

# Airport beta estimates

*Report prepared for Air New Zealand*

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PO Box 29, Stanley Street Plaza  
South Bank QLD 4101  
Telephone [REDACTED]  
Email [REDACTED]  
Internet [www.sfgconsulting.com.au](http://www.sfgconsulting.com.au)

**STRATEGIC FINANCE GROUP**  
S F G C O N S U L T I N G

Level 1, South Bank House  
Stanley Street Plaza  
South Bank QLD 4101

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## Executive summary and conclusions

### Instructions

1. The Strategic Finance Group: SFG Consulting (SFG) has been engaged by Air New Zealand to examine the estimation of equity beta for companies providing airport services.
2. Throughout the report, we follow the six-step approach of the New Zealand Commerce Commission (the Commission) set out in its *Input Methodologies Airport Services: Draft Reasons Paper* of 31 May, 2010 (Draft Reasons). In particular, we use ordinary least squares (OLS) estimation applied to monthly returns data, we make no Bayesian adjustments, and we adopt the Commission's approach to re-levering equity betas. That is, we use the same approach as the Commission for processing the relevant data to produce beta estimates.

### Conclusions

3. Our investigation identifies a larger set of potentially comparable firms than the set used by the Commission in its Draft Reasons. Our approach is to begin with all firms that are classified as operating in the airports, flying fields and airport terminal services industry and for which sufficient data is available. We then apply a classification system provided by Air New Zealand to identify those firms that are most comparable to Auckland International Airport.
4. Whether we use the entire sample or sub-sets based on the Air New Zealand classification, the result is re-levered equity beta estimates that are lower than the estimate of 1.08 adopted by the Commission in its Draft Reasons. Our estimates are more comparable with those previously adopted by the Commission and by other regulators.
5. The Commission's Draft Reasons provide little information about how its smaller set of comparable firms was identified.

## Beta estimates

### Estimation methodology

6. We begin by using the Osiris database to identify the set of all firms that are classified as operating in the airports, flying fields and airport terminal services industry (SIC 458<sup>1</sup>). We then obtain monthly stock returns for each of these firms from the Datastream database. In all cases, stock returns include dividends and capital gains, as is standard. Our final sample of potentially comparable firms is constructed as follows:
  - a. The initial sample of firms classified as operating in the airports, flying fields and airport terminal services industry was comprised of 44 firms;
  - b. Six firms were then removed from the sample because there were no returns data available from Datastream;
  - c. One firm was removed from the sample because there were no market returns (for Kuwait) available from Datastream;
  - d. A further six firms were removed from the sample because they are thinly traded on OTC markets;
  - e. Our final sample is therefore comprised of 31 firms classified as operating in SIC 458.
7. The Osiris database provides a brief description of the business operations of each of these firms, as set out in the Appendix to this report.
8. For each of the 31 firms in the final sample, we perform a standard ordinary least squares regression using all of the available data. In all cases we use monthly stock returns and the most recently available data, consistent with the approach adopted by the Commission.<sup>2</sup> These equity beta estimates are reported in Column [H] of Table 1 below. Table 1 also reports the standard error of each beta estimate (Column [J]) and the R-squared statistic (Column [K]) which provide an indication of the statistical significance and informativeness of each regression.
9. Column [L] of Table 1 reports the number of (monthly) observations used in each regression. We note that the Commission, and some commercial data service providers, use five years of monthly data to estimate equity betas. This is due more to convenience than evidence, with academic studies generally suggesting that longer time periods result in more reliable estimates. A number of academic papers have considered the appropriate length of data that should be used to estimate equity betas. For instance, Gray, Hall, Bowman, Brailsford, Faff and Officer (2005) and Hooper, Ng and Reeves (2005) present evidence to suggest a longer time period should be used than the commercial practice of four or five years of monthly data. Consequently, we use all available data as the basis for our beta estimates.
10. We do not apply any Bayesian adjustment (e.g., Blume or Vasicek corrections), also consistent with the approach adopted by the Commission.<sup>3</sup>

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<sup>1</sup> SIC refers to the Standard Industry Classification system.

