



Review of Domestic Broiler Market: Final Report

21 March 2014

Contents

Executive Summary	1
1 Introduction	7
1.1 Structure of final report	8
2 Broiler Sector	9
2.1 Supply chain	10
2.1.1 Grandparent and parent stock farming	11
2.1.2 Broiler farming	13
2.1.3 Wholesaling (processing and distribution) and retailing	16
3 Market Structure and Cost of Supply	18
3.1 Market share and concentration	18
3.2 Cost structure	20
3.3 Land licensing	22
3.4 Wholesaling business	25
3.5 Imports	27
4 Broiler Price Trends and Transmission Effects	28
4.1 Wholesale and retail pricing survey	28
4.2 Price trends	29
4.3 Supply control and “permitted maximum” price	34
4.4 Price transmission	35
4.4.1 Retail- <i>ex farm</i> price spreads	36
4.4.2 Asymmetric price transmission	36
4.4.3 Market power	37
5 Vertical Coordination	40
5.1 Contractual arrangements	41
6 Concluding Remarks	44
Appendix	45

List of figures

Figure 2-1. Broiler supply and domestic consumption, 2006 – 2012	9
Figure 2-2. Broiler supply chain	10
Figure 4-1. Moving averages of weekly farm prices – 1 January 2009 to June 2013	31
Figure 4-2. Moving averages of monthly retail prices – January 2010 to June 2013	32
Figure 4-3. Spreads between retail and <i>ex farm</i> prices – January 2009 to December 2012	36

List of tables

Table 1-1. Chronology of consultation and information gathering	7
Table 2-1. Number of parent stock farms by State	11
Table 2-2. List of parent stock companies (in alphabetical order)	12
Table 2-3. List of integrators (in alphabetical order)	12
Table 2-4. Breeder population by type and year	13
Table 2-5. Number of day-old chicks (DOC) and broiler chickens, Peninsular Malaysia, 1996-2012	13
Table 2-6. List of hatcheries	14
Table 2-7. Number of broiler farms by State	15
Table 2-8. Free-range chicken farms and population, 2002 – 2008.	15
Table 2-9. Licensed broiler wholesalers and retailers by State (as of 1 September 2013)	17
Table 3-1. Farming cost structure	20
Table 3-2. Farming cost structure as presented by FLFAM	21
Table 3-3. Example of wholesaler's costs	25
Table 4-1. Summary of survey data collected	28
Table 4-2. Highest, lowest and average prices	30
Table 4-3. Price index of <i>ex farm</i> broiler, January 2007 to July 2012	33

Executive Summary

Pursuant to section 11(1) of the *Competition Act 2010* (“the Act”), Malaysia Competition Commission (“MyCC”) conducted a review of the broiler¹ market in Peninsular Malaysia. This review focused on the current structure of the domestic broiler market; and the interactions of farmers, wholesalers and retailers across the broiler supply chain.

The review process involved the release of an Issues Paper on 16 July 2012 that was publicly accessible on MyCC’s website. Submissions were received from Department of Veterinary Services (“DVS”), Federation of Livestock Farmers’ Association of Malaysia (“FLFAM”) and KFC Holdings. An Interim Report was published on 12 December 2012.

In preparing this Final Report, MyCC undertook further analyses of the following matters:

- a) The composition and level of broiler production costs in the farming and wholesaling segments of the supply chain.
- b) The time-profile and pattern of broiler retail prices over and during both the festive and non-festive seasons in Peninsular Malaysia.
- c) Government broiler market policies and pricing regulations which include the licensing of broiler farming, wholesaling and retailing, as well as quota on broiler importation.

Broiler supply chain

The upstream segment of this supply chain involves breeder farming of grandparent and parent stocks, and the farming of broilers for human consumption. The downstream activities comprise processing of chicken meat, distribution (wholesaling) and final market supply (retailing) of both live broilers and processed chicken products. A key feature of the supply chain is the presence of enterprises that own and operate feed mills, grandparent and parent farms (including hatcheries) as well as broiler farms. Such enterprises are referred to as integrators.

In the farming segment, 292 broiler farming establishments were officially registered as businesses by the Companies Commission of Malaysia in 2008. However this number is only about 12.1 per cent of the 2,402 broiler farms for which data has been collected by DVS. The vast difference between the formally recorded number of broiler business establishments and broiler farms may be due to two factors; *viz.* multiple farm ownership and operation by integrators (on the one hand) and the non-registration of independent farmers as commercial

¹ Broilers are chickens that are bred and reared specifically for human consumption. In this report, the terms “broiler” and “poultry” will be used interchangeably.

businesses. MyCC is of the view that the currently obscure form of market structure at the farming level can be clarified by a common database on broiler farming activities.

RECOMMENDATION

The Ministry of Agriculture and Agro-based Industry (“MOA”) should, in consultation with other ministries, government agencies and business associations that collect broiler farming data, formulate and develop a common database on both registered broiler businesses and unregistered broiler farming operations.

Market share and concentration

MyCC’s measurement of market concentration in the broiler farming segment has been somewhat limited by the lack of data. In its consultation with MARDI, MyCC was informed that using the estimated population of day all chicks (“DOC”) in 2010 as proxy for broiler output, (i) 62.5 per cent, of the market was held by 10 integrators, (ii) 21.4 per cent was held by all non-integrators, and (iii) all other independent farmers held 16.0 per cent.

MyCC also looked into concentration in downstream segments of the broiler supply chain using an approach that is consistent with the approach in defining a relevant market. Based on available data on a broadly defined group of broiler products (as defined by the Department of Statistics in the *Annual Manufacturing Establishment Survey 2004*), a CR-4 ratio for the downstream poultry processing segment (at the MSIC 4-digit level) is calculated as 88.5 per cent, and the Herfindahl-Hirschman Index (HHI) for the same segment is calculated as 3,450. Although both these calculated indices are considerably higher than the “safe harbour” of 75 per cent (in the case of CR-4) and 1800 (in the case of HHI), both of them are only indicative, and not determinative, of possible dominance by any poultry processing firm or group of firms.

FLFAM presented in its submission (of August 2012) a CR-4 ratio of 31.3 per cent and HHI of 508 for the parent stock market. These indices were calculated on the basis of FLFAM’s estimated market shares held by 8 integrators and 28 non-integrated parent stock farmers (who include contract farmers).

MyCC is of the view that the absence of parent stock farming concentration does not necessarily mean that other upstream segments of the supply chain (namely, broiler growing), or further downstream segments (namely, broiler wholesaling and processing) may not be overly concentrated. However what is currently unknown (due to lack of data) is the level of concentration that reflects the ownership of broiler growing farms by integrators, non-integrators and independent farmers (who are engaged in broiler growing via contractual arrangements with integrators and/or non-integrators).

COMMENT

Estimation of more recent market shares and concentration indices depends on accessibility of Department of Statistics data.

Farming land licensing

Government has encouraged local businesses to expand the domestic broiler sector. One key factor is the availability of farming land. Currently, each state has a different set of procedures in enforcing *Enakmen Unggas 2005* which is related to the usage of state-owned land. MyCC notes that the different states' approach to land grant has caused investors to be confused and disrupted the planning and timing for their broiler business investment or expansion. The *Enakmen Unggas 2005* may be an unintended regulatory barrier to broiler market entry and expansion.

RECOMMENDATION

MyCC noted that each state has a different set of procedures in enforcing *Enakmen Unggas 2005*. This regulation is not, of itself, a form of entry barrier especially if it is enforced properly; but differences in the states' regulatory requirements may have the effect of establishing an unnecessary entry barrier.

MyCC recommends that state-based DVS should seek standardisation of the farming land licensing requirements and operating procedures across all states.

Imports

Most imports are of broiler parts that are processed into value added product, e.g. chicken sausages, burgers and nuggets. Such imports are subject to trade policy and quota regulations. This has an implication that the quantity of imported products will only have, if any, a small market effect on the domestic prices of live broilers, especially during festive seasons.

COMMENT

The formulation and enforcement of trade policy, which includes approved permit ("AP") and quota regulations, is not within the purview of MyCC. Nonetheless, it may be beneficial for MyCC to consult all relevant Ministries on how particular elements of competition law may help with the design and implementation of more effective quota and AP regulations.

Supply control and “permitted maximum” price

MyCC understands that imposing a “permitted maximum” retail price regime for no more than 2 weeks before and after a festival is aimed at preventing consumers from being charged exorbitantly by retailers. But it may also inadvertently weaken retailers’ competition with one another, as well as create market distortions and a lack of transparency in the commercial relationships between wholesalers and retailers.

Instead of actually competing with one another, all retailers in a “wet” market may decide to sell their broilers at a price close to or at the level of the “permitted maximum” price. Although this could be seen as retailers’ compliance with the “permitted maximum” price, it could also be a tacit form of collusion between and among wholesalers and retailers. Thus, even when consumers have been protected from paying no more than the “permitted maximum” price, any collusive behaviour on the part of retailers will effectively deny consumers of the potential and additional benefits of lower prices that will result from actual market competition.

MyCC is of the view that a “permitted maximum” retail price may have an unintended effect of dampening or lessening competition between broiler wholesalers and retailers over a festive season.

RECOMMENDATION

The Ministry of Domestic Trade, Cooperatives and Consumerism (“MDTCC”) should continue its regulation on “permitted maximum” broiler prices if, and only if, it is deemed necessary for preventing the excessive prices before and after a festive period. Nevertheless, MDTCC should assess the effects of its pricing regulation on the pricing behaviour of farmers, wholesalers and retailers during a festive season.

MyCC is aware that currently, MDTCC consults all broiler market players openly to decide on the “permitted maximum” broiler prices for all of the festive seasons in a year. MyCC recommends that this approach should be revised and replaced with discreet consultations and, as necessary, supervision of individual broiler businesses.

Broiler price trends and transmission effects

MyCC has statistically confirmed, on the basis of econometric analysis, that changes in *ex farm* chicken (i.e. upstream) prices between January 2007 and March 2012 are transmitted asymmetrically and positively to standard broiler (i.e. downstream) prices. For every 10 per cent increase in the *ex farm* price of live chickens, the retail price of broilers can be expected to increase by 7.5 per cent (all other things being equal).

A similar study², based on January 2000 to December 2007 data, found that changes in retail prices of poultry respond more strongly to farm price increases rather than to farm price decreases. Specifically, the speed of retail price adjustment due to an increase in *ex farm* price is (statistically) much faster than when there is a decrease in the *ex farm* price.

RECOMMENDATION

MyCC should consider conducting a specific review of the market factors that could or will underpin asymmetric pricing. Detailed data on costs of broiler business operations may be collected through Section 18 of the Act.

Through its consultations, MyCC was informed by some (not all) wholesalers of a pricing practice of integrators/non-integrators during festive season: namely, in addition to charging a price for the supply of broilers at the same level as the “permitted maximum” price announced by MDTCC, integrators/non-integrators make it mandatory for buyers to also pay for the services provided by integrators’/non-integrators’ employees in catching the purchased quantity of broilers.

RECOMMENDATION

MyCC should consider an investigation of the above-described conduct; and/or consult the Price Control Unit of MDTCC on investigating the business behaviour of broiler farmers during festive seasons under the *Price Control and Anti-Profiteering Act 2011*.

Coordinating mechanisms along a vertical broiler supply chain include integrated ownership and operation, as well as contract arrangements between independent farmers (upstream) and broiler processing firms (downstream). Both the commercial decision to merge as well as the merger itself are not subject to the Act. Nonetheless, MyCC has the responsibility of looking into the market activities of a merged entity that are anti-competitive or potentially anti-competitive.

In a literature review of contract farming in Peninsular Malaysia and with reference to the one sample contract provided by DVS, MyCC has learnt that there are two main components in the farming contract, *viz.* the division of responsibility for providing inputs and the method used to determine farmer compensation. There are advantages as well as disadvantages to contract production of broilers. It can benefit integrators by contractually retaining some if not total control over the grower’s production methods in order maintain product quality control. Production contracts can also benefit independent growers by providing diversified opportunities to earn income and by alleviating cash flow problems that typically plague small farms.

² Juwaidah Sharifuddin *et al* (2013) “Asymmetric Farm Retail Price Movements in the Malaysian Poultry Market”, *Journal of International Food and Agribusiness Marketing*, 25:sup1, 128-136.

However they can also be disadvantageous to farmers. Even though broiler ownership remains with an integrator, most of the farming risks and expenses (e.g. mortality rates and utility bills) are shouldered by the farmer. Furthermore, a term (or a combination of terms) in the contract may place a greater business burden upon farmers, e.g. the contracted input price of chicks are “too high” (i.e. not reflective of open market prices); or the contracted input price of chicken feed and its specified quantity are “too high”; or the contracted output price for live chickens are “too low”.

RECOMMENDATION

The Department of Veterinary Services (“DVS”) should consider the provision of contracting guidelines that will assist and protect small farmers in entering into mutually advantageous contract with integrators and non-integrators.

1 Introduction

Pursuant to section 11(1) of the *Competition Act 2010* (“the Act”), Malaysia Competition Commission (“MyCC”) conducted a review of the broiler³ market in Peninsular Malaysia. This review focused on the current structure of the domestic broiler market; and the interactions of farmers, wholesalers and retailers across the broiler supply chain.

