Malaysian Aviation Commission
Suruhanjaya Penerbangan Malaysia
MAVCOM

TECHNICAL PAPER

AIRFARES FOR DOMESTIC FLIGHTS DURING PEAK SEASONS | **AUGUST 2018**

This Technical Paper outlines the Malaysian Aviation Commission's study on the pricing patterns of airfares for domestic flights during peak seasons and the experiences of other countries in regulating or deregulating airfares.

EXECUTIVE SUMMARY

There have been claims of significantly higher airfares for domestic flights in Malaysia during peak seasons. As the economic regulator of the civil aviation industry, we undertook a study to analyse the pricing patterns of airfares for domestic flights in Malaysia during selected peak seasons using the price multiplier methodology. A price multiplier measures the ratio of the maximum airfare during a peak season over an average airfare.

In general, the average domestic airfares in Malaysia have been declining. This trend varies according to route and airline due to demand, supply, distance, and level of competition.

Out of the 46 domestic routes analysed, 39 routes had airfares with price multipliers of between 0.8x and 3.0x. However, price multipliers above 3.0x were observed during the Chinese New Year period on certain routes within West Malaysia, as well as, between West Malaysia and East Malaysia. In most cases, such airfares were recorded between one and four days within each peak season.

Price multipliers for the peak seasons relate more to high passenger demand than the number of operating airlines for the routes. For example, the PEN-KBR route—solely-operated by Firefly—recorded 0.8x the average airfare during the 2018 Hari Raya Aidilfitri period. Comparatively, the KUL-PEN route—operated by MAB, AirAsia, and Malindo—recorded price multipliers of between 1.2x and 2.9x for the 2018 Chinese New Year period.

Additionally, the findings on domestic airfares during peak seasons in Malaysia are comparable to those in Indonesia, Thailand, the Philippines, and the US. In Malaysia, 80% of the routes analysed had price multipliers of between 1.01x and 3.00x, while in those countries, 88% of the routes were within the same range of price multipliers.

These are consistent with the practice of dynamic pricing adopted by airlines globally, where airfares are set based on the demand and market conditions. The higher demand for scheduled flight services during the peak seasons and the perishable nature of scheduled flight services would result in an increase in airfares.

Meanwhile, a comparative study of airfare-related measures internationally and in selected countries revealed that many countries have moved away from enforcing price regulation. The deregulation of airfares and liberalisation of the airline industry generally have had positive effects of reducing airfares and increasing competition. Indeed, this has been the case for Malaysia where its average domestic airfares have generally been on a declining trend since 2011.

Finally, an important lesson could be learned from the Indonesian experience in implementing strict price regulation by imposing a floor price, a ceiling price, and a surcharge rate for each of its domestic routes. Studies have shown that Indonesia's strict airfare regulation had the unintended negative consequence of higher airfares in general. The imposition of floor and ceiling prices may also discourage competition between airlines.

ABBREVIATIONS

Abbreviations	
Act 771	Malaysian Aviation Commission Act 2015
ACI	Airports Council International
ALI	Air Liberalization Index
ASA	Air Service Agreement
ASEAN	Association of Southeast Asian Nations
bbl	barrel
BEF	Belgian franc
CAAT	Civil Aviation Authority, Thailand
CEDS	Centre for Economic Development Studies, Universitas Indonesia
EU	European Union
FSC	Full-service carrier
GST	Goods and Services Tax
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IDR	Indonesian Rupiah
INACA	Indonesia Air Carriers Association
KPPU	Komisi Pengawas Persaingan Usaha
km	kilometre
LCC	Low-cost carrier
LPEM	Lembaga Penyelidikan Ekonomi dan Masyarakat, Fakultas Ekonomi dan Bisnis, Universitas Indonesia
MAVCOM	Malaysian Aviation Commission
MOT Malaysia	Ministry of Transport, Malaysia
MOT Indonesia	Ministry of Transportation, Indonesia
MYR	Malaysian Ringgit
OAG	Official Aviation Guide of the Airways
PHP	Philippine Peso
PSC	Passenger Service Charges
PSO	public service obligations
SGD	Singapore Dollar
THB	Thai Baht
UK	United Kingdom
US	United States of America
VAT	Value Added Tax
WTO	World Trade Organization

ABBREVIATIONS FOR AIRLINES

Abbreviations	
AirAsia	AirAsia Berhad
Firefly	Fly FireFly Sdn. Bhd.
MAB	Malaysia Airlines Berhad
Malindo	Malindo Airways Sdn. Bhd.
MASwings	MASwings Sdn. Bhd.

AIRPORT CODES

No.	Code	Airport
1	AOR	Sultan Abdul Halim Airport, Malaysia (Alor Setar)
2	ATL	Hartsfield-Jackson Atlanta International Airport, US
3	BCD	Bacolod-Silay City International, Philippines
4	BDL	Bradley International Airport, US (Hartford)
5	BFV	Buriram Airport, Thailand
6	BIK	Frans Kaisiepo International Airport, Indonesia (Biak)
7	BKI	Kota Kinabalu International Airport, Malaysia
8	BKK	Suvarnabhumi Airport, Thailand (Bangkok)
9	BKS	Fatmawati Soekarno Airport, Indonesia (Bengkulu)
10	BOS	Logan International Airport, US (Boston)
11	BPN	Sultan Aji Muhammad Sulaiman Airport, Indonesia (Balikpapan)
12	BTH	Hang Nadim International Airport, Indonesia (Batam)
13	BTU	Bintulu Airport, Malaysia
14	BXU	Bancasi Airport, Philippines (Butuan)
15	CBO	Cotabato Airport, Philippines
16	CEB	Mactan-Cebu International Airport, Philippines
17	CEI	Mar Fah Luang International Airport, Thailand (Chiang Rai)
18	CGK	Soekarno–Hatta International Airport, Indonesia (Jakarta)
19	CGM	Camiguin Airport, Philippines
20	CJM	Chumpon Airport, Thailand
21	CNX	Chiang Mai International Airport, Thailand
22	CRK	Clark International Airport, Philippines (Angeles/Mabalacat)
23	CVG	Northern Kentucky International Airport, US (Cincinnati)
24	DCA	Ronald Reagan Washington National Airport, US (Washington)
25	DEN	Denver International Airport, US
26	DFW	Dallas/Fort Worth International Airport, US
27	DJJ	Sentani International Airport, Indonesia (Jayapura)
28	DMK	Don Mueang International Airport, Thailand (Bangkok)
29	DPL	Dipolog Airport, Philippines
30	DPS	Ngurah Rai International Airport, Indonesia (Denpasar-Bali)
31	DTW	Detroit Metropolitan Airport, US
32	DVO	Francisco Bangoy International Airport, Philippines (Davao)
33	FLZ	Ferdinand Lumban Tobing Airport, Indonesia (Silboga)
34	GES	Buayan International Airport, Philippines (General Santos)
35	HDY	Hat Yai International Airport, Thailand
36	HGN	Mae Hong Son Airport, Thailand
37	HKT	Phuket International Airport, Thailand
38	HNL	Daniel K. Inouye International Airport, US (Honolulu)
39	IAH	George Bush Intercontinental Airport, US (Houston)

No.	Code	Airport
40	IND	Indianapolis International Airport, US
41	IPH	Sultan Azlan Shah Airport, Malaysia (Ipoh)
42	JFK	John F. Kennedy International Airport, US (New York)
43	JHB	Senai International Airport, Malaysia
44	JOG	Adisutjipto International Airport, Indonesia (Yogyakarta)
45	KBR	Sultan Ismail Petra Airport, Malaysia (Kota Bharu)
46	KBV	Krabi International Airport, Thailand
47	KCH	Kuching International Airport, Malaysia
48	KKC	Khon Kaen Airport, Thailand
49	KLO	Kalibo International Airport, Philippines
50	KNO	Kualanamu International Airport, Indonesia
51	KOE	El Tari International Airport, Indonesia (Kupang)
52	KOP	Nakhon Phanom Airport, Thailand
53	KTE	Kerteh Airport, Malaysia
54	KTG	Rahadi Osman Airport, Indonesia (Ketapang)
55	KUA	Sultan Ahmad Shah Airport, Malaysia (Kuantan)
56	KUL	Kuala Lumpur International Airport, Malaysia
57	LAS	McCarran International Airport, US (Las Vegas)
58	LAX	Los Angeles International Airport, US
59	LBU	Labuan Airport, Malaysia
60	LDU	Lahad Datu Airport, Malaysia
61	LGK	Langkawi International Airport, Malaysia
62	LMN	Limbang Airport, Malaysia
63	LOE	Loei Airport, Thailand
64	LOP	Lombok International Airport, Indonesia
65	MCI	Kansas City International Airport, US
66	MDC	Sam Ratulangi International Airport, Indonesia (Manado)
67	MKZ	Melaka Airport, Malaysia
68	MNL	Ninoy Aquino International Airport, Philippines (Manila)
69	MPH	Godofredo P.Ramos Airport, Philippines (Caticlan)
70	MSP	Minneapolis–Saint Paul International Airport, US
71	MYY	Miri Airport, Malaysia
72	MZV	Mulu Airport, Malaysia
73	NAW	Narathiwat Airport, Thailand
74	NST	Nakhon Si Thammarat Airport, Thailand
75	ORD	O'Hare International Airport, US (Chicago)
76	PEN	Penang International Airport, Malaysia
77	PHL	Philadelphia International Airport, US
78	PHS	Phitsanulok Airport, Thailand
79	PIT	Pittsburgh International Airport, US
80	PKN	Iskandar Airport, Indonesia (Pangkalanbuun)

No.	Code	Airport
81	PKU	Sultan Syarif Kasim II International Airport, Indonesia (Pekanbaru)
82	PLM	Sultan Mahmud Badaruddin II International Airport, Indonesia (Palembang)
83	PNK	Supadio International Airport, Indonesia (Pontianak)
84	PPS	Puerto Princesa International Airport, Philippines
85	ROI	Roi Et Airport, Thailand
86	SBW	Sibu Airport, Malaysia
87	SDK	Sandakan Airport, Malaysia
88	SEA	Seattle–Tacoma International Airport, US
89	SFO	San Francisco International Airport, US
90	SRG	Ahmad Yani International Airport, Indonesia (Semarang)
91	STL	St. Louis Lambert International Airport, US
92	SUB	Juanda International Airport, Indonesia (Surabaya)
93	SZB	Skypark Terminal Sultan Abdul Aziz Shah Airport, Malaysia (Subang)
94	TAC	Daniel Z. Romualdez Airport, Philippines (Tacloban)
95	TGC	Tanjung Manis Airport, Malaysia
96	TGG	Sultan Mahmud Airport, Malaysia (Kuala Terengganu)
97	TIM	Mozes Kilangin Airport, Indonesia (Tembagapura/Timika)
98	TWU	Tawau Airport, Malaysia
99	UBP	Ubon Ratchathani Airport, Thailand
100	UPG	Sultan Hasanuddin International Airport, Indonesia (Makassar)
101	USM	Samui International Airport, Thailand
102	USU	Francisco B. Reyes Airport, Philippines (Busuanga)
103	UTH	Udon Thani International Airport, Thailand
104	UTP	U-Tapao International Airport, Thailand

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INTRODUCTION

There have been complaints and debates on the issue of high domestic airfares during festive seasons and school holidays. In view of this, we undertook a comparative study on the pricing patterns of airfares for domestic flights during peak seasons, as well as, on the airfare-related measures implemented internationally and in selected countries.

The study fulfils one of MAVCOM's functions as the economic regulator of the civil aviation industry in Malaysia. This was highlighted by sub-paragraph 17(1)*(a)*(ii) of Act 771, "to encourage effective competition within the civil aviation industry by promoting an economic environment which allows Malaysian carriers to maintain their ability to compete effectively in the civil aviation market in a sustainably profitable, efficient and fair manner". MAVCOM is also responsible on matters relating to consumer protection and the enforcement of competition law in the civil aviation industry.

This paper has two main sections:

- Section 1 provides the comparative analysis of airfares for the domestic flights during peak seasons. It first discusses the scope, route selection, and literature review before going into detail on the findings and comparison with selected countries – Indonesia, Thailand, the Philippines, and the US. This section also explains the concept of dynamic pricing, as well as, the relationship between demand and supply, and how this determines the market price for air travel.
- Section 2 discusses the airfare-related measures at international, regional, and country levels and their implications on the pricing for air travel. This section discusses the developments in airfare-related measures as developed and implemented by ICAO, Indonesia, Malaysia, Thailand, the EU, the Philippines, and the US. Apart from the traditional price regulation via price control, this section also highlights price regulation via other instruments including commitments in the ASAs and competition laws. This section also looks at Indonesia as a case study in lessons learnt for the unintended consequences of price control.

