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Flow of Goods, People and Information among Cities of Northeast Asia

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1. Introduction[1)]

Northeast Asia is perceived as a well-defined region. Conventionally, it comprises China, Japan, the Koreas, Hong Kong SAR, Macau, Mongolia, the Russian Far East and Taiwan. However, there is no equivalent to the European Union, the North American Free Trade Association or an Association of South East Asian Nations as the basis for regional political cooperation. Until the mid-1980s Northeast Asia was split ideologically into rival camps China, North Korea, Mongolia and the Soviet Union on one side and Japan, Hong Kong, South Korea and Taiwan on the other. During the Cold War there was little prospect of regional political cooperation because of different social systems and modes of development. Even after the resumption of economic relations these differences have continued to impede regional political integration. There are still two Koreas.

As there is no firm basis for Northeast Asia in politics it should not be automatically considered as an analytical concept. Does it constitute a sub-region of the global economy? Are interactions between firms and households within the global economy mediated through a national filter? What structures are there between the local and the global? Given the preoccupation with globalisation it might be expected that care should have been taken to specify the basic patterns and structure of economic activities. Yet the literature assumes that nations are the fundamental units and, like city-states, exist at a single point. For Hong Kong or Macau this is indeed the case but it is a gross exaggeration for China and Japan.

It is relevant to reconsider whether the preoccupation with national economies should persist. The

assumption that economic activity is organized within nation-states fits uncomfortably with the argument that transnational corporations have equal weight with nation-states (Rimmer, 1994). Sub-national units such as city-regions need to be recognised in their own right.

This paper takes as its starting point the hypothesis that Northeast Asia is an open system in the world economy. Its boundaries and internal structures are derived empirically. A recurrent problem throughout the study is to find data that are not conflated with national blocks of differing size.

An evaluation is therefore made of data on movements of information, goods and people. These movements may be considered as continuous flows of energy with precise spatial and temporal characteristics that relate to structure and change over time. For technological, economic and social reasons these flows concentrate at the nodes of seaports, airports and teleports which invariably coincide with cities.

Relations between cities give structure to Northeast Asia within the wider Asian-Pacific region and the global economy (see Rimmer, 1989, 1991, 1993, 1996, 1997a, 1998 and in press for earlier studies). This paper therefore begins with an overview of the importance of Northeast Asia's cities and city-regions. After disaggregating the region in terms of demography and economic activity the paper explores flows of goods, people and information. This leads to a discussion of the appropriateness of different spatial visions of Northeast Asia and finally a consideration of the impact of the Asian Crisis.

2. Cities or City-regions?

By the year 2000 Northeast Asia will have 26 urban agglomerations with populations over two million compared with 17 such urban agglomerations in Europe (Table 1). More significantly, the total population of these agglomerations in Northeast Asia will have increased from 115 million in 1980 to 171 million in 2000, whereas those in Europe will have grown only from almost 66 million to 67 million over the same period.

When these agglomerations in Northeast Asia are mapped the concentration of population along the Beijing-Seoul-Tokyo (Besoto) axis is evident (Fig. 1). Other features are the extension of the Besoto axis into Northeast China; the string of centres along the Yangtze Valley; and the apparent isolation of Hong Kong and Guangzhou.

Table 1. Urban Agglomerations in Northeast Asia with Populations Above Two Million , 1980-2000