<sup>2</sup> Draft Reasons, p. 227.

<sup>3</sup> Draft Reasons, pp. 232-233.

11. We then use the unlevering approach adopted by the Commission to convert the OLS equity beta estimates into asset beta estimates for each firm. Setting the debt beta to zero (again, consistent with the approach adopted by the Commission<sup>4</sup>) results in the following formula for unlevering equity betas:

$$\beta_a = \beta_e(1 - L)$$

where  $\beta_a$  represents the unlevered asset beta,  $\beta_e$  represents the equity beta, and  $L$  represents the firm's leverage (debt financing as a proportion of the market value of the firm).

### **Estimation results**

12. The asset beta estimates for each of the comparable firms is set out in Column [G] of Table 1.

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<sup>4</sup> Draft Reasons, p. 234.

Table 1. Airport beta estimates

Ticker	Market	Exchange	Market cap*	Debt*	D/V	Asset beta	OLS beta	Relevered OLS beta	Standard error	Adj. R <sup>2</sup>	No. observations	Air NZ Classification
[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]	[M]
AELG	Slovenia	Ljubljana	48.4	0.0	0%	1.2	1.2	2.0	0.1	55%	130	U
AFI	Italy	Milan	108.5	10.0	8%	0.5	0.6	0.9	0.1	17%	118	C
SAVE	Italy	Milan	352.0	97.9	22%	0.9	1.1	1.4	0.2	38%	60	C
ADP	France	Euronext Paris	5,235.0	3,060.3	37%	0.7	1.1	1.1	0.2	46%	47	U
8864	Japan	Tokyo Stock Exchange	17,075.1	19,565.9	53%	0.3	0.6	0.5	0.1	15%	193	C
AIA	New Zealand	New Zealand	2,450.4	1,076.7	31%	0.7	1.0	1.2	0.1	31%	130	C
600463	China	Shanghai	1,499.4	813.0	35%	0.4	0.7	0.7	0.2	16%	73	N
00694	China	Hong Kong	8,682.7	21,472.9	71%	0.3	1.2	0.6	0.2	31%	126	C
KBHL	Denmark	Copenhagen	10,241.6	3,489.9	25%	0.7	0.9	1.1	0.2	10%	180	C
DBG	France	Euronext Paris	499.3	1,020.9	67%	0.7	2.0	1.1	0.3	26%	167	N
DCP	USA	NYSE	986.5	552.1	36%	0.6	0.9	1.0	0.3	11%	57	N
FLU	Austria	Vienna Stock Exchange	904.5	682.2	43%	0.5	0.9	0.9	0.1	16%	206	U
FHZN	Switzerland	SIX Swiss	1,964.8	1,248.1	39%	0.5	0.8	0.8	0.1	17%	251	C
FRA	Germany	Frankfurt	3,210.0	4,245.8	57%	0.4	1.0	0.7	0.2	18%	114	C
GEM	Italy	Milan	734.6	1,460.3	67%	0.5	1.4	0.8	0.1	48%	273	N
OMAB	Mexico	Mexico	6,954.0	130.9	2%	1.0	1.0	1.6	0.2	39%	42	C
GAPB	Mexico	Mexico	17,905.7	800.0	4%	0.7	0.7	1.1	0.2	27%	51	C
600004	China	Shanghai	10,154.5	1,750.0	15%	0.2	0.3	0.4	0.2	1%	93	C
IFT	New Zealand	New Zealand	976.6	2,379.1	71%	0.0	0.0	0.0	0.5	-1%	176	N

