

A Note on the Multi-Airport Systems
in Osaka Metropolitan Area
–Kansai, Itami and Kobe Airport–

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Outline

- Brief introduction of Japanese major airports
- Detailed description of multi-airport systems in Osaka Metropolitan Area; Kansai, Itami and Kobe Airport
- Some problems in Japanese airport policy
- Backgrounds for future research



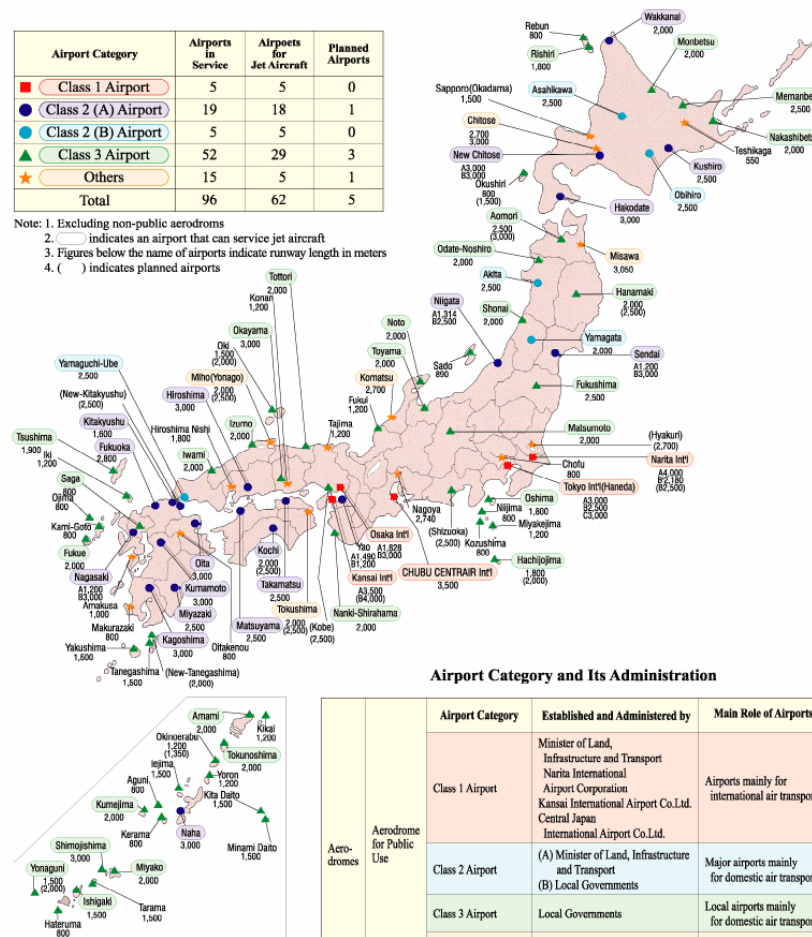
1. Brief Introduction of Japanese Major Airports

1. Airports in Japan (as of February, 2005)

Airports in Japan (As of February, 2005)

Airport Category	Airports in Service	Airports for Jet Aircraft	Planned Airports
Class 1 Airport	5	5	0
Class 2 (A) Airport	19	18	1
Class 2 (B) Airport	5	5	0
Class 3 Airport	52	29	3
Others	15	5	1
Total	96	62	5

- Note: 1. Excluding non-public aerodroms
 2. ○ indicates an airport that can service jet aircraft
 3. Figures below the name of airports indicate runway length in meters
 4. () indicates planned airports



Airport Category and Its Administration

Airport Category	Established and Administered by	Main Role of Airports
Class 1 Airport	Minister of Land, Infrastructure and Transport Narita International Airport Corporation Kansai International Airport Co.Ltd. Central Japan International Airport Co.Ltd.	Airports mainly for international air transport
Class 2 Airport	(A) Minister of Land, Infrastructure and Transport (B) Local Governments	Major airports mainly for domestic air transport
Class 3 Airport	Local Governments	Local airports mainly for domestic air transport
Joint-use Aerodromes	Defence Agency U.S. Air Force	
Other Aerodromes	Local Governments	
Non-public Aerodromes		

2. Airport Category and its Administration

Airport Category	Established and Administrated by	Main Role of Airports	Number of Airports	
			in Service	Planned
Class I	Central Government	Airports mainly for international air transport	5	0
Class II -A	Central Government	Major airports mainly for domestic air transport	19	1
Class II -B	Local Governments		5	0
Class III	Local Governments	Local airports mainly for domestic air transport	54	1
Joint-use Aerodromes	Defence Agency		5	0
	U.S. Air Force		1	0
Other Aerodromes	Local Governments		9	1
Total (as of August, 2006)			98	3

Note: Narita International Airport, Kansai International Airport and Chubu Centrair International Airport are established and administrated by Narita International Airport Corporation, Kansai International Airport Co.Ltd, and Central Japan International Airport Co.Ltd, respectively.

3. Narita International Airport (Tokyo Area)

3.1 Bird's Eye View for NRT (1)



3. Narita International Airport (Tokyo Area)

3.1 Bird's Eye View for NRT (2)



3. Narita International Airport (Tokyo Area)

3.1 Bird's Eye View for NRT (3)





3. Narita International Airport (Tokyo Area)

3.2 Overview

- ❑ Opened in 1978
- ❑ Mainly used for international traffic
- ❑ Having 940ha with 2 runways (4.000m, 2.180m)
- ❑ Number of destination
 - International: 97
 - Domestic: 8
- ❑ As for passenger traffic in 2005 (25th ranked world-wide)
 - International: 30.429.471
 - Domestic: 1.123.597
- ❑ As for cargo volume in 2004 (3rd ranked world-wide)
 - International: 2.311.417 tons
 - Domestic: 10.818 tons
- ❑ Planned final scheme being 1.084ha with 3 runways
- ❑ Facing severe congestion

4. Tokyo International Airport: Haneda (Tokyo Area)

4.1 Bird's Eye View for HND (1)



4. Tokyo International Airport: Haneda (Tokyo Area)

4.1 Bird's Eye View for HND (2)



4. Tokyo International Airport: Haneda (Tokyo Area)

4.1 Bird's Eye View for HND (3)





4. Tokyo International Airport: Haneda (Tokyo Area)

4.2 Overview

- Opened in 1931
- Mainly used for domestic traffic
- Having 1.271ha with 3 runways (3.000m, 3.000m, 2.500m)
- Number of destination
 - International: 1 (Gimpo/Seoul)
 - Domestic: 47
- As for passenger traffic in 2004 (4th ranked world-wide)
 - International: 807.284
 - Domestic: 61.484.121
- As for cargo volume in 2004 (24th ranked world-wide)
 - Domestic: 651.387 tons
- Opening its 4th runway of 2.500m in 2009
- Facing severe congestion

5. Kansai International Airport (Osaka Area)

5.1 Bird's Eye View for KIX (1)



5. Kansai International Airport (Osaka Area)

5.1 Bird's Eye View for KIX (2)



5. Kansai International Airport (Osaka Area)

5.2 Overview

- ❑ Opened in 1994 as off-shore airport and will complete limitedly its second scheme in 2007
- ❑ Construction cost: \ 1.450 billion (about €10 billion) for its first scheme, plus \ 900 billion (about €6 billion) for its second scheme
- ❑ Used for both international and domestic traffic
- ❑ Having 1.050ha with 2 runways (3.500m, 4.000m) in 2007
- ❑ Number of destination
 - International: 66
 - Domestic: 21
- ❑ As for passenger traffic in 2005([ranked world-wide](#))
 - International: 11.209.594
 - Domestic: 5.069.059
- ❑ As for cargo volume in 2005([ranked world-wide](#))
 - International: 799.152 tons
 - Domestic: 41.083 tons
- ❑ Planned final scheme being 1.300ha with 3 runways

6. Chubu International Airport (Nagoya Area)

6.1 Bird's Eye View for NGO



Old Nagoya Airport, just for reference





6. Chubu International Airport (Nagoya Area)

6.2 Overview

- Opened in 2005 as off-shore airport
- Construction cost: \ 650 billion (about €4.5 billion)
- Used for both international and domestic traffic
- Having 471ha with 1 runways (3.500m)
- Number of destination
 - International: 31
 - Domestic: 25
- As for passenger traffic from April 2005 to March 2006
 - International: 5.329.812
 - Domestic: 7.021.915
- As for cargo volume from April 2005 to March 2006
 - International: 233.058 tons
 - Domestic: 40.816 tons
- Planned final scheme being 800ha with 2 runways