Agglomeration	Actual (thousands)			Estimated(thousands)	
	1980	1985	1990	1995	2000
Northeast Asia					
Tokyo (Japan)	21,854	23,322	25,013	26,836	27,856
Shanghai (China)	11,739	12,396	13,452	15,082	17,213
Beijing (China)	9,029	9,797	10,872	12,362	14,206
Seoul (South Korea)	8,283	9,549	10,558	11,641	12,278
Tianjin (China)	7,268	8,133	9,253	10,687	12,369
Osaka (Japan)	9,990	10,351	10,482	10,601	10,601
Hong Kong	4,609	5,070	5,369	5,574	5,712
Shenyang (China)	3,913	4,219	4,664	5,301	6,134
Wuhan (China)	3,155	3,440	3,840	4,399	5,101
Pusan (South Korea)	3,120	3,490	3,778	4,082	4,244
Guangzhou (China)	3,135	3,307	3,595	4,056	4,676
Chongqing (China)	2,577	2,784	3,086	3,525	4,087
Taiyuan (China)	2,156	2,484	2,900	3,417	4,012
Chengdu (China)	2,348	2,601	2,942	3,401	3,963
Harbin (China)	2,467	2,640	2,905	3,303	3,825
Xian (China)	2,120	2,418	2,800	3,283	3,849
Nagoya (Japan)	2,590	2,708	2,939	3,196	3,353
Dalian (China)	1,455	1,916	2,491	3,132	3,777
Jinzhou (China)	1,308	1,776	2,365	3,019	3,663
Nanjing (China)	2,076	2,285	2,571	2,965	3,454
Kitakyushu (Japan)	2,030	2,217	2,448	2,704	2,873
Changchun (China)	1,698	1,900	2,169	2,523	2,954
Tangshan China)	1,698	1,893	2,154	2,502	2,926
Pyongyang (North Korea)	1,796	2,011	2,330	2,470	2,725
Taegu (South Korea)	1,589	1,999	2,215	2,432	2,564
Inchon (South Korea)	1,067	1,365	1,785	2,340	2,843
Sub-total	115,070	126,071	138,976	154,833	171,258
European Union					
Sub-total	65,982	65,202	65,873	66,416	67,131

Source : UN, 1994.