An Interim Report was published on 21 December 2012.

In preparing this Final Report, MyCC undertook further analyses of the following matters:

- d) The composition and level of broiler production costs in the farming and wholesaling segments of the supply chain.
- e) The time-profile and pattern of broiler retail prices over and during both the festive and non-festive seasons in Peninsular Malaysia.
- f) Government broiler market policies and pricing regulations which includes the licensing of broiler farming, wholesaling and retailing, as well as quota on broiler importation.

The chronology of MyCC’s consultations with several parties are summarised in Table 1-1.

Table 1-1. Chronology of consultation and information gathering

Date	Consultation/Information Gathering
8 July 2013	<p>Department of Veterinary Services (DVS)</p> <p>This visit was conducted in order to verify issues in broiler market. MyCC obtained information pertaining to licensing (farming and exporting), the broiler cycle, production of broiler, prices and imports of raw material.</p>
12 September 2013	<p>Department of Veterinary Services (DVS)</p> <p>MyCC obtained clarification pertaining to pricing formula structure, the cost components, definition of integrator, feed mill and the broiler feed, license and imports. DVS also provided data on the average cost of production, average ex-farm price, average price of broiler feed, production volume, yearly production, consumption, broiler export and import data, list of feed miller and list of top 10 ex-farm and wholesale firms.</p>
17 October 2013	<p>Malaysian Agricultural Research and Development Institute (MARDI)</p> <p>MyCC obtained clarification on contractual farming in Malaysia</p>

³ Broilers are chickens that are bred and reared specifically for human consumption. In this Report, the terms “broiler” and “poultry” will be used interchangeably.

	as well as other relevant issues related to broiler market. The MyCC also obtained data pertaining to structure of broiler market, ownership, contract farmers and independent farmers, the market share, the price of broiler, cost of production and regulations.
8 November 2013 and 28 November 2013	Federation of Livestock Farmers' Associations of Malaysia (FLFAM) An interview was conducted in order to understand the reality of broiler market from the farmers' perspective. Information pertaining to broiler farming, the market structure, the relationship between integrators/non-integrators and contract farmers, the relationship between cost of broiler production and wholesale/retail price, government intervention have been gathered during the interview.
8 November 2013	Wholesalers An interview was conducted in order to understand the reality of broiler market from the wholesalers' perspective. Information pertaining to the supply of broiler for wholesalers, the wholesaler's roles, challenges faced by them, licensing, high price during festive season and association have been gathered during the interview.
October 2013 to December 2013	Federal Agricultural Marketing Board (FAMA) and States DVS Consultations pertaining to licensing and data are conducted through telephone, emails and letters.
November 2013 and December 2013	Pertubuhan Peladang Negeri Johor (PPNJ) Consultation pertaining to licensing is conducted through telephone, emails and letters.

1.1 Structure of final report

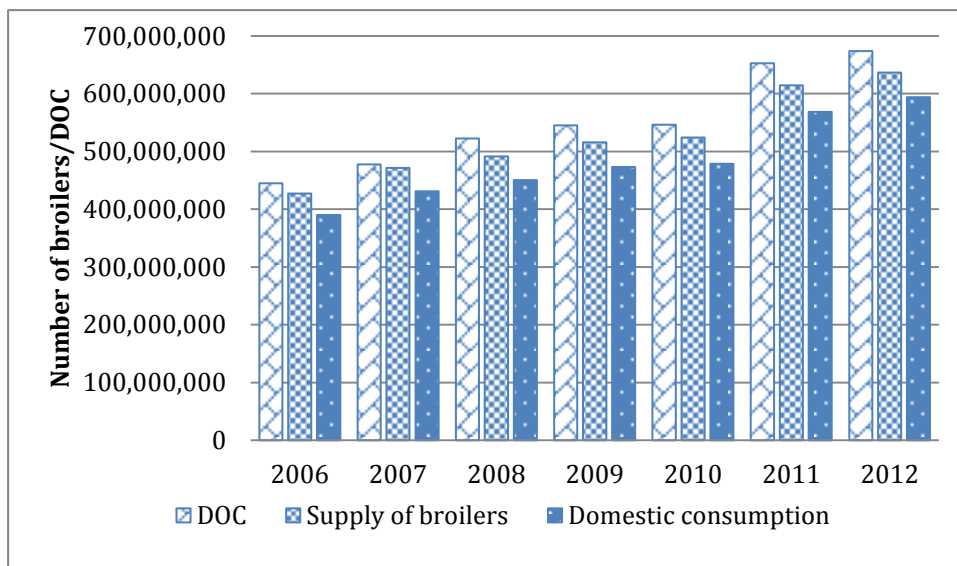
This Final Report presents MyCC's analyses and findings. It is organised as follows:

- Section 2 presents the detailed composition and structure of the broiler supply chain in Peninsular Malaysia.
- Section 3 looks into market concentration and the business cost of broiler farming and wholesale supply respectively.
- Section 4 examines the price trends and pricing transmission effects along the broiler supply chain.
- Section 5 reviews the form and degree of vertical coordination of broiler businesses.
- Section 6 puts forth MyCC's conclusions.

2 Broiler Sector

Of all livestock products sold in Peninsular Malaysia, broiler meat is the main type that is consumed for cultural and religious reasons. An examination of the data collected by the Department of Veterinary Services (hereafter “DVS”) shows that annual domestic consumption has increased from about 390 million broilers in 2006 to more than 594 million broilers in 2012, an increase of more than 52 per cent (see Figure 2-1).

Figure 2-1. Broiler supply and domestic consumption, 2006 – 2012



Source: DVS

Annual supply has also increased steadily from 427 million broilers in 2006 to 637 million broilers in 2012. Over this 7-year period, the supply of broilers has exceeded domestic consumption. Peninsular Malaysia today has in fact continued with its broilers self-sufficiency that was first achieved in 1990.

The composition and structure of the present-day broiler sector is very different from the one that existed in the nineties, due largely to agribusiness consolidation and integration over the last decade or so. Independent and self-operated activities that once made up broiler production have been replaced by a system of contracts or outright ownership and business operations by integrators. As presented in more detail in Section 2.1 below, an integrator is an owner and operator of feed mills, and grandparent, parent and broiler farms in the upstream segment of the supply chain; as well as processing plants and distribution businesses in the downstream segment of the same supply chain. By coordinating the main stages of broiler production and supply, integration is considered a cost-efficient form of business operation.

It is now common for integrators to contract with independent farmers for the rearing of day-old chicks (hereafter “DOC”) to standard-size broilers (of about

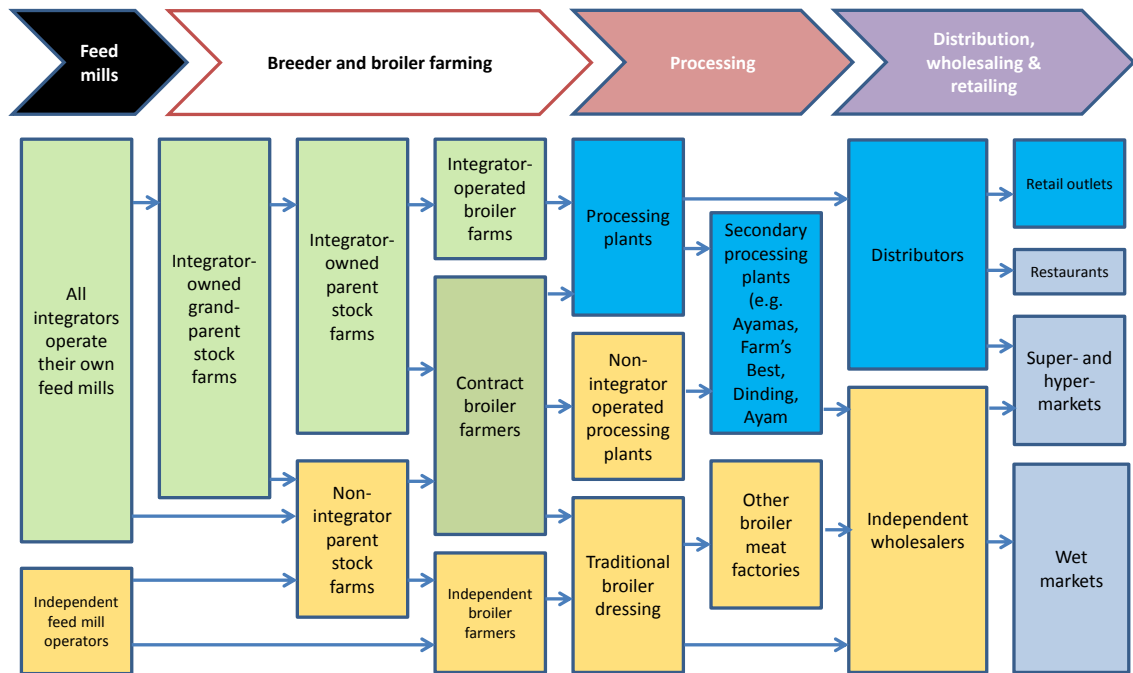
2.2kg weight). Integrators retain ownership of the broilers that are reared by independent farmers. The typical contractual relationships between integrators and independent farmers are examined further in Section 5.

The continuing business growth of the broiler sector is a promising one, yet it has been marred by public news of the increasingly higher prices in metropolitan “wet markets”. For example, it was reported in late September 2011 that the retail price of a standard chicken rose to more than RM9.00 per kg following removal of the Hari Raya Aidil Fitri festival price ceiling of RM7.60 (*The Star*, 30 September 2011); a price increase of more than 18 per cent. Responses from the supply-side (such as those attributed to the Federation of Livestock Farmers’ Associations of Malaysia, or FLFAM) referred to the commercial need for price increases to cover on-going broiler farming cost changes.

2.1 Supply chain

A detailed (and lateral) view of the broiler supply chain in Peninsular Malaysia is presented in Figure 2-2 below.

Figure 2-2. Broiler supply chain



Source: Adapted from DVS

Although feed milling is (strictly speaking) not a farming activity, it has been included in Figure 2-2 for two economic reasons: (i) chicken feed is an essential input for broiler rearing; and (ii) the production of chicken feed is supplementary to broiler farming.

The upstream segment of the supply chain involves breeder farming of grandparent and parent stocks, and the farming of broilers for human consumption. The downstream activities comprise processing of chicken meat, distribution (wholesaling) and final market supply (retailing) of both live broilers and processed chicken products.

The key feature of the supply chain presented in Figure 2-2 above is the presence of enterprises that own and operate feed mills, grandparent and parent farms (including hatcheries) as well as broiler farms. In consultation with DVS, MyCC refers to these vertically-integrated enterprises as integrators. It should be noted that an integrator may be vertically-integrated further by owning and operating a range of the other broiler-related businesses along the supply chain. Enterprises that have integrated a range of other farming and marketing activities (e.g. they run feed mills together with broiler farms and processing plants, but not parent farms) are referred to as non-integrators.

2.1.1 Grandparent and parent stock farming

As of 1 September 2013, there are 4 grandparent stock farmers in Peninsular Malaysia who supply DOC to their own parent stock farms as well as to other independent parent stock farms. These grandparent stock farms are owned and run individually by an integrator, *viz.* (in alphabetical order) CAB Breeding Farm Sdn Bhd, Charoen Pokphand Farm Sdn Bhd, Huat Lai Breeding Farms Sdn Bhd and Leong Hup Poultry Farm Sdn Bhd.

At the next stage of farming activities, there are a total of 108 parent farms in 2012 compared to 82 in 2009. Most of these farms are situated in Johor (see Table 2-1 below).

Table 2-1. Number of parent stock farms by State

State	2009	2010	2011	2012
Perlis	0	0	0	0
Kedah	4	9	8	9
Penang	6	11	16	9
Perak	13	15	14	13
Selangor	4	0	2	5
Negeri Sembilan	15	17	11	17
Malacca	9	12	12	12
Johor	29	35	35	37
Pahang	1	2	2	2
Kelantan	1	0	1	1
Terengganu	0	1	0	3
TOTAL	82	102	101	108

Source: DVS

Furthermore, of the 24 enterprises that run parent farms, 8 of them are owned by integrators (see Table 2-2 below).

Table 2-2. List of parent stock companies (in alphabetical order)

Integrators	Non-integrators
Ayamas/KFC Breeder Farm Sdn Bhd	CAB Breeding Farm Sdn Bhd
Charoen Pokphand Farm Sdn Bhd	DBE Breeder Farm Sdn Bhd
Dindings Breeder Farm Sdn Bhd	
Huat Lai Breeder Farm Sdn Bhd	Other parent farming enterprises
Lay Hong Sdn Bhd	FFM Farms Sdn Bhd
Leong Hup Poultry Farm Sdn Bhd	Hyperbird Sdn Bhd
Pin Wee Breeder Farm Sdn Bhd	Kami Farming Sdn Bhd
Sinmah Breeder Farm Sdn Bhd	LKPP Sdn Bhd
	Medan Juara Sdn Bhd
	Pinwee (Taiping)
	Pertanian Tani Jaya (Shizul Sdn Bhd)
	Prestige Fortune Sdn Bhd
	Shunshing Feed And Breeding Farm Sdn Bhd
	Sin Long Heng Breeding Farm Sdn Bhd
	TD Poultry Sdn Bhd
	Yithai Poultry Sdn Bhd
	Zenxin Agric Sdn Bhd
	Zue Heng Farming Sdn Bhd

Source: DVS

MyCC has ascertained that the above listed integrators are also vertically-integrated with wholesale and/or retail business activities (see Table 2-3 below).

