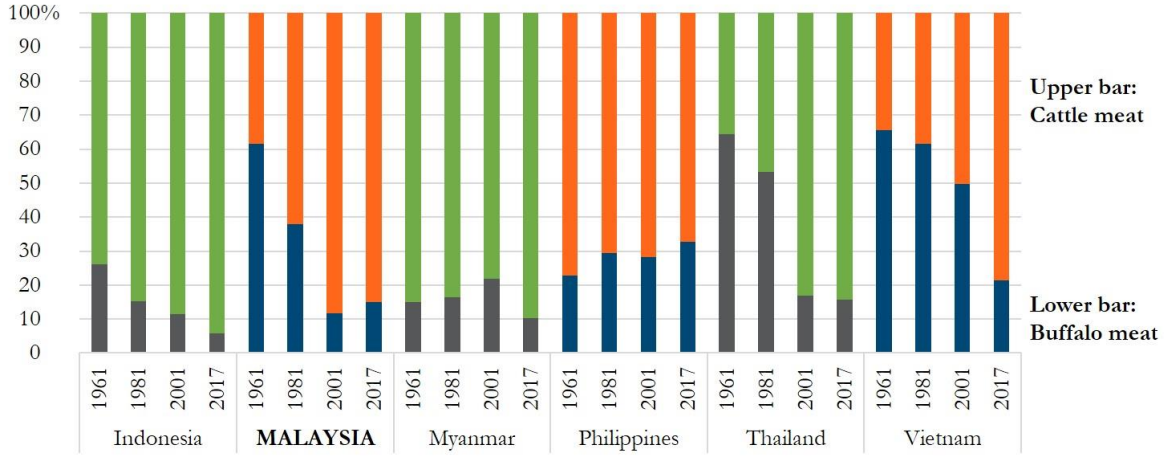
Figure 6. Production over country's land area, bovine meat, selected Southeast Asian countries, 1961 – 2017 (MT/sq km)



Source: FAOSTAT, FAO (n.d.). Charts by authors.

Generally, the share of buffalo meat in overall bovine meat production declined in most SEA countries except Myanmar and the Philippines (Figure 7). In 1961, buffalo meat comprised 61% of total bovine meat production in Malaysia, and by 2001, the share fell to 13%. This phenomenon can be explained by the substitution of buffaloes as draft animals[9] (which would be slaughtered when they got old) with farm machinery in paddy fields in the 1980s[10]. In most countries, the cattle population increased relative to the declining buffalo population with economic transformation, resulting in greater bovine meat production (Figure 4). However, this was not the case in Thailand, where the declining buffalo population was not fully compensated by growth in the cattle population, significantly lowering bovine meat production.

Figure 7. Composition of cattle meat and buffalo meat over total bovine meat production, selected Southeast Asian countries, selected years (%)

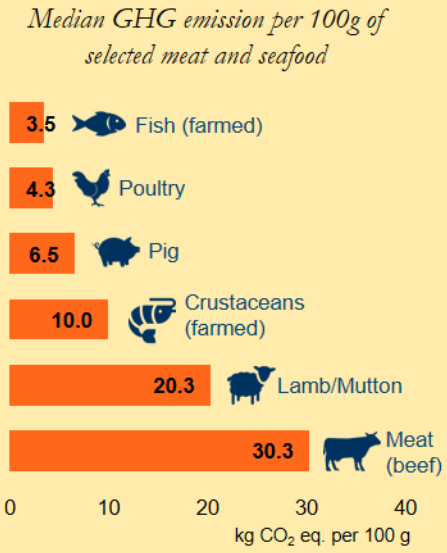


Source: FAOSTAT, FAO (n.d.). Chart by authors.

[9] Draft animal is "any domesticated animal used in drawing heavy loads". Encyclopaedia Britannica: https://www.britannica.com/animal/draft-animal

[10] Nanda and Nakao (2003) & Cruz (2007)

Did you know?



Food production imposes great costs to our environment. Our current food supply chain, especially at the farming stage, contributes to the emission of **green house gasses** (GHC), global **terrestrial acidification** and **eutrophication**. In a new study, **beef** and **dairy** products were found to use the vast majority of our farmland (83%), contributing to more than half of the total agriculture GHG emission, despite providing only 18% of our calories and 37% of our protein. Among selected meat and seafood, beef's median production of GHG was **30 kg** of carbon dioxide equivalent (CO_2 eq.) per 100g, which is the highest. In some cases, emission from beef can reach **135 kg**! Scientists behind this study claimed that avoiding meat and dairy products could help reduce some environmental damage.