9706	Japan	Tokyo Stock Exchange	111,256.2	35,614.0	24%	0.6	0.7	0.9	0.3	3%	226	U
005430	Korea	Korea Stock Exchange	134,080.1	40,296.9	23%	0.5	0.7	0.9	0.1	14%	250	N
5014	Malaysia	Kuala Lumpur	5,500.0	707.8	11%	1.0	1.1	1.6	0.1	34%	120	U
MIA	Malta	Malta	109.6	55.1	33%	0.5	0.7	0.8	0.1	33%	89	C
MAP	Australia	ASX	5,006.7	6,112.4	55%	0.6	1.2	0.9	0.2	24%	92	U
MPLU3	Brazil	Sao Paulo	3,113.0	0.0	0%	0.3	0.3	0.5	0.5	-7%	12	N
600009	China	Shanghai	22,911.5	3,081.2	12%	0.2	0.3	0.4	0.1	4%	137	C
000089	China	Shenzhen	8,890.7	53.4	1%	0.2	0.2	0.3	0.1	1%	126	C
S58	Singapore	Singapore	2,935.8	251.5	8%	0.8	0.9	1.3	0.1	42%	116	N
SAT	Italy	Milan	88.7	5.8	6%	0.5	0.5	0.9	0.2	18%	33	U
TAVHL	Turkey	Istanbul	2,052.5	2,769.7	57%	0.3	0.8	0.6	0.2	24%	46	C
600897	China	Shanghai	4,800.7	17.0	0%	0.2	0.2	0.4	0.1	2%	150	C

Source: Datastream, SFG Calculations.  $\beta_a = \beta_e(1-L)$

13. The mean asset beta in Table 1 (Column [G]) is 0.53. When this is re-levered to 40% debt financing, to be consistent with the Commission's assumed gearing level, the re-levered equity beta is:

$$\beta_e = \frac{\beta_a}{(1-L)} = \frac{0.53}{(1-0.4)} = 0.88.$$

14. The approach adopted by the Commission is obtain an estimate of the asset beta and then re-lever to obtain an estimate of the appropriate equity beta,<sup>5</sup> and we follow the Commission's approach in this regard. For completeness, we also report the re-levered (to 40% debt financing) equity beta estimates for each firm in Column [I] of Table 1. The mean of these re-levered equity beta estimates is also 0.88.

### Sample selection

15. The estimates thus far are based on *all* firms that are classified as operating in the airports, flying fields and airport terminal services industry. It is, of course, possible that some of these firms are more comparable to Auckland International Airport (in terms of systematic risk, or sensitivity to changes in aggregate wealth) than others. In this regard, Air New Zealand has supplied us with a classification of the 31 firms in the set of potential comparables. Firms that Air New Zealand considers to be closely comparable to Auckland Airport are signified as "C." Those that are considered to be less comparable (e.g., because they involve a substantial amount of activity outside airport terminal services) are signified as "N." Those firms for which Air New Zealand is unable to make a categorical classification are signified "U." These classifications are set out in Column [M] of Table 1.
16. The average asset beta of those firms that are classified as being most comparable to Auckland Airport (i.e., those classified as "C") is 0.48. This corresponds to a re-levered equity beta (assuming 40% debt financing) of 0.79.
17. The average asset beta of those firms that are classified as being not uncomparable to Auckland Airport (i.e., those classified as "C" or "U") is 0.55. This corresponds to a re-levered equity beta (assuming 40% debt financing) of 0.92.
18. In summary, the re-g geared equity beta estimates are:
- 0.88, based on the full sample;
  - 0.79, based on those firms that are considered to be most comparable to Auckland Airport; and
  - 0.92, based on those firms that are considered to be not uncomparable to Auckland Airport.
19. These estimates can be compared with the Commission's estimate of 1.08, which is based on the Commission's smaller set of comparable firms.

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<sup>5</sup> Draft Reasons, p. 226, 232.