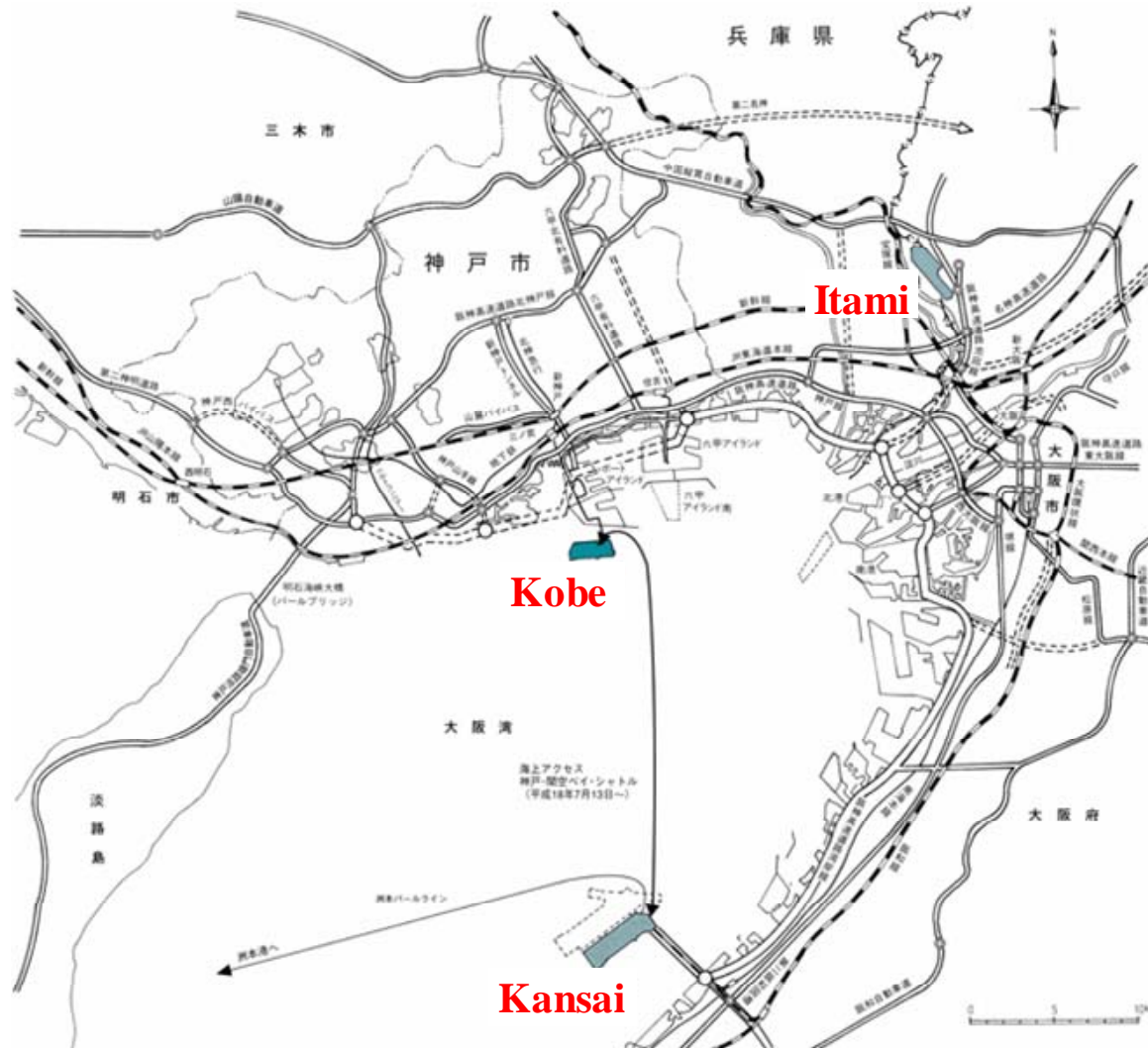


2. Detailed Description of Multi-Airport Systems in Osaka Metropolitan Area

1. Location of three Airports



2. Transportation Networks around Osaka Bay



3. Outline of three Airports

Airport	Kansai			Osaka (Itami)	Kobe
Airport Code	KIX			ITM	UKB
Established and Administered by	Kansai International Airport Co. Ltd.			Central Government	Kobe City
Stage	Phase 1	Phase 2	Ultimate	-	-
Year of Completion (or Open)	1994	2007	-	1939	2006
Area (ha)	510	1.050	1.300	317	272
Runways	3,500m x 1	3,500m x 1	3,500m x 2	3,000m x 1	2.500m x 1
		4,000m x 1	4,000m x 1	1.828m x 1	
Passenger Terminal (,000 m ²)		302	Terminal 2		15,4
Cargo Terminal (,000 m ²)		125	-		
Feasible Aircraft Movements (,000)		230	300	Up to 370/day	
Feasible Passenger Volume (,000)		25.000	-		
Feasible Cargo Volume (,000 ton)		1.750	-		

Osaka International Airport: Itami (ITM) (1)



Osaka International Airport: Itami (ITM) (2)



Osaka International Airport: Itami (ITM) (3)



Kobe Airport (UKB)



Just for reference,
New KitaKyusyu Airport opened on 16 March, 2006 (1)



Just for reference,
New KitaKyusyu Airport opened on 16 March, 2006 (2)





4. Role of three Airports (National Allocation Policy)

□ Kansai

Class I: Primary international and domestic airport for the Western Japan

□ Itami

Class I: Primary domestic airport for the Kansai Region

□ Kobe

Class III: Domestic airport only for local demand in Kobe and its suburbs



5. Historical Backgrounds

- It was intended to build a new airport in Kansai Region because of noise problem and capacity limitation at ITM, which, originally, was to be closed following the opening of a new airport.
- Kobe was, at first, the most likely candidate place to build a new airport among three potential places.
- Kobe rejected the plan, but later it changed its decision. Kobe strongly competed with Sennan District (present location of KIX) for a new airport.
- Instead of giving up, Kobe insisted to build a local airport.
- Central government admitted it on condition that Kobe wouldn't provide international services in the future.
- At the same time, it was decided to retain ITM as a domestic-only airport after KIX opened.



6. Main Causes for retaining ITM

Local Government Side:

Nearby communities opposed closing ITM for economic reasons.

Central Government Side:

Central Government worried about the shortage of airport capacity in Kansai Region, which could appear in the long run.

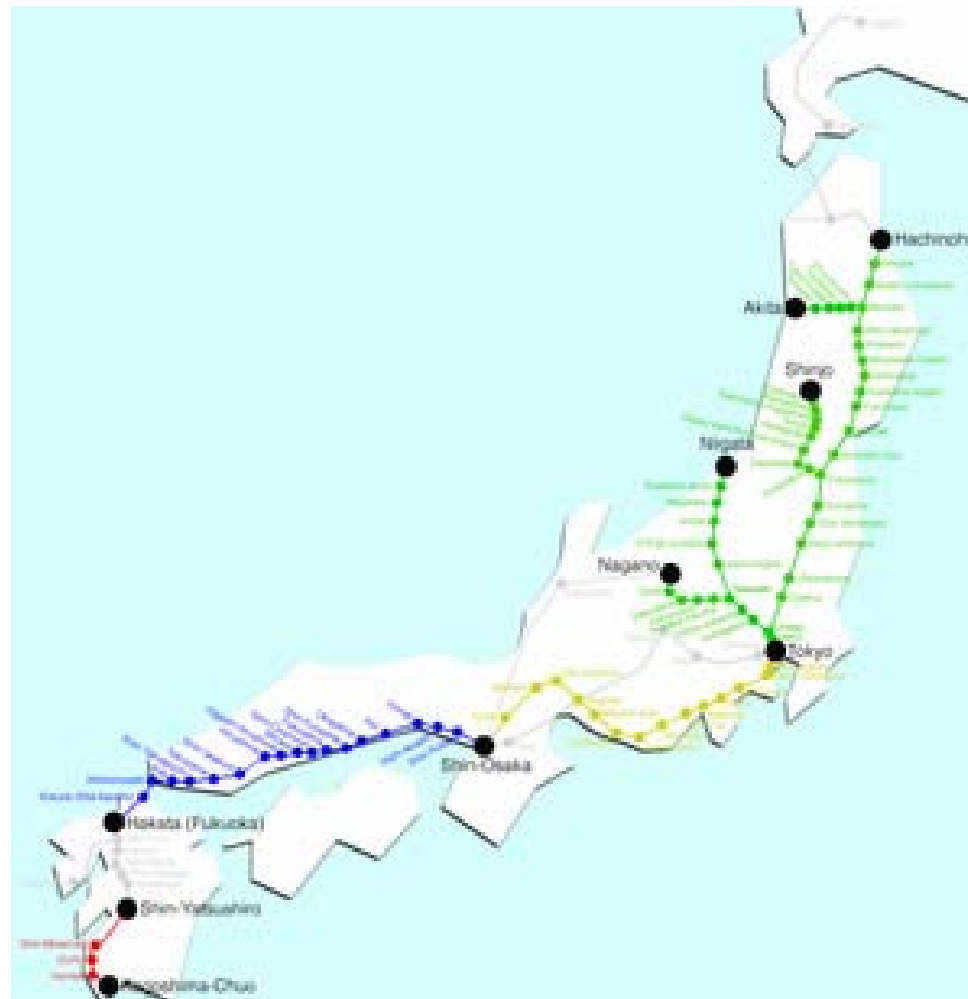
Airline Side:

Airlines, facing severe competition with Shinkansen for money-tree route like Tokyo-Osaka, highly evaluate the convenient location of ITM (The share of air transportation between Tokyo and Osaka is about 20%).

Just for reference,

Networks of High-speed Railway Lines (Shinkansen)

1. List of Shinkansen Lines



Network of High-speed Railway Lines (Shinkansen)

2. Tokaido Shinkansen



- Between Tokyo and Shin-Osaka
- Through Japan's 3 largest metropolitan areas

Network of High-speed Railway Lines (Shinkansen)

3. Pictures of Shinkansen (1)



Network of High-speed Railway Lines (Shinkansen)

3. Pictures of Shinkansen (2)



Network of High-speed Railway Lines (Shinkansen)

4. Outline of Tokaido Shinkansen

Opening Year	1964
Length of Route	552,6 km
Frequency (both direction)	295/day (about 1/6-7min on single direction)
Capacity of one Train	1.323 seats (consisting of 16 cars)
Passengers carried	375 thousand/day
Percentage of Business Passengers	Around 70 %
Travel Hour	2 hr. 30 min.
Sales	1.030 billion yen (about €7 billion)

Note: Data on 2005

Network of High-speed Railway Lines (Shinkansen)

5. Number of Flights on Tokyo-Osaka Route

Tokyo→Osaka				Osaka→Tokyo				
Haneda	Itami	JAL	14	Itami	Haneda	JAL	14	
		ANA	14			ANA	14	
	Kansai	JAL	7	Kansai	Haneda	JAL	7	
		ANA	8			ANA	8	
	Total			43	Total			43
	Narita	Itami	JAL	1	Itami	Narita	JAL	1
ANA			1	ANA			1	
Kansai		JAL	0	Kansai	Narita	JAL	0	
		ANA	0			ANA	0	
Total			2	Total			2	

Note: Per day (2006/09/01-2006/09/30)



7. Advantages of ITM

- ❑ Users are likely to prefer ITM, because ITM is conveniently located with a lot of frequencies. On the contrary, KIX is remotely located from the city center (about 1 hour to the central Osaka).
- ❑ Airlines gradually moved, after the opening of KIX, some flights and routes from KIX to ITM according to consumers' preferences.
- ❑ In addition, landing fees for domestic service are about 1.5-2.0 times higher in KIX than in ITM.



8. Recent Traffic Regulation or Control by Central Government towards ITM

- ❑ Operating hours are 7:00-22:00 (Scheduled service; 7:00-21:00) effective April 2006.
- ❑ Aircraft with more than two engines would be banned at ITM effective April 2006.
- ❑ Traffic capacity will be capped up to 370/day (jet; 200, propeller; 170) effective April 2007. (Now, jet; 200, low-noise jet; 14, propeller; 156)
- ❑ Long-haul domestic services are limited.