SECTION 1: COMPARATIVE ANALYSIS OF DOMESTIC AIRFARES

This section provides the quantitative analysis on airfares for domestic flights in Malaysia during peak seasons, and the comparison of pricing patterns of airfares in selected countries during their respective peak seasons.

We are interested to find answers to these questions:

- How do we measure the increase of airfares? What would be the appropriate base price for determining the increase of airfares?
- What is considered a significant increase in airfares? What are the factors that influence airfares?

These questions reveal the complexity of pricing and revenue management of airlines, which practise dynamic pricing, where airfares change daily, or even hourly, based on the supply and demand of their seats.

To answer these questions, we have approached the quantitative analysis in the following manner and sequence:

- Identifying the routes and airlines to be analysed.
- Exploring any existing methodologies in measuring the magnitude of price increase in either the airline industry or other sectors.
- Determining and applying the appropriate methodology.
- Determining whether there is any airfare increase in Malaysia during peak seasons and, if so, whether such increase in airfares is considered significant in comparison with the pricing patterns of the domestic airfares in selected countries.

Scope

The analysis focuses on the domestic flights in Malaysia during peak seasons, which corresponds with the complaints and queries on airfares received by MAVCOM. With regards to the domestic flights, only airfares for commercial flights were analysed – airfares for the PSO services were excluded as they are subsidised by the Government of Malaysia and governed separately from the commercial flight services.

In terms of the peak seasons, the study analysed airfares during the following festive seasons and school holiday:

- Chinese New Year (15 – 16 February 2018 or 5 – 6 February 2019)
- Public school holiday (17 – 25 March 2018 or 16 – 24 March 2019)
- Pesta Kaamatan and Hari Gawai (30 May – 2 June 2018)
- Hari Raya Aidilfitri (15 – 16 June 2018)
- Hari Raya Aidiladha (22 – 23 August 2018)
- Christmas (25 December 2018)

These dates were chosen for the following reasons:

Complaints and queries received: all complaints and queries received were for airfares during the Chinese New Year period or public school holidays. We selected the nine-day school holiday in March as one of the peak seasons for this quantitative analysis, instead of the approximately 38-day year-end school holiday in November and December, in view of the length of the school holidays. We chose to monitor the March school holiday because airfares tend to be higher when the travel period is shorter, as air travels during such a period would be more concentrated. This compares to the year-end school holiday during which consumers would have a longer period to travel and the air travel pattern would be more spread out.

Duration of the holiday: the selected peak seasons cover public and school holidays that are at least two days as travellers tend to fly for such longer holidays. For example, Deepavali was excluded from the quantitative analysis because the public holiday is only one day and falls on a Tuesday. However, the Christmas public holiday was included even though it is only for a day as it coincides with the year-end school holidays, and demand for flights is typically high then.

Malaysia's demographic: the Malaysian population comprises various ethnic groups, where 50% of the population are Malays, 21% Chinese, 13% other Bumiputras, and 6% Indians1. Hence, it is appropriate that the selected peak seasons include the main festive celebrations for these ethnic groups, which are the Chinese New Year, Hari Kaamatan, Hari Gawai, Hari Raya Aidilfitri, Hari Raya Aidiladha, and Christmas.

[1] Department of Statistics, Malaysia (2016).

Route Selection

There are 46 domestic routes in Malaysia (excluding routes served exclusively by a PSO operator) that are commercially served by four domestic airlines: AirAsia, Firefly, MAB, and Malindo. These routes are divided into the following three categories based on the origin and destination of the flights. Each category has its own unique characteristics.

Category 1: West Malaysia-East Malaysia (18 routes)
Category 1 comprises flights between West and East Malaysia, separated by the South China Sea. Air transport is the only available mode of passenger transport connecting West Malaysia and East Malaysia. The farthest route in Category 1 is the KUL-SDK route (1,848 km).

Category 2: West Malaysia-West Malaysia (21 routes)
Category 2 are flights within West Malaysia, with the farthest route being the LGK-JHB route (679 km). However, unlike Category 1, travellers within West Malaysia can also choose to travel on-land, using the railway and road systems (buses and cars).

Category 3: East Malaysia-East Malaysia (7 routes)
Category 3 are routes within East Malaysia, and the farthest route in this category is the KCH-BKI route (803 km). Geographically, land transport may not be a feasible alternative to air travel for certain routes within East Malaysia, taking into consideration the poor road network and significant traveling time.

Dynamic Pricing

Dynamic pricing refers to a pricing strategy where the price of a good or service changes in response to the market conditions and demand. This contrasts with the fixed pricing strategy for which the price of a good or service remains fixed once the price is established and the product is put on sale[2]. Other than the air transport industry, dynamic pricing is practised across a wide range of industries and markets, including the ride-sharing services and hotels[3].

Airlines globally engage in dynamic pricing as part of their overall revenue management to maximise revenues from the airline's perishable products (seats) by managing the relationship between price, demand, and capacity. Hence, dynamic pricing may allow the airlines to maximise revenues by selling the right products to the right passengers at the right time and price.

Given that seats on flights are perishable and unoccupied seats are worthless once the flights take off, airlines are incentivised to ensure that flights are filled by as many passengers as possible. At the same time, setting fares at a level that is too low may lead to losses in potential revenues for airlines since there may be passengers who are willing to fly at higher fares but are able to purchase tickets at cheaper prices. Revenue management, via dynamic pricing, helps airlines increase their total flight revenues by having several prices for the same product. This allows airlines to collect incremental revenues from "discount" passengers who otherwise would not fly by paying the full airfares, and from high-paying passengers who are willing to pay the full airfares[4].

[2] Paul and Weinbach (2013).
[3] For example, Uber and Grab practise a form of dynamic pricing known as surge pricing, where fares increase for rides taken during peak periods (Uber, 2016). Hotel rooms may also be subject to dynamic pricing as room rates may change depending on how far in advance a customer books his stay (Abrate, Fraquelli, and Viglia, 2012).
[4] Toh and Raven (2003).

Airlines are also motivated to employ dynamic pricing to meet the seasonal demand variations. As airline seats are limited, higher demand for flights during certain periods will cause prices to increase[5]. Airlines meet the higher demand for flights during the peak periods by adjusting their fare distributions accordingly. Airlines may also rely on the increased revenues from the peak-period sales to ensure that the route is commercially viable for the whole year. This may lead to long-term passenger benefits such as continued service and low airfares for the routes during off-peak periods.

How Do Airlines Conduct Dynamic Pricing?

Airlines practise dynamic pricing by restructuring the fare distribution of tickets sold on a given flight. In practice, this occurs via inventory control by the removal of the low-fare "buckets" on a given flight or the reallocation of seats across "buckets". Airline revenue management departments often conduct dynamic pricing with the aid of computer programmes and algorithms that help forecast demand for a flight.

What are "buckets"?

Airlines create a range of airfare products—with different prices, and sometimes different terms and conditions—that share a common inventory of seats in each flight. These airfare products are assigned to tiered cabin classes, which are generally known as first, business, and economy. However, products can be further segmented within these cabin classes and these booking classes are commonly known as buckets. Since our study focuses on the airfares for the economy or the lowest seat class available, we look at the buckets within this cabin class – for example, most airlines advertise and price their economy class seats in buckets such as promotional, basic, and flexible fares, with flexible fares being the most expensive of the three buckets. Table 1 provides an illustration of buckets for the economy class seats.

Table 1: Example of Buckets for the Economy Class Seats

Bucket	Average Airfare Value (RM)	Range of Airfare Values (RM)
Y	900	800 – 1,000
M	700	600 – 799
B	500	400 – 599
H	300	200 – 399
V	150	100 – 199

[5] See Box 2 for a discussion on the relationship between demand and supply in determining the price.

Example 1: Dynamic pricing via removal of low-fare buckets

If tickets for a given flight are in high demand, an airline may choose to remove the low-fare buckets, such as the promotional fare bucket, to "push" consumers to purchase tickets in the higher fare buckets, such as the basic or flexible fares. Conversely, an airline may choose to introduce low-fare buckets to fill up seats if a flight is projected to have spare capacity. In the example below, an airline has removed the promotional bucket in anticipation of high demand for a flight. The 30 seats initially allocated to the promotional bucket are reallocated to the higher buckets (see Table 2). This leads to an increase in the airfares offered by the airline and its potential revenue.

Table 2: Removal of the Low-Fare Buckets

Bucket	Airfare (RM)	Seats Before Reallocation	Seats After Reallocation
Flexible	800	20	25
Basic	300	50	75
Promotional	150	30	0
Potential Revenue (RM)		**35,500**	**42,500**

Example 2: Dynamic pricing via reallocation of seats across buckets

Airlines may also choose not to remove or introduce fare buckets altogether, but rather, adjust the number of seats sold in each bucket. An example is illustrated in Table 3, where a portion of the number of seats assigned to the promotional bucket is reallocated to the basic bucket.

Table 3: Reallocation of Seats Across Buckets

Bucket	Airfare (RM)	Seats Before Reallocation	Seats After Reallocation
Flexible	800	20	20
Basic	300	50	60
Promotional	150	30	20
Potential Revenue (RM)		**35,500**	**37,000**

In both examples above, passengers may find that the promotional airfares are no longer available for those flights, either due to the total unavailability of the promotional airfares (by removal of the promotional bucket altogether) or fewer number of seats offered within the promotional bucket. Thus, customers may have to purchase tickets in the higher airfare buckets.

Literature Review

There have been many studies done on the airlines' pricing behaviours relating to dynamic pricing. However, there are no publicly available studies that specifically measure the magnitude of increase in airfares using price multipliers. Literature on airlines' dynamic pricing include:

- You (1999) developed a dynamic pricing model in airline seat management for flights with multiple flight legs. The model addressed two main problems that airlines face during the pre-flight period – first, to determine suitable fares for the opened buckets and second, to determine the right time to close the buckets. As explained earlier, a flight may have to take off with empty seats if the airline closes certain buckets too soon and passengers are not willing to pay the higher fares in the remaining buckets. Conversely, if an airline closes certain buckets too late, it may lose the additional revenue from passengers who are willing to pay the higher fares.

- Volodymyr, Alberto and Claudio (2015) studied yield management interventions of two main European LCCs, in the form of airfare reductions. Their findings showed that airfare reductions are more effective in raising the load factor on routes where the passenger mix is more diverse. Traditionally, airfares continuously increase as fewer seats remain available on flights. However, their studies showed that for routes which had a good mix of passengers traveling for leisure, business, and family purposes, certain yield management interventions were adopted to raise load factors. These interventions include the decreasing of airfares. On routes where the passenger mix was less diverse such as routes which mainly catered for business travellers, no robust yield management strategy was observed.

Studies relating to other industries had observed the relationship between dynamic pricing strategies and price multipliers, such as in the hotel revenue management or soccer game ticket models. Examples are discussed below.

- Mehmet and Rizvan (2017) proposed a mathematical model to obtain dynamic ticket prices for soccer game tickets by multiplying the mean season ticket prices (used as the reference price) with a set of price multipliers. The objective of the model is to maximise revenue in the sports industry by obtaining a set of changing prices based on the fans' willingness to pay.

  The model utilises two different price multipliers: the time multiplier and the inventory multiplier. The time multiplier increases as the date of purchase approaches the date of the game. The logic behind this scenario is to offer low prices at the beginning of the sales period to sell as many tickets as possible. The time multiplier then increases continually towards the end of the sales period based on the assumption that last-minute fans are not very concerned about prices (price inelastic). Meanwhile, the inventory multiplier increases as the inventory decreases, based on the assumption that the remaining tickets will sell at higher prices due to the decrease in ticket supply.

  The ticket prices obtained from this model is a product of the reference price, time multiplier, and inventory multiplier. The reference price was determined based on the mean season ticket price. Season ticket prices are established for all home games. The mean season ticket price is identified by dividing the season ticket price by the total number of games included.

  As all multipliers have significant impact on ticket prices, the chosen average value for both the time and inventory multipliers is 1.25x. The price multipliers are set in such a way that the output dynamic prices are not lower than the mean season ticket price, and not too high that they discourage fans from purchasing. Put differently, dynamic ticket prices are expected to send a message that season tickets are the least expensive option for fans. To ensure this, the parameters of the multipliers are determined accordingly.

- Saleh, Atiya and Habib (2013) proposed a dynamic pricing approach for the hotel revenue management based on a set of price multipliers that vary around 1x and provided a varying discount/premium over historical seasonal reference prices. The goal is to maximise revenue, taking into account the current demand level and the demand-price sensitivity of the hotel guests.