Source: Carrington (2018) & Poore and Nemecek (2018)

Box 1: Ruminant production policy in Malaysia

Over the years, policy to develop the ruminant industry in Malaysia has mainly revolved around four initiatives:

(i) importation of high-quality breeds for eventual distribution to smallholder pastoralists;
(ii) integration of livestock rearing in tree crop (mainly oil palm and rubber) plantations;
(iii) promotion of large production systems, especially feedlot systems; and
(iv) development of the feed sector.

MAJUTERNAK and the importation of high-quality breeds

In 1972, the National Livestock Development Authority (MAJUTERNAK) was established for the development and commercialisation of the beef and dairy industries. Within three years after its establishment, seven beef/dairy farms were opened in Peninsular Malaysia and Sarawak, involving 12,000 acres of land, 100,000 heads of cattle and 640 employees[11]. By the end of 1980, 10 abattoirs constructed by MAJUTERNAK were fully operational[12].

MAJUTERNAK managed the importation of high-quality animals for breeding purposes, of which a large proportion was distributed to smallholders by the Department of Veterinary Services

[11] Government of Malaysia (1976)
[12] Government of Malaysia (1981)

(DVS)[13]. Under the Second Malaysia Plan, 1971 – 1975 (2MP), 8,700 buffalo and cattle were distributed to smallholders under *pawah* schemes[14]. This paired initiative continued under the Third and Fourth Malaysia Plans for 1976-1980 and 1981-1985 respectively.

A decade later, MAJUTERNAK was dissolved in 1983, after which the Department of Veterinary Services (DVS) took over about 400 hectares of land on seven former MAJUTERNAK farms[15]. DVS assumed the role of importing and breeding high-quality animals besides carrying out animal distribution and extension services, including artificial insemination.

Integration of livestock in smallholdings and plantations

Integration of animals in estates and smallholdings has been encouraged since the Fourth Malaysia Plan, 1981 – 1985 (4MP) to maximise land utilisation. Under the 4MP, the distribution of cattle and buffalo was carried out by the Integrated Agricultural Development Projects (IADPs) and the Coconut Replanting and Rehabilitation Project. A total of about 38,000 heads of cattle and buffalo were distributed to about 38,000 farmers by these projects[16].

Later, land development agencies—including the Federal Land Development Authority (FELDA), Rubber Industry Smallholder Development Authority (RISDA), and the Federal Land Consolidation and Rehabilitation Authority (FELCRA)—together with the Pahang State Farmers Organization (PASFA) and the Johor State Farmers Organization (PPNJ) also participated in these integration programmes. By the year 2000, these agencies accounted for 15% of the country's cattle[17].

Promotion of the feedlot system

The Fifth Malaysia Plan, 1986 – 1990 (5MP) encouraged part-time livestock enterprises in Peninsular Malaysia to become commercial units. The use of the feedlot system utilising local agricultural by-products, such as palm kernel cake (PKC) and oil palm sludge, was promoted under the 5MP[18]. However, the rising cost of PKC during 1987 – 1989 and the availability of cheaper imported beef under barter or countertrade arrangements with India frustrated the plan[19]. The feedlot system was reiterated as the strategy for sectoral development in subsequent agricultural policies[20]. Under the Ninth Malaysia Plan, 2006 – 2010 (9MP), the government allocated RM80 million to develop the National Feedlot Programme, of which RM40 million was to establish the

[13] Ibid.
[14] Government of Malaysia (1976)
[15] Government of Malaysia (1986)
[16] Ibid.
[17] Government of Malaysia (2001)
[18] Government of Malaysia (1986)
[19] Government of Malaysia (1991)
[20] Referring to National Agricultural Policy (1992 – 2010), Third National Agricultural Policy (1998 – 2010) and National Agrofood Policy (NAFP) (2011 – 2020).

National Feedlot Centre in Gemas, with the rest for the development of satellite feedlot farms around the country[21].

Development of the feed sector

The Sixth Malaysia Plan, 1991 – 1995 (6MP) acknowledged that domestic production of feed is costly due to the absence of the economies of scale[22]. The 6MP envisaged experimentation in the domestic production of maize, tapioca and soybean as sources of feed. At the same time, beginning from 1991, the import duty on animal feed was gradually abolished; as a result, the annual growth rate of beef[23] production during the 6MP period was well above target—4.1% compared to the 1.3% target[24].