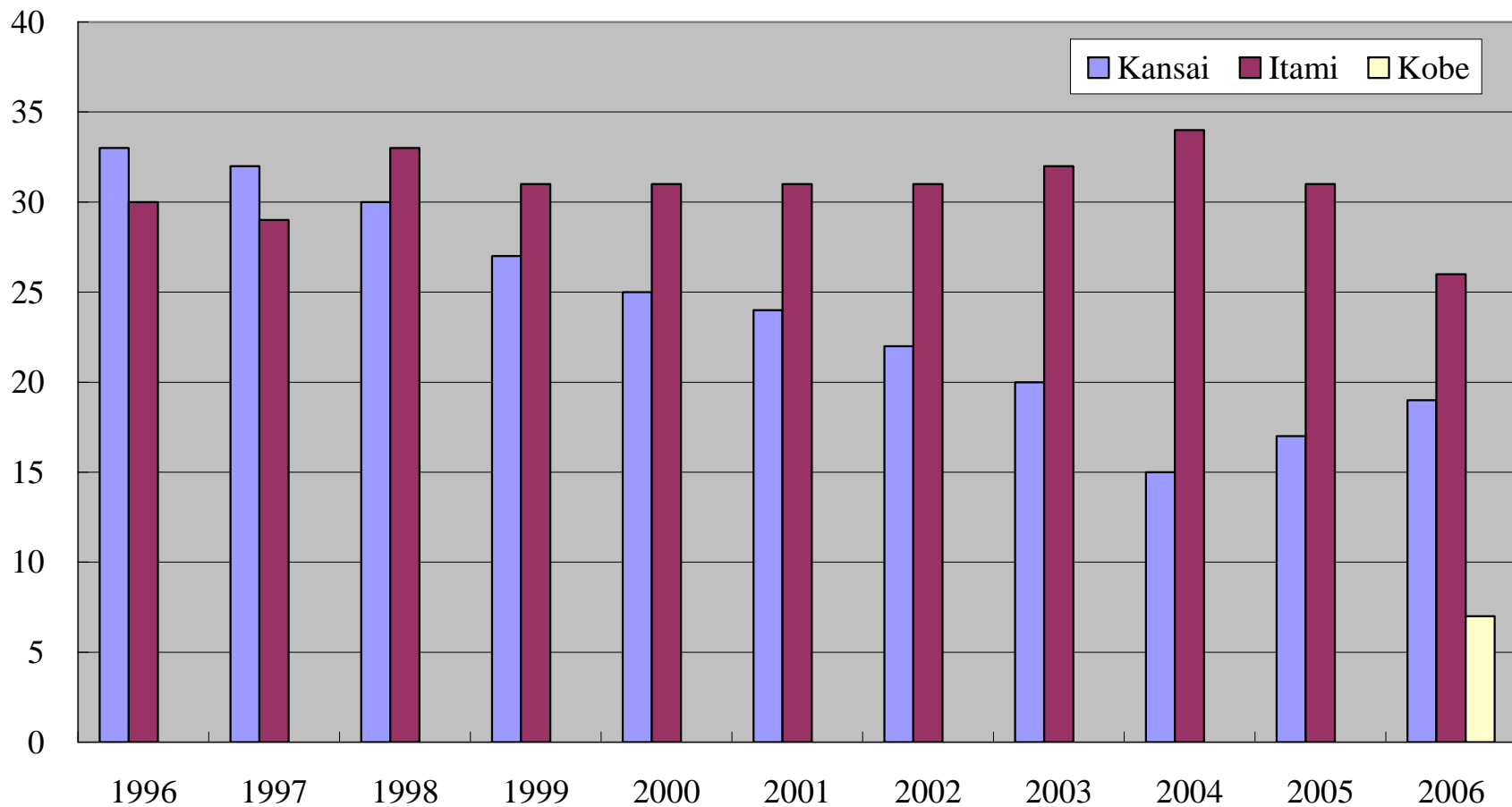


9. Aims of Central Government

- While part of the reasoning behind this move is to reduce noise around the airport, many area residents have opposed the restriction as an unnecessary impediment on the airport.
- In fact, Central Government wishes to increase the traffic at KIX in order to improve its business. So, these are rather **relief-measures** for KIX.
- Policies adopted by Central Government will be **against consumers' preference or benefits.**

10. Traffic Throughput at KIX, ITM and UKB

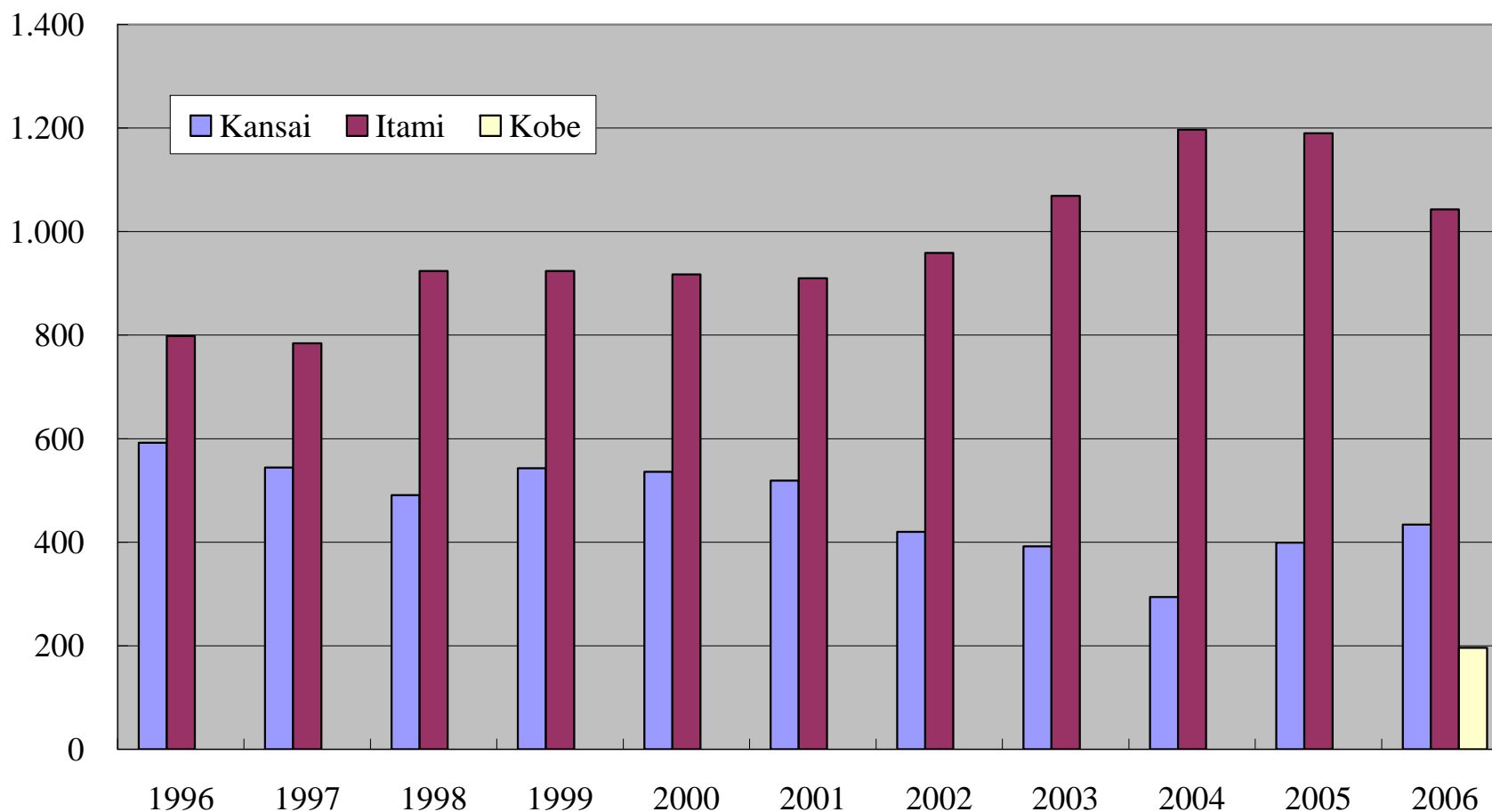
10.1 Number of Domestic Routes served at three Airports



Note: Based on Departure Flights between one-week of 9/4-9/10
Kobe opened on 16 February, 2006.

10. Traffic Throughput at KIX, ITM and UKB

10.2 Number of Domestic Flights served at three Airports

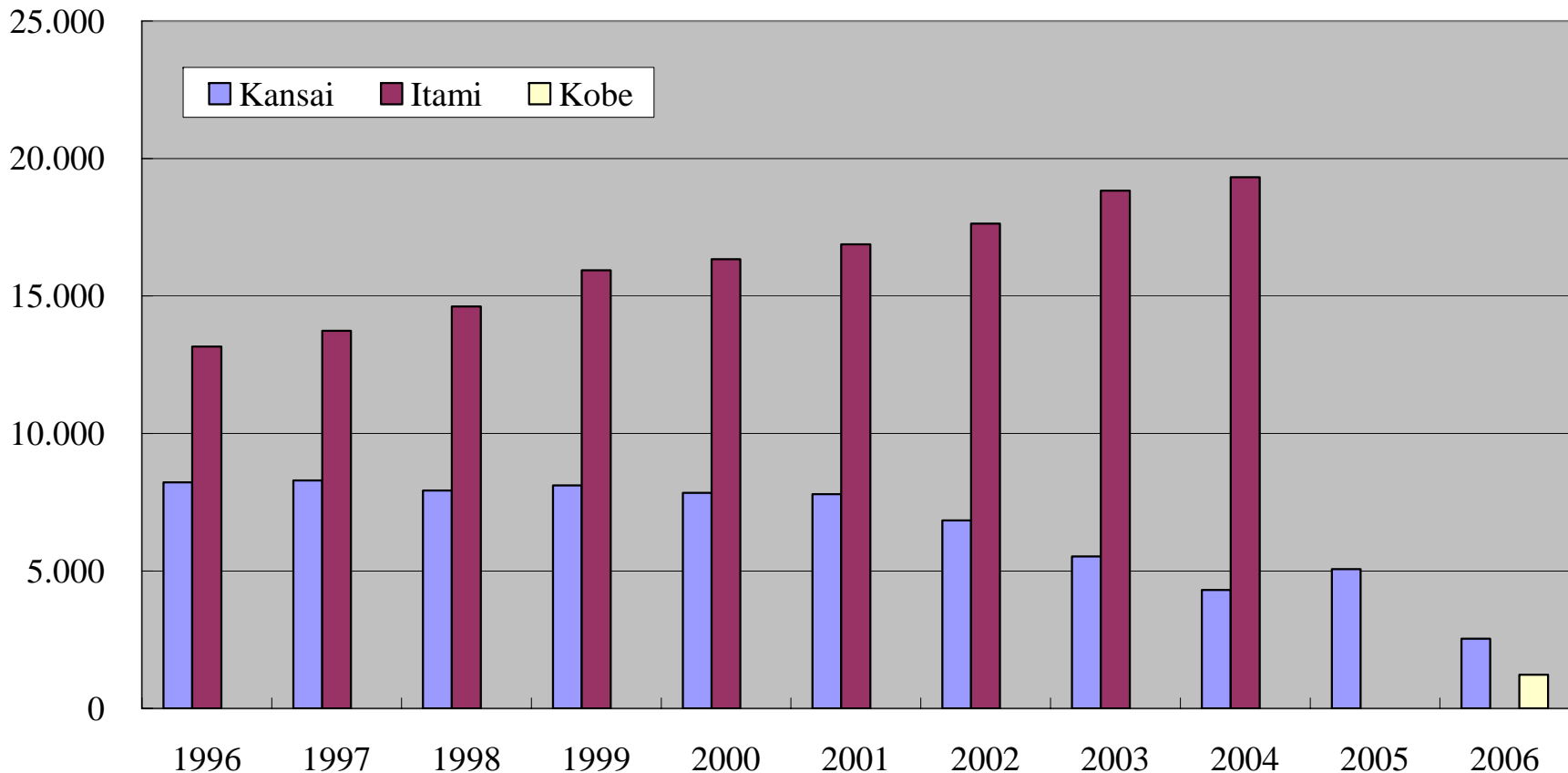


Note: Based on Departure Flights between one-week of 9/4-9/10
Kobe opened on 16 February, 2006.