  In this study, four different price multipliers were multiplied with the reference price to obtain the final booking price. The four variables selected were time from reservation until arrival date, the hotel's remaining capacity at the time of the reservation, the length of stay, and the number of rooms to be reserved. In the hotel revenue management scenario, the reference price is the historical seasonal price determined by the hotel manager based on his experience. Similar to the soccer game ticket model, the final booking price is constrained by a certain limit to ensure that the price does not deviate much from the reference price. This will guarantee that the pricing of the room is under control and does not behave in a peculiar way. In this case, the authors had set the deviation limit to 40%, which means that the final price must be within plus or minus 40% of the reference price.

The price multipliers in these studies were pre-set and used as part of the inputs to determine the optimal prices to maximise revenue. In contrast, our quantitative analysis uses price multipliers to measure the ratio of the peak price over a reference price. Additionally, the findings of these studies are industry-specific. As such, the price multiplier limits of 1.25x and 1.40x used in those respective studies may not be an appropriate basis for comparison with the airline industry. The sports and tourism industries have different motivations to keep prices constrained.

Price Multiplier Methodology

Given the nature of the complaints and queries received by MAVCOM on the alleged increases in the domestic airfares during peak seasons, and in the absence of existing literature on similar studies, the price multiplier methodology was chosen. This method provides a measure of the magnitude of the increase in prices during the peak seasons relative to a base airfare. The price multiplier methodology is defined as the ratio of the maximum airfare during the selected peak season over a base airfare.

$$\textit{Price multiplier} = \frac{\textit{maximum airfare during a peak season}}{\textit{base airfare}}$$

Maximum Airfare During A Peak Season

The main challenge in measuring the price multiplier is to determine the maximum and the base airfares. Under dynamic pricing strategies, prices may change daily, or even hourly, based on the demand for seats on a specific route or flight; the flight's remaining seat capacity; and the length of period between the date of booking and the date of departure.

The study simulates the behaviour of a domestic passenger who would generally purchase a flight ticket at the lowest available airfare; travel nearer to the date of the public holiday; and book tickets at least a few weeks in advance.

For this study, the Malaysian domestic airfares were obtained from each airline's booking website at least 20 days before the date of the selected public holiday or school holiday. To better reflect the actual prices that passengers pay when booking tickets, the airfares recorded include the airline base fares, the PSC[6], any compulsory administrative fees[7], and the GST, wherever applicable[8]. For each peak season, airfares over a minimum period of ten days were observed, inclusive of the public holiday. Out of all the airfares in a day, the lowest available airfare of the day is identified. Thus, for each peak season, the lowest available airfare for at least ten days are recorded. The maximum airfare for a peak season is the highest of the lowest recorded airfares.

For example, for Hari Raya Aidilfitri, the public holiday fell on 15 and 16 June 2018 (Friday and Saturday). Based on the scope of the study, the lowest daily airfare offered by each airline for each route from 11 June 2018 (Monday) to 21 June 2018 (Thursday) was collected. The maximum airfare for the Hari Raya Aidilfitri period was then determined based on the highest airfare of the eleven daily airfares observed.

[6] Includes the passenger security service charge.

[7] E.g.: Malindo's administrative fee of RM20 for each one-way, domestic flight ticket.

[8] For observations on Malaysian domestic airfares carried out between December 2017 and May 2018, the applicable GST was 6% of the sale price. For observations on Malaysian domestic airfares carried out from 1 June 2018 onwards, the applicable GST was 0%.

Base Airfare

Recall that in the soccer game tickets study mentioned earlier, the base price or reference price was the mean season ticket price, while in the hotel revenue management study, the reference price was based on the historical seasonal booking price determined by the hotel manager. Unfortunately, identifying the base airfare is more complicated in the absence of an exact definition of the base or reference price.

Our study was conducted based on the complaints on the increase in airfares that passengers had observed when trying to book flight tickets during peak seasons. And so, one of the options is to set the base price as the airfare that passengers see most frequently on the booking websites. In using this as a base price, we would have to monitor the daily airfares for at least 30 days from the chosen public holiday and identify the mode airfare, that is, the value of airfares that appear most often. As there are 46 domestic routes and six peak seasons to collect, this method is impractical.

A second option is to set the base airfare using the historical average airfares. This can be obtained via the IATA AirportIS database. However, we note that:

- The AirportIS only reports monthly average data.
- Historical airfares could be influenced by historical jet fuel prices.
- Historical airfares could be influenced by certain incidents such as the Sabah earthquake (2015) or the MH370 and MH17 twin tragedies (2014) that could affect demand for domestic flights and, consequently, domestic airfares.

In view of these considerations, the yearly average airfares for 2016 and 2017 were chosen as the base airfares for each route.

As an example, the JHB-TWU route is operated by AirAsia and the maximum airfare observed during the 2018 Chinese New Year period was RM744. Based on the IATA AirportIS database, the 2016 and 2017 average airfare for the route was RM312. Using the price multiplier formula, the price multiplier for AirAsia's flights on the JHB-TWU route during the 2018 Chinese New Year period was 2.4x.

Both the maximum airfare for each peak season and the base airfare are based on the airfare of a one-way ticket for each route.

Limitations of the Study

This study had several limitations in terms of methodology and data. These limitations may influence the interpretation of the data, as well as, the results of the analysis.

Methodology limitations

The airfare data for the selected peak seasons was monitored in phases as the monitoring had to be carried out manually, rather than through big data analytics. For the Malaysian domestic routes, the airfare data was collected between December 2017 and July 2018 while for the domestic routes in Indonesia, Thailand, the Philippines, and the US, the airfare data was collected throughout June 2018. As stated above, the airfare data was collected at least 20 days from the selected date of the public holiday or school holiday. The interval of the monitoring date and the date of the public holiday or school holiday varies between approximately three weeks to one year. Therefore, the data utilised in the study could be affected by the time during which these airfares were recorded as airfares fluctuate according to changes in the demand and market conditions through dynamic pricing practices.

Data limitations

Given that the main purpose of this study was to analyse the pricing patterns of airfares for domestic flights during the peak seasons, the most optimal method would be to analyse the actual fares paid and the number of tickets sold according to the airfare buckets, which is only available from the airlines. However, due to the need for expediency in carrying out this study, the data on the actual number of tickets sold according to the airfare buckets could not be collected from the airlines and analysed within the study's timeframe.

As the best alternative, the airfare data was collected from the respective airlines' booking websites for the Malaysian domestic routes, and Google Flights for the domestic routes in Indonesia, Thailand, the Philippines, and the US. The limitations of data collected from the booking websites and Google Flights are as follows:

- Airfares observed might differ from the actual airfares paid by the passengers, due to dynamic pricing.
- As Google Flights collects data from multiple sources including airlines' booking websites and third-party travel sites, there might be some discrepancies between the airfare data collected via Google Flights compared to the airfare data collected directly from the airlines' booking websites. A search using Google Flights might have resulted in the observation of an airfare offered by a third-party travel site that was lower than the airfares offered on the airlines' booking websites for the same route and peak season. Using the price multiplier methodology, the lowest available airfare for each day within the peak season period would be recorded. As a result, the price multiplier data for the Malaysian domestic routes might not be a like-for-like comparison to the price multiplier data for the domestic routes in Indonesia, Thailand, the Philippines, and the US due to the difference in the data sources.

With regard to the historical average airfares:

- The data obtained from AirportIS did not include any applicable additional charges such as the PSC, compulsory administrative fees, and the GST. These additional charges were manually added to the historical average airfare data obtained from AirportIS for the calculation of the base airfares, consistent with the airfare data recorded for each peak season. In addition, the average airfare data sourced from AirportIS was converted from USD to either MYR, IDR, THB, or PHP using the respective average currency exchange rates for 2016 and 2017 sourced from Thomson Reuters. These limitations might cause the average airfare data collected to differ from the actual average airfares paid due to the manual addition of the applicable PSC, fees, and GST, and the fluctuation of the currency exchange rates.
- For routes operated by MAB and MASwings[9], the base airfares are based on the average airfares of both airlines in AirportIS due to the airlines sharing the same IATA airline code. Therefore, the base airfares for MAB used in this study may be influenced by the MASwings fares.

[9] The routes are BKI-SDK, BKI-TWU, BKI-MYY, MYY-KCH, KCH-SBW, and KCH-BTU.

As stated above, the monitoring of the airfare data was undertaken in phases because it was carried out manually without using big data analytics. Consequently, the airfares for six Malaysian domestic routes were only monitored from March 2018 onwards, after the 2018 Chinese New Year and March school holiday period[10]. Thus, for these six routes, the airfares for the Chinese New Year and March school holiday periods in 2019 were monitored instead of the 2018 Chinese New Year and March school holiday. This might contribute to the variations of the airfare data gathered due to dynamic pricing, which would be affected by the different peak season periods.

Finally, some base airfares for the domestic routes in Indonesia, Thailand, the Philippines, and the US were not available in AirportIS. In the absence of the base airfares, the price multipliers for those routes could not be calculated.

[10] The six routes that were monitored from March 2018 onwards were JHB-KCH, JHB-MYY, JHB-SBW, KUL-MYY, KUL-SDK, and KUL-LGK.

Key Findings

In general, the average airfares for the Malaysian domestic market have been on a declining trend since 2011. The average airfares have dropped from RM251 in January 2011 to RM214 in May 2018. However, this trend varies according to route and airline due to demand, supply, distance, and level of competition. Our analysis focused on the domestic flights in Malaysia during the selected peak seasons based on the nature of complaints and queries received.

Flights During the Chinese New Year Period Recorded the Highest Multipliers

The study found that the highest price multipliers for all route categories occurred during the Chinese New Year period, and the highest price multiplier of 5.7x was recorded on the IPH-JHB route (see Table 4).

The maximum price multipliers for Category 1 (West Malaysia to East Malaysia) and Category 3 (within East Malaysia) were 4.2x[11] and 2.0x, respectively. AirAsia is the sole operator for JHB-SBW, while IPH-JHB is only served by Malindo. Meanwhile, for the BKI-TWU route, we note that there were three airlines operating this route during that period: AirAsia, MAB, and MASwings. However, MASwings is a PSO operator, whose flight services for the BKI-TWU route are subsidised by the Government and, thus, excluded from the scope of this study.

Table 4: Highest Price Multiplier for Each Route Category

Route Category	Highest Price Multiplier	Route	Peak Season	Airline	Maximum Airfare (RM)	Base Airfare (RM)
1	4.2x	JHB-SBW	Chinese New Year*	AirAsia	988	236
2	5.7x	IPH-JHB	Chinese New Year	Malindo	1,074	187
3	2.0x	BKI-TWU	Chinese New Year	AirAsia	262	130

Source: MAVCOM Analysis, Airlines' Websites, AirportIS
**Based on 2019 Chinese New Year airfares*

It should be noted that Table 4 highlights only the highest price multiplier recorded for each route category; not all airfares for JHB-SBW, IPH-JHB, and BKI-TWU recorded 4.2x, 5.7x, and 2.0x price multipliers, respectively. Rather, airfares fluctuated throughout the 13-day observation period for the two Chinese New Year periods, resulting in different daily price multipliers being recorded (see Table 7 for illustration).

[11] As stated above, for the JHB-SBW route, the study recorded the airfares during the 2019 Chinese New Year period.

Table 5 shows the top ten domestic routes with the highest price multipliers. The routes include both routes within West Malaysia, as well as, routes between West Malaysia and East Malaysia. Out of the ten highest price multipliers, eight were recorded during the Chinese New Year period.

Table 5: Highest Price Multiplier for Each Route Category

No.	Highest Price Multiplier	Route	Peak Season	Airline	Max. Airfare (RM)	Base Airfare (RM)
1	5.7x	IPH-JHB	Chinese New Year	Malindo	1,074	187
2	4.2x	JHB-SBW	Chinese New Year*	AirAsia	988	236
3	4.2x	JHB-KCH	Chinese New Year*	AirAsia	788	188
4	3.6x	PEN-MKZ	Chinese New Year	Malindo	657	185
5	3.4x	KUL-SBW	Chinese New Year	AirAsia	844	248
6	3.1x	KUL-KCH	Hari Raya Aidilfitri	MAB	1,142	364
7	3.1x	KUL-BKI	Hari Raya Aidilfitri	MAB	1,337	438
8	3.0x	JHB-BKI	Chinese New Year	AirAsia	911	309
9	2.9x	JHB-PEN	Chinese New Year	AirAsia	500	170
10	2.9x	KUL-PEN	Chinese New Year	Malindo	558	191

Source: MAVCOM Analysis, Airlines' Websites, AirportIS
**Based on 2019 Chinese New Year airfares*

The 2.0x – 3.0x is the Most Common Maximum Price Multiplier

Table 6 displays the distribution of the highest price multiplier for each route. The analysis shows that out of 46 routes, 17 routes had the maximum price multipliers of between 1.01x and 2.00x, and 20 routes had the maximum price multipliers of between 2.0x and 3.0x. On the other hand, three routes had maximum price multipliers of more than 4.00x during the peak seasons.