Table 2-3. List of integrators (in alphabetical order)

Enterprise	Integrator	Wholesale	Retail
Charoen Pokphand Farm Sdn Bhd	/		/
Dinding Farm Sdn Bhd	/	/	/
Huat Lai Farm Sdn Bhd	/		
KFC Farm Sdn Bhd	/	/	/
Lay Hong Sdn Bhd	/	/	/
Leong Hup Poultry Farm Sdn Bhd	/	/	/
Pin Wee Farm Sdn Bhd	/	/	
Sinmah Farm Sdn Bhd	/	/	

Source: DVS

MyCC was informed by KFC Holdings that most of its farming output are processed and distributed to its own food businesses, viz. KFC, Pizza Hut, and Rasamas.

On the basis of the only formally available data to date, it can be seen that the parent stock has increased from about 10.5 million birds in 2009 to more than 16.9 million birds in 2010 (see Table 2-4 below). Over the same time period, the parent stock of free-range chickens increased from 485,000 birds in 2009 to about 634,000 in 2010.

Table 2-4. Breeder population by type and year

Type		2009	2010
Parent stock	'000 (% total)	10,504.5 (6.0)	16,968.1 (9.2)
Free-range breeders	'000 (% total)	48.5 (0.03)	63.4 (0.03)

Source: DVS

2.1.2 Broiler farming

The supply of day-old chicks (DOC) increased from 545.3 million in 2009 to 673.9 million in 2012 (see Table 2-5).

Table 2-5. Number of day-old chicks (DOC) and broiler chickens, Peninsular Malaysia, 1996-2012

Year	Number of DOC	Number of broiler chickens
2009	545,282,847	516,231,809
2010	546,398,347	524,035,048
2011	653,096,763	614,496,996
2012	673,868,330	636,997,603
2013 (forecast)	n.a.	720,111,193

Sources: FLFAM and DVS

According to FLFAM, “output of DOC [has] expanded much more rapidly since 2005 when it recorded a growth rate of about 6.0 per cent from 2005 to 2011 compared to 2.3 per cent from 1996 to 2005. Output of broiler chickens also experienced a parallel growth pattern” (p. 13 of FLFAM submission).

The main sources of DOC supply are hatcheries. There are currently a total of 49 hatchery businesses, of which 29 are run and operated by integrators, 5 by non-integrators and 15 by independent enterprises (see Table 2-6 below).

Review of Domestic Broiler Market: Final Report

Table 2-6. List of hatcheries

Enterprise	Number of hatcheries
Integrator	
AYAMAS Intergrated Poultry Industry Sdn Bhd	5
Charoen Pokphand Jaya farm(M) Sdn Bhd	4
Dindings Sdn Bhd	2
Huat Lai Broiler Breeders Sdn Bhd	3
Lay Hong Farm Sdn Bhd	3
Leong Hup Poultry Farm Sdn Bhd	8
Pin Wee Nutri Breeder Farm S/B	2
Sinmah Breeders Sdn Bhd	2
TOTAL	29
Non-Integrator	
CAB Cakaran Breeding Farm Sdn Bhd	4
DBE Poultry Sdn Bhd	1
TOTAL	5
Other enterprises	
Avian Farm Malaysia Sdn Bhd	1
Cabin Premier GPS Farm Sdn Bhd	1
FFM Farms Sdn Bhd	2
Gesing Group Sdn. Bhd	1
Heng Kai Hock Farm Sdn Bhd	1
Hyperbird Sdn Bhd	1
KAMI Farming Sdn Bhd	1
LKPP Goldkist Sdn Bhd	1
Medan Juara Sdn Bhd	1
Shunshin Feed & Breeding Farm	1
Sizul Breeding Farms Sdn Bhd	1
TD Poultry Sdn Bhd	1
Yithai Breeding Farm (M) Sdn Bhd	1
Zenxin Agriculture Sdn Bhd	1
TOTAL	15
GRAND TOTAL	49

Source: DVS

With regards to broiler farming, the available data shows that the total number of farms has decreased from 3,014 in 2010 to 2,402 in 2012. Currently, most of the farms (about 50 per cent of total number) are in Johor, Perak and Kelantan (see Table 2-7 below).

Table 2-7. Number of broiler farms by State

State	2009	2010	2011	2012
Perlis	13	17	16	13
Kedah	233	290	302	203
Penang	100	143	138	73
Perak	592	582	362	376
Selangor	187	172	187	202
Negeri Sembilan	186	252	187	193
Malacca	131	132	128	95
Johor	646	659	588	558
Pahang	154	167	158	178
Kelantan	248	301	339	274
Terengganu	273	299	299	237
TOTAL	2,763	3,014	2,704	2,402

Source: DVS

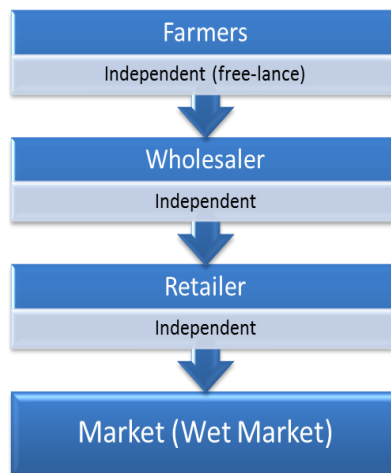
According to the data collected by the Ministry of Agriculture and Agro-based Industry (and cited by FLFAM in its submission to MyCC), the number of free-range chicken farms increased from 169 in 2002 to 242 in 2008 (see Table 2-8). The population of live free-range chickens nearly doubled from 9 million birds in 2002 to 16 million birds in 2008. According to FLFAM, there has been no change in live bird population since 2006 due to the lack of economic viability in rearing free-range chickens.

Table 2-8. Free-range chicken farms and population, 2002 – 2008.

Year	2002	2003	2004	2005	2006	2007	2008	Growth Rate (%)
Number of farms	169	241	196	187	223	219	242	6.16
Number of live birds (million)	9	24	18	17	16	16	16	10.06

Source: Ministry of Agriculture and Agro-based Industry, as cited in FLFAM's submission.

MyCC was informed by DVS that broiler farmers in the western and southern States (namely, Perlis to Johor, and including Pahang) contract with integrators, whereas those in Terengganu and Kelantan are independent (free-lance) farmers. These independent farmers buy newly hatched chicks from integrators (who have an excess of DOC), and they sell their grown broilers to both wholesalers and local wet market retailers.



In the Department of Statistics' (DOS) *Report on the census of agricultural establishments – livestock 2009*, it was noted that there were 292 broiler farming “establishments” in the whole of Malaysia. In this census, an establishment is defined as “an economic unit engaged in one activity, under a single legal entity and operating in a single physical location”, and “each branch of a multi-branch organization at a different location was conceptually treated as a different location establishment.” The entities covered by this census are businesses that are officially registered by the Companies Commission in 2008.

The large difference between the 292 registered broiler farming establishments covered in the DOS census and the 2,402 broiler farms recorded in DVS data suggests that integrators are more than likely to have contracted broiler rearing services with independent farmers of whom some are not formally registered as a farming business. MyCC is of the view that the currently obscure form of market structure at the farming level can be clarified by a common database on broiler farming activities.

RECOMMENDATION

The Ministry of Agriculture and Agro-based Industry (“MOA”) should, in consultation with other ministries, government agencies and business associations that collect broiler farming data, formulate and develop a common database on both registered broiler businesses and unregistered broiler farming operations.

2.1.3 Wholesaling (processing and distribution) and retailing

According to the data collected by the Ministry of Domestic Trade, Cooperative and Consumerism (MDTCC), there are a total of 317 licensed wholesalers and 860 licensed retailers in the Peninsular Malaysia (see Table 2-9 below). Most of these registered wholesalers and retailers are in Johor. Other states in Peninsular Malaysia that have more than 100 registered retailers include Negeri Sembilan, Pahang and Selangor.

Table 2-9. Licensed broiler wholesalers and retailers by State (as of 1 September 2013)

State	Number of wholesalers	Number of retailers
Johor	54	216
Kedah	22	22
Kelantan	17	30
Malacca	15	39
Negeri Sembilan	19	103
Pahang	30	140
Perak	32	68
Perlis	0	3
Penang	36	25
Selangor	47	101
Terengganu	12	37
Kuala Lumpur Federal Territory	20	33
Labuan Federal Territory	13	42
Putrajaya Federal Territory	0	1
TOTAL	317	860

Source: MDTCC

According to FLFAM,

[a]bout 65 to 70 per cent of the output of live broilers is sold directly to wholesalers, while the remaining 30 to 35 per cent is channelled to processing plants which sell the dressed broilers directly to restaurants, hypermarket chains or to wholesalers and retailers. Thus almost two-thirds of the broilers are processed by non-integrators. The off-farm processing can range from primary processing or dressing of chickens to the manufacture of a range of products such as chicken frankfurters, cocktail sausages, burgers and nuggets (p. 9 of FLFAM's submission).

...

The notion that the quantity of broiler meat supplied far exceeds the total quantity demanded (domestic demand by consumers plus exports), and therefore the excess supply should exert [downward] pressure on domestic prices does not arise, especially with a thriving downstream processing industry. Excess supply is absorbed by the integrators who own and operate plants to further process broilers into a wide variety of chicken meat products (p. 14 of FLFAM's submission).

MyCC is aware that domestic excess supplies of live chickens are exported primarily to Singapore.

3 Market Structure and Cost of Supply

3.1 Market share and concentration

A market is considered to be concentrated when a few businesses in that market hold, respectively and collectively, large market shares. The market share held by a firm may be calculated on the basis of its sales, the number of its customers, its production capacity, value added, or volume of output.

The only published computation of market concentration at the upstream segment of the supply chain that MyCC came across is based on 2001 data.⁴ According to this publication:

- 67 per cent of the total parent stocks are owned by 5 integrators.
- 5 integrators supplied 59 per cent of the chicks that were sold in the market, and 39 per cent was supplied by 21 non-integrators.
- 5 integrators supplied between 50 to 60 per cent of the total output of broiler farms.

In its consultation with MARDI⁵, MyCC was informed that using the estimation of DOC in 2010 as proxy to output,

- 62.5 per cent of the market was held by 10 integrators,
- 21.4 per cent was held by all non-integrators, and
- other independent farmers held 16.0 per cent.

Based on available data on a broadly defined group of broiler products (as defined by the Department of Statistics in the *Annual Manufacturing Establishment Survey 2004*), MyCC computed the CR-4 ratio for the downstream poultry processing segment of the supply chain (at the MSIC 4-digit level) to be 88.5 per cent, and the Herfindahl-Hirschman Index (“HHI”) to be 3,450.⁶ Both of these computed indices are considerably higher than the “safe harbour” of 75 per cent (in the case of CR-4) and 1800 (in the case of HHI).

It should be noted that the computed CR-4 ratio and HHI are only indicative, and not determinative, of possible dominance by the poultry processing firms or group

⁴ Kaur, Bisant and Fatimah Mohamed Arshad (2007). “Marketing of poultry in Malaysia: Structural issues and challenges” in Fatimah Mohamed Arshad *et al* (eds), *50 Years of Malaysian Agriculture: Transformational Issues, Challenges and Direction*, USM Press, Serdang, 2007; Chapter 24.

⁵ Poultry Section of DVS (2011). Annual Report of Poultry Sector, Department of Veterinary Services, Ministry of Agriculture and Agro-based Industry, Putrajaya (not published)

⁶ The CR-4 ratio is calculated on the basis of market shares of the 4 largest firms in the market. The HHI is calculated by summing the squares of market shares of all firms (or the identified group of “largest” firms) in the market.

of firms with large market shares. To account for the possible or likely competitive effects in the processing segment of the supply chain, other factors (e.g. barriers to market entry, scale economies, pricing practices) will need to be assessed.⁷

In response to MyCC's queries on market shares held by businesses in the upstream segment of the broiler supply chain, and (separately) at the processing and/or wholesaling segments, FLFAM made the following remarks:

The computation of ... market concentration indices such as CR-4 and Herfindahl-Hirschman Index (HHI) must be based on the relevant market segment. In the Issues Paper, both these indices have been computed using the processing activities classified under the MSIC 4-digit level, and this has been applied to the entire supply chain [underlined by MyCC]. Thus it does not reflect the extent of market concentration in the broiler industry, i.e. poultry farming (p. 14 of FLFAM's submission)

MyCC believes that FLFAM has misunderstood the CR-4 ratio and HHI that were estimated by MyCC with reference to the downstream processing segment of the supply chain (instead of the entire supply chain). MyCC agrees with FLFAM's view that, in the context of competition law, market concentration indices must be calculated with reference to the relevant market segment. In that regard, market concentration at the respective segments of parent stock farming, broiler growing, and downstream processing are all conceptually and empirically different from any other statistical measures of the distribution of production or output within the entire broiler supply chain (i.e. the entire broiler industry).