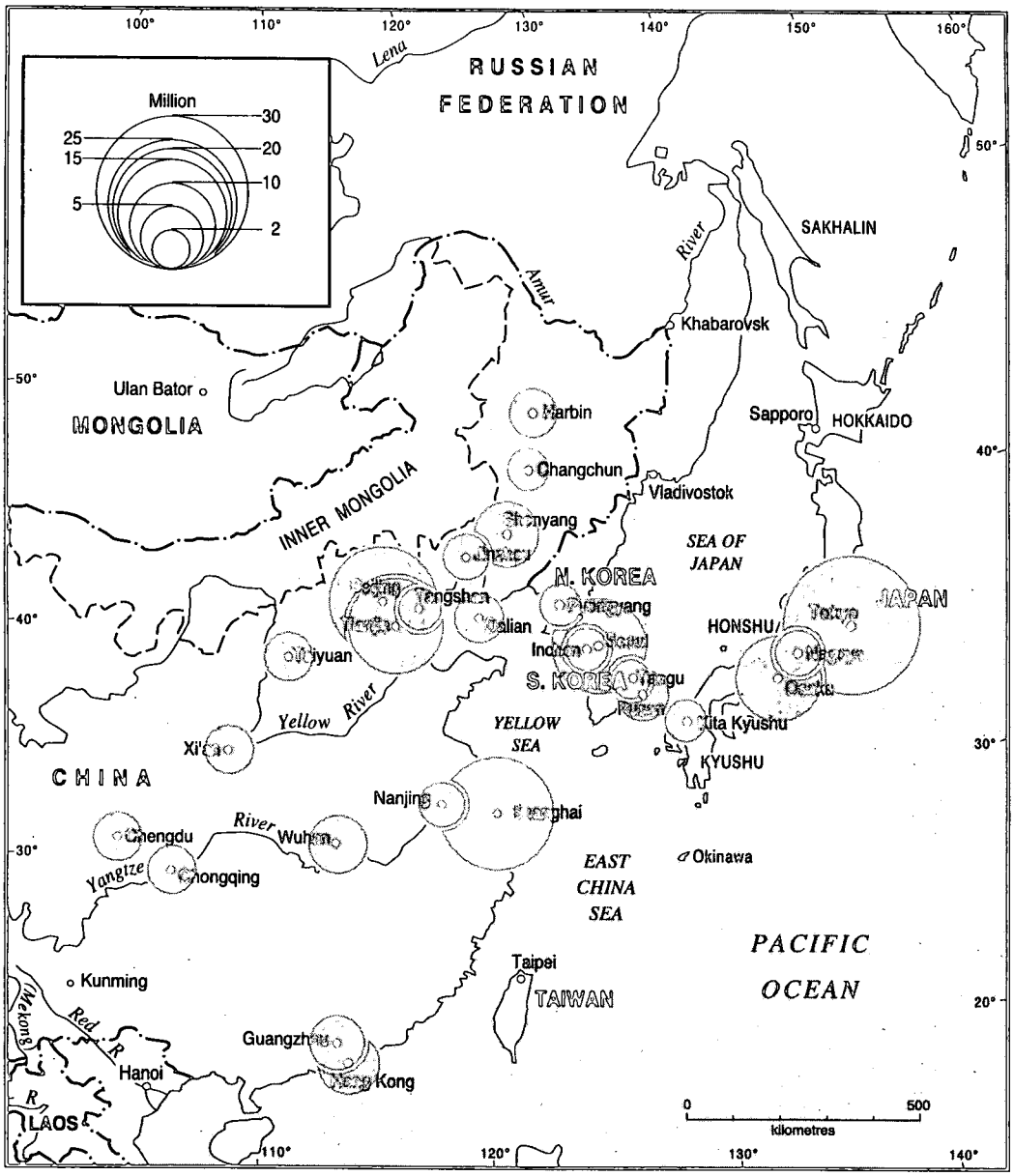


Figure 1. Urban Agglomerations in North East Asia with Estimated populations over 2 Million in the Year 2000 (Source: Data from UN, 1994).

As population is an unreliable guide to the relative economic importance of agglomerations we need to gauge the strength of the economies of individual city-regions. However, the paucity of economic statistics preclude any meaningful breakdown of the Russian Far East, Mongolia and North Korea into city-regions. Consequently, attention is focused on defining city-regions in China (including the Hong Kong SAR), Japan, South Korea and Taiwan.

Even then only a coarse regional network can be used for China, Japan and South Korea. China's coastal and central provinces are condensed to six macro city-regions and the vast area covered by the western provinces to one. Japan's regionalisation follows national planning guidelines that recognises six macro sub-regions. South Korea's mainland provinces are grouped into four regions with Cheju Island left as a separate entity. Taiwan's regions adhere to those chosen by the government statistician.

A guide to the comparative strength of the 23 city-regions resulting from this exercise is derived from their relative contribution to Northeast Asia's Gross Regional Product in 1995 (adjusted for Purchasing Power Parity). Japan's Tokyo-Kanto region had the largest Gross Regional Product at nearly US$1,000 billion (Table 2). Yet Tokyo-Kanto was not dominant as it accounted for less than 14 per cent of the regional total. However, the top 5 city-regions, Japan's Tokyo-Kanto and Nagoya-Chubu and China's Shanghai-Changjiang Delta, Beijing-Bohai and Guangzhou-Southeast section accounted for 47 per cent of the regional total. If Hong Kong SAR is added to Southeast China the figure would have been over 49 per cent. Further the top 10 city-regions all in Japan and China are responsible for over 75 per cent of the regional total.

These high levels of concentration suggest that other city-regions are in national 'shadow-belts' (Lu 1994). Although Hokkaido/Tohoku, Kyushu/Okinawa and Chugoku/Shikoku in 1995 were seen as being peripheral in Japan, their Gross Regional Product was on a par with South Korea's Capital City region. While Pusan-Kyongsang was only South Korea's second ranking city-region its economy still more than matched those of the Hong Kong SAR and Taipei-Northern Taiwan, and was also ahead of Kaohsiung-Southern Taiwan. Despite the fact that South Korea's west coast city-regions Cholla and Chungchong have been categorised as 'lagging areas' they were similar in size to Taiwan's Central region. The smallest city-regions were Taiwan's Eastern region and South Korea's Cheju island but the size of their economies still ranked above North Korea, Mongolia and the Russian Far East.