Table 6: Distribution of Maximum Price Multipliers Based on Number of Routes

Route Category	No. of Routes	Distribution of Maximum Price Multipliers				
		0 – 1.00x	1.01x – 2.00x	2.01x – 3.00x	3.01x – 4.00x	Above 4.00x
1	18	-	3	10	3	2
2	21	2	8	9	1	1
3	7	-	6	1	-	-
Total	**46**	**2**	**17**	**20**	**4**	**3**

Source: MAVCOM Analysis, Airlines' Websites, AirportIS

However, airfares and, thus, the price multipliers, vary during a particular peak season due to dynamic pricing. To illustrate this, Table 7 shows the distribution of the daily price multipliers recorded during the two observed Chinese New Year periods for the JHB-SBW, IPH-JHB, and BKI-TWU routes (which recorded the highest price multiplier for each route category). For example, even though the highest price multiplier for Category 2 routes was 5.7x (for IPH-JHB during the Chinese New Year period), the daily price multipliers of the airfares observed for the same route during the same period range from below 1.00x to above 4.00x. Similarly, the airfares for the BKI-TWU and JHB-SBW routes during the Chinese New Year periods showed daily price multipliers ranging between 0 and 3.00x, and between 1.01x and above 4.0x, respectively.

Table 7: Distribution of Daily Price Multipliers Recorded for Selected Routes for Chinese New Year[12]

Route Category	Route	No. of Players	Distribution of Daily Price Multipliers				
			0 – 1.00x	1.01x – 2.00x	2.01x – 3.00x	3.01x – 4.00x	Above 4.00x
1	JHB-SBW	1	-	5	1	2	5
2	IPH-JHB	1	2	4	2		5
3	BKI-TWU	2	17	8	1	-	-

Source: MAVCOM Analysis, Airlines' Websites, AirportIS

[12] As stated above, the 2018 Chinese New Year period was observed for IPH-JHB and BKI-TWU while the 2019 Chinese New Year period was observed for JHB-SBW. For each Chinese New Year period, airfares over 13 days, inclusive of the public holidays, were observed.

Several Monopoly Routes Recorded High Price Multipliers

Out of the 46 domestic routes studied, 18 routes are operated by only one airline. From the six peak seasons monitored, Table 8 lists the highest price multipliers for each of the 18 routes and the corresponding peak seasons for which the multipliers were recorded. Most of the highest price multipliers occurred during the Chinese New Year period.

Table 8: Maximum Price Multipliers for Monopoly Routes

Route	Price Multiplier	Season	Airline	Maximum Airfare (RM)	Base Airfare (RM)
IPH-JHB	5.7x	Chinese New Year	Malindo	1,073	187
JHB-SBW	4.2x	Chinese New Year*	AirAsia	988	236
JHB-KCH	4.2x	Chinese New Year*	AirAsia	788	188
PEN-MKZ	3.6x	Chinese New Year	Malindo	657	185
JHB-BKI	3.0x	Chinese New Year	AirAsia	911	309
JHB-PEN	2.9x	Chinese New Year	AirAsia	500	170
PEN-KCH	2.8x	Chinese New Year	AirAsia	735	262
JHB-MYY	2.8x	Chinese New Year*	AirAsia	775	277
JHB-TWU	2.4x	Chinese New Year	AirAsia	744	312
PEN-BKI	2.1x	Chinese New Year	AirAsia	735	349
KBR-KCH	2.0x	Hari Raya Aidilfitri	AirAsia	471	236
JHB-LGK	1.9x	Chinese New Year	AirAsia	361	187
KUL-KUA	1.7x	Chinese New Year	MAB	412	248
JHB-TGG	1.6x	Chinese New Year	AirAsia	240	153
KBR-BKI	1.5x	Hari Raya Aidiladha	AirAsia	469	313
LGK-KCH	1.3x	March School Holiday	AirAsia	306	231
SZB-KTE	0.8x	Chinese New Year	Malindo	231	282
PEN-KBR	0.8x	Hari Raya Aidilfitri	Firefly	297	388

Source: MAVCOM Analysis, Airlines Website, AirportIS
**Based on 2019 Chinese New Year*

The average price multiplier for the 18 monopoly routes was 2.5x, and eight routes recorded maximum airfares more than 2.5x their base airfares. For routes such as PEN-KBR and SZB-KTE, their price multipliers were lower than 1.0x. This means that the observed airfares for these two routes during the peak seasons were lower than their 2016 and 2017 average airfares. Based on the historical data from April 2017 to April 2018, analysis showed that the average load factor for the 18 monopoly routes were more than 80%. This signals that the demand on these routes were high, which might explain the high airfares on some of these routes during peak seasons.

High Price Multipliers are Recorded for Certain Competitive Routes

We further investigated the behaviour of airlines on the selected Category 2 routes which are served by more than two airlines. Based on our analysis, even though the routes are operated by multiple airlines, as well as, accessible via land transport such as buses, trains, or cars, the price multipliers could still be as high as 2.5x and 2.9x for certain routes (see Table 9). This signals that these routes have high demand for flights during the peak seasons. According to the laws of supply and demand, the prices of goods and services will increase as the demand increases. Box 1 provides a simple explanation on the price determination of goods and services via the demand and supply curve.

Table 9: Price Multipliers for Category 2 Routes Served by Multiple Operators

Category 2 Routes	Airline	Price Multiplier	Peak Season	Maximum Airfare (RM)	Base Airfare (RM)
KBR-KUL	AirAsia	2.3x	Chinese New Year	316	139
	Malindo	1.9x	Chinese New Year	359	192
	MAB	1.6x	Chinese New Year	342	214
KUL-LGK	AirAsia	1.5x	Christmas	206	140
	Malindo	1.4x	Christmas	275	197
	MAB	1.2x	Hari Raya Aidilfitri	283	238
KUL-PEN	Malindo	2.9x	Chinese New Year	558	191
	AirAsia	2.5x	Chinese New Year	329	130
	MAB	1.2x	Chinese New Year	268	222

Source: MAVCOM Analysis, Airlines' Websites, AirportIS

Box 1: How Demand and Supply Determine the Market Price?

Demand and supply represent the willingness of buyers and sellers to transact. An exchange of a product or the provision of a service takes place when buyers and sellers can agree upon a price.

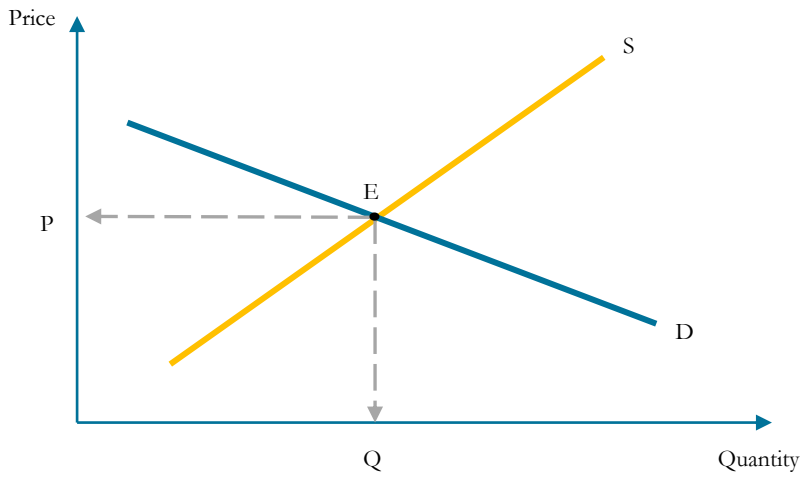
The demand and supply curve

Demand refers to how much quantity of a product or service is desired by buyers. The quantity demanded is the amount of a product or service people are willing to buy at a certain price. If all other factors remain equal, the higher the price of a good or service, fewer people will demand for that good or service. In other words, the higher the price, the lower the quantity demanded. The demand curve is, thus, downward sloping, as illustrated in Figure 1 as D.

Supply represents how much quantity of a product or service that the market can offer. The quantity supplied refers to the amount of the product that producers are willing to supply at a certain price. Producers are more willing to supply more products when they can sell it at a higher price, thus, the supply curve slopes upward as illustrated in Figure 1 as S.

The market equilibrium point is the point where the quantity supplied equals to the quantity demanded and is marked as point E. P and Q represent the market price and quantity demanded, respectively.

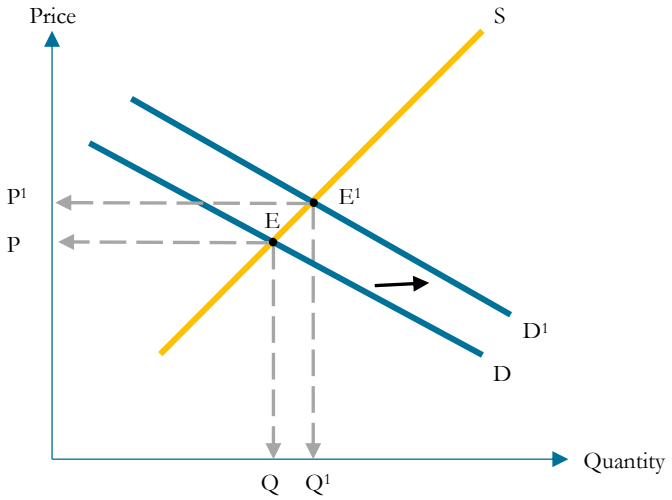
Figure 1: Demand and Supply Curve



Market price increases as the demand curve shifts upwards

In a situation where the supply of goods or services is unchanged, but an increase in demand due to factors other than price (such as seasonality or income level) occurs, the change in demand can lead to higher equilibrium prices. The increase in demand can be represented on the graph as the demand curve being shifted to the right (See Figure 2). Q^1 symbolizes the new quantity demanded by the market, while P^1 is the new higher equilibrium price.

Figure 2: Demand and Supply Curve



Similarly, in the case of the domestic air services market, there is a fixed number of seats per flight and a limited number of flights per day. And so, as the demand increases, airfares consequently increase.

Significant Airfare Increases Mostly Occurred Between One and Four Days During the Peak Seasons

It is worth noting that even though airfares were higher during certain peak seasons and for certain routes, such higher airfares did not occur for an entire peak season. Instead, these mostly occurred between one and four days out of the full monitoring period for each peak season. Below are three examples of domestic airfare fluctuations during the Chinese New Year, Hari Raya Aidilfitri, and Hari Gawai periods that show different pricing patterns for different peak seasons, routes, and airlines.

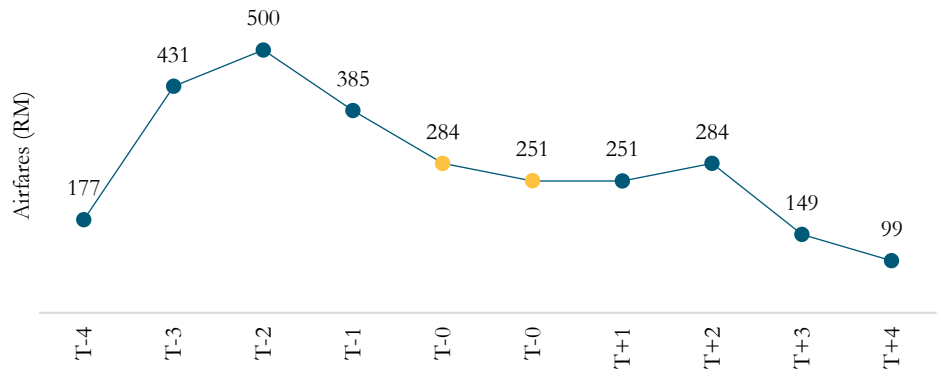
Table 10 and Figure 3 provide an example of how AirAsia airfares fluctuated during the Chinese New Year period for the JHB-PEN route. It is observed that airfares increased from T-4 to the highest price at T-2. The airfares then dropped gradually from T-2 onwards, with T-0 being the actual dates of the Chinese New Year public holiday.