MyCC was also informed by FLFAM of the CR-4 ratio and HHI that it has calculated on the basis of the estimated market shares held respectively by 8 integrators and 28 non-integrated parent stock companies (which included a group of "Others" who are also non-integrated parent stock businesses).

The CR-4 ratio ... is 31.3 [per cent]. This is considered very low compared to the threshold of 75 per cent which is considered the "safe harbour". Likewise the HHI is only 508, which is far below the threshold level of 1800, regarded as "highly concentrated" ... Thus the domestic broiler industry operates in a relatively un-concentrated market. It would take significant mergers of firms to place broiler production in Malaysia in the highly concentrated market category (pp. 14 – 16 of FLFAM's submission).

MyCC's understanding of FLFAM's estimated indices is that the supply market for parent stocks is not concentrated, but MyCC is not convinced of FLFAM's inference that "the domestic broiler industry operates in a relatively un-concentrated market." The absence of concentration at a specific farming segment of the supply chain (namely, parent stock farming) does not imply that the next farming segment (namely, broiler growing), or the following downstream segments (namely, broiler wholesaling and processing) are also not concentrated. In particular, MyCC is well-aware of the fact that there were more than 3000 broiler growing farms outputting close to 600 million broilers in 2011. However what is less known (if at all) is the level of market concentration that reflects the ownership of broiler growing farms by integrators, non-integrators and

⁷ The topic of pricing practices is addressed in Section 5.

independent farmers (who are engaged in broiler growing via contractual arrangements with integrators and/or non-integrators).

DVS licensing requirements is a form of market entry barrier. Farmers are required to install standard coops that can house no more than 20,000 birds. DVS has estimated that compliance with their licensing requirement will require a start-up capital of about RM520,000. For this reason, many farmers prefer to be contract farmers as financial assistance can be provided by integrators, e.g. the farmer’s capital loan from an integrator will be deducted upon the farmer’s supply of grown broilers to that integrator.

In this regard, MyCC aims to consult further with ministries and government agencies on the types of data that should be collected to facilitate empirical estimation of concentration indices in the broiler farming and processing segments of the broiler supply chain.

COMMENT

Estimation of more recent market shares and concentration indices depends on accessibility of Department of Statistics data.

3.2 Cost structure

About 70 per cent of farmers rear their broilers in an open-house system while only about 30 per cent has changed to close-house system because of the system’s higher investment and operational costs (e.g. a close-house system uses electricity for ventilation).

The calculated cost of production (CCOP) proposed by DVS was an effort of the integrators and DVS. CCOP is an average of costs incurred by an open-house system and close-house system during rainy season and sunny season. It serves as a guide, and not the actual cost of production which varies according to the circumstances and size of business.

Based on the information provided by DVS, the farming cost structure comprises of DOC, chicken feed, vaccination, labour, utility and other inputs (see Table 3-1). The main sources of production cost variations over time are fluctuations in DOC prices and costs of chicken feed.

Table 3-1. Farming cost structure

Input	% of total cost
DOC	21.0
Chicken feed	72.8
Vaccines and vitamins	1.0
Manpower	2.6
Utilities (water, electricity)	0.9
Transport	1.7
TOTAL COST	100.0

Source: DVS

The costs mentioned above do not include the investment and finance to enhance broiler farming businesses.

Further information on the farming cost structure is provided by FLFAM (on pp. 16-19 of its submission):

Due to wide variations in the size of farming activities, the COP in the industry varies according to farm size. In general, the larger the farm, the lower is the COP. However, for the purposes of negotiations, FLFAM computes the broiler COP for an average farm size of 30,000 birds per batch. The FLFAM computes the detailed broiler COP on a regular monthly basis. The calculated COP benchmark is used for reference and it takes into account the viability of the various participating farm enterprises at the grand parent, parent and broiler grow out levels. The COP index for January and July/August of each year from 2007 is computed [in Table 9 presented in FLFAM’s submission].

The overall COP has risen by about 45.0 per cent from January 2007 and July 2012, whereas feed costs have increased by about 80.0 per cent or almost twice the overall increase in COP during this period. Feed cost is the largest cost component in broiler production costs and it accounts for about two-thirds (68.7 per cent) of the total COP [see Table 3-2 below which is a copy of the table presented in FLFAM’s submission]. The weighted average increase in COP since 2007 is 25.1 per cent,

Table 3-2. Farming cost structure as presented by FLFAM

Input	% of total cost
Cost of DOCs(10,000 x price of DOC)	15.0
Manpower	3.9
Vitamins, Electrolytes & Vaccines	3.0
Utility	1.8
Maintenance	1.0
Housing Depreciation	4.0
Feed Cost	68.6
Bank Interest based on 7%	3.2
Sale of Chicken Manure	(0.5)
TOTAL COST OF PRODUCTION	100.0

Source: FLFAM

Hence, movements in the average COP are largely driven by changes in feed costs. Thus increase in feed prices has a significant impact on the profitability and viability of the industry. A significant portion of the inputs used in the production of broilers is imported. These include superior genetics, broiler feed such as corn, soybean meal and feed additives, as well as vaccines. The only local ingredient of some significance is crude palm and rice bran and these are used at very low percentages of the feed formulation. Even these are purchased at export prices.

Apart from feed price, the price of DOC is also an important determinant of the average cost of production. It accounts for about 15 per cent of the COP. The cost of DOC has been relatively stable with a decline of about 13.0 per cent between January 2010 and January 2011.

...

Like other primary commodity producers, the broiler industry is also increasingly dependent on foreign labour as it is difficult to hire local labour. However, it faces serious difficulties with respect to recruitment (new and replacement workers) and retention of foreign workers (beyond the 5-year tenure). The current on-going modernization and automation of the broilers have reduced demand for labour to some degree. For instance, closed house poultry rearing has increased worker utilization efficiency by three times. However, there are inherent labour-intensive ancillary tasks outside the core farming operations that rely on foreign labour such as vaccination, feed milling, removal and processing of chicken manure, replacement loading etc. The approving authorities fail to take into account the peculiar nature of the broiler industry and approve less number of workers than that recommended by the Ministry of Agriculture and Agro-based Industry.

MyCC concurs that while such matters should be looked into in some detail, they are beyond its regulatory role and responsibilities.

Other matters that affect or are related to the cost components of broiler farming are outlined below:

- Land is getting scarcer and its premium varies according to states
- MyCC understands that water and electricity tariffs are different (and presumably, higher) if farmers do not register under the agriculture tariff system.
- The minimum wages policy by government has increased the production cost especially when labour productivity is lower.

MyCC has also been made to understand that:

- farmers set their prices according to their cost of production, capacity to supply, purchasing volume, long-term relation, delivery distance, cash advance and customer's willingness to pay. A problem faced by farmers in respect to price is the payment received from customers. The payments are usually late and less than the negotiated price depending on the bargaining power of both farmers and customers.
- at times, media reports on broiler prices may mislead consumers. Media will only publish news with value, thus the issue of broiler price during festive seasons has always been a published subject. However, no news coverage was done of the price trend or when the price was lower. For example, for the Hari Raya festival in 2013, the higher broiler price (relative to the prices before the festival) was due to weather condition and haze which affects broiler growth and health at the time.

3.3 Land licensing

It should be noted that the entire broiler sector is still undergoing a transition period in terms of government's livestock farming policy and regulations.

Enakmen Unggas 2005 empowers state-based DVS offices to inspect and issue licenses for broiler farming. However, states are at different stages of

implementing the enactment and each state is free to enforce that regulation in line with the state's urban planning policies (which varies). According to MyCC's research, Terengganu has yet to enforce this law.

Most states, especially those that had implemented the enactment, required the following to be fulfilled before applying for the license:

(a) a proposed plan that shows:-

- i. border of the poultry farm and border of the land on which the poultry farms will be established,
- ii. area/dimension, building design and the structure of the poultry farm, and
- iii. location that shows the straight line distance to homes, schools, clinics or places of worship existed at the time the application is made within the minimum two hundred meters of any building or infrastructure used for the rearing of poultry farm proposed;

(b) a certified copy of the land grant on which the proposed poultry farm will be established;

(c) if the land is not owned by the applicant, a written consent of registered landlords;

(d) a certified true copy of business registration, if the applicant is corporate body;

(e) a photocopy of the applicant's identity card; and

(f) two passport-sized photographs of the applicant.

The licensing procedure varies according to states. Some states, such as Perak, Kelantan, Selangor and Malacca, require farmers to submit licensing application to the municipal council. Municipal council will then form a committee which include DVS as part of the committee. Once the application is submitted, the first audit compliance will be conducted. The district officer will inspect the proposed poultry farm which will be reported to a committee comprising various Departments, such as Economic Planning Unit (EPU), Urban Planning Unit, Environment Unit, DVS and other agencies. At this stage, DVS may support the business plan if it is appropriate. A second audit/inspection of the business plan will be conducted if the first audit did not fulfil/satisfy the committee. The farmer will be advised accordingly and comply. The second report will be presented to a standing committee before license is granted when the applicant revised the business plan accordingly; otherwise, the audit process repeats several times.

However, states such as Kedah and Johor have different procedures. In Kedah, two types of license will be required. One license is for broiler farming from DVS while another is from the municipal council to get permission to build the broiler house. Whereas for Johor, DVS is in the position to channel the application to the committee to permit broiler farming.

Some states, in particular Malacca and Johor, require a compulsory change in the land status from agriculture (oil palm) to industry (broiler farming). Perak encourages a change in land status but it is not a mandatory. Furthermore, Malacca and Terengganu have specified certain areas in which broiler farming is not allowed. Terengganu in addition specified a few specialised areas dedicated for broiler farming. Johor enforced this rule before but revoked later.

In all states, open houses are still permitted in 2013. However, starting from 2014, some states will enforce and ensure that only a close-house is permitted to be built although the existing open-house is permitted as well. Perak has started to obligate new applicants to build closed houses.

As known to MyCC, an integrator/non-integrator may have broiler houses located in different states (e.g. Chop Cheong Bee may have few farms in Negeri Sembilan and another in Malacca). The different states' approach to land grant has caused investors to be confused and disrupted the planning and timing for their business expansion. The impact observed from such practice is frustration and discouragement to farmers to actively enter and compete in the market. Hence the different regulatory approaches in different states may limit production as well as potential entrants in the market.

Encouragement from government is needed to expand the domestic broiler sector. Investment for business expansions would be discouraged by the presence of regulatory obstacles. If a state government wishes to preserve certain areas, it should also consider allocating alternative areas for an economic activity such as broiler farming.

RECOMMENDATION

MyCC noted that each state has a different set of procedures in enforcing *Enakmen Unggas 2005*. This regulation is not, of itself, a form of entry barrier especially if it is enforced properly; but differences in the states' regulatory requirements may have the effect of establishing an unnecessary entry barrier.

MyCC recommends that state-based DVS should seek standardisation of the farming land licensing requirements and operating procedures across all states.

3.4 Wholesaling business

A license must be obtained from MDTCC for running a wholesale business. The typical operations of a wholesaler involve the following:

- Transportation of broilers from broiler farms to its processing plant
- Storage of live birds.
- Slaughtering (manual).
- Distribution of slaughtered bird using lorries.

A wholesalers' costs of operation include the following:

- Diesel
- Maintenance of lorries (transport broiler in and transport broiler out for sale)
- Salary of employees (slaughter, cleaner)
- Saw blade
- Electricity
- Storage

An example of a wholesaler's costs of operation, based on a fully-loaded lorry with 296 baskets x 20kg per basket, is given in Table 3-3 below.

Table 3-3. Example of wholesaler's costs

Expense items		RM	%
Wages	1.Driver - 2 person	340	26%
	2.Catcher – 1 person	60	5%
Toll	(400km X RM0.25)	100	8%
Diesel	(500km X RM0.75)	375	29%
Per day lorry maintenance		150	12%
Road tax	RM1,900 / 312day (26 dayX12month)	6	0%
Insurance	RM10,000 / 312day (26dayX12month)	32	3%
Depreciation	RM250,000/6 year	134	11%
Basket damage	basket/day	70	6%
Total		1,267	100%
Average Cost RM/Kg		0.21	

There is some variation in the running of a wholesale business: some wholesalers will only sell slaughtered birds, and others will sell a mix of slaughtered and live birds. The gross margin earned by them is approximately 6 to 7 per cent. The ex

farm prices that maintain the profitability of wholesaling are between RM3.80 and RM4.50.

Although wholesalers may enter into long-term purchase contracts with integrators and/or non-integrators, it is not usually done because (i) the supplies from farmers and the demand from retailers are usually unstable and (ii) wholesalers will have to incur higher capital costs for larger live birds storage facilities.

Wholesalers usually operate locally, although some will operate between cities. The daily operation of a wholesaling business commences in the morning when orders from retailers are gathered and prices are surveyed among the integrators/non-integrators until 11 am. By then, wholesalers will place orders with their selected integrators/non-integrators. Wholesalers will then fetch the broilers, process them and get it delivered to retailers the next morning.