10. Traffic Throughput at KIX, ITM and UKB

10.3 Number of Passengers at three Airports

Thousand Passengers

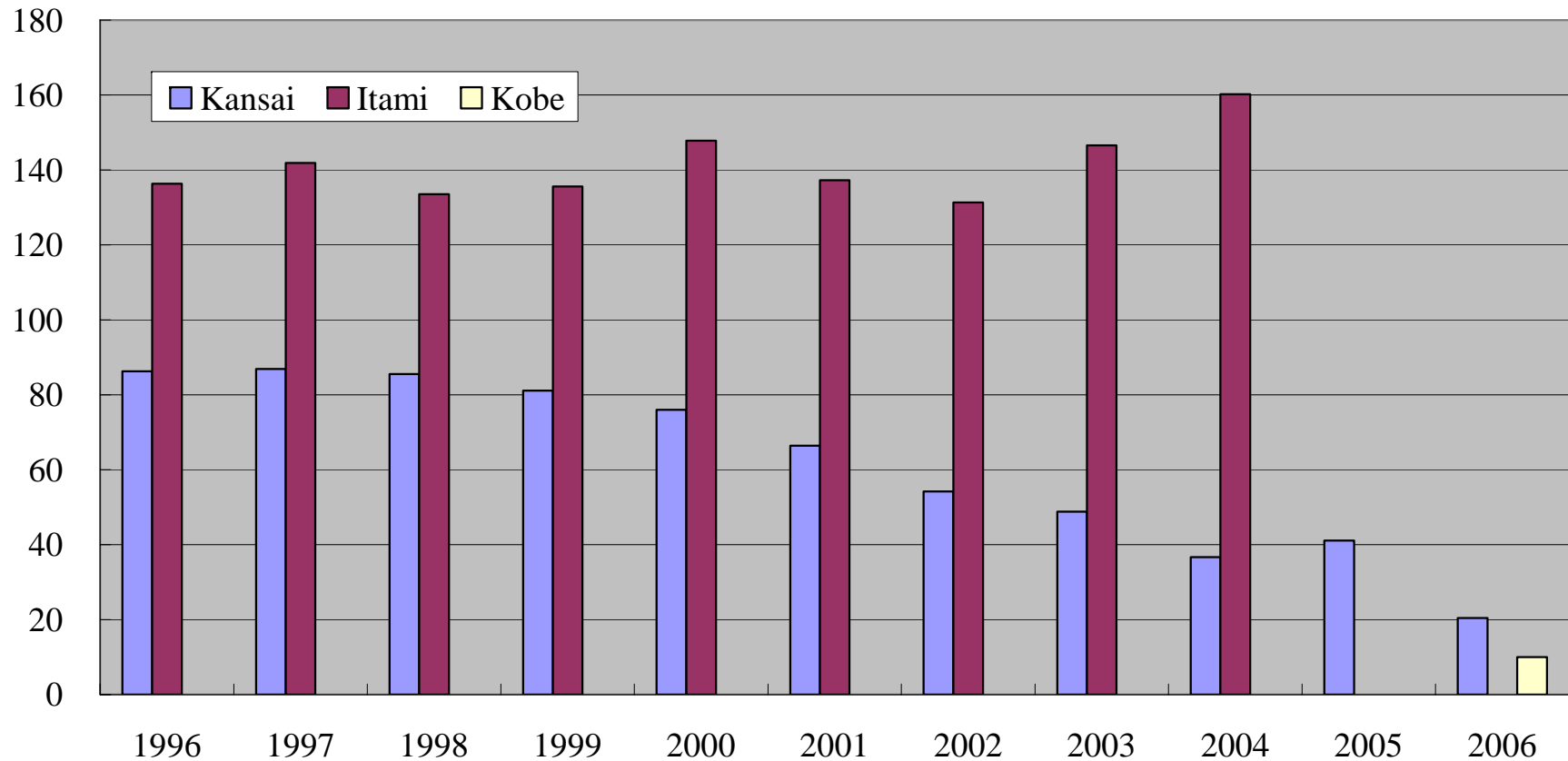


Note: The figure on Kansai in 2006 is from January to June and that on Kobe in 2006 is from its opening day to the end of July

10. Traffic Throughput at KIX, ITM and UKB

10.4 Cargo Volumes handled at three Airports

Thousand Tons

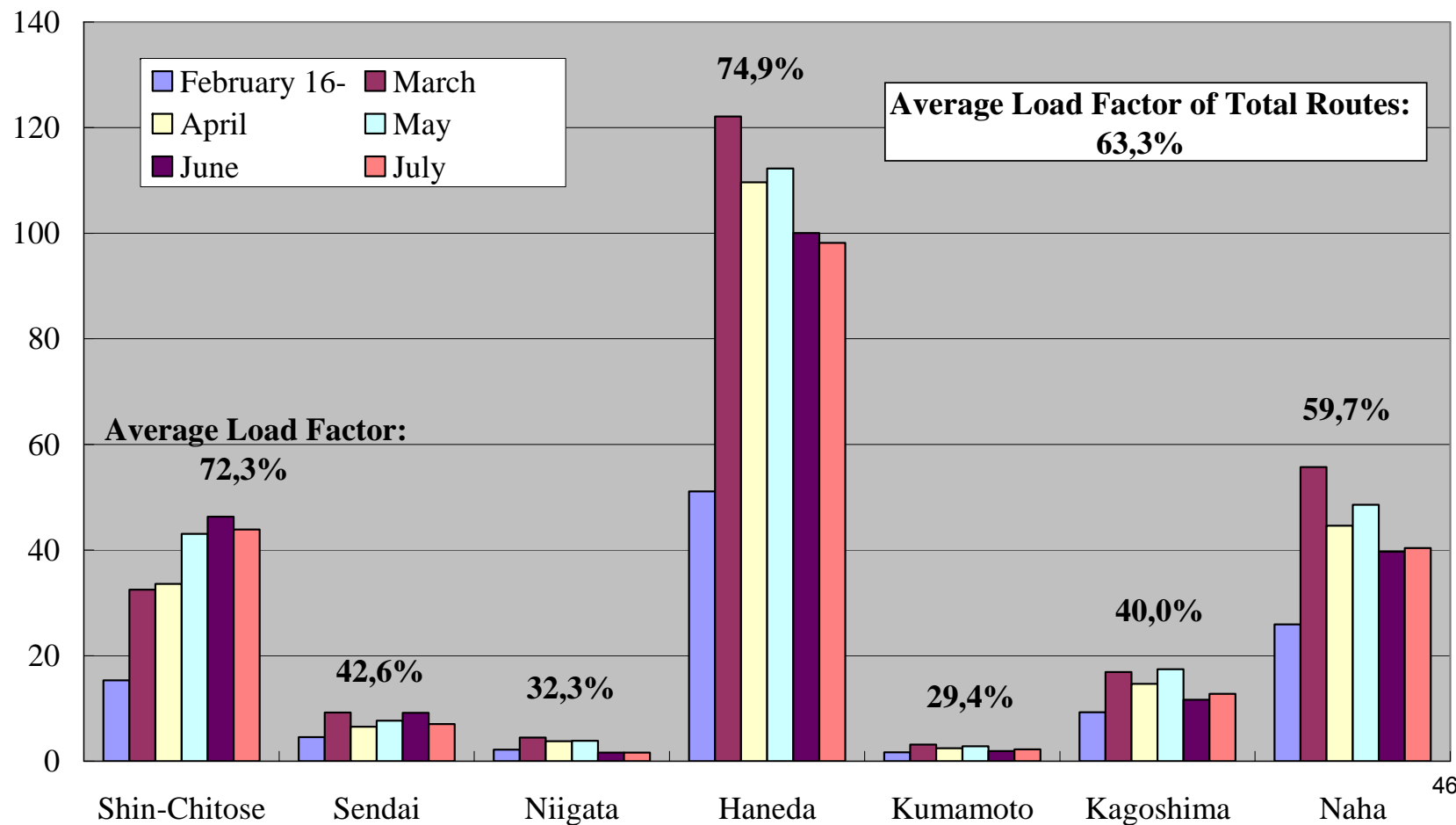


Note: The figure on Kansai in 2006 is from January to June and that on Kobe in 2006 is from its opening day to the end of July

10. Traffic Throughput at KIX, ITM and UKB

10.5 Change over Number of Passengers at UKB from Opening up to Present

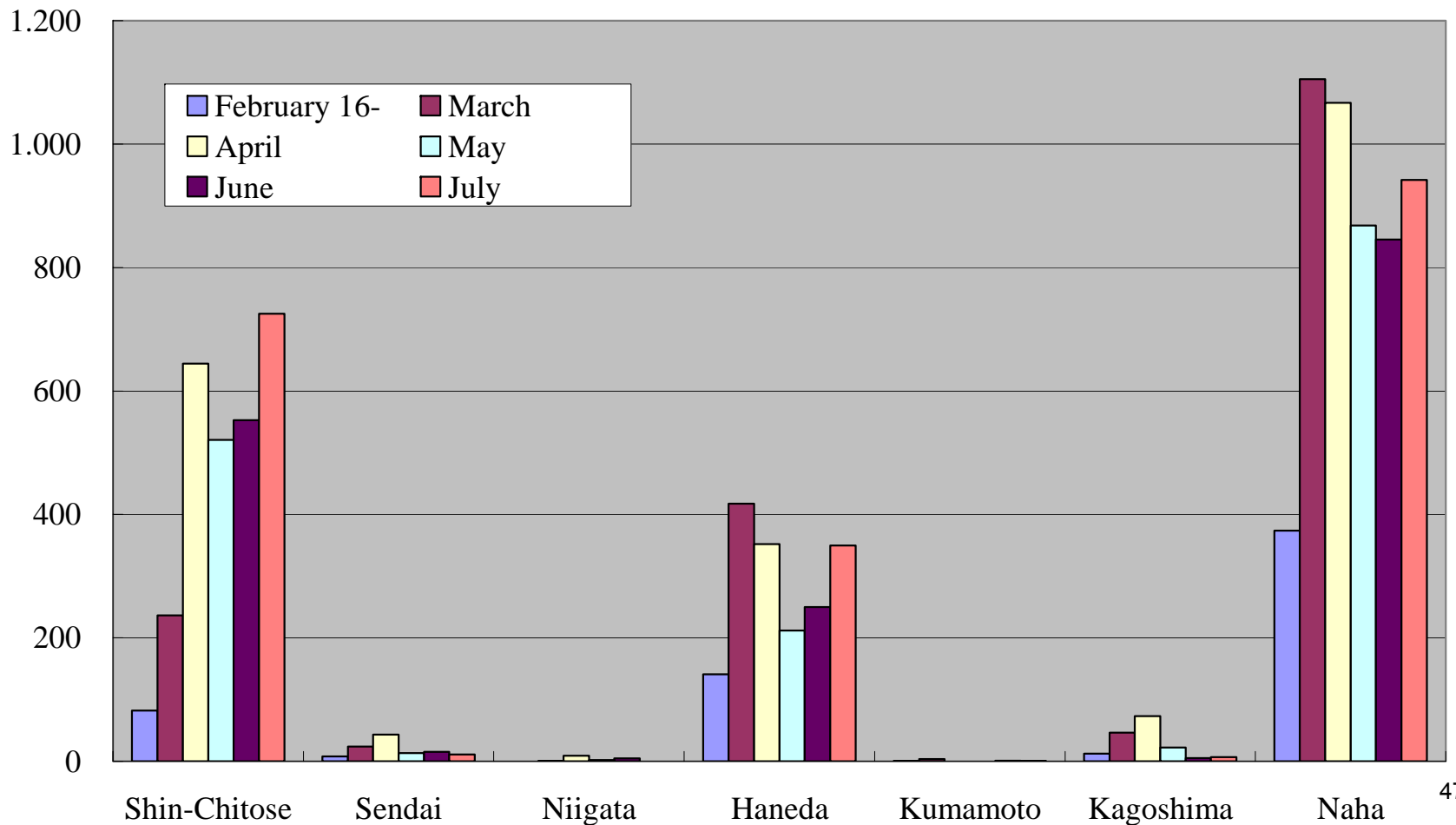
Thousand Passengers



10. Traffic Throughput at KIX, ITM and UKB

10.6 Change over Cargo Volumes handled at UKB from Opening up to Present

Thousand Tons





10. Traffic Throughput at KIX, ITM and UKB

10.7 Some Notices for UKB

- Just after the opening of UKB, it was booming, partly thanks to bargaining airfares.
- **The throughput of UKB is now on the downward path**, mainly because of low frequency.
- At present, operating hours of UKB are 7:00-22:00 and aircraft movements are now capped up to 60 times/day.