Table 10: AirAsia Airfares for JHB-PEN during Chinese New Year Period

Day	Date	T	Lowest Available Airfare (RM)
Monday	12/2/2018	T-4	177
Tuesday	13/2/2018	T-3	431
Wednesday	14/2/2018	T-2	500
Thursday	15/2/2018	T-1	385
Friday	16/2/2018 (Chinese New Year)	T-0	284
Saturday	17/2/2018 (Chinese New Year)	T-0	251
Sunday	18/2/2018	T+1	251
Monday	19/2/2018	T+2	284
Tuesday	20/2/2018	T+3	149
Wednesday	21/2/2018	T+4	99

Source: MAVCOM Analysis, Airlines' Websites

Figure 3: AirAsia Airfares for JHB-PEN during Chinese New Year Period



Source: MAVCOM Analysis, Airlines' Websites

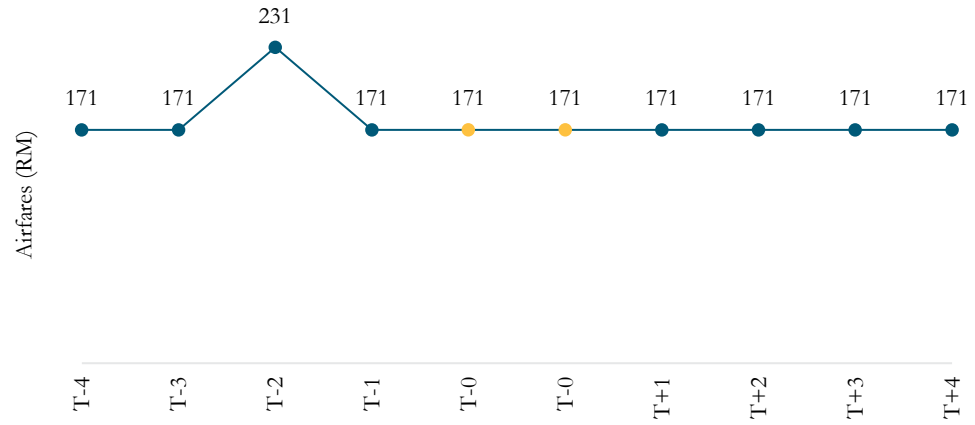
For Hari Raya Aidilfitri, Table 11 and Figure 4 illustrate the airfare fluctuation for the SZB-TGG route operated by Malindo. The airfare increased from T-3 to the highest price at T-2, and then dropped back to RM171 from T-1 onwards, with T-0 being the actual dates of the Hari Raya Aidilfitri public holiday.

Table 11: Malindo Airfares for SZB-TGG during Hari Raya Aidilfitri Period

Day	Date	T	Lowest Available Airfare (RM)
Monday	11/6/2018	T-4	171
Tuesday	12/6/2018	T-3	171
Wednesday	13/6/2018	T-2	231
Thursday	14/6/2018	T-1	171
Friday	15/6/2018 (Hari Raya Aidilfitri)	T-0	171
Saturday	16/6/2018 (Hari Raya Aidilfitri)	T-0	171
Sunday	17/6/2018	T+1	171
Monday	18/6/2018	T+2	171
Tuesday	19/6/2018	T+3	171
Wednesday	20/6/2018	T+4	171

Source: MAVCOM Analysis, Airlines' Websites

Figure 4: Malindo Airfares for SZB-TGG during Hari Raya Aidilfitri Period



Source: MAVCOM Analysis, Airlines' Websites

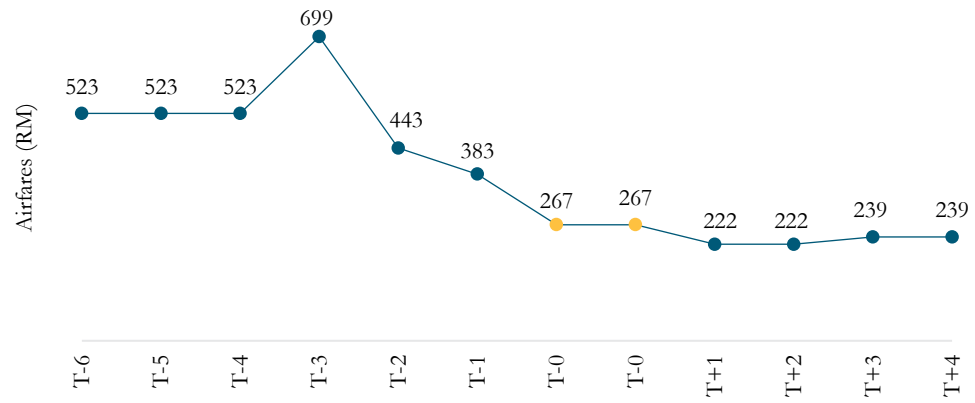
For Hari Gawai, Table 12 and Figure 5 show the airfare fluctuation for the JHB-SBW route operated by AirAsia. The airfares increased from T-4 to the highest price at T-3. The airfares then dropped gradually from T-2 onwards, with T-0 being the actual dates of the Hari Gawai public holidays.

Table 12: AirAsia Airfares for JHB-SBW Route during Hari Gawai Period

Day	Date	T	Lowest Available Airfare (RM)
Saturday	26/5/2018	T-6	523
Sunday	27/5/2018	T-5	523
Monday	28/5/2018	T-4	523
Tuesday	29/5/2018	T-3	699
Wednesday	30/5/2018	T-2	443
Thursday	31/5/2018	T-1	383
Friday	1/6/2018 (Hari Gawai)	T-0	267
Saturday	2/6/2018 (Hari Gawai)	T-0	267
Sunday	3/6/2018	T+1	222
Monday	4/6/2018	T+2	222
Tuesday	5/6/2018	T+3	239
Wednesday	6/6/2018	T+4	239

Source: MAVCOM Analysis, Airlines' Websites

Figure 5: AirAsia Airfares for JHB-SBW during Hari Gawai Period



Source: MAVCOM Analysis, Airlines' Websites

How Does Malaysia Compare to Other Countries?

Are the Malaysian domestic airfares during peak seasons considered excessive? Let's compare the findings discussed earlier with the price multipliers of other domestic air services markets during their peak periods. What we found to be common is that dynamic pricing is practised by all airlines globally, and so, as in the case of Malaysia, the domestic airfares for other countries also tend to increase during their respective peak seasons.

Country and Route Selection

To ensure a fair comparison, the countries and routes were selected based on the following criteria:

- Countries with at least three airlines operating on some of their domestic routes. Routes operated by at least three airlines may be considered competitive (depending on the market shares of the airlines), and they were chosen to examine the effect of competition on price multipliers.
- Countries with some domestic routes that have similar distance range to the Malaysian domestic routes.

As in the case of Malaysia, the peak season selection for these countries was based on the period being either a federal or national holiday; the holiday being related to the dominant ethnic group or religion of the country; and the holiday being at least two days (including the weekend).

Based on the above criteria, we selected the peak seasons in Indonesia, Thailand, the Philippines, and the US as listed in Table 13.

Table 13: Selected Peak Seasons in Indonesia, Thailand, the Philippines, and the US

Country	No. of Routes	Peak Seasons	Date
Indonesia	23[13]	Hari Raya Aidiladha	22 August 2018
		Christmas	25 December 2018
		Chinese New Year	5 February 2019
		Hari Raya Aidilfitri	5 – 6 June 2019
Thailand	20[14]	King's Birthday Holiday and Buddhist Lent Day	27 – 30 July 2018
		Anniversary of Death of King Bhumibol	13 – 15 October 2018
		New Year's Holiday	31 December 2018 – 1 January 2019
Philippines	20[15]	All Saints' Day	1 – 2 November 2018
		Christmas	24 – 25 December 2018
		Maundy Thursday and Good Friday	18 – 21 April 2019
US	20[16]	Independence Day	4 July 2018
		Thanksgiving	22 – 23 November 2018
		Christmas	25 December 2018

Source: MAVCOM Analysis, Airlines' Websites, AirportIS

For each peak season, we observed the domestic airfares for a period of at least ten days inclusive of the selected holiday. The observation exercise was carried out throughout June 2018. The airfare data was collected from Google Flights.

For the US and the Philippines, where there were different numbers of marketing and operating airlines on a selected route, the number of airlines competing on such route was recorded based on the number of the marketing airlines, instead of the number of the operating airlines. This decision was made based on the fact that there are operating airlines that operate flight services for certain marketing airlines and the tickets for such flights can only be purchased through the marketing airlines.

On the other hand, for Indonesia and Thailand, there was no difference between the number of marketing airlines and operating airlines for their domestic flight services.

[13] For Indonesia, the routes observed were BKS-CGK, CGK-PKU, JOG-DPS, SRG-CGK, CGK-BPN, CGK-PLM, KNO-CGK, SUB-DPS, CGK-BTH, CGK-SUB, KTG-PKN, SUB-KOE, CGK-DPS, DJJ-BIK, LOP-CGK, UPG-CGK, CGK-FLZ, DPS-PLM, MDC-CGK, UPG-MDC, CGK-JOG, DPS-TIM, and PNK-CGK.

[14] For Thailand, the routes observed were BFV-DMK, CNX-HGN, DMK-PHS, KBV-BKK, BKK-HKT, CNX-USM, DMK-ROI, KKC-CNX, CEI-HDY, DMK-HDY, DMK-UBP, LOE-DMK, CNX-BKK, DMK-KOP, HDY-CNX, UTH-BKK, CNX-DMK, DMK-NST, HKT-DMK, UTP-HKT, BKK-HDY, BKK-NAW, CNX-UTH, and DMK-CJM.

[15] For the Philippines, the routes observed were BCD-CRK, CEB-KLO, DPL-MNL, MPH-CEB, BXU-MNL, CEB-MNL, DVO-MNL, MPH-MNL, CBO-MNL, CEB-PPS, MNL-CBO, PPS-CRK, CEB-CRK, CGM-CEB, MNL-KLO, TAC-CEB, CEB-GES, CRK-DVO, MNL-PPS, and USU-CRK.

[16] For the US, the routes observed were ATL-DEN, ATL-ORD, BOS-JFK, BOS-LAX, CVG-DTW, DCA-JFK, DEN-DTW, DEN-SEA, HNL-LAX, IAH-ATL, IAH-MCI, IND-DTW, IND-ORD, LAS-LAX, LAX-DFW, LAX-SFO, ORD-MSP, ORD-PIT, ORD-STL, and PHL-BDL.

Domestic Airfares Also Increased During Peak Seasons in Selected Countries

The price multiplier methodology was applied on selected routes and peak seasons for each selected country. Overall, the range of price multipliers recorded for these countries during their respective peak seasons was between 0.4x and 3.8x. Out of the 83 routes observed, 64 routes had the maximum price multipliers between 1.01x and 2.00x, and 9 routes had the maximum price multipliers between 2.01x and 3.00x (see Table 14). In other words, 88% of the routes had the maximum price multipliers within the 1.01x to 3.00x range. This is similar to the distribution pattern of Malaysia's maximum price multipliers for its domestic routes. Out of the 46 Malaysian domestic routes, 37 routes or 80% of them were within the 1.0x to 3.0x range. **This highlights that the pricing patterns of Malaysia's domestic airfares during peak seasons are consistent with those of Indonesia, Thailand, the Philippines, and the US.**

Table 14: Distribution of Maximum Price Multipliers for Selected Countries

Country	No. of Routes	Distribution of Maximum Price Multipliers				
		0 – 1.00x	1.01x – 2.00x	2.01x – 3.00x	3.01x – 4.00x	Above 4.00x
Indonesia	23	-	23	-	-	-
Thailand	20	-	16	4	-	-
Philippines	20	4	14	1	1	-
US	20	-	11	4	5	-
Total	**83**	4	64	9	6	-

Source: MAVCOM Analysis, Airlines' Websites, AirportIS

Table 15 summarises the routes with the highest price multipliers and the corresponding peak seasons in each selected country. The results show that the maximum price multipliers for the selected countries are between 1.5x and 3.8x the base airfares.

Table 15: Highest Price Multiplier in Indonesia, Thailand, the Philippines and the US

Country	No. of Routes	No. of Players	Festive Seasons	Price Multiplier	Maximum Airfare (Local Currency)	Base Airfare (Local Currency)
Indonesia	UPG-MDC	3	Hari Raya Aidiladha	1.5x	IDR1,630,000	IDR1,057,141
Thailand	DMK-PHS	3	New Year's Holiday	2.9x	BHT4,330	BHT1,500
Philippines	BCD-CRK	1	All Saints' Day	3.1x	PHP5,771	PHP1,860
US	DEN-DTW	5	Independence Day	3.8x	USD719	USD187

Source: MAVCOM Analysis, Airlines' Websites, AirportIS

Despite having three airlines operating on the UPG-MDC and DMK-PHS routes, the price multipliers were 1.5x and 2.9x, respectively, indicating that airfares were demand-driven. Distance and substitutability are also relevant factors, as seen from the DEN-DTW route (1,804 km) that recorded 3.8x price multipliers even with five airlines serving the route. Table 16 below shows the distribution of the maximum price multipliers in the selected countries based on the number of airlines serving the selected routes.