The business challenges facing wholesaler involve the following:

- Debt: Wholesalers usually face tough times in receiving payments from retailers.
- Government regulations: Due to local and environmental authorities, open market slaughter is not permitted any longer. However, wholesalers have observed that when price is fixed for a festive season, integrators/non-integrators will charge the fixed price but at the same time include extra charges such as salary for broiler catcher.

RECOMMENDATION

MyCC should consider an investigation of the above-described conduct; and/or consult the Price Control Unit of MDTCC on investigating the business behaviour of broiler farmers during festive seasons under the *Price Control and Anti-Profiteering Act 2011*.

3.5 Imports

Most imports are of broiler parts that are processed into value added product, e.g. chicken sausages, burgers and nuggets. Such imports are subject to trade policy and quota regulations. This has an implication that the quantity of imported products may not be sufficient to have any effect on the domestic prices of live broilers especially during festive seasons.

COMMENT

The formulation and enforcement of trade policy, which includes approved permit (“AP”) and quota regulations, is not within the purview of MyCC. Nonetheless, it may be beneficial for MyCC to consult all relevant Ministries on how particular elements of competition law may help with the design and implementation of more effective quota and AP regulations.

Imported raw materials used in feed milling process consist of corn, soy bean and sometimes maize. 30 per cent of these raw materials are imported from India and the remaining 70% from Brazil and Argentina. The prices of the raw material changed every three months due to price hedging. In addition to the prices of raw materials, the quality of raw materials is perhaps greater importance. For instance, the higher quality of raw material from Brazil and Argentina increases the quality of feed. Nevertheless, the corn disease outbreak in Brazil last August 2012 has made feed miller to shift their order to India. This may be the main reason of the volatile broiler price trend.

4 Broiler Price Trends and Transmission Effects

4.1 Wholesale and retail pricing survey

MyCC wrote to MDTCC on 24 April 2012 requesting its assistance with a survey of broiler wholesalers and retailers who “do business” in no more than 3 “wet markets” in each of the Peninsular state’s capital, as well as in each of the state’s rural districts. This survey was conducted by MDTCC over the month of May 2012. The main pricing question asked of an interviewed party (wholesaler or retailer) refers to the selling price of live chickens that was being charged – by a wholesaler on retailers; or by a retailer on consumers – on the day of the interview as well as two weeks before the day of the interview. The price data that has been collected (and summarised in Table 4-1 below) does not necessarily reflect any monthly or seasonal trends in broiler price changes.

Table 4-1. Summary of survey data collected

State	Sample size		Wholesale price (RM per kg)		Retail price (RM per kg)	
			On the day of interview	2 weeks' before the day of interview	On the day of interview	2 weeks' before the day of interview
Kelantan	50	Min	3.70	3.50	5.29	3.99
		Max	6.50	6.30	7.50	7.30
		Average	5.23	4.84	6.40	5.95
Perlis	12	Min	4.60	3.90	6.80	5.90
		Max	6.00	5.50	8.00	7.50
		Average	5.21	4.78	7.16	6.79
Putrajaya Federal Territory	7	Min	4.50	3.50	5.80	5.20
		Max	6.20	5.80	7.00	6.80
		Average	5.37	4.67	6.46	5.87
Kedah	7	Min	4.60	4.10	6.00	6.00
		Max	5.80	5.30	7.80	7.30
		Average	5.13	4.52	6.91	6.47
Kuala Lumpur Federal Territory	18	Min	5.20	4.50	6.00	5.60
		Max	6.20	5.50	7.00	6.00
		Average	5.63	4.70	6.67	5.80
Malacca	27	Min	4.50	3.50	6.30	5.30
		Max	6.40	6.80	7.60	7.80
		Average	5.39	4.84	7.23	6.75
Pahang	27	Min	3.60	3.20	5.10	4.20
		Max	6.60	7.50	8.00	8.00
		Average	5.07	5.05	7.19	6.93

Review of Domestic Broiler Market: Final Report

Selangor	58	Min	4.20	3.50	3.80	3.10
		Max	7.00	5.80	7.50	8.00
		Average	5.22	4.66	6.75	6.45
Johor	84	Min	4.80	4.60	6.00	5.80
		Max	6.30	6.70	7.50	7.20
		Average	5.60	5.48	6.75	6.58
Negeri Sembilan	40	Min	3.90	3.10	5.39	5.39
		Max	6.50	6.50	7.60	7.50
		Average	4.71	4.25	7.03	6.74
Penang	46	Min	4.40	3.50	7.00	6.00
		Max	7.00	7.00	8.70	8.50
		Average	5.80	5.33	7.87	7.44
Terengganu	48	Min	3.50	3.40	4.00	4.00
		Max	6.00	5.60	7.50	7.50
		Average	4.73	4.68	6.40	6.44

The 2-week time-pattern of wholesale and retail pricing appears to differ across the Peninsular states. For example, in the case of Malacca, both of the minimum wholesale and retail prices of live chickens two weeks before the interview day (respectively RM3.50 and RM 5.30 per kg) were less than those on the day of the interview (respectively RM4.50 and RM6.30 per kg). On the other hand, the maximum wholesale and retail prices of two weeks' ago (respectively RM6.80 and RM7.80 per kg) were both higher than the prices charged on the day of the interview. In contrast, all of the minimum and maximum prices that were charged in Penang on the day of interview were (with one exception) higher than those charged two weeks' ago.

Furthermore, the additional information collected from interviewed parties revealed that:

- the wholesale supply of live chickens was usually delivered on a daily basis;
- the final price of live chickens was usually set by retailers on a daily basis; and
- retailers will usually keep the stock of unsold live chickens in a day to sell them on the following day.

4.2 Price trends

According to local media reports as well as the data recorded by FAMA⁸ (between January 2009 and December 2012), *ex farm* prices and wholesale and retail prices

⁸ Data is collected through survey at each capital market (one market for one state) every Tuesday and Thursday every week. Random sampling method is used to select respondents

(for “standard” broilers) fluctuate on a monthly basis. The highest, lowest and annual average prices recorded in 2009, 2010, 2011 and 2012 are presented in Table 4-2.

Table 4-2. Highest, lowest and average prices

	2009			2010			2011			2012		
	H	L	Ave	H	L	Ave	H	L	Ave	H	L	Ave
<i>Ex farm</i> , in RM per chick	4.35 (Oct)	3.60 (Apr)	4.09	4.60 (Aug)	4.00 (Feb)	4.35	5.50 (Sep)	4.45 (Dec)	4.95	4.75 (Jun, Sep, Oct)	4.05 (Apr)	4.40
Wholesale, in RM per kg	6.05 (Sep)	5.25 (Apr)	5.81	6.30 (Aug)	5.50 (Apr)	5.95	7.25 (Sep)	6.00 (Dec)	6.64	6.40 (Jun, Oct)	5.45 (Feb, Apr)	5.95
Retail, in RM per kg	6.85 (Sep, Oct, Nov)	6.15 (Apr)	6.67	7.15 (Aug)	6.60 (Apr)	6.94	8.30 (Jul)	7.10 (Jan)	7.75	7.60 (Jun, Oct)	6.70 (Feb)	7.15

Source: FAMA

Notes: H – Highest; L=Lowest, Ave=Average

In 2009, the *ex farm* prices fluctuated between the lowest level of RM3.60 (in April of that year) and the highest level of RM4.35 (in October of same year). In 2010, the highest price of RM4.60 was in August and the lowest price of RM4.00 was in February. In 2011, prices ranged between the lowest level of RM4.45 (in December) and the highest level of RM5.50 (in September). While in 2012, the price ranged between the lowest of RM4.05 (in April) and the highest level of RM 4.75 (in June, September and October). Furthermore, the annual average price has risen by more than 6 per cent from RM4.09 in 2009 to RM4.35 in 2010. The annual average price of RM4.95 in 2011 is more than 13 per cent higher than that in the previous year, 2010 while the annual average price of RM4.40 in 2012 has dropped by about 11 per cent compared to the previous year, 2011 where the price was RM4.95.

The wholesale prices in 2009 varied between the highest level of RM6.05 per kilogram in September of that year and the lowest level of RM5.25 in April of same year. In 2010, prices varied between RM5.50 in April and RM6.30 in August; while in 2011, the highest price of RM7.25 was in September and the lowest price of RM6.00 was in December. And in 2012, the highest price was RM6.40 in June and October while the lowest was RM5.45 in February and April. The annual average price of RM5.81 in 2009 increased by about 2.4 per cent to RM5.95 in 2010 although there was higher fluctuation noted with an increase of more than 14 per cent in 2011 from 2009.

The lowest retail price of a “standard” broiler was RM6.15 per kilogram in April of 2009 and the highest was RM6.85 in from September to November of same year.

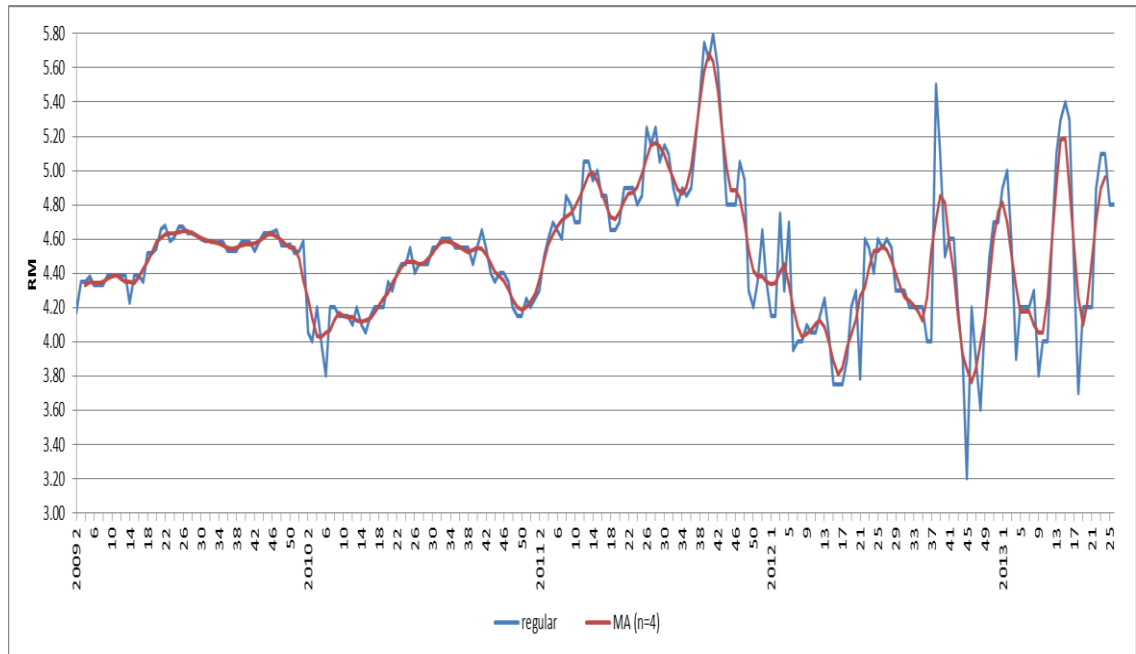
(farmers/wholesalers/retailers) with sample size of 3 to 5 respondents per category at each market every time the survey was conducted.

In 2010, prices ranged between RM6.60 (in April) and RM7.15 (in August). In 2011, the lowest price was RM7.10 in January and the highest price was RM8.30 in July. And in 2012, the lowest price was RM6.70 in February while highest was RM7.60 in June and October of the same year. The annual average retail price increased with the same trend as the wholesale price where it is noted that the annual average retail price increased by a rate of just over 7 per cent from 2009 to 2012 although the rate fluctuated higher in 2011 with an increase of more than 16 per cent from 2009.

MyCC performed a trend analysis of weekly farm prices, as well as the monthly market prices of live chickens and “standard” broilers. MyCC’s main finding, based on this trend analysis, is that the prices for live chickens and “standard” broilers are all on an inclining trend.

The “adjusted” (or centred) 4-week moving averages of farm prices between 1 January 2009 and 3rd week of June 2013 are charted in Figure 4-1.⁹ The sequential numbers on the horizontal axis refer to the sequential weeks in a year, e.g. the number “2009.2” refers to week 2 in 2009 and the following numbers “6, 10, 14, ..., 50” refer to week 6, 10, 14, ..., 50 in the same year.