Further refinement of this network of city-regions is necessary to determine if disparities within regions are greater than between them. This proposition is demonstrated by the inclusion in Table 2 of Jilin, Heilongjiang and Liaoning that together comprise China's less prominent Northeast region. However, these intra-regional disparities are not pursued here given the study's more limited focus on analysing transport and communications connections between major cities.

Table 2. City-Regions in Northeast Asia Ranked by Estimated Gross Domestic Product Adjusted for Purchasing Power Parity, 1995

Region	Country	Chief cities	Area	Population	Estimated GDP (PPP)	
			thousand sq. km	million	billion US$	per cent
Kanto	Japan	Tokyo	32	39.5	999.6	13.85
Changjiang Delta	China	Shanghai	922	128.7	694.1	9.62
Bohai	China	Beijing	356	174.3	609.6	8.44
Southeast	China	Guangzhou	570	155.4	591.7	8.20
Chubu	Japan	Nagoya	67	23.2	518.2	7.18
Western	China	Chengdu	5,374	279.8	489.4	6.78
Changjiang Valley	China	Wuhan	695	224.3	469.4	6.50
Kansai	Japan	Osaka	27	20.6	456.8	6.33
Northeast	China	Shenyang	789	104.5	355.8	4.93
Outer Central	China	Taiyuan	1,506	145.7	295.5	4.09
Hokkaido/Tohoku	Japan	Sapporo	147	15.5	294.5	4.08
Kyushu/Okinawa	Japan	Fukuoka	42	14.7	263.8	3.65
Capital City Region	South Korea	Seoul	28	21.7	251.4	3.48
Chugoku/Shikoku	Japan	Hiroshima	51	12.0	235.3	3.26
Liaoning	China	Shenyang	148	41	167.6	
Kyongsang	South Korea	Pusan	32	12.8	151.1	2.09
Hong Kong	Hong Kong	Hong Kong	1	6.2	142.3	1.97
Northern	Taiwan	Taipei	7	9.1	139.2	1.93
Heilongjiang	China	Harbin	454	37.3	120.6	
Southern	Taiwan	Kaohsiung	10	6.3	76.8	1.06
Jilin	China	Changchun	187	26.1	67.7	
Cholla	South Korea	Kwangju	20	5.2	56.9	0.79
Central	Taiwan	Taichung	11	5.4	53.1	0.74
Chungchong	South Korea	Taejon	17	4.4	49.4	0.68
Eastern	Taiwan	Hualien	8	0.2	6.1	0.09
Cheju	South Korea	Cheju	2	0.5	5.3	0.07
North Korea	North Korea	Pyongyang	121	23.9	5.2	0.07
Mongolia	Mongolia	Ulan Bator	1,567	2.5	4.9	0.07
Russian Far East	Russia	Vladivostok	6,220	7.6	3.4	0.05
Total					7,218.8	100.00

Note : Rounding errors. Areas comprising Northeast China - Liaoning, Heilongjiang and Jilin - are italicised to show their positioning if a finer-grained mesh of city-regions is used.

Source: Rimmer, 1998.