20. Consequently, the selection of which firms are to be included in the set of comparables can have a material effect on the equity beta estimate.
21. The Commission sets out its process for selecting the set of comparable firms as follows:

The first step is to identify relevant comparable firms for inclusion in the sample. Here, ‘comparable’ means firms that, à priori, have very similar exposure to market risk. In practice, in most New Zealand industries, it is difficult to find a sufficient number of comparable businesses to implement such an approach based solely on domestic data. Indeed, in some cases (e.g. electricity transmission), the entire industry consists of a single natural monopoly supplier. As a result, it is likely that the sample of comparable firms will include similar firms from overseas jurisdictions. This may include firms from the industry in question, or other sectors with a comparable risk profile.

The only New Zealand airport that is listed on a stock exchange is AIAL. The Commission therefore included nine international overseas firms that operate airports in its sample of comparable firms. Given the size of the sample, the Commission did not consider it necessary to consider asset betas from industries with a similar risk profile.<sup>6</sup>

22. That is, the Commission provides little detail on the process that it has used to identify its smaller set of comparable firms.
23. Finally, we note that there is a high degree of overlap between our sample and the set of firms used by the Commission. The firms that correspond to both samples, and their OLS equity beta estimates are set out in Table 2 below.

**Table 2. Comparison of airport beta estimates**

Company	Market	Exchange	SFG OLS beta	NZCC OLS beta
Aeroports de Paris	France	Euronext Paris	1.1	0.9
Auckland International Airport	New Zealand	New Zealand	1.0	0.9
Flughafen Wien	Austria	Vienna Stock Exchange	0.9	0.8
Flughafen Zurich	Switzerland	SIX Swiss	0.8	1.3
Fraport	Germany	Frankfurt	1.0	1.0
Grupo Aeroportuario Del Centro Norte	Mexico	Mexico	1.0	1.0
Grupo Aeroportuario Del Pacifico	Mexico	Mexico	0.7	0.6
MAP Group	Australia	ASX	1.2	1.2

Source: Draft Reasons, Datastream, SFG Calculations.

24. Table 2 shows that our equity beta estimates are closely comparable to those used by the Commission for all cases but for Flughafen Zurich, where the Commission’s estimate of 1.25 is

<sup>6</sup> Draft Reasons, p. 223.

the highest estimate in its sample. For all other firms, our estimates are very close to (or slightly above) those adopted by the Commission.

## **Conclusion**

25. Our beta estimates for the firms used by the Commission are generally very close to the Commission's estimates. This indicates that our process of estimating beta is commensurate with the process used by the Commission and generally produces closely comparable results. Consequently, any difference in final beta estimates will result only from differences in the set of comparable firms that are used. In this regard, we note that:
- a. If a larger set of firms that are classified as operating in the airports, flying fields and airport terminal services industry (SIC 458) are used, the resulting equity beta estimate is lower than that adopted by the Commission; and that
  - b. The Commission has provided no detail on how it has selected the firms in its set of comparables.

## References

- Gray, S., J. Hall, R. Bowman, T. Brailsford, R. Faff and R. Officer, (2005), The performance of alternative techniques for estimating equity betas of Australian firms, Report prepared for the Energy Networks Association (May).
- Hooper, V. J., K. Ng and J. J. Reeves, (2005), Beta forecasting: A two-decade evaluation, Working paper, University of New South Wales and Stanford University.
- New Zealand Commerce Commission, (2010), Input Methodologies Airport Services: Draft Reasons Paper, 31 May.

## Appendix 1: Business descriptions of comparable firms

### **Aerodrom Ljubljana D.D. (AELG; Slovenia)**

Aerodrom Ljubljana D.D. carries out airport services such as receiving and sending off planes and passengers, cargo depot, catering. In addition, the Company performs other commercial activities for airport users, such as general aviation, aero engineering, business premises lease, parking facilities and other.

### **Aeroporto Di Firenze S.P.A (AFI; Italy)**

The Company's principal activity is the management of Florence Airport for passenger and cargo transportation. The company offers a wide-ranging network of Italian connections. The Company also manages non-aviation activities, such as duty-free shops, refreshment bars and advertising space concessions.