Figure 4-1. Moving averages of weekly farm prices – 1 January 2009 to June 2013



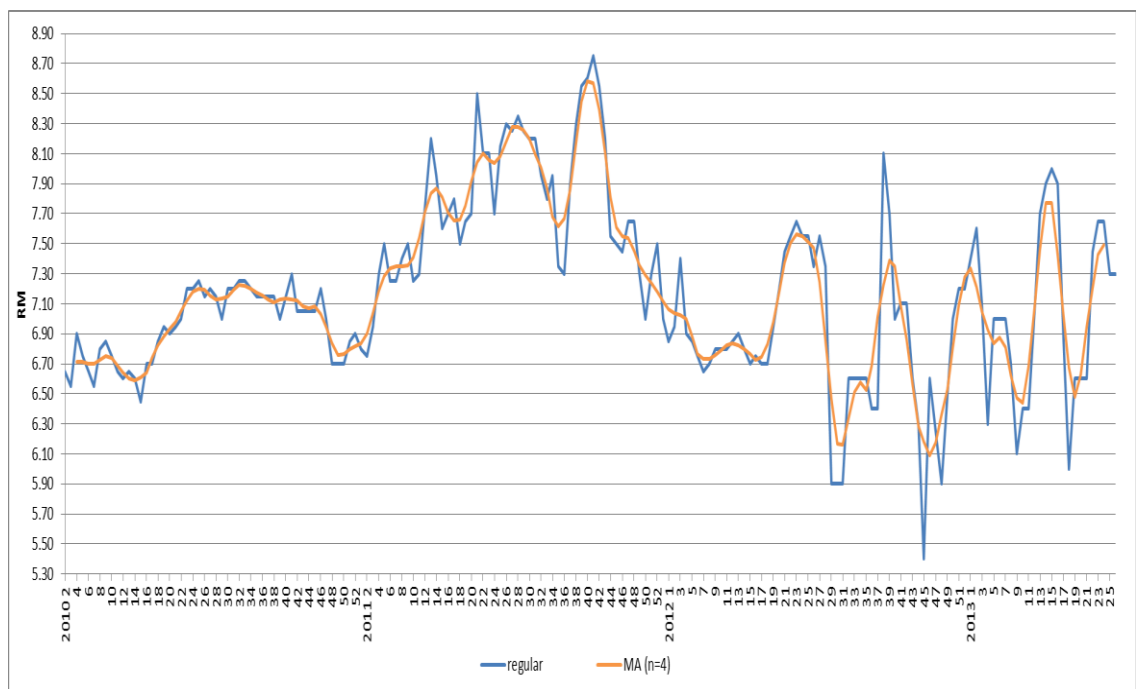
Source: DVS

⁹ Technically, a moving average of a price is usually calculated over an odd-period of time (e.g. a 7-day moving average or a 3-month moving average) to “remove” the cyclical, seasonal and irregular components of the time-series data. The price trend can then be discerned. In the case of an even timeframe (particularly, over 4 weeks in a month or 12 months in a year), an “adjusted” (or centred) moving average has to be calculated. For further details on this methodology, refer “Statsoft Electronic Statistics Textbook” that is publicly available at www.statsoft.com/textbook/time-series-analysis/ (accessed on 3 November 2011).

Between second week of 2009 and the last week of 2010, the price movement appears to be on an inclining trend with an oscillation period of about 26 weeks within each calendar year. The “typical” farm price pattern is as follows: Farm prices trend upwards from around week 14 of the calendar year (early April) before they trend downwards after week 40 of the same year (early October). The oscillation period between 2011 and 2012 is about 20 weeks within each calendar year while in 2013 the oscillation period is approximately about 10 weeks.

The “adjusted” (or centred) 4 weeks moving averages of *retail* chicken prices are charted in Table 4-2.

Figure 4-2. Moving averages of monthly retail prices – January 2010 to June 2013



Source: DVS

Since January 2010, retail prices have been on an inclining trend, with an oscillation period between 3 to 4 calendar months. An upward trend can also be discerned in 2011, although the oscillation period is unclear due to the “dramatic” moving average price increase in January 2011. The price decline to its lowest in November 2012, beyond which relatively shorter price cycles can be seen between September 2012 to June 2013.

The linkage of *ex farm* and retail prices varies on a monthly basis. From a business perspective, this should be expected because any change in the costs of farming and wholesaling (as well as the margins that can be earned at each level of the supply chain) would be included in the final (i.e. retail) price for the product.

FLFAM submitted the following comments on price movements:

The *ex farm* prices of broilers have been volatile but much less than retail or wholesale prices of broilers. Price volatility is not untypical of primary commodities, especially perishable items.

The *ex farm* price index for broilers shows that prices have increased steadily throughout 2007, but fell by 2.8 per cent in January 2008, before gaining momentum for the next 22 months. Broiler prices dropped the following two months before rising sharply to reach a record high of about 53.0 per cent in November 2010 [see Table 4-3 below which is a copy of the table presented in FLFAM's submission]. These trends coincide with the inclining price trends of corn and soya bean, two important inputs into broiler production.¹⁰ According to the weekly report prepared by US Grains' Council, there is a sharp fall in estimated harvest and yield of corn, wheat and soya bean. The tight supply in these main feed ingredients will push prices further ... (p. 22 of FLFAM's submission).

Table 4-3. Price index of *ex farm* broiler, January 2007 to July 2012

Year	Month	Price Index	Year	Month	Price Index	Year	Month	Price Index
2007	Jan	100.0	2009	Jan	102.9	2011	Jan	137.7
	Feb	100.5		Feb	108.5		Feb	143.0
	Mar	101.3		Mar	107.6		Mar	145.2
	Apr	101.7		Apr	101.2		Apr	147.8
	May	101.2		May	121.7		May	147.8
	Jun	102.1		Jun	113.6		Jun	148.4
	Jul	104.3		Jul	111.7		Jul	149.9
	Aug	106.3		Aug	109.7		Aug	150.6
	Sep	107.9		Sep	119.8		Sep	151.0
	Oct	109.3		Oct	122.3		Oct	153.1
	Nov	109.8		Nov	113.3		Nov	153.3
	Dec	107.9		Dec	98.0		Dec	152.2
2008	Jan	97.2	2010	Jan	90.5	2012	Jan	135.5
	Feb	101.6		Feb	114.0		Feb	138.5
	Mar	104.7		Mar	115.6		Mar	135.5
	Apr	107.5		Apr	115.7		Apr	134.6
	May	108.9		May	116.2		May	133.6
	Jun	107.7		Jun	117.4		Jun	135.1
	Jul	108.6		Jul	118.2		Jul	135.1
	Aug	111.7		Aug	118.4			
	Sep	114.7		Sep	119.6			
	Oct	116.3		Oct	120.3			
	Nov	118.8		Nov	120.3			
	Dec	119.5		Dec	119.7			

Source: FLFAM

¹⁰ According to FLFAM, the composition of compounded feed for broilers comprises 55 per cent corn, 25 per cent soya bean meal, 3 per cent wheat pollard, 4 per cent corn gluten meal, and 3 per cent crude palm oil.

KFC Holdings remarked in its submission that:

MyCC's ... findings in relation to the inclining price trend for day-old chicken, live chicken and 'standard' broilers are not applicable to KFC as the broilers produced by KFC *ex farm* are rarely sold to the public save for very limited instances. This only occurs if KFC has broiler production in excess of what it requires for its restaurant business, in which case KFC may sell just this limited amount in the market. However, such instances are rare and the quantity of such excess broilers sold in the market is minimal.

4.3 Supply control and "permitted maximum" price

Since 2000, poultry prices at the producer, wholesale and retail levels are subject to a Festive Season Price-Controlled Scheme enforced by the Ministry of Domestic Trade, Cooperatives and Consumerism (MDTCC) pursuant to the *Price Control and Anti-Profiteering Act 2011* (formerly the *Price Control Act 1946*). Under this Scheme, a "permitted maximum" retail price is set by MDTCC for the respective festival seasons of Chinese New Year, Hari Raya Aidil Fitri, Deepavali and Christmas.

FLFAM puts forth the view (on pp. 27-28 of its submission) that:

... price controls contribute to market distortions that harm consumers and producers alike in the medium to long-term ...

Apart from distorting the market, it impacts negatively on the image of the industry. This is especially true of financiers who tend to regard such action as market interferences that impinge on the commercial viability of the industry. The poultry industry had a poor risk rating by financial institutions in the country under the price control regime [which was removed in 2008] ... Access and availability of adequate capital is crucial to an industry that is currently in transformation to remain viable in the face of competition.

... *ex farm* prices vary between the larger and smaller firms. Based on past industry experience, the *ex farm* controlled price is often set at a level that is below the COP for smaller producers and above the COP for larger producers and integrators. Evidently, the price control policy impacts negatively on the smaller farms.

It is common for prices to be sticky downwards even in the most competitive markets. There is a time-lag before prices are restored to market equilibrium prices following the removal of price controls. When the market prices for broilers fall during the control period, farmers have to sell the commodity according to the laws of supply and demand. On the contrary, others down the market chain sell the commodity at the declared control price since the control prices are "ceiling prices" and not fixed prices. The traders along the market chain appear to adhere to the control prices even when the control period is over while farmers are subjected to the laws of supply and demand unless the *ex farm* price rises above the control price in which case the downstream market chain would follow suit.

MyCC understands that imposing a “permitted maximum” retail price regime for no more than 2 weeks before and after a festival will prevent consumers from being charged exorbitantly by retailers. But it may also inadvertently weaken retailers’ competition with one another, as well as create market distortions and a lack of transparency in the commercial relationships between wholesalers and retailers.

Instead of actually competing with one another, all retailers in a “wet” market may decide to sell their broilers at a price close to or at the level of the “permitted maximum” price. Although this could be seen as retailers’ compliance with the “permitted maximum” price, it could also be an outcome of collusive pricing by the retailers. Thus, even if consumers have benefitted from paying the “permitted maximum” price, any collusive behaviour on the part of retailers will effectively deny consumers of the potential and additional benefits of lower prices that will result from actual market competition.

MyCC is of the view that a “permitted maximum” retail price may have an unintended effect of dampening or lessening competition between broiler wholesalers and retailers over a festive season.

RECOMMENDATION

The Ministry of Domestic Trade, Cooperatives and Consumerism (“MDTCC”) should continue its regulation on “permitted maximum” broiler prices if, and only if, it is deemed necessary for preventing excessive prices before and after a festive period. Nevertheless, MDTCC should assess the effects of its pricing regulation on the pricing behaviour of farmers, wholesalers and retailers during a festive season.

MyCC is aware that currently, MDTCC consults all broiler market players openly to decide on the “permitted maximum” broiler prices for all of the festive seasons in a year. MyCC recommends that this approach should be revised and replaced with discreet consultations and, as necessary, supervision of individual broiler businesses.

4.4 Price transmission

Generally speaking, a business operator in one segment of a supply chain will buy materials from someone in the upstream segment of that chain. From the perspective of this business operator, the price paid for the upstream entity’s materials is the economic cost of an input. When there is a change in this economic cost, it may be passed-on through the price of the operator’s output that is sold to other parties (i.e. other producers or consumers).

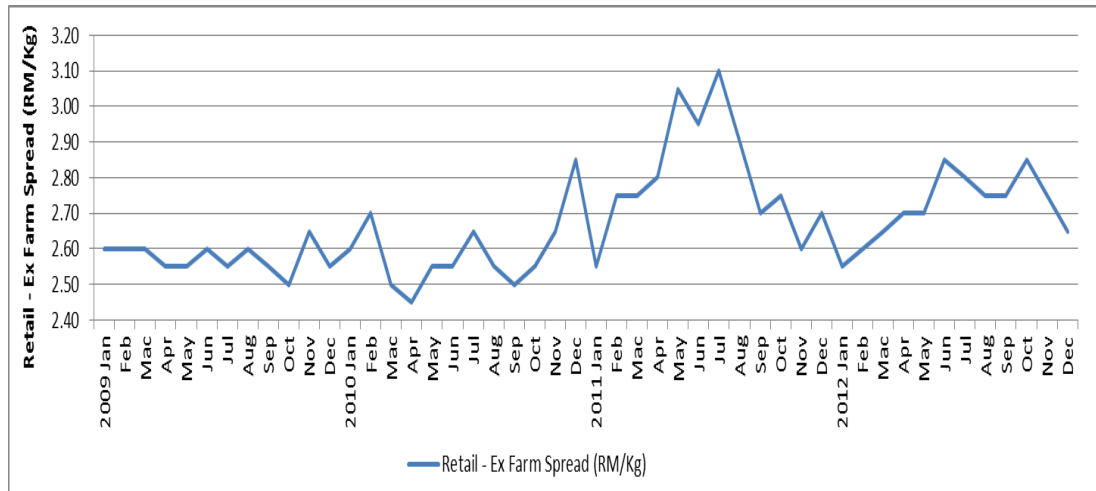
In the context of the broiler supply chain, a seller in the upstream segment of the supply chain can be expected to charge buyers in the immediate downstream

segment a price that will not only cover the seller’s upstream costs, but also generates a margin.

4.4.1 Retail-*ex farm* price spreads

MyCC looked into the retail-*ex farm* price spread in some detail on the basis of the monthly average data formally recorded by DVS. The monthly pattern of this price spread, which is the difference between the average retail prices of a “standard” broilers and average *ex farm* prices of live chickens, is shown in Figure 4-3 below.

Figure 4-3. Spreads between retail and *ex farm* prices – January 2009 to December 2012



MyCC noted that the highest spread between retail and *ex farm* prices is RM3.10 in July 2011 while the lowest spread is RM2.45 in April 2010 where the average spread between 2009 and 2012 is RM2.67.