11. Summary

- KIX, ITM, and UKB are separately administrated; Kansai International Airport Co. Ltd (Private Company), Ministry of Land, Infrastructure and Transport (Central Government) and Kobe City (Local Government), respectively, **under the strong regulation of Central Government.**
- Practically, almost **no competition** exists among these three airports.
- Central Government wishes to shift the flights from ITM to KIX in order to make KIX profitable.
- As for domestic services, users have the strong preference for ITM.



11. Summary (continue)

- At present, terminal demand concentrate on ITM and **domestic flights are dispersed among these three airports.**
- In addition, Central Government will, allegedly, cap the total jet aircraft movements in ITM and UKB combined to the fixed number, with the result that KIX will absorb all of the increment of demand for domestic air service in Kansai Region (The situation of ITM and UKB is zero-some).
- As a result, passengers outside Osaka Region transferring at KIX suffer from low frequency of domestic flights from/to KIX, followed by the fact that **not a few of them go abroad by way of Chubu, Seoul, Taipei etc..**



3. Some Problems in Japanese Airport Policy



1. Airport Development Special Account

- Except Narita, Kansai and Chubu, all airports in Japan are **controlled in the same special account (Pooling-system)**.
 - >> No information for each airport's balance sheet
(Probably, only Haneda and Itami will be profitable)
- This systems used to contribute to the formation of national-wide air networks by **cross-subsidies from profitable major airports to non-profitable local airports.**
- Airports have been, up to now, widely located nation-wide and now funds are used mainly for the truly necessary further development in the congested airports like in Tokyo or Osaka.



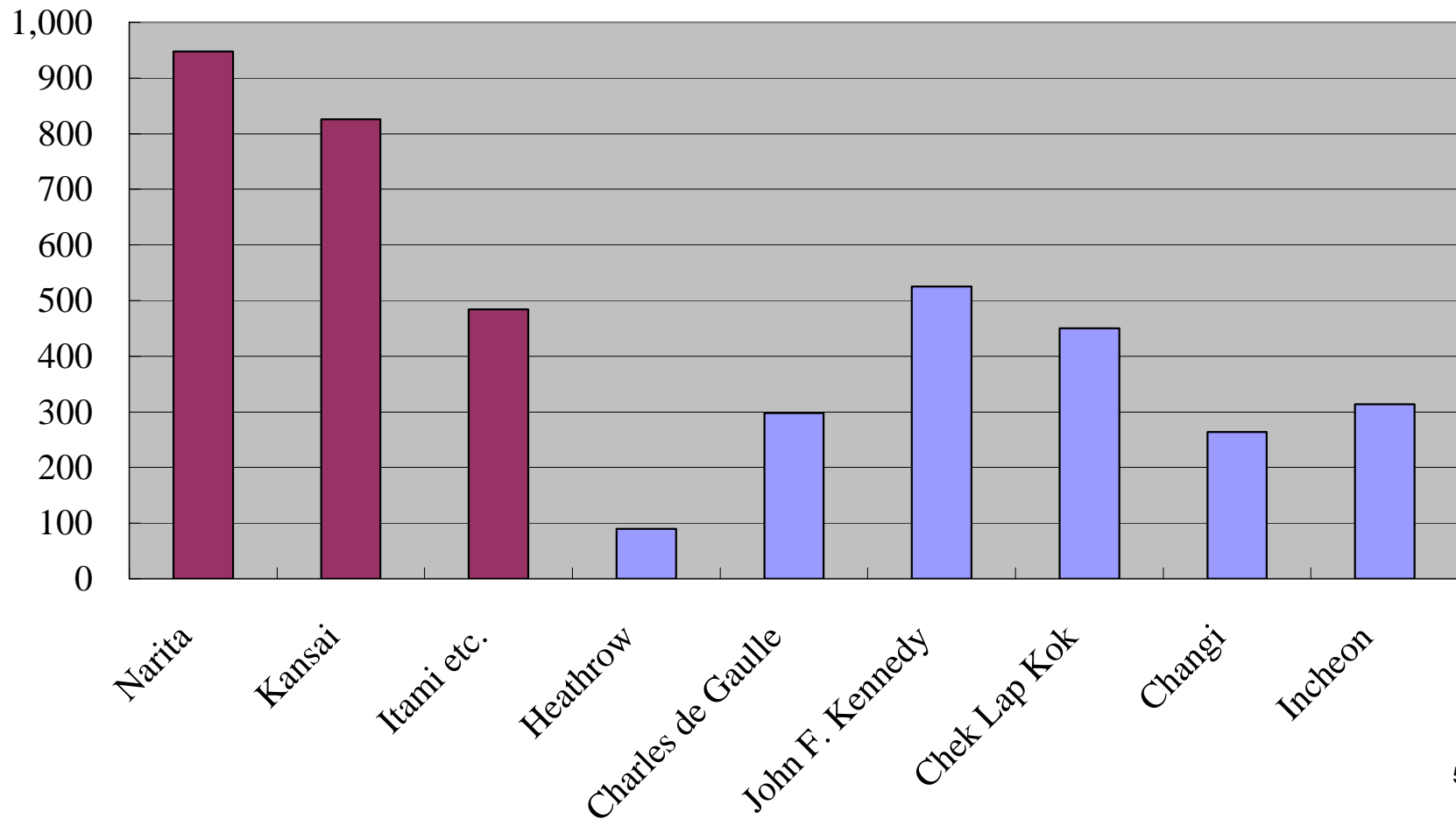
2. Much Dependence on Airport User Charges, Little from General Account for Airport Development

- Total amount from General Account accounts for **5%~15%** in the total revenue of Special Account.
>>Relatively high airport charges (landing fees etc.)
- **Less than 1%** in the total public-related expenditure by Central Government, in comparison with about 4% for harbor development or about 2% for fishing ports development.

Comparison of Landing Fee among Major Airports

B-747

Thousand Yen





3. Split-up between Air-side and Land-side

- Except Narita, Kansai and Chubu, **air-side (runway, taxiway etc.) and land-side (terminal building, parking area etc.) are separately managed.** In general, the former is by public-sector and the latter by private-sector.
 - >> No cross-subsidy from commercial sector to aeronautical sector, as often observed in other regions
 - >> No room for strategy in airport charging system



4. Limited Airport Capacity for Competition among Airlines

- In 2000, Civil Aeronautics Law was amended;
 1. Supply/demand regulation policy was abolished.
 2. License for each route was no longer needed.
 3. Airfare regulation was also deregulated from approval regulation to prior notification.>> Ready for competition among airlines
- At congested airports such as Haneda, slot allocation is subject to review per every five years based on pre-set allocation criteria.

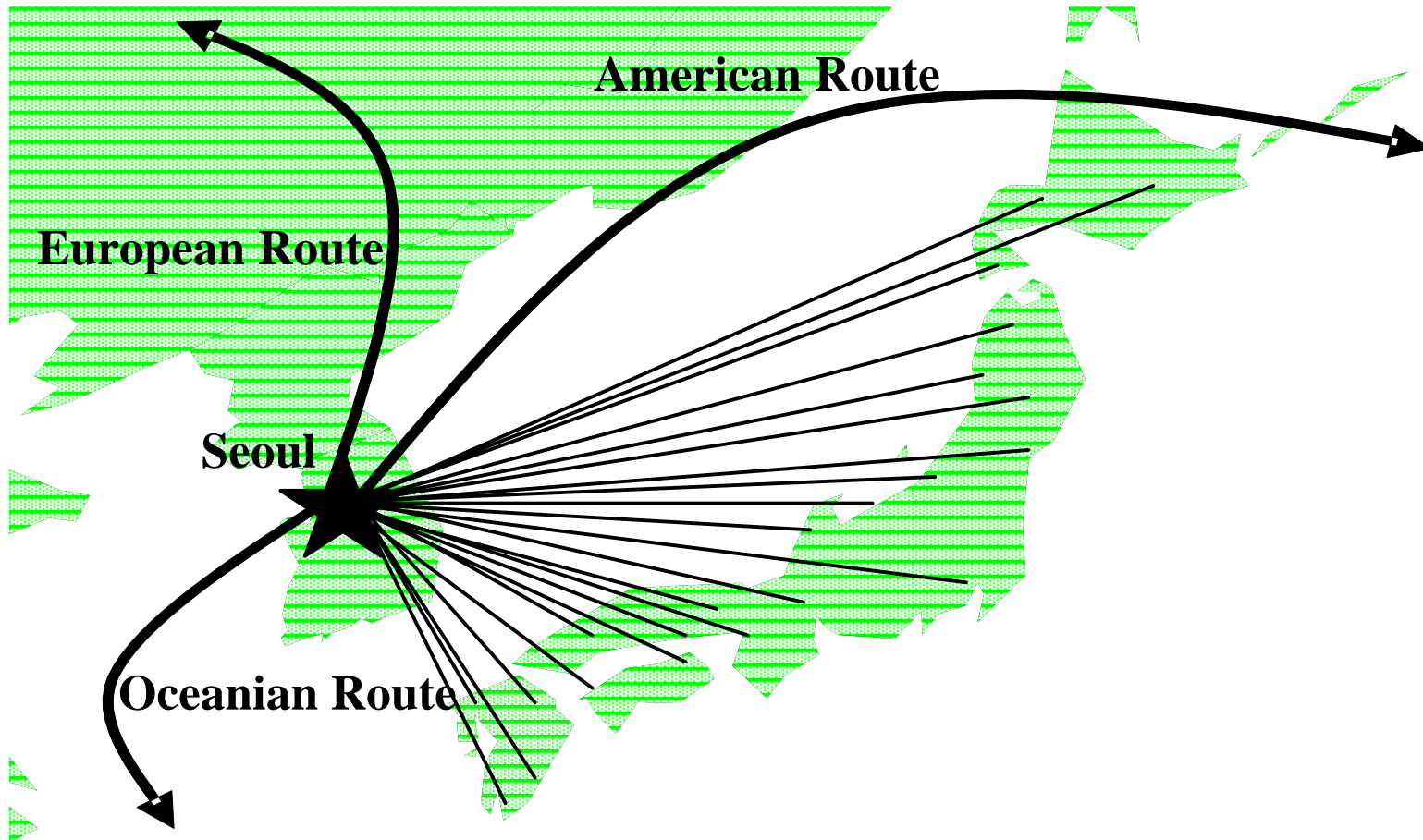


4. Backgrounds for Future Research

1. Current Position of Japanese Major Airports

1.1 Network Formation by Foreign Airlines

1) Sixth Freedom by Korean Airlines (KE, OZ)