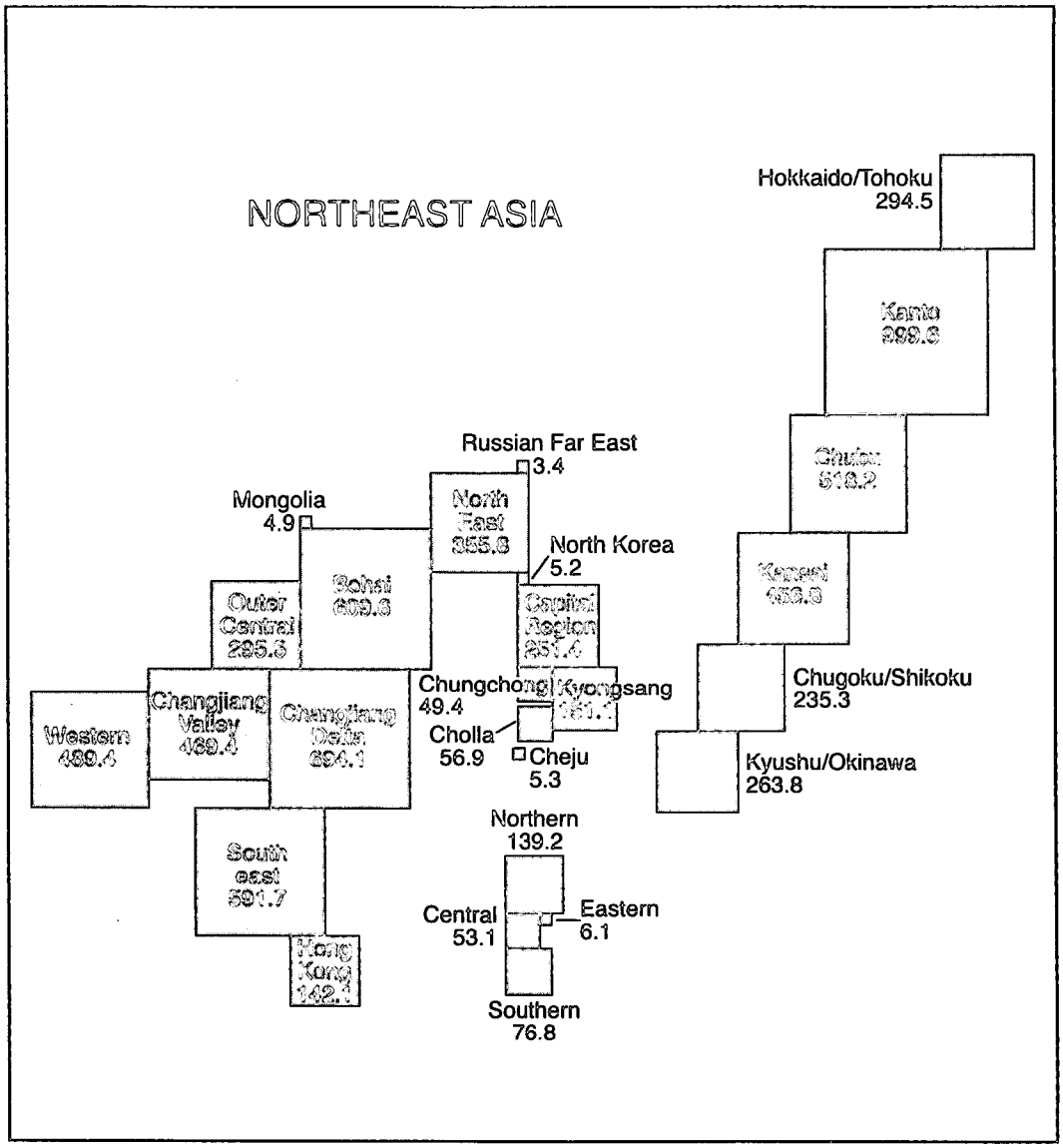


Figure 2. Estimated Gross Product by City-Region in Northeast Asia (Source: Rimmer, 1998).

When the 23 city-regions are mapped according to their Gross Regional Product the uneven nature of Northeast Asia's development is apparent (Fig. 2). Using the thirteenth-ranking South Korea's Capital City region as the yardstick, all city-regions in China and Japan, except for Hiroshima - Chugoku / Shikoku, have larger economies. Tokyo-Kanto is almost four times larger and the combined Guangzhou-Southeast China-Hong Kong SAR is almost three times larger. Conversely, both Pusan-

Kyongsang and Taipei-Northern Taiwan are only 60 per cent the size of South Korea's Capital City region; Southern Taiwan 30 per cent; Cholla, Chungchong and Central Taiwan around 20 per cent each; and Eastern Taiwan and Cheju about 2 per cent each. These marked differences in the size of city-regions raise the question as to the extent to which they are reflected in the flows of goods, people and information.