In its submission, FLFAM provided an empirical analysis of the spread between COP and *ex farm* prices from January 2007 till July 2012. Although the estimated trend line suggests that the spread between COP and *ex farm* prices increases at about 0.3 cents per month on average, FLFAM acknowledged that this relationship is statistically insignificant due to autocorrelation (i.e. successive observations in a time series of data are correlated). In other words, the spreads between COP and *ex farm* prices is a “random walk” over time.

4.4.2 Asymmetric price transmission

Numerous empirical studies of agricultural and livestock markets, especially those in EU countries, have uncovered statistical evidence of price transmission effects. Increases in upstream prices reduce retail margins. For this reason, price transmission effects tend to be positive. Upstream price increases are passed-on through the supply chain, thereby causing downstream prices to rise. Furthermore, price transmission tends to be asymmetric, i.e. only upstream price increases (but not price decreases) are passed-on to the downstream price.

MyCC has statistically confirmed, on the basis of econometric analysis, that changes in *ex farm* chicken (i.e. upstream) prices between January 2007 and March 2012 are transmitted asymmetrically and positively to standard broiler (i.e. downstream) prices.¹¹ Specifically, for every 10 per cent increase in the *ex farm* price of live chickens, the retail price of broilers can be expected to increase by 7.5 per cent (all other things being equal).

A recently published study¹² found that changes in retail prices of poultry respond more strongly to farm price increases rather than to farm price decreases. Specifically, the speed of retail price adjustment due to an increase in *ex farm* price is (statistically) much faster than when there is a decrease in the *ex farm* price. These findings were based on January 2000 to December 2007 data.

In its submission, FLFAM did not comment specifically on asymmetric price transmission. Instead FLFAM looked into the asymmetric transmission of production costs to *ex farm* prices (over the period of February 2007 to July 2012) by regressing the logarithmic values of *ex farm* prices against the logarithmic values of COP using an “autoregressive distributed lag” (ARDL) econometric model. According to FLFAM:

- This relationship is statistically significant at the 5 per cent critical level.
- In the long term, the pass-through of COP to *ex farm* price is close to 100 per cent and “[t]his is to be expected, otherwise farms have to close down.” (p. 28 of FLFAM’s submission).

4.4.3 Market power

When asymmetric price transmission results in an increase (but not a decrease) in retail prices, the question arises as to whether the retail price increase is justified by the higher input cost that is paid by retailers; or whether the price has increased by an amount more than the change (if any) in the cost of the input.

¹¹ Before any inferences about asymmetric price transmission can be drawn from a regression of logarithmic retail prices (the dependent variable) against logarithmic farm-gate prices (the independent variable), the co-integration of retail and farm-gate prices has to be verified. For further technical details on co-integration, refer to Engle, Robert F. and Clive W.J. Granger (1987), “Co-integration and error correction: Representation, estimation and testing”, *Econometrica*, 55(2), pp. 251-276. The Engle-Granger approach to verifying co-integration involves a statistical (*viz.* the Dickey-Fuller) test of whether the “errors” between the actually observed and estimated retail prices (calculated on the basis of the estimated regression coefficient) are non-stationary. This statistical test is formalised in Dickey, D.A. and W.A. Fuller (1979). “Distribution of the estimators for autoregressive time series with a unit root,” *Journal of the American Statistical Association*, 74, pp. 427–431. MyCC has statistically confirmed, through the Dickey-Fuller test at both the significance levels of 1 and 5 per cent, the co-integration of retail and farm-gate prices that is reflective of both short-run market dynamics (i.e. deviations from market equilibrium prices) and long-run market expectations (i.e. market-driven price adjustments).

¹² Juwaidah Sharifuddin *et al* (2013) “Asymmetric Farm Retail Price Movements in the Malaysian Poultry Market”, *Journal of International Food and Agribusiness Marketing*, 25:sup1, 128-136.

On the basis of its statistical findings, MyCC has formed of the view that the close-to immediate pace and extent by which *ex farm* price increases are passed-on to wholesale and/or retail prices may be related to or caused by market power and/or the exercise of oligopolistic behaviour in the intermediate (wholesale) stages of supply chain. That said, it should be noted that market power is neither necessary nor sufficient for asymmetric price transmission. The latter can occur for other reasons, e.g. charging the “maximum permissible” price allowed by government and increasing (instead of reducing) that price after the removal of government’s price control. In a market that is increasingly vertically integrated, there will be a lower number of independent businesses in each stage of the supply chain. This is the main reason why it is more likely for upstream price increases (but not price reductions) to be passed-on downstream.¹³

Thus the market power of an integrated firm (or group of integrated firms) may be the source of asymmetric price transmission. When there is a change in price at the farm level, firms along the supply chain may be colluding tacitly when they all immediately pass-on an upstream price change to minimise or completely avoid any reductions of their margins. Likewise, they would be keen to maintain prices above the competitive level and earn a higher margin by not passing-on any reduction in price at the farm level.¹⁴

Other forms of strategic actions that may cause by or are related to asymmetric price transmission include the following.

- A firm operating in an increasingly oligopolistic market may, on the basis of “learning by doing”, increase the price of its product on the expectation that the higher price will be matched by market rivals. This same firm will never opt for the strategy of price reduction because it may lead to a “price war” in the market.
- When there is an increase in input prices, all firms will follow one another in adjusting the prices for their products upwards. When there is a reduction in input prices, these firms will avoid undermining their tacit agreement by not reducing the prices of their products.
- Inflation could also be a cause of asymmetric price transmission. In this case, firms would increase their product prices in anticipation of inflated input costs. Even when the actual rate of cost inflation is lower than anticipated, none of the firms will find it necessary to re-adjust or lower the prices for their goods.

On p. 28 of its submission, FLFAM opined that:

¹³ McCorriston, S. and I.M. Sheldon (1996). “Trade policy in vertically-related markets”, *Oxford Economic Papers*, 48, 664-672.

¹⁴ An overseas empirical study has found that more than 20 and 17 per cent of retail-wholesale price margins for dairy and meat products respectively can be attributed to oligopoly-oligopsony distortions. See Gohin, A. and H. Guyomand (2000). “Measuring market power for food retail activities: French evidence”, *Journal of Agricultural Economics*, 51, 181-195.

- “ex-farm gate prices are determined by the market forces of demand and supply and any increase in input costs is not automatically passed on to the selling price as is practiced in the cost plus method of pricing”;
- “... farmers are essentially price takers and have to absorb monthly losses. The market for broilers at the ex-farm level of the chain is highly competitive as reflected in the relatively low margins and the high volatility. Thus most, if not all, of the benefits of lower real costs have been competed away by market forces”; and
- “Given the volatility in monthly prices, farmers must ensure that the average price they sell for the year is higher than the average total cost of production. This ensures farmers operate efficiently in order to remain profitable”.

KFC Holdings stated in its submission that “KFC makes its pricing decisions independently, taking into considerations all relevant costs components in determining the retail prices of its products to its consumers, ... KFC does not coordinate its decisions with other players in the market whether relating to pricing or other market practices.”

RECOMMENDATION

MyCC should consider conducting a specific review of the market factors that could or will underpin asymmetric pricing. Detailed data on costs of broiler business operations may be collected through Section 18 of the Act.

5 Vertical Coordination

Coordinating mechanisms along a vertical supply chain include contracts and integrated ownership and operation. In most developed economies (such as UK, US and Australia), vertical integration of broiler businesses along the supply chain coincided with the prevalence of contract arrangements between farmers (upstream) and large broiler processing firms (downstream). The main factors that drive vertical integration in the poultry industry are margin control; biosecurity; and economies of scale (particularly in processing). According to the World Bank (2001), vertical integration has considerable economies of scale, especially in the area of disease control that has become prominent in recent times.¹⁵

The broiler industry in Malaysia has undoubtedly evolved and adapted itself to modern forms of commercial practices. There are now 10 broiler businesses consist of 8 integrators and 2 non-integrators in Malaysia, compared to 5 in the early 2000s. The expectation is that the level of competition between integrators will be more intense now than 10 years ago.

The level of competition across the supply chain may have been affected by increasingly concentrated upstream and downstream markets due to vertical integration (formally achieved by business mergers).

Recent mergers and acquisitions of broiler businesses include the following:

- On 14 October 2009, it was reported in *The Edge* that Leong Hup Holdings Bhd (LHH) acquired the poultry firm Ladang Ternakan Maju Sdn Bhd (LTM). With LTM as a new subsidiary, LHH aimed to expand its annual production of DOC from about 124 million birds to 134 million birds, and broiler chickens from about 38 million birds to about 47 million birds. According to LHH, this acquisition would strengthen its position as one of the largest integrated poultry farm and hatchery operators in Malaysia.
- On 16 October 2009, it was reported in *The Edge* that DBE Gurney Resources Bhd bought a 51 per cent stake of Visa Jiwa Sdn Bhd, an integrated poultry operator involved in poultry breeding, hatchery, processing, feed milling, broiler farming and distribution of poultry products. This partial acquisition will increase DBE group's annual production of broiler chickens from 10 million to 24.5 million birds.
- On 25 August 2010, it was reported by New Strait Times that QL Resources has acquired the 11 million shares or 23.29 per cent of Lay Hong Berhad from London Biscuits Bhd (Lonbisco) for RM48.55 million. According to QL Resources, the acquisition of Lay Hong which are in similar businesses will enable QL and Lay Hong to achieve synergies from feed raw material sourcing arrangements, supply chain networks and operation efficiency.

¹⁵ World Bank (2001). *Livestock Development, the Environment, Poverty and Global Food Security: A Strategy Paper*. World Bank, Washington DC

- On 2 November 2010, it was reported by *Business Times* that KFC Holdings Bhd will be acquiring, via its subsidiary Ayamas Food Corporation Sdn Bhd (Ayamas), four poultry-related companies for RM 1.11 million from Johor Corporation Bhd (JCorp). In its Bursa filing, KFC Holdings said these companies were among the seven farms in Sedenak Kulai, Johor owned by Johor Franchise Development Sdn Bhd (Johor Franchise) and Johor Ventures Sdn Bhd (Johor Ventures) – both of whom are wholly-owned subsidiaries of JCorp. The other three farms previously owned by Johor Franchise and Johor Ventures have already been purchased by Ayamas. According to KFC Holdings, operation of all the acquired farms by one company (Ayamas) would reap the advantages of centralised resource planning, management and poultry processing to meet the demand of KFC’s retail outlets and other retailers in the market.
- On 10 October 2011, it was reported in *The Star* that a proposed takeover of Leong Hup by Emerging Glory could likely to be completed in Q4 2011 or in Q1 2012. Emerging Glory and Leong Hup Management Sdn Bhd, currently have a combined 46.74 per cent stake in Leong Hup. According to Emerging Glory’s CEO, the rationale for the takeover bid is purely a business decision that was based on demand and supply factors in the poultry industry and its related activities.

At the time of this Final Report, MyCC is not aware or informed of any recent broiler business mergers. Both the commercial decisions of enterprises to merge as well as the merger itself are not subject to the Act. Nonetheless, MyCC considers it important to keep an eye open for any conduct or contracts or agreements that will or may substantially lessen or restrict competition along, or in particular segments of, the broiler supply chain.

5.1 Contractual arrangements

The market comprises of both contract farmers and independent farmers. Among the farmers in Malaysia, about 35 per cent is identified to be independent farmers while the remaining has contracted with integrators. Most small farmers has low education, hence it is difficult for them to negotiate on terms and condition written in the contract.

A study shows that only about 40 per cent DOC are reared on the integrator’s own farm and 60 per cent DOC are contracted out to farmers¹⁶.

In order to have a better understanding of contractual arrangements, MyCC requested DVS assistance with the provision of sample contracts that spell out the standard terms and conditions in contract broiler farming. DVS assisted by providing a sample of one recent agreement. MyCC was also informed that other sample contracts would need to be directly requested from farmers. MyCC

¹⁶ Tapsir, S., Mokhdzir, H.L., Nor, R.S. & Jalil, N. (2011), Issue and impact in broiler contract farming in Peninsular Malaysia, *Economic and Technology Management Review*, Vol. 6

approached a few farmers but they were not able to assist because written agreements on contract farming are no longer in practice.

In a literature review of contract farming in Peninsular Malaysia¹⁷ and with reference to the one sample contract provided by DVS, MyCC has learnt that there are two main components in the farming contract, *viz.* the division of responsibility for providing inputs and the method used to determine farmer compensation.

Broiler farmers in Malaysia usually operate on their own land and they provide labour for the work performed on broiler housing facilities. Operating expenses such as utility (electricity and water) costs, clean-up cost, and mortality disposal are also the farmer's responsibilities. Integrators provide chicks (to be grown to a processing weight of 2.2 to 2.3kg), feed, and vaccination services. They may also make decisions about the frequency of flock rotations on a farm. For example, the growing period of broilers in Peninsular Malaysia has been shortened from 42 days in 2000 to 35 days in 2010.

Just like in any other industries (be it agricultural or manufacturing), there are both advantages and disadvantages to contract production of broilers.

It can benefit integrators by contractually retaining some if not total control over the farmer's production methods in order maintain product quality control. Contracts can also benefit independent farmers by providing diversified opportunities to earn income and by alleviating cash flow problems that typically plague small farms. It also ensures the quality supply of feed and chicks are good as well as consultations are provided to the farmers by the integrators.