1. Current Position of Japanese Major Airports

1.1 Network Formation by Foreign Airlines

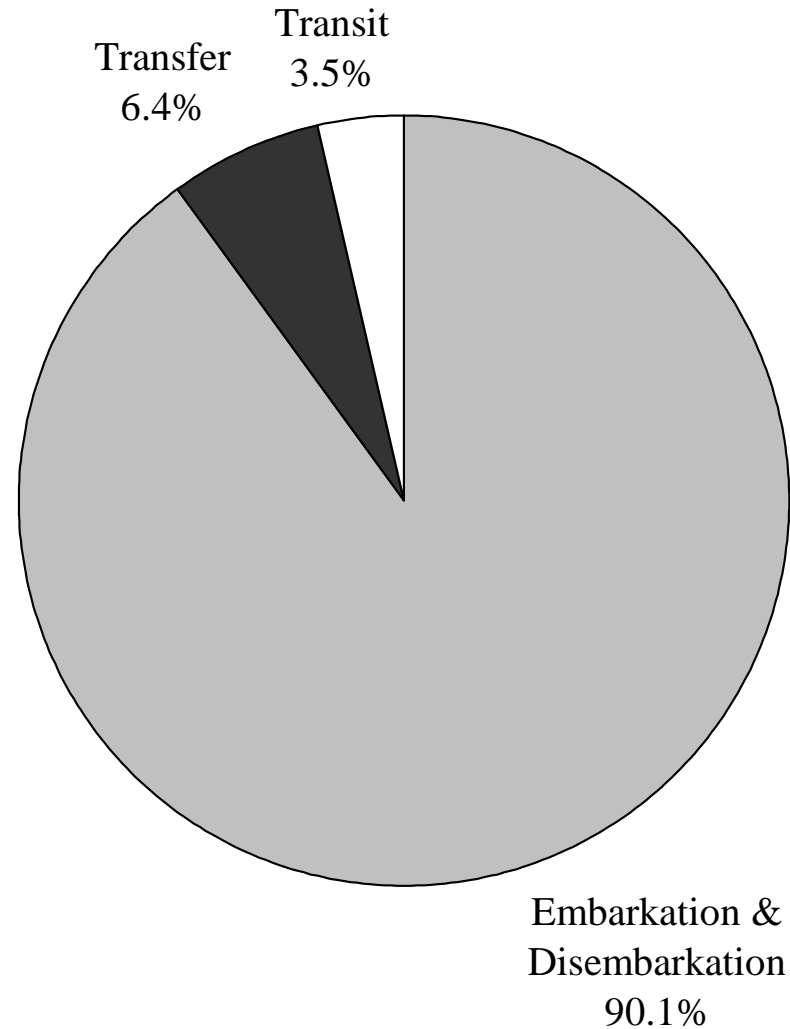
2) Fifth Freedom by American Airlines (NW, UA)

Busan	Arrival →	←	14:30	Departure	Detroit
	Departure 17:40 ←	←		Arrival	
Singapore	Arrival →	←	15:00	Departure	Minneapolis/St. Paul
	Departure 17:45 ←	←		Arrival	
Shanghai	Arrival →	←	15:05	Departure	Seattle/Tacoma
	Departure 17:50 ←	←		Arrival	
Nagoya	Arrival →	←	15:15	Departure	Portland
	Departure 17:55 ←	←		Arrival	
Guangzhou	Arrival →	←	15:25	Departure	Los Angeles
	Departure 18:00 ←	←		Arrival	
Beijing	Arrival →	←	15:40	Departure	San Francisco
	Departure 18:05 ←	←		Arrival	
Seoul	Arrival →	←	15:55	Departure	Detroit
	Departure 18:15 ←	←		Arrival	
Hong Kong	Arrival →	←			
	Departure 18:20 ←	←			
Bangkok	Arrival →	←			
	Departure 18:35 ←	←			
Manila	Arrival →	←			
	Departure 19:00 ←	←			

1. Current Position of Japanese Major Airports

1.2 Transferring Rate at Narita and Kansai

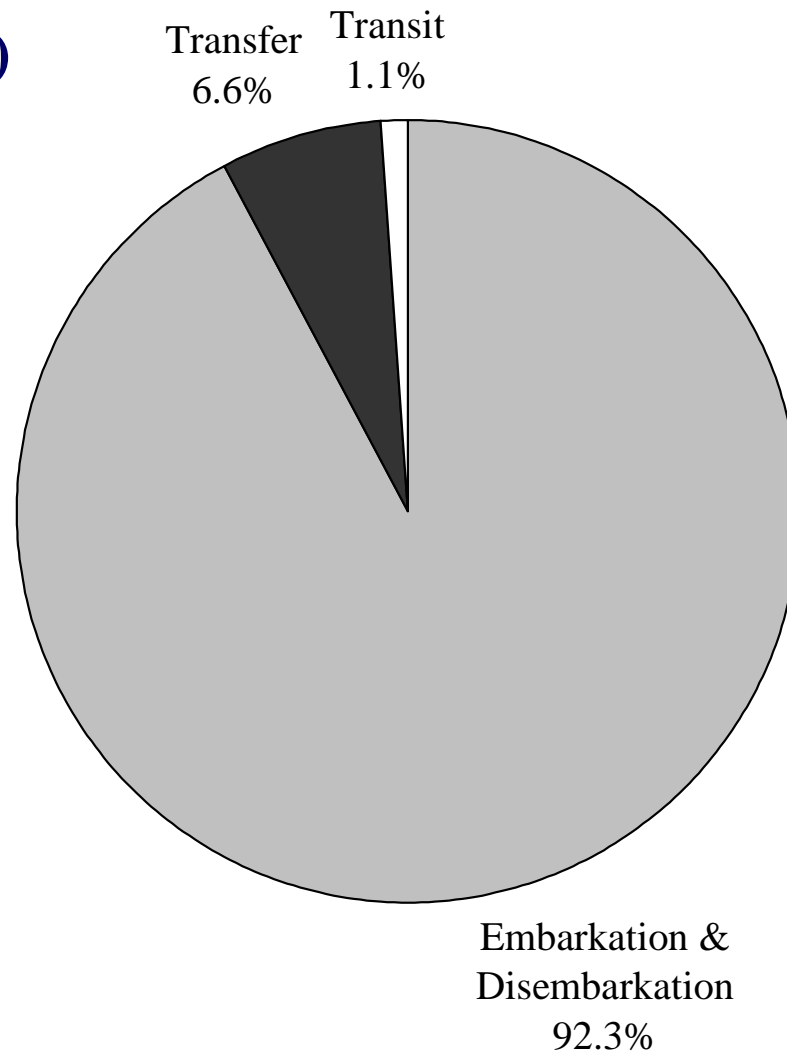
1) Narita (2001)



1. Current Position of Japanese Major Airports

1.2 Transferring Rate at Narita and Kansai

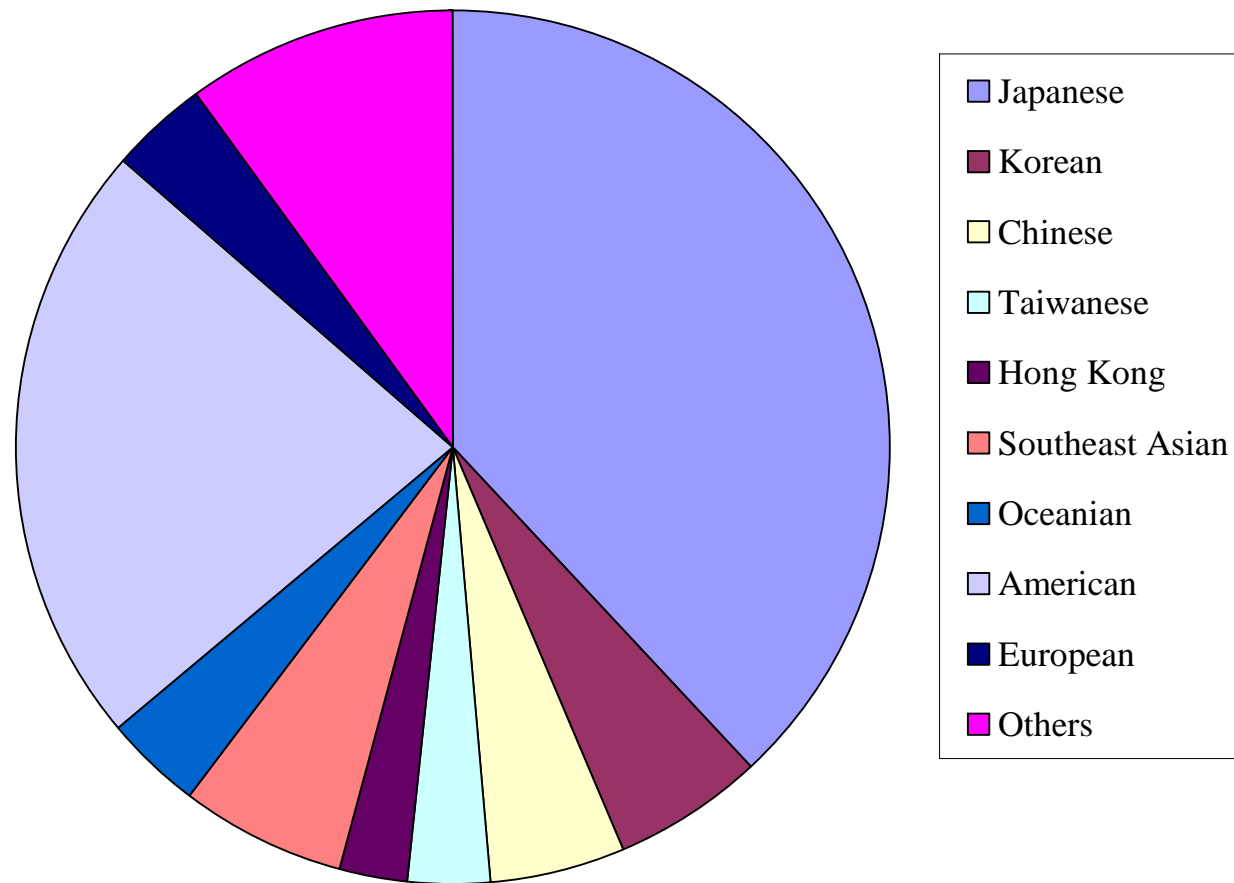
2) Kansai (2001)