In the National Agrofood Policy, 2011 – 2020, feed production was still identified as the critical bottleneck for the ruminant industry[25]. Recently, imported maize and soybean comprised about three-quarters of total feed in Malaysia for ruminants and non-ruminants[26].

Bovine Meat Price

Common complaints about the soaring price of bovine meat are not without grounds. The price of local beef[27] rose by 82% from 2008 to 2018. In 2008, consumers had to pay RM18.70 for one kg of local bovine meat, whereas in 2018, the price was RM33.95 (Figure 8). Worse, the price of the cheaper option, imported bovine meat, more than doubled over the same period. In comparison, the price of processed chicken increased by 20%—by less than RM2/kg. The gap in prices between chicken and bovine meat has been widening over the years, explaining the increasing consumption of chicken relative to bovine meat, as shown in Figure 1.

The price of bovine meat does not seasonally vary much within a year, as shown in Figure 9, and have not increased sharply during festive seasons, probably because bovine meat prices are controlled by the government during festive seasons[28].

[21] Department of Veterinary Services (DVS) (n.d.)
[22] Government of Malaysia (1991)
[23] Beef in RMK-6, and most government documents for that matter, refer to bovine meat (cattle meat and buffalo meat)
[24] Government of Malaysia (1996)
[25] Ministry of Agriculture & Agro-based Industry (MOA) (2011)
[26] Data from FAOSTAT, FAO (n.d.). Refer to Figure 17 of Ashraf Shaharudin and Siti Aisyah Tumin (2019)
[27] Note that beef here refers to bovine meat (i.e. meat both from cattle and buffaloes), since the data assumes such.
[28] Malaysia Competition Commission (MyCC) (2019)

Figure 8. Average retail price of bovine meat and chicken, Malaysia, 2008 – 2018 (RM/kg)

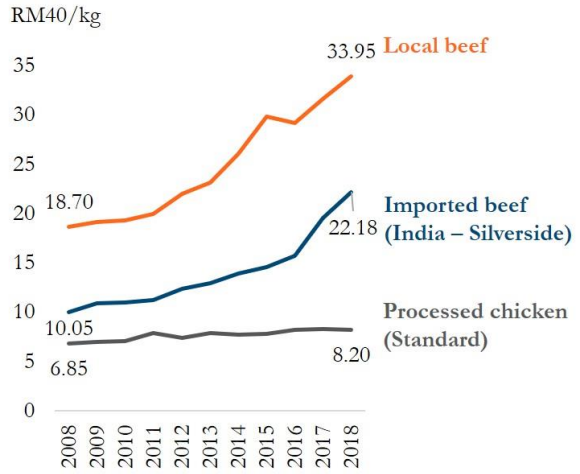
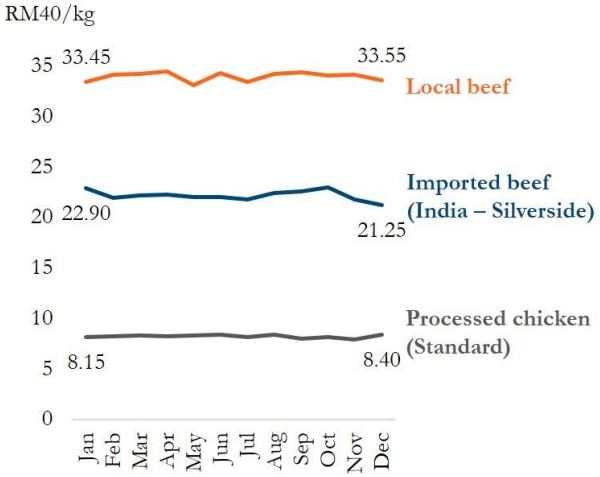


Figure 9. Average monthly retail price of bovine meat and chicken, Malaysia, 2018 (RM/kg)



Notes: Data from the Department of Veterinary Services (DVS) & Federal Agricultural Marketing Authority (FAMA) assume 'beef' (Malay: *daging*) to include meat derived from cattle and buffaloes (i.e. bovine meat).
Sources: Data for the years 2008 to 2017: Department of Veterinary Services (DVS) (2018). Data for 2018: FAMA (n.d.). Charts by authors.