Table 16: Maximum Price Multiplier in Selected Countries Based on Number of Airlines Serving Each Route

Route Category	Maximum Price Multipliers Based on Number of Airlines							
	1	2	3	4	5	6	7	8
Indonesia	1.3x	1.5x	1.5x	1.5x	1.5x	1.4x	1.4x	1.2x
Philippines	3.1x	1.8x	1.9x	1.3x	2.4x	-	-	-
Thailand	1.8x	2.3x	2.9x	1.9x	-	-	-	-
US	1.7x	1.5x	3.3x	2.4x	3.8x	3.5x	-	-

Source: MAVCOM Analysis, Airlines' Websites, AirportIS

SECTION 2: COMPARATIVE ANALYSIS OF AIRFARE-RELATED MEASURES

Countries have various options to address pricing issues in the aviation services market. They could decide to be heavy-handed and impose price control with their relevant authorities and agencies by setting the airfares for airlines to charge their passengers. They could also decide for a more *laissez-faire* approach and not regulate prices at all, letting the market set the airfares. There are also options in-between these two scenarios. This section discusses these various options and scenarios undertaken at the different level of jurisdictions – international, regional, and national. As in Section 1, this section also undertakes a comparative analysis by examining the experiences of selected countries in addressing pricing issues in their aviation services markets. Of interest is the case of Indonesia, which currently enforces a price control regime via the setting of price floor and price ceiling for its domestic air travel markets.

Implementation of Price Regulation to Regulate Airfares

The implementation of price regulation to set airfares dates to the days when airlines, flying both the domestic and international routes, were heavily regulated. Indeed, when the international treaty on aviation—the Convention on International Civil Aviation, or commonly known as the Chicago Convention—was signed in 1944, almost all airlines in the world were State-owned and regarded as "flag carriers". Then, States did not only regulate prices or airfares, but also market entry, capacity, and business operations. The domestic air transport services were either monopolised by a flag carrier or provided by a limited number of airlines as determined by the State.[17]

[17] For example, Australia had a two-airline policy in the 1950s for its domestic air transport services, which was served by the Trans-Australian Airlines and the Australian National Airways.

ICAO Guidance and ASAs as Price Regulation Instruments for International Air Travel Markets

At the international level, such heavy-handed regulation of the air transport services could be seen from the bilateral ASAs entered by States in the early years. In general, ASAs regulate economic matters relating to the international civil aviation and set out the terms and conditions for the provision of international air transport between the States. Traditionally, ASAs limit the number of airlines allowed to operate flights between the States who are parties to the respective agreements, the routes, the capacity and/or the frequency of flights to be provided by the airlines. Traditional ASAs also required international airfares to be subject to approval by the States.

Such commitments are endorsed by ICAO as reflected in its guidance on ASAs[18]. ICAO provides guidance on international airfares in two official documents – the Manual on the Regulation of International Air Transport[19], as well as, the Policy and Guidance Material on the Economic Regulation of International Air Transport[20]. Price regulation of airfares as committed to by the States in their ASAs is based on either two of the three main approaches recommended in the ICAO Template ASA relating to the governance of international airfares:

- **The "traditional" approach:** also known as a "double approval" approach, international airfares must be approved by all the signatory Parties or States to the ASAs.
- **The "transitional" approach:** also known as either a "country of origin" or a "double disapproval" approach. For the former, airlines determine their airfares, either unilaterally or negotiated, and these must then be approved by the country of origin for the international flights covered by the ASAs. For the latter, airlines determine their airfares, again either unilaterally or negotiated, and these may not be sold if both signatory Parties or States disapprove the airfares. Malaysia had adopted the transitional approach for its Template ASA.

[18] As a specialized international organisation under the UN for civil aviation, ICAO has developed economic policies relating to international civil aviation.
[19] ICAO (2004).
[20] ICAO (2016).

Price Controls as Price Regulation Instruments for National Air Travel Markets

There are countries that implement price regulation for their national or domestic air travel markets. These are mainly developing countries with growing national markets – case studies of Indonesia and Thailand are discussed in detail below.

Case study: Development of Indonesia's domestic airfare regulation regime

Indonesia makes for an interesting case study:

- Indonesia has had a long history of airfare regulation in its domestic civil aviation sector[21].
- Indonesia's airfare regulation regime for its domestic flights is extensive, covering the imposition of floor prices, ceiling prices, and surcharge rates for all domestic routes.
- There are studies and literatures on the effects of Indonesia's airfare regulation regime.

Prior to 1997, airfares were determined by the Government of Indonesia. Between 1997 and 2002, the Government of Indonesia gave INACA, which is an association of airlines, the authority to fix the standard of basic airfare for economy class for all domestic routes. The KPPU, the national competition authority of Indonesia, issued a letter of recommendation to the MOT Indonesia for the revocation of the authority given to INACA as such practice was found to be unlawful and harmful to consumers. Subsequently, INACA's authority was revoked by the Government.

In 2002, the MOT Indonesia issued an order which established ceiling prices for economy class airfares for domestic routes[22]. The ceiling price was set for each route based on established base rates and distance. The rationale for imposing ceiling prices was to protect consumers from excessive pricing by airlines.

In 2005, the MOT Indonesia issued an order to establish floor prices for economy class airfares for domestic routes[23]. The floor prices were imposed to prevent predatory pricing; ensure that airlines are earning enough yield to maintain the safety of their aircrafts; and prevent bankruptcy of airlines.

With the imposition of ceiling prices and floor prices for airfares, one of the remaining factors that would affect airfares is fuel surcharge. In 2006, INACA issued a document relating to the determination of the average fuel surcharge rate at IDR20,000 per passenger. This was done with the agreement of the Directorate General of Civil Aviation.

The KPPU responded to INACA's action by stating that such determination of fuel surcharge rate is a form of cartel and airlines should determine their respective fuel surcharge rates independently. The KPPU also initiated an investigation on 13 Indonesian airlines for the fixing of fuel surcharge rate and issued an infringement decision against nine airlines[24]. The infringing airlines were imposed significant financial penalties ranging from IDR1 billion to IDR162 billion.

[21] It is noted that Indonesia also imposes price regulation in other transport or transport-related sectors, including public bus, train, ferry, sea freight, airport, river port, and sea port services.

[22] Keputusan Menteri Perhubungan Nomor 9 Tahun 2002 tentang Tarif Penumpang Angkutan Udara Berjadwal Dalam Negeri Kelas Ekonomi.

[23] Keputusan Menteri Perhubungan Nomor 36 Tahun 2005.

[24] Putusan 25/KPPU-I/2009 tentang Penetapan Harga Fuel Surcharge Dalam Industri Jasa Penerbangan Domestik.

Following the KPPU's infringement decision relating to the fixing of fuel surcharge by the airlines, the MOT Indonesia established the regulation of surcharge in addition to the regulation of floor price and ceiling price for airfares[25].

In 2010, the MOT Indonesia established the maximum airfare that airlines could charge based on the type of flight services that they provide:

- Airlines providing "full services" may charge up to 100% of the established ceiling price for each domestic route.
- Airlines providing "medium services" may charge up to 90% of the established ceiling price for each domestic route.
- Airlines providing "no frills" services may charge up to 85% of the established ceiling price for each domestic route.

In 2014, the MOT Indonesia issued regulations mandating airlines wishing to charge airfares below 30% of the ceiling price to seek the approval of the Directorate General of Civil Aviation from 19 November 2014[26]. The threshold for the mandatory approval requirement was amended later in 2014 to any proposed airfare below 40% of the ceiling price, effective from 30 December 2014[27].

The regulations and orders stated above are not exhaustive. Instead, they represent the main developments of airfare regulation in Indonesia. We note that the regulations and orders pertaining to the determination of floor prices, ceiling prices, and surcharge rates have been updated periodically.

Indonesia's current domestic airfare regulation regime is governed by Peraturan Menteri Perhubungan Republik Indonesia Nomor PM 14 Tahun 2016[28]. As for the economy class airfares, the MOT Indonesia sets the floor price, the ceiling price, and the fuel surcharge rate for each domestic route. The regulation provides the following:

- The calculation formula for determining the ceiling and floor prices, taking into account the distance rate[29], tax, insurance, and the surcharge rate. The distance rate is calculated by multiplying a base rate with the distance of each route. The base rate is determined by the MOT Indonesia, taking into consideration factors such as costs, profit margin, load factor, and aircraft type.
- The regulation prescribes a detailed list of items that are considered as part of the costs, and divide aircraft into three categories: jet aircraft, propeller aircraft with fewer than 30 seats, and propeller aircraft with more than 30 seats.

[25] Keputusan Menteri Perhubungan Nomor 26 Tahun 2010.
[26] Peraturan Menteri Perhubungan Republik Indonesia Nomor 59 Tahun 2014 Tentang Perubahan Atas Peraturan Menteri Perhubungan Nomor 51 Tahun 2014 Tentang Mekanisme Formulasi Perhitungan dan Penetapan Tarif Batas Atas Penumpang Pelayanan Kelas Ekonomi Angkutan Udara Niaga Berjadwal Dalam Negeri.
[27] Peraturan Menteri Perhubungan Republik Indonesia Nomor 91 Tahun 2014 Tentang Perubahan Kedua Atas Peraturan Menteri Perhubungan Nomor 51 Tahun 2014 Tentang Mekanisme Formulasi Perhitungan dan Penetapan Tarif Batas Atas Penumpang Pelayanan Kelas Ekonomi Angkutan Udara Niaga Berjadwal Dalam Negeri.
[28] Peraturan Menteri Perhubungan Republik Indonesia Nomor PM 14 Tahun 2016 Tentang Mekanisme Formulasi Perhitungan dan Penetapan Tarif Batas Atas dan Bawah Penumpang Pelayanan Kelas Ekonomi Angkutan Udara Niaga Berjadual Dalam Negeri.
[29] Distance rate = base rate x distance.

- The surcharge rate is calculated based on the aircraft type and the distance rate. The surcharge rate may be applied if —
    - the jet fuel price increases by more than IDR9,729 per litre within a period of three consecutive months; or
    - the operational costs increase by a minimum of 10% within a period of three consecutive months due to foreign exchange rates.
- Based on the formula prescribed, the regulations list the floor price and ceiling price for each domestic route according to the type of aircraft.
- As in 2010, the maximum airfares that may be charged by airlines are determined based on the type of flight services that they provide:
    - Airlines providing "full services" may charge up to 100% of the established ceiling price for each domestic route.
    - Airlines providing "medium services" may charge up to 90% of the established ceiling price for each domestic route.
    - Airlines providing "no frills" services may charge up to 85% of the established ceiling price for each domestic route.
- The floor price is set at 30% of the established ceiling price for each domestic route.

Case study: Thailand's domestic airfares regulation regime

For Thailand, the CAAT imposes a price ceiling for its domestic airfares via its subsidiary legislation since approximately 2011. For most domestic routes in Thailand, the applicable price ceiling is THB13 per km. However, routes with less than 300 km without an alternative mode of transport that are operated by aircraft with fewer than 14 seats are subject to a price ceiling of THB22 per km.

In determining the price ceiling, the CAAT gathered data relating to the operating costs from airlines, which includes staff costs, fuel costs, and aircraft purchase or lease costs. The CAAT faced difficulty in verifying the data as airlines have the incentives to inflate their costs for their benefits. There is also information asymmetry between the regulator and the industry. Upon getting the data on operating costs from the airlines, the base operating costs were determined. A certain profit margin was then applied to the base operating costs. The calculation of the total operating costs was made based on the assumption of a certain percentage of passenger load factor.

The price ceilings for the Thai domestic routes were established in 2011, when the jet fuel price was high. The price ceilings have not been revised since their establishment and there is no intention to revise them at present. However, at the time of the study, the CAAT was looking into establishing a separate price ceiling for the LCCs. To do so, it would have to clearly define the LCC and the FSC.

Adherence to the price ceilings is one of the conditions incorporated into the airline operators' licences. Airlines are required to file the maximum airfares they intend to charge for domestic flights and submit reports on the airfares that they had imposed monthly. The CAAT compiles the reports submitted by the airlines and publishes an internal, quarterly report for monitoring. Thus far, no airline has been found to violate the established price ceilings.

The CAAT also noted that airlines generally charge airfares close to the price ceilings during peak traveling periods, such as during the festive seasons. However, the overall average airfare is about THB10.5 per km. This may be due to competition between airlines in the Thai domestic markets.

Liberalisation of the Air Travel Markets and Deregulation of Airfares

The liberalisation of the international air travel markets and its accompanying deregulation of airfares for international flights in the US was spurred by a national-level liberalisation and deregulation exercise, that is, the enactment of the US Airline Deregulation Act 1978. Before this, the US Civil Aeronautics Board regulated airfares and flight routes for the US domestic flights. Despite the existing practice of price regulation in some countries as highlighted earlier, the US liberalisation of its air travel markets and deregulation of airfares were emulated by many other countries and jurisdictions – similarly, not just for their international and regional airlines markets but also their national or domestic markets.[30]

ICAO Guidelines and ASAs Adopted the "Full Liberalisation" Approach

The policy shift towards market liberalisation and airfares deregulation was recognised in the third approach recommended by the ICAO Template ASA. Known as the **"full liberalisation" approach,** airlines are given the right to determine their airfares, which could not be disapproved by the signatory Parties to the ASAs.