1. Current Position of Japanese Major Airports

1.3 Rough Description of International Aircraft Movements by Airlines at Narita in 2004

1) Passenger





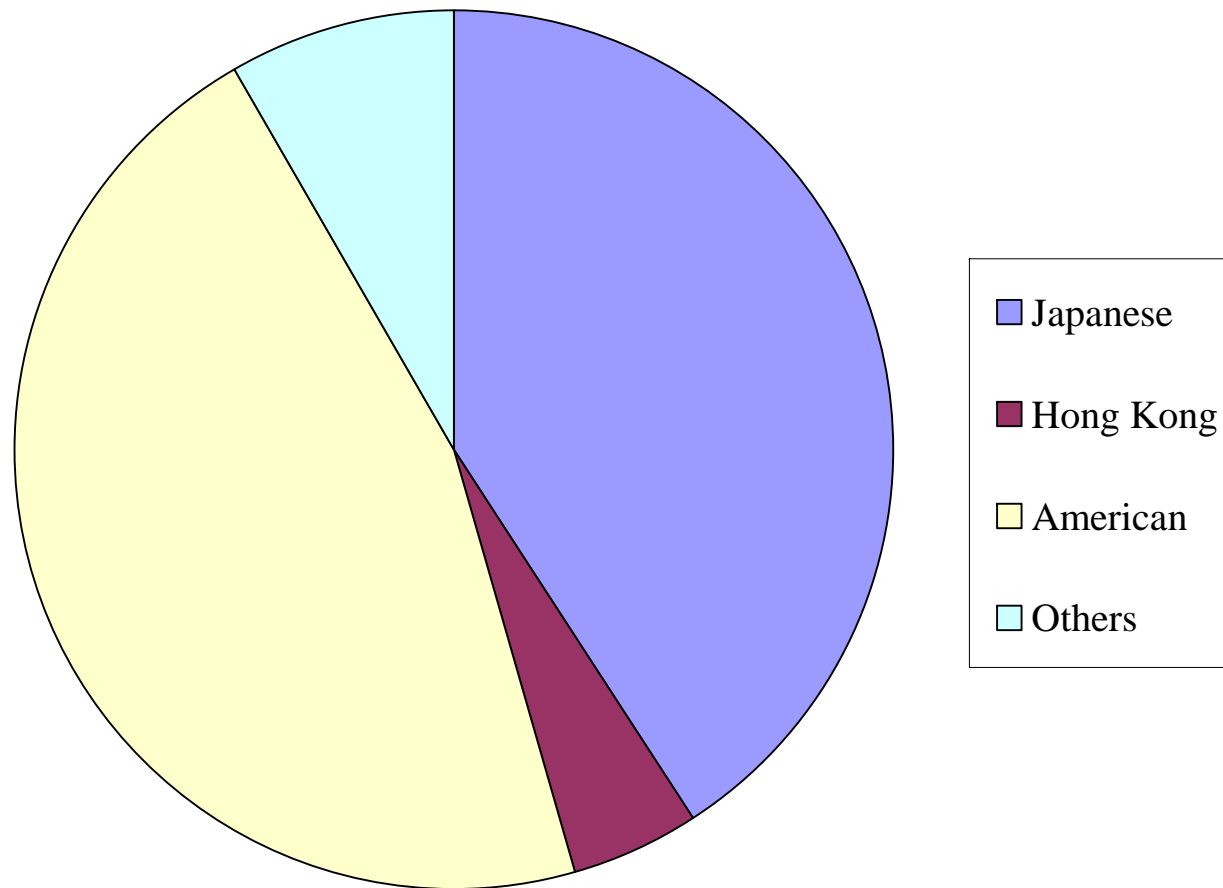
Top 10 Airlines in Aircraft Movements at Narita in 2004 (Passenger)

	Airline	Movements
1	Japan Airlines	33,894
2	Northwest Airlines	15,862
3	All Nippon Airways	15,316
4	United Airlines	10,818
5	Korean Airlines	5,171
6	American Airlines	4,180
7	JALways	3,650
8	Cathay Pacific Airways	3,648
9	Air China	3,312
10	Qantas Airways	3,208

1. Current Position of Japanese Major Airports

1.3 Rough Description of International Aircraft Movements by Airlines at Narita in 2004

2) Cargo





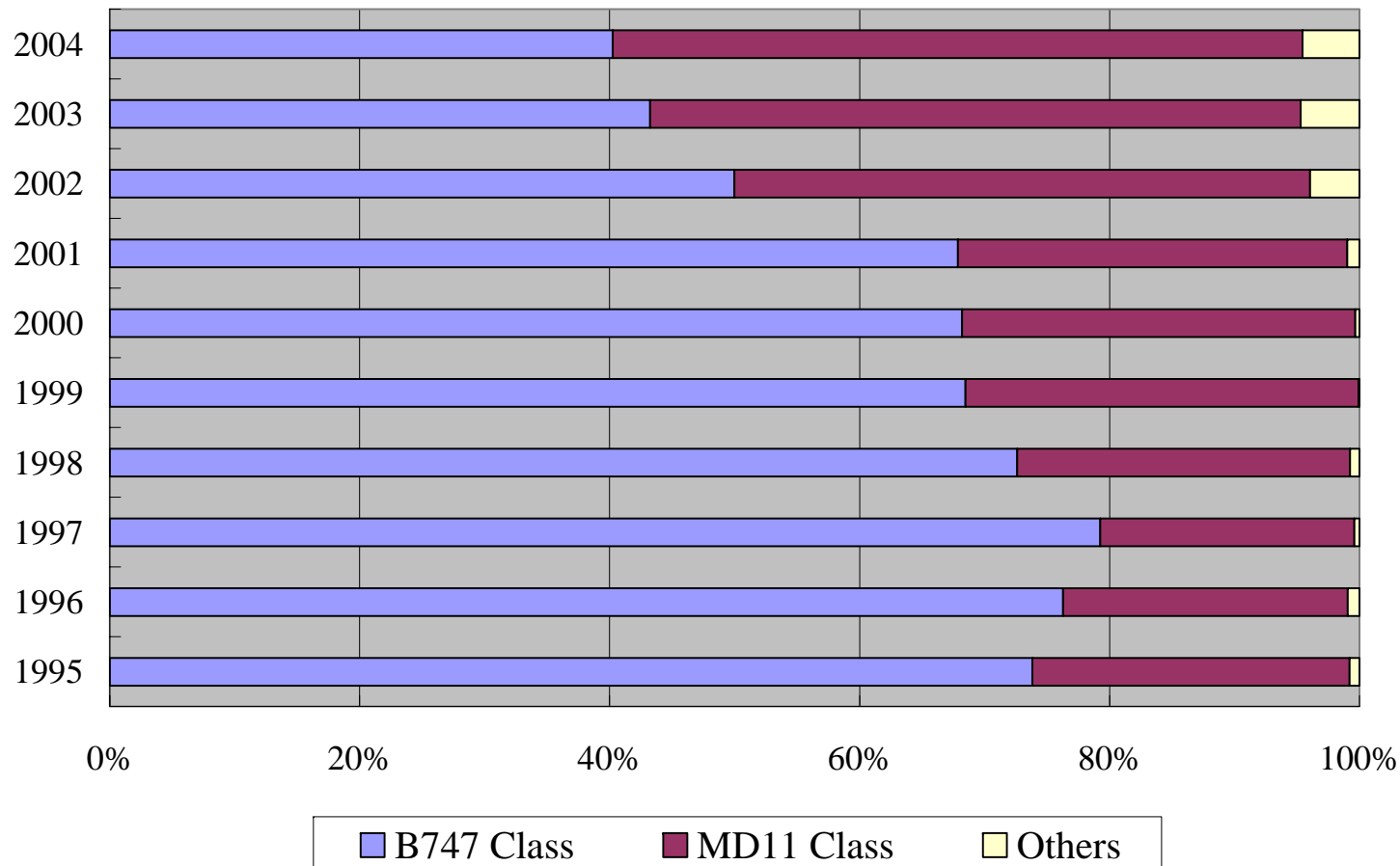
Top 10 Airlines in Aircraft Movements at Narita in 2004 (Cargo)

	Airline	Movements
1	FedEx Express	5,293
2	Japan Airlines	4,749
3	Nippon Cargo Airlines	4,365
4	Northwest Airlines	3,588
5	UPS	2,487
6	All Nippon Airways	1,169
7	Polar Air Cargo	871
8	Cathay Pacific Airways	775
9	Japan Asia Airways	584
10	Air Hong Kong	518