3. Flows

Ideally, interactions between city-regions in Northeast Asia should be gauged through the simultaneous study of information, goods and people flows between multilayered hubs. The three hub layers comprise connections to sea-land, air and telecommunications networks. Links between the different levels of the multilayered hub pairs are the corridors accommodating flows of goods, people and information that are analogous to movements of solids, liquids and gases. Within the multilayered hubs synergies are possible between sea-land, air and telecommunications. Goods can be switched between either sea-land or air, and telecommunications can be substituted for passenger movements. The growing dependence of freight and passenger systems on telecommunications within this multilayered hub structure suggests that increasingly the profits will not be obtained from cargo space or seats but from distilling information (i.e. the profits are to be obtained higher up the tree). The new commercial currency will not only include traffic rights but information rights. Given the nature of available data it is not possible to pursue this ideal study of interactions between city-regions in Northeast Asia. Information, goods and people flows have to be examined separately.

1) Information

Survey data on information flows are available for studying interactions between Japanese prefectures (KK, 1990, 1995, 1997; Chiiki Keizai Kenkyukai, 1996). They could be combined to examine flows between city-regions, however comparable data are not available for Northeast Asia as a whole. All that is available are maps of fibre-optic networks and the Asian internet backbone (Rimmer and Morris-Suzuki forthcoming). Consequently, reliance has to be placed on telecommunications traffic measured in Millions of Minutes of Telecommunications Traffic (MiTT) published in Telegeography to gauge the importance of routinised information flows throughout the region (Staple, 1998).

Telecommunications is the fastest growing sector of the Northeast Asian economy. The headquarters of five of the world's top 40 international

Table 3. Outgoing International Telecommunications Traffic, 1996/97
(Millions of Minutes of Telecommunications Traffic)

	China	Japan	Hong Kong	Korea	Macau	Russia	Taiwan	USA
China	-	86.8	750.0	45.7	41.	6.2	115.0	58.1
Japan	202.1	-	57.8	155.7	0	n.a.	85.0	342.1
Hong Kong	965.0	69.5	-		52.	n.a.	69.5	96.0
Korea	120	125	25	-	n.a.	n.a.	9	156.7
Macau	48.6	0.4	47.3	0.3		n.a.	3.1	
Taiwan	164.5	68.6	69.7	8.6	3.7	n.a.	-	111.7
USA	297.6	698.3	538.7	379.8	n.a.	n.a.	320.6	

Source: Staple, 1998.