While ICAO and ASAs focus on international civil aviation, their principles and approaches relating to airfares for international scheduled flight services are relevant to the overall policy on airfares including for domestic flights. Other than the US and the EU, the liberalisation and deregulation of the domestic air travel markets were subsequently undertaken by many countries including Australia, Canada, South Korea, India, and Japan from the 1980s until well into the 2000s.

Market liberalisation and airfares deregulation for Malaysia post-2006

Prior to 2006, the Government of Malaysia had been implementing a heavy-handed regulatory regime to regulate its domestic air travel market, in terms of market entry, capacity, and airfares. In 2006, the Government approved the liberalisation and deregulation of the domestic air travel market as part of the national rationalisation policy. Following this, the domestic airlines were given full flexibility to operate the domestic flights in terms of network coverage, flight frequency, and airfares.

This policy shift came after the entry of AirAsia into the markets since 2001 and its subsequent expansion of operations. The policy rationale was to encourage competition in the domestic market. However, the Government continued to regulate the overall capacity of domestic flights through the allocation of traffic rights, which is now under the purview of MAVCOM as provided by Act 771[31] since 1 March 2016.

[30] The EU is an example of a regional liberalisation of civil aviation and deregulation of airfares, which were carried out by way of three packages of liberalisation that were passed between 1987 and 1992. The third package allowed EU airlines to freely set airfares, subject to safeguards.

[31] Despite the current policy of deregulation of airfares, section 46 of Act 771 does provide MAVCOM with the power to regulating charges for aviation services, which includes scheduled flight services, if it considers appropriate to do so.

Enforcement of Competition Law to Regulate Airlines' Pricing Practices

The deregulation of airfares accompanying the market liberalisation process meant that most countries no longer enforce the traditional heavy-handed price regulation such as price caps and price controls. However, this does not mean that airlines are given the full freedom for their pricing practices. These are now subject to competition laws. Additionally, signatory Parties to the ASAs may also commit to the enforcement of their respective competition laws on their airlines' pricing practices. These are to ensure that airlines would not undertake anti-competitive pricing practices, which could include exploitative abuses such as excessive pricing. Excessive pricing is prohibited as an abuse of dominance and in the case of Malaysia, this comes under section 53 of Act 771.

Key Findings

Heavy-handed Price Regulation Can Have Unintended Negative Consequences

As discussed earlier, governments have the option to implement various forms of price regulation with the heavy-handed version being price controls. In turn, price controls can come in the form of a price ceiling or a price floor.

In the case of price ceilings, the government mandates a maximum price that can be charged for a good or service[32]. According to basic economic theory, price ceilings can either be binding or non-binding. A price ceiling is considered binding if it is below the equilibrium price in a free market. In this case, the price ceiling will lead to excess demand or shortage of the good. A non-binding price ceiling is one above the equilibrium price and should not, in theory, affect the price or quantity of the good or service in the market.

Conversely, price floors are minimum prices mandated by the government for certain goods or services. These can also be binding or non-binding depending on whether the floor price is above or below the market price.

Enforcing price ceilings and price floors to address exploitative abuses

Governments enforce price ceilings and price floors to curb exploitative abuses by firms with significant market power. The enforcement of price ceilings is common in certain industries—such as utilities, telecommunications, and energy—which operate in an imperfect competition environment[33]. In such cases, the objective is to ensure prices are kept to a certain level to benefit consumers.

Price floors, on the other hand, are imposed to protect certain industries and producers. Governments may impose price floors to ensure a "fair deal" for producers who may otherwise be subject to competition and to ensure that supply for the good or service is constantly available. A prominent example of price floors is the Common Agricultural Policy in the EU, which aimed to ensure a fair standard of living for farmers and the availability of agricultural supplies by stabilising markets[34].

[32] Yetter (2013).
[33] Cowan (2002).
[34] Grant (2016).

Effects of price controls

While governments may enforce price controls on good faith and intention, they often have adverse effects including:

- **Distortions in the quantity of goods in the market:** binding price controls can lead to excess supply in the case of price floors, or shortages in the case of price ceilings. A price ceiling can lead to shortages in the market, as producers cut back on supply whilst consumers increase their demand due to lower prices. Inversely, a price floor can lead to a situation of glut, where producers increase their supply in response to the higher price even while consumers cut back on their demand.

  An example of a price floor leading to a glut is the Common Agricultural Policy in the UK. Initially, the policy was implemented by imposing a price floor on agricultural products. Thus, agricultural firms produced amounts of goods more than what was demanded by consumers. This surplus would be purchased by the government. This led to infamous stockpiles of produce often referred to as "butter mountains and wine lakes"[35]. Meanwhile, price ceilings can also have adverse effects on the quantity of goods provided by suppliers. Clark (1979) described how food price controls imposed by the Armed Forces Revolutionary Council in Ghana had led to farmers deliberately withholding their crops from sale.

- **Reductions in the quality of products:** price controls, specifically price ceilings, may also lead to reductions in quality. Since producers cannot charge higher prices as there are price ceilings, they may cut investments to maintain their profit margins. And so, while price ceilings may benefit consumers via lower prices, these may be offset by lower quality products. In the medical industry, Kessler (2005) concluded that price controls had led to reduced incentives for firms to invest in research and development, thus, having an adverse impact on the quality of medical care for patients.

- **Higher prices despite the policy's stated objectives:** while basic economic theory observes that a non-binding price ceiling has no effect on the market, there is evidence to suggest that price ceilings can paradoxically lead to higher prices. The presence of a price ceiling may provide a focal point for collusion by firms[36]. Firms who may compete in the absence of a price ceiling may use the ceiling as a focal point to collectively raise prices even without explicit collusive agreements.

  Knittel and Stango (2003) carried out a study on the credit card market, which showed that price ceilings had the unintended effect of increasing average prices for consumers. In Canada, a similar effect of price ceilings was also found on the gas market[37]. In addition, Genakos, Koutrompis and Pagliero (2015) studied the repeal of a mark-up ceiling regulation in the Greek market for fruits and vegetables. The study found that the removal of the mark-up ceiling had led to significant price decreases. The authors suggested that this was due to the loss of the focal point leading to a breakdown in collusion between players in the market.

[35] Grant (2016).
[36] Schelling (1960).
[37] Sen et al. (2011).

Price controls unintendedly increase average domestic airfares in Indonesia

The KPPU and the LPEM studied the effects of INACA's authority in setting the standard of basic domestic airfares for economy class. Basically, this had caused airfares to increase significantly by four to five times for all the domestic routes in Indonesia compared to the airfares prior to 1997[38]. The study also found that since 2005, domestic airfares had increased on various routes.

Another study undertaken by the KPPU and the CEDS analysed the performance of the airline services market, including airfares, in Indonesia for the period of 2001 to 2015[39]. As mentioned earlier, the Government of Indonesia had introduced another price control measure in 2014 which required airlines to get government approval to charge any airfare below 30%, and subsequently, 40% of the ceiling price. This study found that, during the said period, there were significant increase in the average domestic airfares and decrease in the domestic passenger traffic in Indonesia.

In addition to the findings of the studies above, the price control regime in Indonesia received much criticisms in view of the following points:

- Instead of protecting consumers against excessive prices, the imposition of ceiling prices had the unintended negative effect of increasing the average airfares and decreasing competition between the airlines, thus, causing harm to consumers. By establishing ceiling prices, airlines are incentivised to maximise their profits by pricing their airfares nearer to the ceiling price. Airlines were also discouraged from setting airfares based on actual market forces or commercial considerations, such as level of demand or costs.

- The Government of Indonesia imposes price floors to address safety standard issues in the industry. Unfortunately, there is no guarantee that airlines would invest more in safety requirements and maintenance from the additional revenues earned from the higher airfares. Safety issues would be better addressed by stricter enforcement of safety regulation, rather than by imposing price floors.

- The effects of exploitative abuses such as excessive pricing can be addressed by enforcing the generic competition law rather than resorting to the heavy-handed price control regime.

As such, although the Government of Indonesia had intended to protect both the consumers and the industry through its strict domestic price control regime, it has the unintended negative effects of higher airfares and discouraging competition in the market. As concluded in the Note by Indonesia to the OECD on Airline Competition, "Ticket pricing remain[s] as the biggest problem for [the] Indonesian airline industry" as it is subject to heavy government regulation.

[38] KPPU and LPEM (2012).
[39] KPPU and CEDS (2015).

Pursuing Liberalisation Policy Can Develop and Promote Competition

In general, studies have shown that liberalisation and deregulation have positive effects of increasing competition and reducing airfares. Examples of the effects in selected jurisdictions are discussed below:

- **The US:** under price regulation, competition between airlines was based on service quality. This encouraged overcapacity which tends to inflate airfares, as they were fixed. However, deregulation shifts competition towards the price of airfares[40]. The study by the US General Accounting Office[41], which compared airfares for the US domestic flights in 1979 and 1994, found that the average airfare per passenger mile in 1994 had dropped between 8% and 11% compared to in 1979; and airfares had declined at a majority of the airports in the US. This is consistent with the findings in other studies including by Graham et al. (1983) which found that airfares fell substantially in most US city-pairs, especially for long-distance routes; and by Morrison and Winston (1995) which estimated that deregulation resulted in a reduction of 22% in real average airfares between 1978 and 1993.

  The deregulation of the airline industry in the US had also resulted in increased competition. Borenstein (1992) found that in 1990, airfares on markets with two active airlines were, on average, 8% lower than on monopoly routes. It was also found that the existence of a third airline on a route would result in an additional 8% decrease in airfares in general. Meanwhile, Moore (1986) had studied the effects of airline deregulation on passenger traffic, capital, and labour in five markets[42] in 1976 and 1983. It found that deregulation had resulted in a substantial increase in the number of passengers, especially in terms of tourists and passengers traveling on discount fares. Deregulation also benefited capital investment, either through more efficient use of capital due to higher load factors and fewer staff per flight, or through the increase in the share prices of major airlines. In terms of labour, however, deregulation appeared to result in lower wages despite the initial gains in employment in the newer airlines.

- **The Philippines:** the Philippines' domestic airline industry was liberalised and deregulated through the Executive Order 219 in 1995. The liberalisation and deregulation of the airline industry include market entry and airfares. Manuela (2007) studied ten city-pairs in the Philippines[43] and found that on average, airfare per km was 10% lower after liberalisation and deregulation of the airline industry in the Philippines[44]; and more than 90% of domestic passengers in 2003 benefited from lower airfares due to discounts and promotions offered by the airlines, as a result of competition[45].

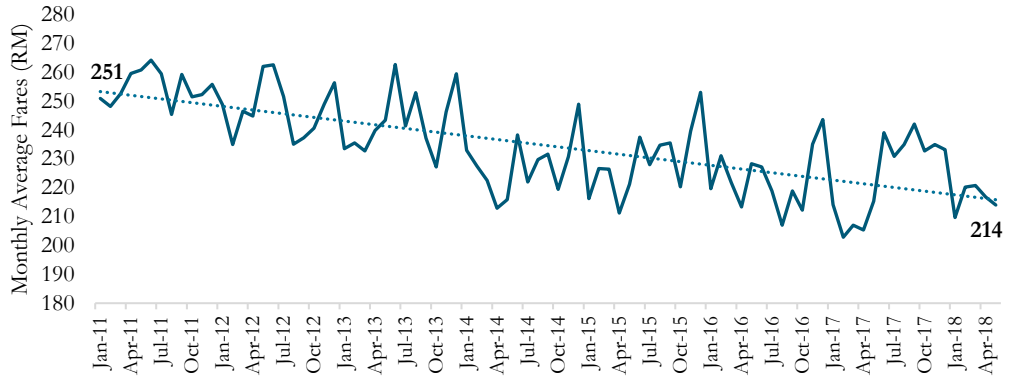
[40] Douglas and Miller (1974); Graham et al. (1983).
[41] US General Accounting Office (1996).
[42] These include long-haul, medium-haul, and short-haul markets.
[43] The city-pairs were chosen based on the following criteria: the route attracted any new entrant at one time, the city-pairs represent short- (<350km), medium- (351 – 700km) and long-haul markets(>701km), there is a competing mode of transport, and the city-pairs connect to Metro Manila.
[44] Based on the average of full economy and discounted airfares.
[45] The study noted that 90% of domestic passengers in the Philippines then travelled on 23 routes that were served by at least 2 airlines.