### **Aeroporto Di Venezia Marco Polo S.P.A SAVE (SAVE; Italy)**

SAVE S.P.A manages the Venice Marco Polo airport. Its activities fall under three business areas: airport management; the management of mobility infrastructures and related services; public catering and the management of the travellers' shops (Food & Beverage and Retail) in the mobility infrastructures.

### **Aéroports De Paris SA (ADP; France)**

The Company is an airport group. It specializes in owning and operating 3 Ile-de-France airports (Paris - Charles de Gaulle, Paris - Orly, and Paris - Le Bourget), 10 aerodromes, and one heliport (Paris Issy-les-Moulineaux). The Company's sales break down by activity is as follows:

- supply of airport services (74.8%): air traffic management, intermodal transportation and terminal management, preparation of restaurant, parking, and telecommunication spaces, installation of airport infrastructures, etc.;
- real estate management (6.3%): land and commercial real estate property leasing (businesses, offices, hotels, logistics buildings, etc.);
- stopover assistance services (6%): passenger registration and transfer, baggage handling, aircraft management (cleaning, guidance, storage and starting assistance, aircraft loading and unloading), etc.;
- other (12.9%): including international airport management, airport engineering services, specialized telecommunications services, operation of commercial spaces, etc.

### **Airport Facilities Co Ltd (8864; Japan)**

The Company's principal activity is to manage and lease airport buildings and facilities at Haneda Tokyo International Airport, Itami Osaka International Airport and other local airports such as Shin-Chitose, Sendai, Nagoya, Hiroshima-Nishi, Kagoshima, Fukuoka and Miyazaki airport. The operations are carried out through the following divisions: Real estate leasing; Heat supply and Water supply and sewage. The Real estate leasing relates to leasing of buildings. The Heat supply division includes air cooling and heating. The water supply and sewerage division provides water supply, sewerage treatment, aircraft and equipment leasing and communication services.

### **Auckland International Airport Limited (AIA; New Zealand)**

AIAL is the owner and operator of Auckland International Airport. It is New Zealand's largest and busiest airport both by aircraft and passenger movements and the country's primary gateway.

**Avstar Aviation Group Inc (AAVG; USA)**

AvStar Aviation Group, Inc is focused on acquiring and developing aviation-related businesses. The Company is focused on the maintenance, repair and overhaul (MRO) of aircraft, and providing products and services for the general aviation sector.

**Beijing Airport High-Tech Park Co Ltd (600463; China)**

The Company is primarily engaged in the development and sale of land and leasing of standard factories. The Company is also involved in the management of properties and the construction and building business. Other activities include the provision of consultancy services.

**Beijing Capital International Airport Company (00694; China)**

The Company is principally engaged in the ownership and operation of the international airport in Beijing ("Beijing Capital Airport") and the provision of related services.

**Copenhagen Airport AS (KBHL; Denmark)**

The Company owns and operates the airports at Kastrup and Roskilde in Denmark. The Company's core businesses involve the operation and expansion of systems related to air traffic operations. It has international ownership stakes in Mexico, Norway, the UK and China. The Company has two wholly owned subsidiaries, Copenhagen Airport's Hotel and Real Estate Company A/S and Copenhagen Airports International A/S.

**Derichebourg (DBG; France)**

Derichebourg provides airport services including runway assistance, passenger assistance, coordination and control of stopovers, aircraft cleaning, logistics and baggage handling.

**Dynacorp International (DCP; USA)**

DynaCorp International Inc. (DynaCorp International) is a provider of specialized, mission-critical professional and support services outsourced by the United States military, non-military United States governmental agencies and foreign governments. The Company's expertise is in law enforcement training and support, security services, base and logistics operations, construction management, aviation services and operations, and linguist services. It also provides logistics support for all of its services. The Company's customers include the United States Department of Defence (DoD), the United States Department of State (DoS), foreign governments, commercial customers and certain other United States federal, state and local government departments and agencies. Revenue from the United States government accounted for approximately 96% of total revenue during the fiscal year ended April 3, 2009 (fiscal 2009).