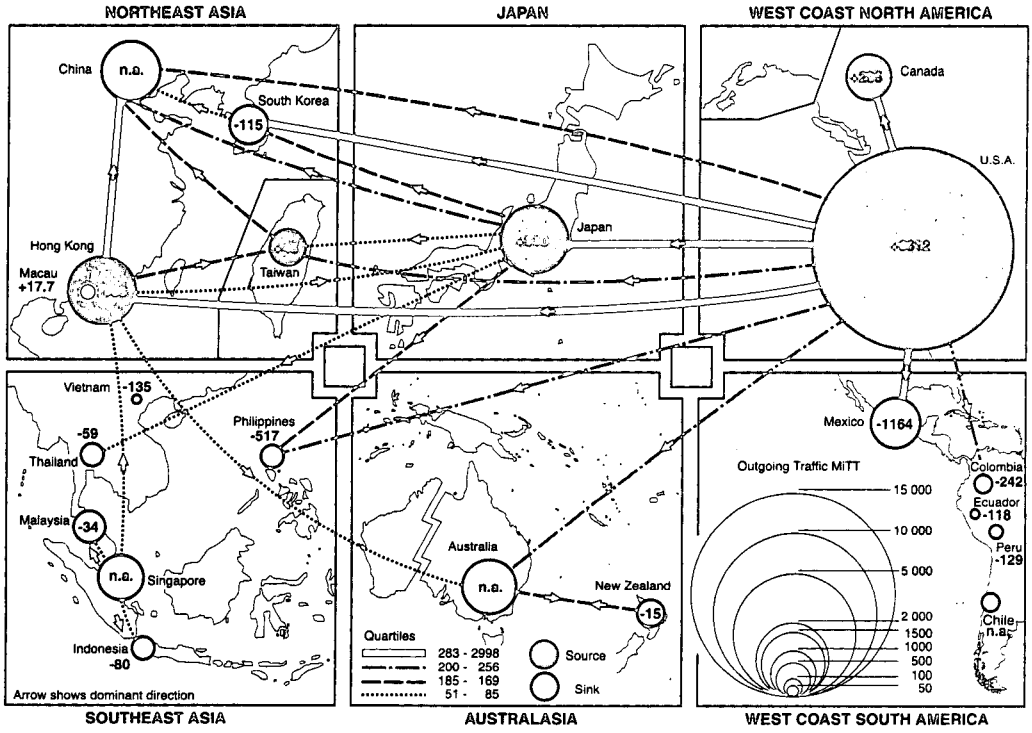


Figure 3. Telecommunications Connections between Country-Pairs within the Asia-Pacific Region, 1995 (Source: data from Staple, 1998).

carriers, in terms of outgoing traffic, were located in five of the region's major cities: Hong Kong Telecom, China's MPT in Beijing, Japan's KDD in Tokyo, Taiwan's Chungwa Telecom in Taipei and Korea Telecom in Seoul. However, an examination of the relative strength of interactions between these telecommunications hubs in Northeast Asia is precluded by the

absence of inte - city telecommunications traffic data. Traffic data are restricted to the largest country-pairs on public switched networks (Table 3).

Mapping country-pairs in Northeast Asia during 1995 could be misleading. Apart from Hong Kong/China, connections between the United States and Japan, Hong Kong, Korea, Taiwan and China are much stronger than those between other Northeast Asia country-pairs. This highlights the need to put regional inter-country flows into an Asia-Pacific context to emphasise the dominance of the United States as the global junction of telecommunications traffic. As Hong Kong, Japan, Taiwan and Macau had net outflows of traffic they are represented as minor 'sources' of traffic whereas China and South Korea with net inflows are featured as 'sinks'. Japan and China have one of the most marked traffic imbalances among non-United States routes.

Only by making heroic assumptions that the main city in each country ominates international traffic can the city's location be equated with headquarters and throughput of telecommunications companies. As shown by the international traffic indicators this may be feasible for Hong Kong and Macau but not for countries with decentralised and multipolar systems such as China and Japan (Table 4). Clearly, Hong Kong and Macau have very different characteristics than the other Northeast Asian economies.

2) Goods

Switching attention to goods transport offers an opportunity to consider flows by sea, land and air at a sub-national level. Initially, attention is focused on container movements as close paralleles are drawn between much of Northeast Asia's present economic development and the past

Table 4. National Telecommunications Traffic Indicators, 1995/96

	GDP (1996) US$bill	Popn (1996) Mill	Main lines (1996) (thous)	Lines per 100 (1996)	MiTT (1996) per capita	Cellular users (1996) thous	PCs (1996) thous	Internet users (1995) thous
China	697.6	1,210.0	54,940.0	4.5	1.2	6,850.0	3,700.0	3,146.0
Hong Kong	143.7	6.3	3,451.2	54.7	275.7	798.4	950.0	305.6
Japan	5,108.5	125.4	62,511.3	49.8	13.5	10,204.0	16,100.0	907.1
Korea	455.5	45.5	19,601.0	43.1	15.4	3,181.0	5,997.0	294.1
Macau	6.4	0.5	161.5	32.5	226.4	44.8	40.0	1.3
Russia	344.7	148.2	25,994.6	17.5	5.7	88.5	3,500.0	221.4
Taiwan	243.0	21.5	10,010.6	46.6	31.4	970.5	1,900.0	251.9

Source : Staple, 1998.

development of the Mediterranean Sea and the Baltic's Hanseatic League of cities. This maritime emphasis also highlights the region's grossly deficient land infrastructure (including transport and communications networks, financial institutions and power supply). An examination of the region's bulk trade and its lack of oil and mineral resources and investment is beyond the scope of this paper (see UNCTAD, 1998).