Further analysis is necessary to understand the rapid price increases over the years. MyCC's report suggests several possible reasons[29]. According to MyCC, the hike in the price of local 'beef' reflects the increasing import value of live cattle and the shift in the country source from Thailand to Australia in 2012. However, there are some doubts about this reasoning. First, the unit import value (RM/kg) of live cattle[30] in 2018 (RM13.90/kg) was only 27% higher than in 2013 (RM10.91/kg), whereas the price of local beef increased by 46% over the same period. Second, the shift of import source from Thailand to Australia in 2012 cannot explain the continued domestic price increase in the following years. The share[31] of live cattle and buffalo imports from Australia in total imports in 2018 was the same as in 2013, that is 78%[32].

[29] Ibid. (pg. 100)
[30] This include: Cattle, pure-bred (HS 10221) and Cattle, other than pure-bred (HS 10229). Live buffalo is excluded due to incomplete weight data. Data source: UN COMTRADE (n.d.)
[31] In value term
[32] Calculation based on data from UN COMTRADE (n.d.)

To explain the rising price of imported bovine meat in Malaysia, the MyCC report[33] notes the presence of dominant players in the import trade, which may have oligopolistic control over prices. Although there are about 80 importers of bovine meat into Malaysia, two main importers collectively account for about 40~50% of imports in the past few years[34]. MyCC identifies potential anti-competitive practices among the dominant players which include: (i) exclusive agreements/ preferential treatment between key importers and overseas exporters attributed to long-standing relationships, and (ii) the imposition of tying (bundling) requirement where distributors and retailers are forced to purchase less favourable cuts from importers in order to buy the parts they want[35].

Bovine Meat Trade

Bovine meat is mostly imported in frozen form. In 2018, 150 thousand MT (USD498 million) of frozen bovine meat was imported. India was, by far, the largest exporter of frozen bovine meat to Malaysia (78% share in value terms), followed by Australia (12%) and New Zealand (5%).

In the same year, two thousand MT (USD20 million) of fresh or chilled bovine meat were imported, of which 91% (in value terms) was from Australia, followed by New Zealand (4%), the United States (3%) and Japan (2%). India's exports of fresh or chilled bovine meat to Malaysia, on the other hand, are almost negligible. This has been attributed to the limited logistics capabilities of Indian exporters compared to exporters from developed countries like Australia. Besides, fresh or chilled bovine meat from Australia and New Zealand is mostly of premium grade, whereas meat from India mainly caters for the mass market[36].

Figure 10. Import of bovine meat (frozen), Malaysia, 1989 – 2018 (million USD and thousand MT)

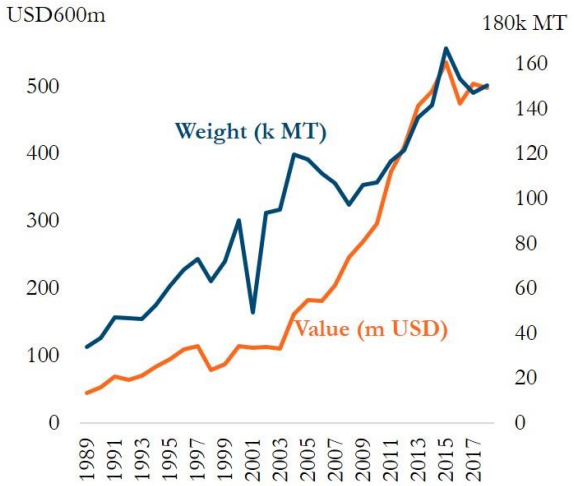
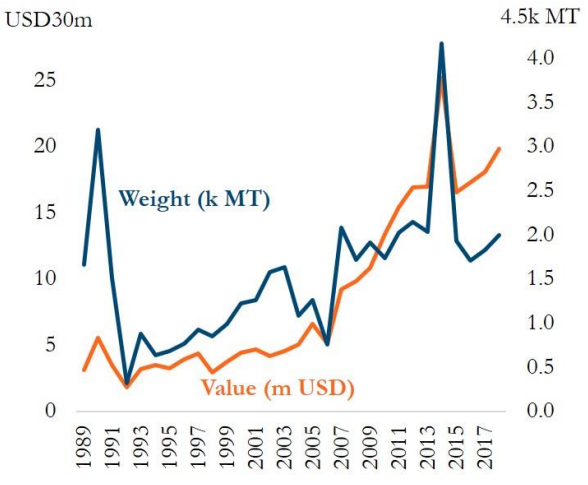


Figure 11. Import of bovine meat (fresh or chilled), Malaysia, 1989 – 2018 (million USD and thousand MT)



Source: UN COMTRADE (n.d.)