**Flughafen Wien AG (FLU; Austria)**

The Company is an Austrian holding company based in Vienna that, through its subsidiaries, is engaged in the operation, as well as development and building initiatives at the Vienna International Airport in Austria. It operates through three main divisions. The Airport division

handles the daily operation and maintenance of the terminal, aprons and all facilities relating to passenger and baggage handling. The Airport division is also responsible for flight operations, the airport's fire department, medical facilities and access control and winter services. The Handling division covers a range of services for scheduled, charter and general aviation flights. This predominantly entails the loading and unloading of aircrafts, transportation of passengers and crews and the towing, handling, fuelling and parking of aircrafts. The Non-Aviation division covers related airport services, such as shopping, food, security, car parking, technical services and real estate activities.

#### **Flughafen Zurich AG (FHZN; Switzerland)**

The Company is a Switzerland-based company that is engaged in the operation of Zurich Airport in Switzerland. The Company is also involved, together with its local partners, in airport operations in India, Colombia, Chile, Honduras and Venezuela. The Company operates within two main business areas. The Aviation Operations business segment is engaged in the construction, operation and maintenance of the airport's operations infrastructure, operation of the runway system, all apron zones and passenger zones in the terminals, freight operations and baggage handling, as well as the provision of aircraft energy supply systems, passenger handling, security services and airport police activities. The Marketing and Real Estate business segment focuses on the development, marketing and operation of the commercial infrastructure at the airport, such as shops, catering and other facilities.

#### **Fraport AG (FRA; Germany)**

The Company provides airport services to domestic and international carriers, offering a full range of services including traffic and terminal management, ground handling, and real estate and facility management.

#### **Generale Mobiliare Interessenze Azionarie S.P (GEM; Italy)**

The holding company Gemina currently focuses its activities on directing and controlling its subsidiaries. Gemina's businesses are: management of transport infrastructures (Aeroporti di Roma); power generation from renewable sources (Fiumicino Energia); audio communication system for aircraft navigation (SITTI).

#### **Global Aircraft Solutions Inc (GACFQ; USA)**

Global Aircraft Solutions, Inc. (Global), is a holding company created to establish, maintain and administer the equity and debt funding of any acquired subsidiaries, as well as maintain the capitalization of any subsidiaries. Global subsidiaries include Hamilton Aerospace Technologies, Inc. (HAT) and World Jet Corporation (World Jet). HAT is a provider of aircraft maintenance, repair and overhaul (MRO) services to owners and operators of Transport Category commercial jet aircraft. World Jet is an aircraft parts sales and aircraft parts brokerage facility servicing aircraft operators, aircraft leasing companies and MRO facilities.

#### **Grupo Aeroportuario Del Centro Norte S.A.B. DE C.V. (OMA.B; Mexico)**

Grupo Aeroportuario del Centro Norte, S.A.B. de C.V. (OMA) holds concessions to operate, maintain and develop 13 airports in Mexico, which serve a major metropolitan area (Monterrey), three tourist destinations (Acapulco, Mazatlan and Zihuatanejo), regional centres (Chihuahua, Culiacan, Durango, San Luis Potosí, Tampico, Torreon and Zacatecas) and border cities

(Ciudad Juarez and Reynosa). Its airports are located in nine of the 31 Mexican states, covering a territory of approximately 926,421 square kilometres.