However they can also be disadvantageous to farmers. For example, under most broiler production contracts, ownership of the broilers remains with the integrator, but most of the farming risks and expenses (e.g. mortality rates and utility bills) are shouldered by the farmer. Furthermore, a term (or a combination of terms) in the contract place a greater business burden upon farmers, e.g. high deposit payment, the contracted input price of chicks are "too high" (i.e. not reflective of open market prices); or the contracted input price of chicken feed and its specified quantity are "too high"; or the contracted output price for live chickens are "too low". The farmers are also uncertain about their income or make losses in some cases. The farmers incur losses if there was a delay in catching and rules pertaining to delays in catching of the broilers are not clearly mentioned in the agreement.

FLFAM commented on the consolidation of broiler businesses and contract farming.

The characteristic independent and self-operated smaller farms of the past have been replaced by a system of contracts or outright ownership and operation of the broiler production by integrators in order to remain efficient.

¹⁷ Tapsir, S., Mokhdzir, H.L., Nor, R.S. & Jalil, N. (2011), *op. cit.*

The fully integrated farms are the very large companies that own hatcheries, processing plants and even feed mills. They supply the day-old chicks (DOC) to small independent farmers who then raise the broilers. The farmers are responsible for setting up the farm facilities and they contract independently with integrators who retain ownership of the birds over their entire life cycle.

One of the effects on the transformation process is the closure of many of the individual farms and the rise in larger commercial poultry farming entities that are able to capture technical, technological and pecuniary economies of size. The market and non-market challenges to broiler farming explain why most of the remaining small broiler farmers have adopted contract farming activities. This is not unique to the Malaysian broiler industry but is a worldwide phenomenon. Thus, poultry farming activities in the country are currently a mix of traditional and modern farming operations with a clear and definite shift towards more modern automated and environmentally friendly controlled closed housing farming production facilities.

By adopting the contract farming arrangement, the smaller farms are able to reduce the risk factors by passing most of the market risks to the integrators. They however have to bear risks with respect to production such as input risks and other external threats such as weather, pests and diseases. Broiler growers in Malaysia have no access to insurance as yet to safeguard against such production risks (pp. 30-31 of FLFAM's submission).

MyCC notes that pecuniary economies can be indeed achieved by "larger commercial poultry entities". But such economies, which are typically production cost savings, are directly linked to the use of market power. For example, a large commercial poultry entity such as an integrator can "buy" (i.e. contract for) the services of an independent broiler farmer on "cheaper" terms and conditions than its smaller rival. The lower cost of poultry farming that is achieved by a large commercial entity, even if passed-on to final consumers, is acquired at the expense of the contracted independent farmer. In this regard, pecuniary economies are simply an income transfer from one firm (or group of firms) to another.

RECOMMENDATION

The Department of Veterinary Services ("DVS") should consider the provision of contracting guidelines that will assist and protect small farmers in entering into mutually advantageous contract with integrators and non-integrators.

6 Concluding Remarks

The broiler sector in Peninsular Malaysia has expanded in recent years through higher levels of private investments and entrepreneurship.

Based on the information presented in FLFAM's submission, the parent stock market is far from being concentrated. However the same cannot be said of the supply market for fully-grown broilers; not because it is factually concentrated, but because there is currently no information on the ownership of broiler growing farms by integrators, non-integrators and independent farmers. MyCC believes that further research into this matter is needed so that all market players, consumers and even government policymakers can be better informed of the possible forms and nature of broiler market competition.

MyCC has undertaken econometric analysis and found that changes in *ex farm* prices (between January 2007 and March 2012) are transmitted asymmetrically and positively to retail prices. Specifically, the retail price of broilers can be expected to increase by about 7.5 per cent for every 10 per cent increase in the *ex farm* price of live chickens. But the retail price is unlikely to drop immediately whenever there is a drop in the *ex farm* price. Asymmetric price transmission, which involves the passing-on of a price increase (but not a price decrease) at one level of the supply chain to the next, is not inherently anti-competitive. It is the tacit sustenance of a positive price transmission that would be of some concern to MyCC.

MyCC understands that *ex farm* prices which are determined on the basis of negotiations between farmers and wholesalers (or distributors) will fluctuate daily, and their levels will differ from one farm to another. As such, "there is little avenue for any active or tacit collusion in the production and supply of broiler chickens up to the farm gate ... [and] there is no horizontal arrangement between the farms to fix the ex-farm price, or even restrict supply to raise the same" (p. 33).

FLFAM itself recognises there is an increasing level of vertically integrated broiler businesses worldwide, of which Malaysia is one good example. MyCC is of the view that when players in a sector become increasingly vertically integrated, there will be a lower number of competing businesses in each stage of the supply chain. This is the main reason for MyCC's concern with price transmission effects. The lower the level of competition, the more likely it will be for upstream price increases (but not price reductions) to be passed-on downstream.

In order to "promote economic development by promoting and protecting the process of competition", MyCC will continue to monitor the market behaviour of all parties along the broiler supply chain.

Appendix

The empirical literature on price linkages between *ex farm* and retail markets is extensive. MyCC only came across two studies using Malaysian data.¹⁸ The literature summarised below (in chronological order) are primarily those on livestock and agricultural sectors.

- An extensive analysis was undertaken of the transmission of five agricultural producer prices through the food marketing system in seven countries of the European Union (*viz.* Germany, Italy, France, Holland, Belgium, United Kingdom and Denmark).¹⁹ On the basis of monthly price series data between 1971 and 1990, the hypothesis of long-run perfect price transmission is supported for the producer-consumer pair of pork prices in five EU countries, and for the pair of buttermilk prices in six EU countries. The United Kingdom was the only exception where perfect price transmission was rejected for all the pairs of products. For the cases where the hypothesis is rejected, the estimated elasticity of price transmission is greater than 1; i.e. a 1 per cent change in producer prices will result in a greater than 1 per cent change in consumer prices.
- A study of farm-gate and retail prices for beef, lamb and pork in the UK and Wales found a price link in the lamb industry, but not in the beef or pork industries.²⁰ For the lamb industry, prices are set at the retail level and this is indicative of retailers' market power. The absence of any long-run price relationships in the beef and pork industries is interpreted as evidence against the operation of competitive markets.
- In Australia, the farm, wholesale and retail prices for beef were found to be co-integrated, i.e. they are moved together over time in response to exogenous shifts in demand and supply curves.²¹
- On the basis of a sophisticated statistical analysis (using the so-called "error-correction" model) of 200 weekly observations of producer and wholesaler prices for pork in northern Germany, it was found that the

¹⁸ Kaur, B. and Fatimah Mohamed Arshad *op. cit.* referred to an unpublished doctoral thesis by Kaur, B. on "Asymmetric price transmission and market integration in the broiler industry in Peninsula Malaysia" (UPM, 2006). According to Kaur and Arshad, this thesis found significant evidence of asymmetric price transmission through which increases in farm prices were transmitted rapidly to retail prices, but farm price declines took a long time to be reflected in retail prices. See Juwaidah Sharifuddin *et al* (2013), *op. cit.*

¹⁹ Palaskas, S. (1995). "Statistical analysis of price transmission in the European Union", *Journal of Agricultural Economics*, 41, 61-69.

²⁰ Dawson, P.J. and R. Tiffin (1997). "Estimating marketing margins in the meat sector using cointegration analysis". *Agricultural Economics Society Annual Conference*, University of Edinburgh, 21-24 March.

²¹ Chang, H.S. and G. Griffith (1998). "Examining the long-run relationships between Australian beef prices," *Australian Journal of Agricultural and Resource Economics*, 42, 369-387.

transmission of producer to wholesale prices is asymmetric in the sense that the farm gate-wholesale margin is corrected more rapidly when it is squeezed relative to its long-run level, than when it is stretched.²²

- An analysis of the relationships between US farm, wholesale and retail beef prices (on a weekly basis over the period January 1981 to March 1998) found unidirectional price transmission from the farm level to the wholesale and retail levels. The authors also found that the responsiveness to price shocks (at the farm level) had increased in recent years. They inferred that US markets may have become more efficient in transmitting information through vertical marketing channels.²³
- Using a model of oligopolistic interaction, the authors showed that the weak transmission of coffee bean prices to consumer prices in the Netherlands was due to a relatively large share of other business operating costs other than the costs of coffee beans.²⁴
- The spread between *ex farm* and retail prices for lamb in the UK was examined on the basis of 1979-1993 price data.²⁵ It was found that the casual relationship (or statistically, the direction of a so-called Granger-causality) runs from retail to producer prices.²⁶ This means that in the long-run, it is the change in retail demand that will impact upon the *ex farm* prices that can be charged.
- A study using monthly observations (from January 1988 to September 1997) of producer and retail prices for pork in Switzerland found evidence of unidirectional and asymmetric price transmission from producers and retailers.²⁷ Increases in producer prices that result in the reduction of the marketing margin are passed on to retail prices faster than reductions in producer prices that lead to increases in the marketing margin.
- In a study of the dairy sector in Spain, the authors argued that the (then) existing government quota on milk supply at the farm level may have led to a situation in which processors will compete strongly for access to the

²² von Cramon-Taubadel, S. (1998). "Estimating asymmetric price transmission with the error-correction representation: An application to the German pork market", *European Review of Agricultural Economics*, 1-18.

²³ Goodwin, B. K. and M.T. Holt (1999). "Price transmission and asymmetric adjustment in the US beef sector." *American Journal of Agricultural Economics*, 81, 630-637.

²⁴ Bettendorf, L. and F. Verboven (2000). "Incomplete transmission of coffee bean prices in the Netherlands", *European Review of Agricultural economics*, 27, 1-16.

²⁵ R. Tiffin and P.J. Dawson (2000), "Structural breaks, cointegration and the farm retail price spread for lamb", *Applied Economics*, 32, pp. 1281-1286.

²⁶ Granger-causality refers to the statistical relationship between one set of time-series data with that of another set of time-series data.

²⁷ Abdulai, A. (2002). "Using threshold cointegration to estimate asymmetric price transmission in the Swiss pork market" *Applied Economics*, 34, 679-687.

farm-constrained supply of milk. In order to retain or even increase their retail market shares, the processors may choose not to pass any farm level price increase fully to the retail level. The authors concluded that the presence (but not abuse) of market power could be consistent with symmetric price relationships in the dairy product market.²⁸

- In a study of price transmissions for several products in Netherlands, it was found that broiler processors will do not pass-on price reductions that they received from farmers (upstream); but they will transmit price increases fully and instantaneously to their downstream customers.²⁹ On the other hand, beef price changes at the farm level are levelled off at the processing and retail segments of the supply chain, i.e. lower prices are not passed-on to final consumers. The authors concluded that market power may explain why price reductions are not fully transmitted, but it is a less significant cause of poor price transmission than the presence of “sticky” prices (i.e. adjustment costs are higher when firms re-set prices than when they continue to sell at the previous prices).
- In a consulting study of the links between retail and farm-gate milk prices in the UK, Denmark, France and Germany, it was found that a unit increase in the retail price of liquid milk in UK is fully transmitted upstream to the farm-gate price.³⁰ In contrast, a unit increase in farm-gate price will only result in a 0.56 unit increase in the retail price, whereas unit decrease in farm-gate price will reduce the retail price by 0.71 unit. It was also found that two-way price transmissions were imperfect in Germany, but price transmissions did not occur in Denmark. In France, farm-gate price changes were transmitted (imperfectly) to retail prices; but not *vice versa*. According to the authors, the different forms of price transmissions may be due to the different market structures or varying degrees of government intervention.
- A major study commissioned by U.K. Department for Environment, Food and Rural Affairs (DEFRA) looked into the determinants of farm-retail price spreads for about 90 products during the 1990s. With the exception of certain dairy products, no evidence of asymmetric price transmissions was found. The study also found no evidence of particular countries (with the exception of France) in which price transmissions along the food chain are systematically asymmetric.³¹

²⁸ Serra, T. and B.K. Goodwin (2003). “Price transmission and asymmetric adjustment in the Spanish dairy sector”, *Applied Economics*, 35, 1889-1899.

²⁹ Zachariasse, L.C. and F.H.J. Bunte (2003). “How are farmers faring in the changing balance of power along the food chain?” Inleiding voor OECD – Conference on Changing Dimensions of the Food Economy: Exploring the Policy Issues. Den Haag, 6-7 February.

³⁰ London Economics (2003). “Examination of UK milk prices and financial returns”, Report prepared for The Milk Development Council, February.

³¹ London Economics (2004). “Investigation of the determinants of farm-retail price spreads”, Final Report to DEFRA.

- The authors developed and applied a relatively new “threshold vector” error-correction statistical approach to an analysis of price transmission in the US beef, chicken and egg markets.³² The results indicated significant price transmission asymmetries in response to both negative and positive price shocks along the respective supply chains.

³² Vavra, P. and B.K. Goodwin (2005). "Analysis of price transmission along the food chain", OECD Food, Agriculture and Fisheries Working Papers, No. 3, OECD Publishing.