1. Current Position of Japanese Major Airports

1.4 International Aircraft Movements by Aircraft types at Narita

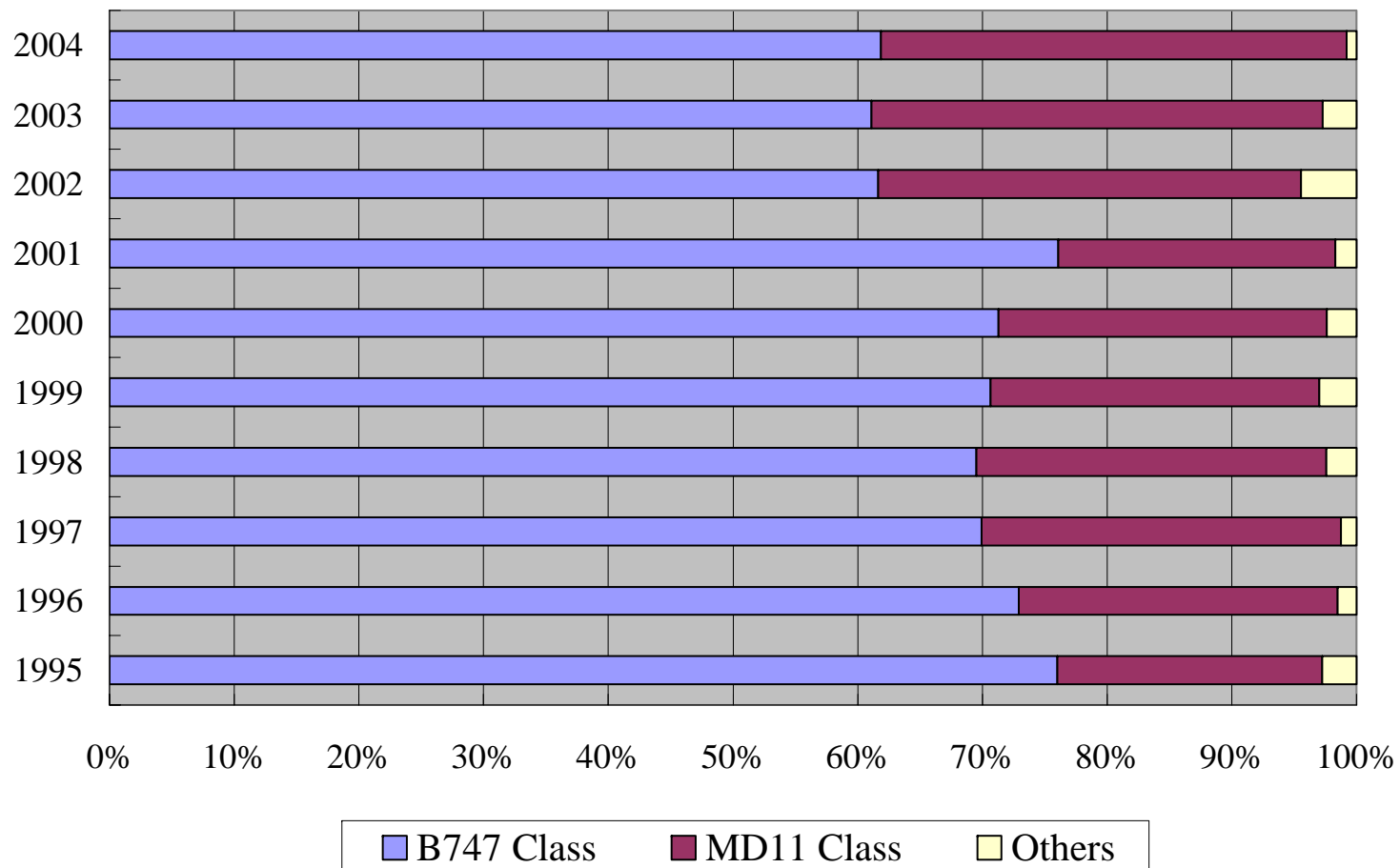
1) Passenger



1. Current Position of Japanese Major Airports

1.4 International Aircraft Movements by Aircraft types at Narita

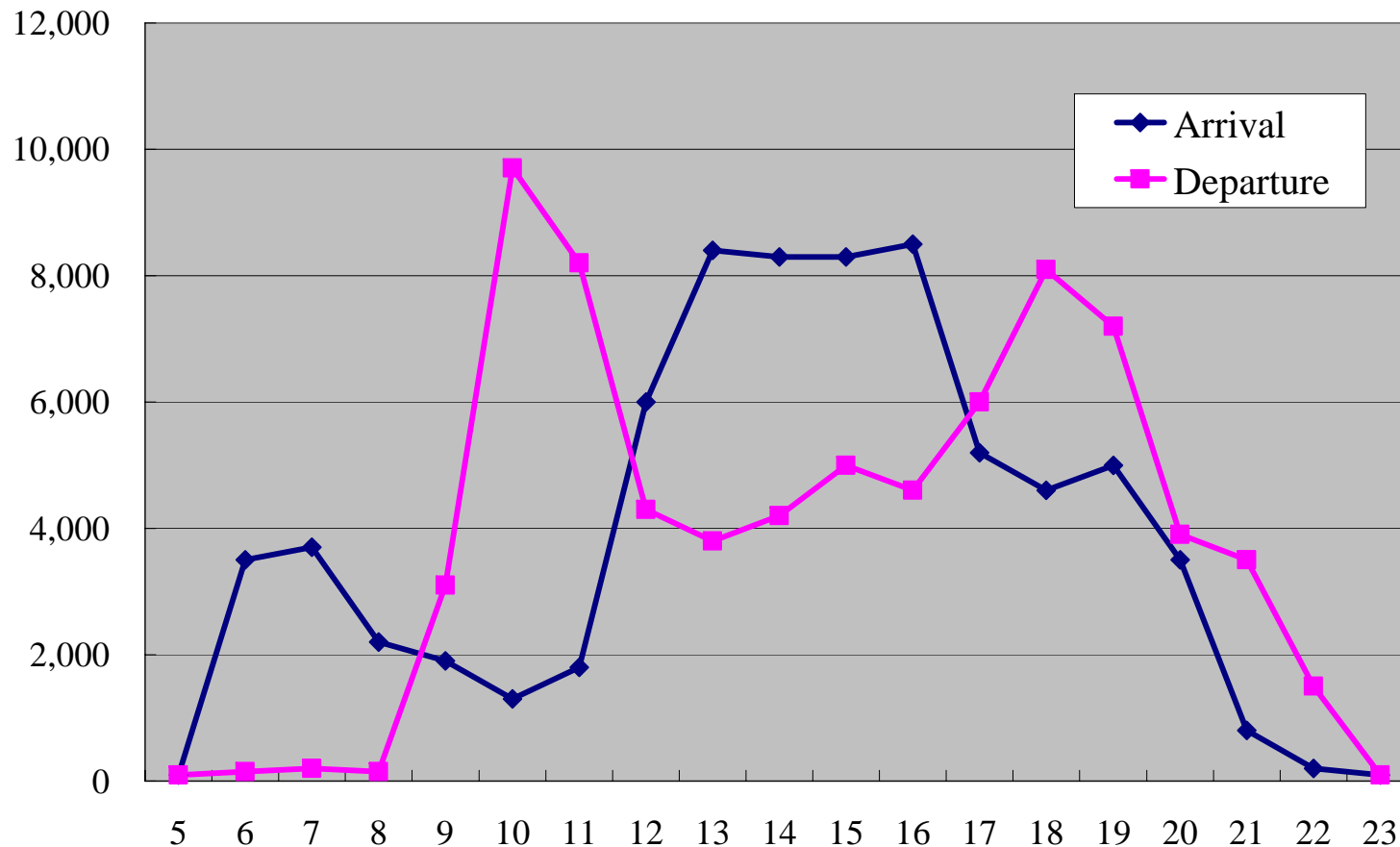
2) Cargo



1. Current Position of Japanese Major Airports

1.5 Rough Description of International Aircraft Movements by Time at Narita in 2004

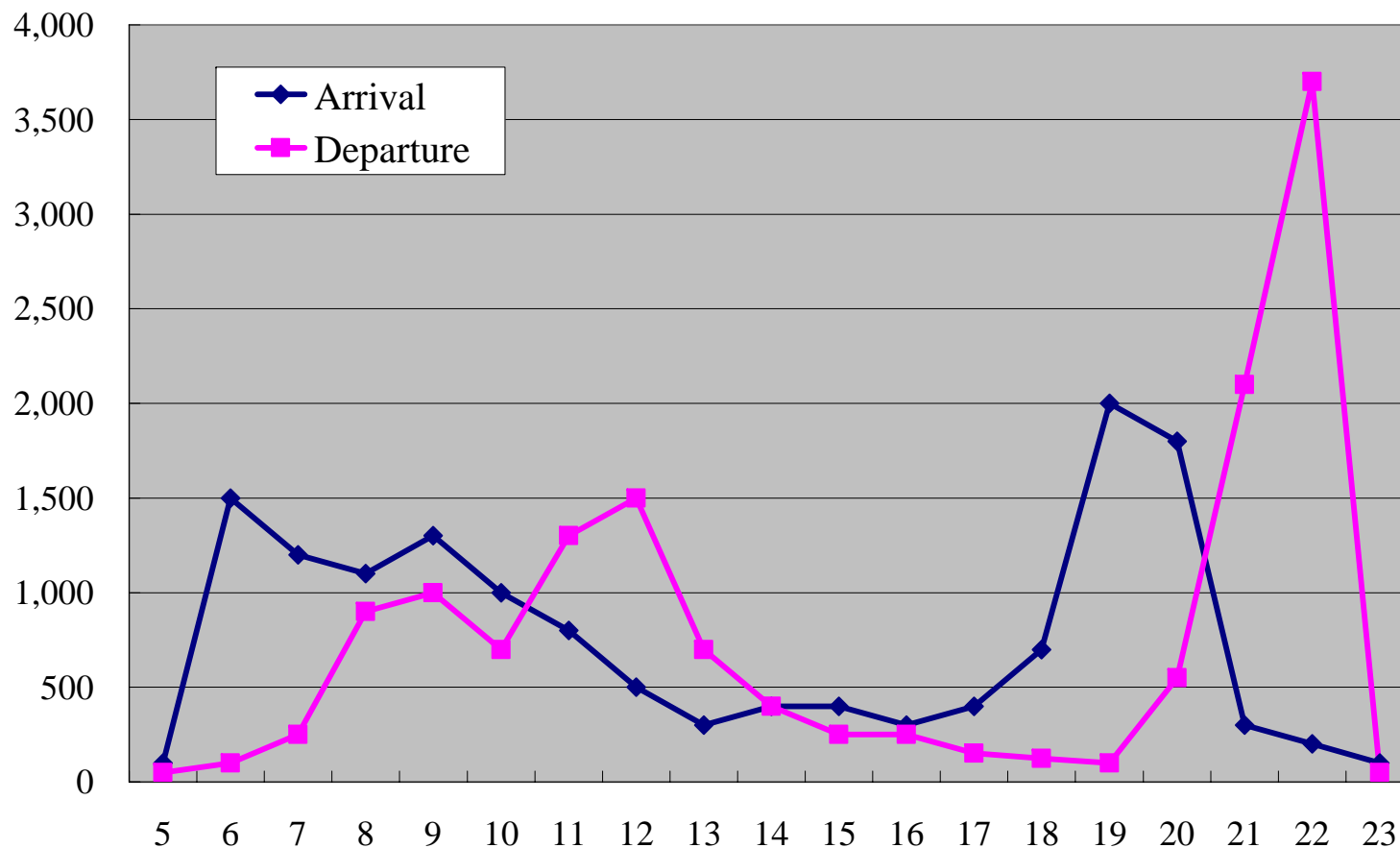
1) Passenger



1. Current Position of Japanese Major Airports

1.5 Rough Description of International Aircraft Movements by Time at Narita in 2004

2) Cargo





2. Summary for Current Situation

- ❑ Limited airport capacity and high airport charges
>> less competitive compared with neighboring airports
- ❑ Relatively strong air network formation by foreign airlines
- ❑ Low level of transferring rate (5%~10%), with comparison with European major airports (30%~50% in some cases)
- ❑ Less development in **wave system structures**



3. Drastic Changes surrounding Asian Market

- Asia-Pacific region is the most rapidly growing center in air transportation.
 - >> **About 50% in 2050**, according to IATA
- International aviation market in Asia is more and more liberalized.
- Expected strong influence of **alliances** on the strategy of airlines in Asia-Pacific region for network formation.
- Emergence of **low-cost carriers** in Asia-Pacific region.
 - >> Occupying already powerful position in U.A. or Europe
 - >> Much attention drawn to **secondary or tertiary airport**



4. Useful Methods

- Measuring and quantifying the competitive position of Japanese major airports; Narita, Kansai and Chubu in terms of air network connectivity
 - >> *NetScan Model*
- Evaluation of airline networks and some suggestions for hub development strategy at Kansai International Airport
 - >> *NetCost Model*