**Grupo Aeroportuario Del Pacifico S.A. DE C.V. (GAP.B; Mexico)**

Grupo Aeroportuario del Pacífico, S.A.B. de C.V. holds concessions to operate 12 airports, which serve two major metropolitan areas (Guadalajara and Tijuana), several tourist destinations, such as Puerto Vallarta, Los Cabos, La Paz and Manzanillo, and a number of mid-sized cities, such as Hermosillo, Guanajuato, Morelia, Aguascalientes, Mexicali and Los Mochis.

**Grupo Aeroportuario Del Sureste S.A.B. DE C.V. (ASUR.B; Mexico)**

Grupo Aeroportuario del Sureste, S.A.B. de C.V. Grupo Aeroportuario del Sureste, S.A.B. de C.V. (ASUR) is a holding company. The Company holds concessions to operate maintain and develop nine airports in the southeast region of Mexico. As operators of these airports, it charges airlines, passengers and other users fees for the use of the airports' facilities. The Company also derives rental and other income from commercial activities conducted at its airports, such as the leasing of space to restaurants and retailers. Its concessions include the concession for Cancun International Airport. It also holds concessions to operate the airports in Cozumel, Huatulco, Merida, Minatitlán, Oaxaca, Tapachula, Veracruz and Villahermosa.

**Guangzhou Baiyun International Airport Co Ltd (600004; China)**

The Company primarily provides ground-handling services to airlines; as well as, leasing business, retail trade, advertising, acting, aircraft maintenance services and other services.

**Hainan Meilan International Airport Company Limited (00357; China)**

The Company is primarily engaged in the operation of the Meilan Airport in Hainan, China.

**Infratil Limited (IFT; New Zealand)**

The Company is listed on the New Zealand Exchange and owns airports in New Zealand and Europe as well as electricity, waste to energy and port investments in New Zealand and Australia.

**International Total Services Inc (ITSW; USA)**

International Total Services Inc. is a domestic provider of aviation contract support services and is also a provider of commercial security staffing services. The Company provides services to customers in more than 150 cities in the United States and the United Kingdom. Aviation services offered by the Company include pre-departure screening, skycap, baggage handling and aircraft appearance services, and wheelchair and electric cart operations. The Company's security services extend beyond aviation security, and include the provision of commercial security staffing services to government and business clients, hospitals, arenas and museums.

**Japan Airport Terminal (9706; Japan)**

The Company's principal activities are to sell merchandise and to operate the airport terminal facilities. The operations are carried through the following divisions: Sale of merchandise; Airport facility management and Restaurants. The Sale of merchandise division deals with sale of merchandise within the passenger buildings. The Airport facility management division deals with management and maintenance of airport facilities, parking, customer information, advertising, air

ticket sales, other travel services, travel insurance, hotel reservations and baggage storage. The Restaurants division deals with operation of restaurants and sale of foodstuffs within the passenger buildings.

#### **Korea Airport Service (005430; Republic of Korea)**

Korea Airport Service Co., Ltd. provides ground handling services for flights flying to and from Korea. Its aircraft ground handling services include baggage and cargo loading/unloading; aircraft cabin cleaning; aircraft exterior cleaning; catering support service; inspection and repair of ground support equipment, repair of ULD, manufacturing of ground equipment, manufacture and repair service of inflight items, and laundry services; cargo handling; and aircraft refuelling. The company also produces limestone for manufacturing of iron and for desulfurization. In addition, Korea Airport Service engages in producing and selling natural mineral water; growing and supplying fresh vegetables for catering in the cabin of the aircraft; and raising cattle and selling. Further, it operates Jeju Folk Village and Touring business.

#### **Malaysia Airports Holdings Berhad ( 5014; Malaysia)**

The core activities of the company include the management, operation and maintenance as well as development of airports with primary importance being placed on the operational efficiency, safety and security of passengers, cargo and aircraft operations. Besides its core business activities, MAHB has in its corporate structure, a few subsidiary companies to offer a range of aviation and non-aviation-related products and services.

#### **Malta International Airport Plc (MIA; Malta)**

The principal activities of the Company are the development, operation and management of Malta's airport.