[33] Malaysia Competition Commission (MyCC) (2019)
[34] Ibid. (pg. 97)
[35] Ibid. (pg. 115)
[36] Government of Malaysia (1991)

The enormous quantity of bovine meat exports in the early 1990s (reaching a peak in 1994 for frozen bovine meat and in 1992 for fresh or chilled bovine meat) was mostly due to exports of slaughtered halal bovine meat to Saudi Arabia[37]. This could be due to Malaysian efforts to strengthen economic relations with Saudi Arabia towards the end of the 1980s, by setting up a Joint Committee consisting of the National Trade and Commerce Council of Malaysia and the Middle East Trade, Industry and Agriculture Council[38].

On the other hand, the large exports in the 2010s have mainly been due to exports to Singapore (of frozen bovine meat) and Thailand (of fresh or chilled bovine meat)[39]. This coincided with the ASEAN Trade in Goods Agreement (ATIGA) that came into force in May 2010, which implies the elimination of import duties[40] among the six ASEAN member states[41, 42]. Both Singapore and Thailand remain the main export markets for Malaysia's bovine meat exports. In 2018, the largest export destination for frozen bovine meat was Singapore (77%), followed by Cambodia (7%) and Pakistan (6%). For fresh or chilled bovine meat, Thailand accounted for 95% of exports in 2018.

Figure 12. Export of bovine meat (frozen), Malaysia, 1989 – 2018 (million USD and thousand MT)

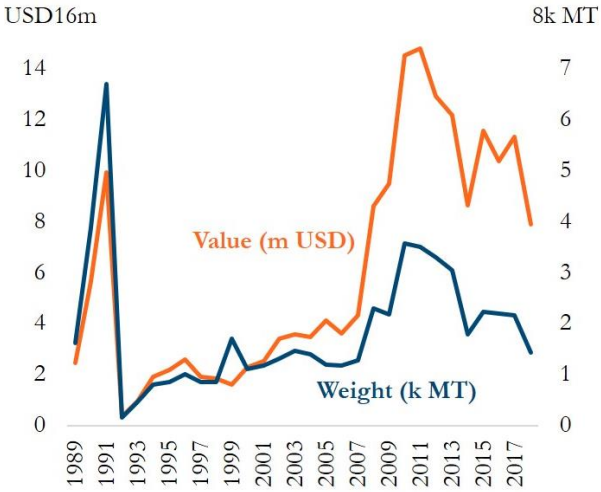
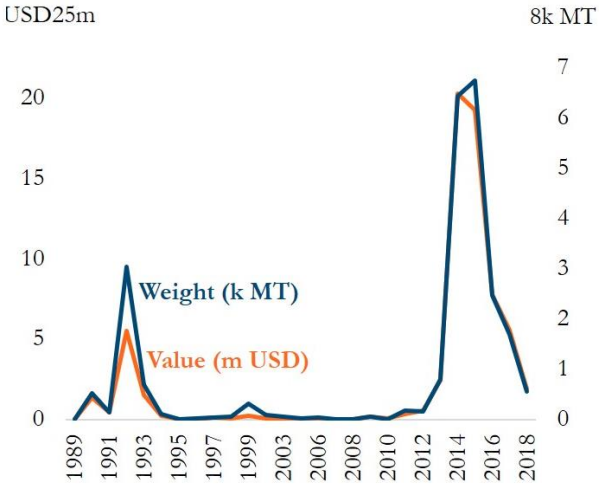


Figure 13. Export of bovine meat (fresh or chilled), Malaysia, 1989 – 2018 (million USD and thousand MT)



Source: UN COMTRADE (n.d.)

[37] UN COMTRADE (n.d.)
[38] Asmady Idris (2013)
[39] UN COMTRADE (n.d.)
[40] Except for products listed on the Sensitive and Highly Sensitive List. For Malaysia, the products are mostly rice-based products.
[41] Namely Brunei, Indonesia, the Philippines, Singapore and Thailand
[42] Royal Customs Department Malaysia (2015)

Conclusion

Malaysia's per capita bovine meat consumption is among the highest in Southeast Asia despite the country being one of the smallest producers of bovine meat in the region, with only 22% self-sufficiency. To support domestic consumption, Malaysia imports bovine meat, mainly from India (frozen) and Australia (fresh or chilled).

The price of local bovine meat has risen by 82% from the year 2008 to 2018. On the other hand, the price of processed chicken only increased by 20%. This perhaps explains the increasing consumption of chicken relative to bovine meat, and the common complaint of bovine meat becoming less affordable. The rising price of imported bovine meat could be attributed to the presence of dominant players in the import trade, which may have oligopolistic control over prices.

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