- **The EU:** Rietveld et al. (2002) had analysed the consumer benefits associated with airline liberalisation on 34 intra-European routes from 1988 to 1992[46]. They found that economy airfares on fully-liberalised routes were 34% lower than economy airfares on routes with less degree of liberalisation; and the departure frequency on fully-liberalised routes were 36% higher than the number of departures on routes with less degree of liberalisation.

Lower airfares for the Malaysian domestic market post-liberalisation

The average airfares for the Malaysian domestic market have been on a declining trend since 2011. In January 2011, the average airfare for domestic routes was RM251, compared to RM214 recorded in May 2018 (see Figure 6). This translates to a 15% fare reduction between the two periods. The lower average airfares observed today could be attributable to a number of reasons. This includes the competitive pressures with the entry of a new airline, Malindo, that commenced operations in March 2013. Also, the lower jet fuel costs (jet fuel price was USD104/bbl in 2011 compared to USD83/bbl for the first five months of 2018) and the advancement of technologies in the aviation industry, such as newer and more fuel-efficient aircrafts, may be contributing factors to the decline in average domestic airfares.

Figure 6: Average Airfares for Domestic Market



Source: AirportIS, Thomson Reuters

[46] The sample routes represent different traffic densities and stage lengths, while the period between 1988 and 1992 represents various degrees of liberalisation in the European market.

An example of the effects of liberalisation and deregulation would be the opening of the KUL-SIN route in 2007, which had resulted in the decrease of airfares. Prior to 2007, Malaysia had allowed only Malaysian Airlines[47] to operate the KUL-SIN route. As a result, the route was dominated by Singapore Airlines and Malaysian Airlines as a duopoly. In late 2007, the Government of Malaysia had allowed AirAsia to enter the market, which prompted Tiger Airways' entry as well. This had caused an immediate, significant decrease in airfares as shown in Table 17 below[48]:

Table 17: Comparison of Airfares on SIN-KUL Route

Airline	Fare before entry (SGD)	Fare after entry[49] (SGD)
AirAsia	-	18.93
Malaysian Airlines	220.00	26.00
Tiger Airways	-	42.00
Singapore Airlines	220.00	156.00

Source: Zhang et al. (2008)

Regulating Airline Pricing Practices via Competition Law

Since the introduction of competition into the air travel and the aviation services markets, the industry has been regulated by competition law in many jurisdictions. In Malaysia, the aviation services markets are governed by the competition law provided under Part VII of Act 771.

Since this study relates to claims of airfares increases during peak seasons in Malaysia, a common question that arose is whether such increases amount to excessive pricing. As mentioned previously, excessive pricing is an exploitative abuse and is prohibited by the abuse of dominance provision in a competition law. For Malaysia, section 53 of Part VII of Act 771 would apply.

Strict test applies for excessive pricing under competition law

It is important to highlight the threshold for excessive pricing that is prohibited as an abuse of dominance is high. The following elements must be fulfilled to decide on excessive pricing which amounts to an abuse of dominance[50]:

- The enterprise has a **dominant position or market power** in a market.
- The enterprise imposes **excessively high prices, which have no reasonable relation to the economic value** of the product or service.
- The imposition of excessively high prices is **sustained over a period of time**[51].

Based on the elements above and the findings in Section 1, it is very unlikely for the airfares increases during peak seasons in Malaysia to be regarded as excessive pricing that is prohibited under section 53 of Act 771:

[47] Malaysia Airlines' business, property, rights, liabilities, and affairs were transferred to MAB on 1 September 2015 pursuant to the Malaysian Airline System Berhad (Administration Act 2015), gazetted on 5 January 2015.
[48] AirAsia and Tiger Airways offered limited free seats.
[49] Average fare of 3Q08, before tax and fees.
[50] In the absence of jurisprudence on this issue in Malaysia, reference to principles laid by foreign authorities and courts are made.
[51] The UK Guidelines on Assessment of Individual Agreements and Conduct states that "to be abusive, prices must be consistently excessive".

- The findings of the quantitative analysis show that the increase in airfares was driven by demand during the peak seasons. Thus, it could be argued that there is reasonable commercial justification for the spike in airfares for a short period of time. Also, the increase occurs on all types of routes, including monopoly routes, routes that are served by two or more airlines, and routes with alternative mode of transports. In addition, the increase in airfares during peak seasons in Malaysia are comparable to those of other countries.

- The increase in airfares occurs mainly between a period of one and four days for each peak season. The increase in airfares does not occur over a sustained period of time, which is also supported by the low base airfare or the yearly average airfare.

The high threshold of excessive pricing under competition law underlies the cautious approach adopted by most jurisdictions to avoid any over-reaching enforcement of the prohibition of excessive pricing[52] based on the following reasons:

- Price increases that are due to natural market forces should not be prohibited. Any significant price increase by an enterprise would be corrected by the market, as it would attract new entrants into the market and the consequent increase in competition would bring the prices down again. In this regard, some argued that intervention should be limited to cases in which entry barriers are very high, where there is a reasonable prospect that consumers could be exploited. "*The need for a strict enforcement policy is less obvious in circumstances where the market is contestable, since high prices would ordinarily attract new entrants that would compete away the excessive margins.*" [53]

- The prohibition of excessive prices may have a chilling effect on investment and innovation. Enterprises may be discouraged from investing in research and development in an industry that is price regulated. This could arise from concerns over their ability to recoup their investments due to the price regulation that constrains on their ability to charge a higher price for the innovative product.

- There are practical difficulties in measuring and determining whether a price is excessive. For example, in order to determine whether there is excessive pricing, the court/authority would need to verify the costs of the product or service, the competitive price for the product or service, and the actual and reasonable profit margins. Given the information asymmetry between the enterprises and the court/authority, the enforcement against excessive prices is often very challenging in practice.

[52] At the extreme, the US antitrust law, "in almost all instances, does not prohibit firms from setting a "high" price because the freedom of a firm to determine the conditions (including price) upon which it sells its product or service is a central component of the free market. In a free market economy, price serves critical allocative functions. Price adjusts to balance supply and demand, and high prices often serve to attract investment to markets where it would create the greatest consumer benefit". Note by the United States, Roundtable on Price Discrimination, Directorate for Financial and Enterprise Affairs Competition Committee, Organisation for Economic Co-operation and Development, DAF/COMP/WD(2016)69 (2016).

[53] O'Donoghue and Padilla (2006).

As such, the enforcement against excessive pricing only occurs in exceptional circumstances, as illustrated in examples of excessive pricing cases in Box 2 below.

Box 2: Examples of Excessive Pricing Cases

United Brand v Commission, Case 27/76 [1978] ECR 207

This case relates to the alleged abuses of a dominant position by United Brands, the importer of the Chiquita brand of Latin American bananas. United Brands supplied these bananas unripe and in bulk to distributors operating in various EU countries. The distributors would buy the bananas while still green, ripen the bananas using their own facilities and distribute the ripe bananas to retailers across their national markets.

Amongst others, the Commission claimed that United Brands charged unfairly high prices to customers in certain Member States, such that these prices were "excessive in relation to the economic value of the product supplied". The prices charged by United Brands to its customers in Germany (other than the Scipio group), Denmark, the Netherlands, Belgium, and Luxembourg are considerably higher, sometimes by as much as 100%, than the prices charged to customers in Ireland.

United Brands argued that the prices were driven by the market conditions prevailing in those countries, and that the higher prices charged by United Brands as compared to other branded and unbranded bananas were justified by the superior quality of its Chiquita bananas.

The Court decided for United Brands on this point and rejected the Commission's earlier decision on the presence of excessive pricing. The Court found that the Commission could not discharge that burden without analysing cost data to assess whether prices charged by United Brands were abusive:

"250. In this case, charging a price which is excessive because it has no reasonable relation to the economic value of the product supplied would be such an abuse.

251. This excess could, inter alia, be determined objectively if it were possible for it to be calculated by making a comparison between the selling price of the product in question and its cost of production, which would disclose the amount of the profit margin; however, the Commission has not done this since it has not analysed UBC's costs structure.

252. The question therefore to be determined are whether the difference between the costs actually incurred and the price actually charged is excessive, and, if the answer to this question is in the affirmative, whether a price has been imposed which is either unfair in itself or when compared to competing products.

253. Other ways may be devised – and economic theorists have not failed to think up several – of selecting the rules for determining whether the price of a product is unfair."

General Motors Continental NV vs. Commission, Case 26/75 [1975] ECR 1367

General Motors had a legal monopoly and the freedom to set charges for the issuance of certificates and shields for vehicles. Between 15 March and 31 July 1973, General Motors charged the same rates for the issue of certificates of conformity and type-shields in five cases of parallel imports as it has charged previously for inspecting certain American models, which was BEF5,000 plus BEF900 VAT.

From 1 August 1973, it implemented its new scale of charges which distinguished the charges for a private car manufactured in Europe by an undertaking within the General Motors group (BEF1,250) and a private car manufactured in the US by General Motors (BEF5,300 – 30,000).

On 3 August 1973, General Motors took action to reimburse part of the amounts charged in the five cases mentioned above. In two cases, it returned BEF4,900 and in the other three cases, BEF4,425 were returned.

The Court in this case found that General Motors' conduct did not amount to abuse of dominance because, although the fee charged was "excessive in relation to the economic value of the service provided", it was charged only occasionally and for a limited duration only.

Scandlines Sverige v. Port of Helsingborg, COMP/36.568 [2006] 4 CMLR 1298

This case relates to the complaints by Scandlines Sverige, a ferry operator, against the Port of Helsingborg in Sweden. Scandlines alleged that the Port of Helsingborg charged excessive port fees for services provided to ferry operators active on the Helsingborg-Elsinore route between Sweden and Denmark.

Adopting the approach laid down in the United Brands case, the Commission rejected the allegation of excessive pricing and held as follows:

"214. …an analysis of excessive or unfair pricing abuse must focus on the price charged, and its relation to the economic value of the product. While a comparison of prices and costs, which reveals the profit margin of a particular company may serve as a first step in such an analysis, this in itself cannot be conclusive as regards to whether the price is unfair.

215. In line with what the Court has stated in para.[252] of the United Brands judgment, a distinction must be made between the assessment of the difference between the price and the production costs – the profit margin – and the assessment of whether the price is unfair.

216. At the end of s.II.B.2.1.d, the Commission concluded that in any event, even if it were to be assumed that the profit margin of HHAB is high or even "excessive", this would not be sufficient to conclude that the price charged bears no reasonable relation to the economic value of the services provided.

228. As a consequence, even if it were to assume that there is a positive difference between the price and the production costs exceeding what Scandlines claims as being a reasonable margin (whatever that may be), the conclusion should not necessarily be drawn that the price is unfair, provided that this price has a reasonable relation to the economic value of the product/service supplied. The assessment of the reasonable relation between the price and the economic value of the product/service must also take into account the relative weight of non-cost related factors.

232. In the present case, the economic value of the product/service cannot simply be determined by adding to the approximate costs incurred in the provision of this product/service as assessed by the Commission, a profit margin which would be pre-determined percentage of the production costs. The economic value must be determined with regards to the particular circumstances of the case and take into account also non-cost related factors such as the demand for the product/service."

CONCLUSION

Airlines globally engage in dynamic pricing as part of their overall revenue management strategy, which entails airlines to charge airfares according to demand and market conditions. The higher demand for flight services during peak seasons and the perishable nature of flight services explain the increase of airfares for domestic flights during those periods.

In the case of Malaysia, 39 out of 46 domestic routes had airfares with price multipliers between 0.8x and 3.0x. However, price multipliers above 3.0x were recorded on certain routes and peak seasons. The significant increase in airfares mostly occurred between one and four days within each peak season. Price multipliers for the peak seasons relate more to high passenger demand than the number of operating airlines for the routes.

Additionally, the findings on domestic airfares during peak seasons in Malaysia are comparable to those in Indonesia, Thailand, the Philippines, and the US. In Malaysia, 80% of the routes analysed had price multipliers between 1.01x and 3.00x, while in those countries, 88% of the routes were within the same range of price multipliers.

Meanwhile, a comparative study of airfare-related measures internationally and in selected countries revealed that many countries have moved away from enforcing price regulation. The deregulation of airfares and liberalisation of the airline industry generally have had positive effects of reducing airfares and increasing competition. Indeed, this is the case for Malaysia where its average domestic airfares have generally been on a declining trend since 2011.

Malaysia could learn from Indonesia's experience in strictly regulating airfares by imposing a floor price, a ceiling price and a surcharge rate for each of its domestic routes. Studies have shown that Indonesia's strict airfare regulation had the unintended negative consequence of higher airfares in general. The imposition of floor and ceiling prices may also discourage competition between airlines.

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