#### **MAP Group (MAP; Australia)**

MAP is one of the world's largest private airport owners and operators with a core portfolio of three major airports - Sydney, Copenhagen and Brussels and a long term strategic investment in Grupo Aeroportuario del Sureste de Mexico S.A.B. de C.V. in Mexico.

#### **Multiplus S.A. (MPLU3; Brazil)**

Multiplus provides loyalty program management, administration and operation services for customers of its commercial partners.

#### **River Hawk Aviation Group Inc (RHWI; USA)**

River Hawk Aviation, Inc. (River Hawk) is an aviation products and services company with operations in the aircraft charter, lease and management, fixed base operations and maintenance segments of the general aviation industry. Its services including fuelling, line services, ground transportation and the provision of hangar and ramp space.

#### **Saker Aviation Services Inc (SKAS; USA)**

Saker Aviation Services, Inc. (Saker), through its subsidiaries, operates in the fixed base operation (FBO) segment of the general aviation industry. An FBO provides ground-based services, such as fuelling and hangaring for general aviation, commercial, and military aircraft; aircraft



maintenance, and other miscellaneous services. The Company also provides consulting services for a non-owned FBO facility and serves as the operator of a heliport. Its business activities are carried out at the Wilkes-Barre/Scranton (Pennsylvania) International Airport, where it operates an FBO, Garden City (Kansas) Regional Airport, where it operates an FBO, the Downtown Manhattan (New York) Heliport, and at the Niagara Falls (New York) International Airport, where it provides consulting services to the operator.

#### **Shanghai International Airport Co Ltd (600009; China)**

The Group's principal activity is providing services and guaranteeing the airport lounge facilities for aviation enterprises and passengers.

#### **Shenzhen Airport Co Ltd (000089; China)**

The Company's main businesses are investment, air freight transportation, import & export services, leasing cargo and passenger agency services.

#### **Singapore Airport Terminal Services Ltd ( S58; Singapore)**

The principal activities of the Company are to provide ground handling services including airfreight handling services, passenger services, baggage handling services, and apron services; inflight catering services including aircraft interior cleaning, and cabin handling services; aviation security services, and airline laundry services.

#### **Societa Aeroporto Toscano Galileo Galilei S.P. (SAT; Italy)**

Societa Aeroporto Toscano SpA (S.A.T.) is an Italian company engaged in the management of the airport of Pisa in Italy. It divides its activities into two sectors: aviation activities, and non-aviation activities. Its aviation activities include managing and developing of airport infrastructures, as well as security controls and police services; aviation marketing, dedicated to the growth of passenger and cargo traffic of Pisa airport and network of destinations connected with Pisa airport, and ground handling services management, which offers services dedicated to ground assistance for aircraft, passengers and goods. The non-aviation activities consist of exploiting the airport's real estate and commercial capacities that offers car rental services, railway station, bars, pizzerias, restaurants and shops, among others.

#### **Tav Havalimanlari Holdings A.S (TAVHL; Turkey)**

The Company is engaged in the development, construction and management of airports, terminals, aircraft sheds, duty free shops and passenger lounges. The Company also offers airport ground and passenger services. It operates Istanbul Ataturk Airport's international and domestic terminal buildings, car parks and general aviation terminal, as well as other airports, including Ankara Esenboga Airport and Izmir Adnan Menderes Airport in Turkey, and international airports in Georgia and Tunisia.

#### **United Projects Group K.S.C.C. (UPAC; Kuwait)**

The main activities of the Company are providing airplane ground, cleaning services and catering, leasing out airplanes, tourism, travel, cargo services, managing projects, investing surplus funds investment, and portfolios managed by specialized companies.

### **Xiamen International Airport Group Co Ltd (600897; China)**

The Company is principally engaged in the provision of ground services for international and civil flights. It is also involved in the leasing of commercial and office space, property management and the provision of flight information services.