① Container shipping

Before examining container ports within the confines of Northeast Asia there is a need to see them in an Asian-Pacific, if not a world, context (Fig. 4). Hong Kong, Kaohsiung, Kobe, Yokohama, Keelung, Pusan, Tokyo and Shanghai all figure among the world's top 25 ports. Collectively, Northeast Asian ports accounted for 29 per cent of the world's total container movements in 1995. They were the headquarters of

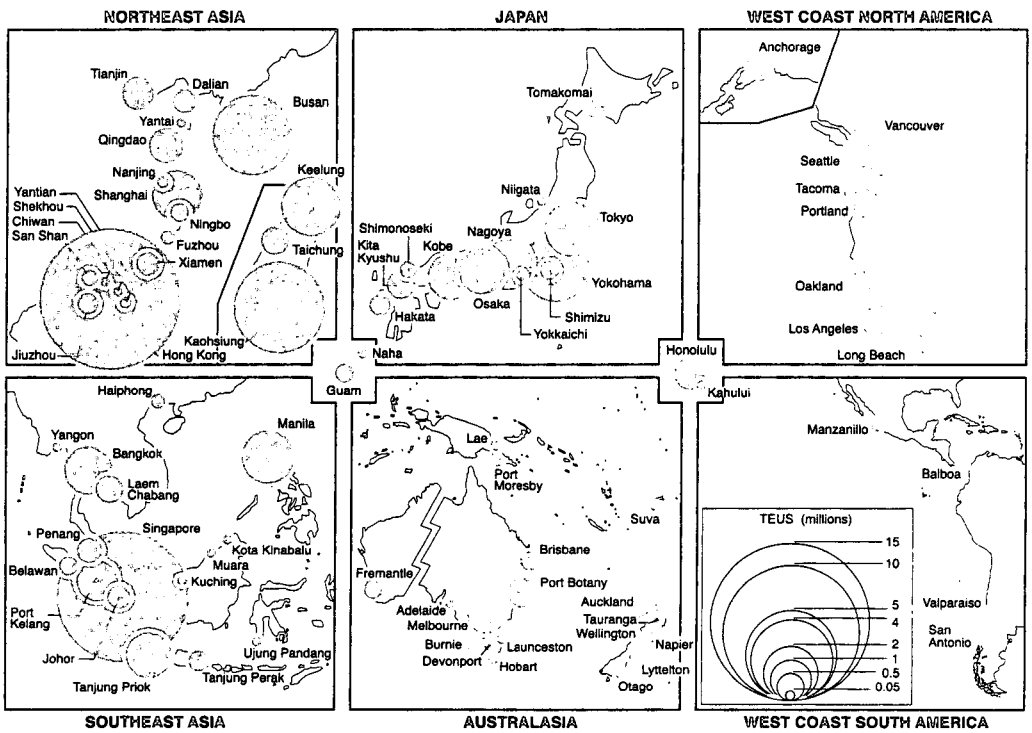


Figure 4. Location and Size of Container Ports within the Asia-Pacific Region (Source: Data from CIY, 1997)

container shipping companies operating within global alliances and the home ports for half of the world's container fleet capacity. During the early 1990s the growth in intraregional container movements within Northeast Asia comprising both manufactured goods and transhipments outstripped the growth of the region's Trans-Pacific and Trans-Suez trade (UNCTAD, 1998). Clearly, Northeast Asia is at the centre of the world's container shipping industry.

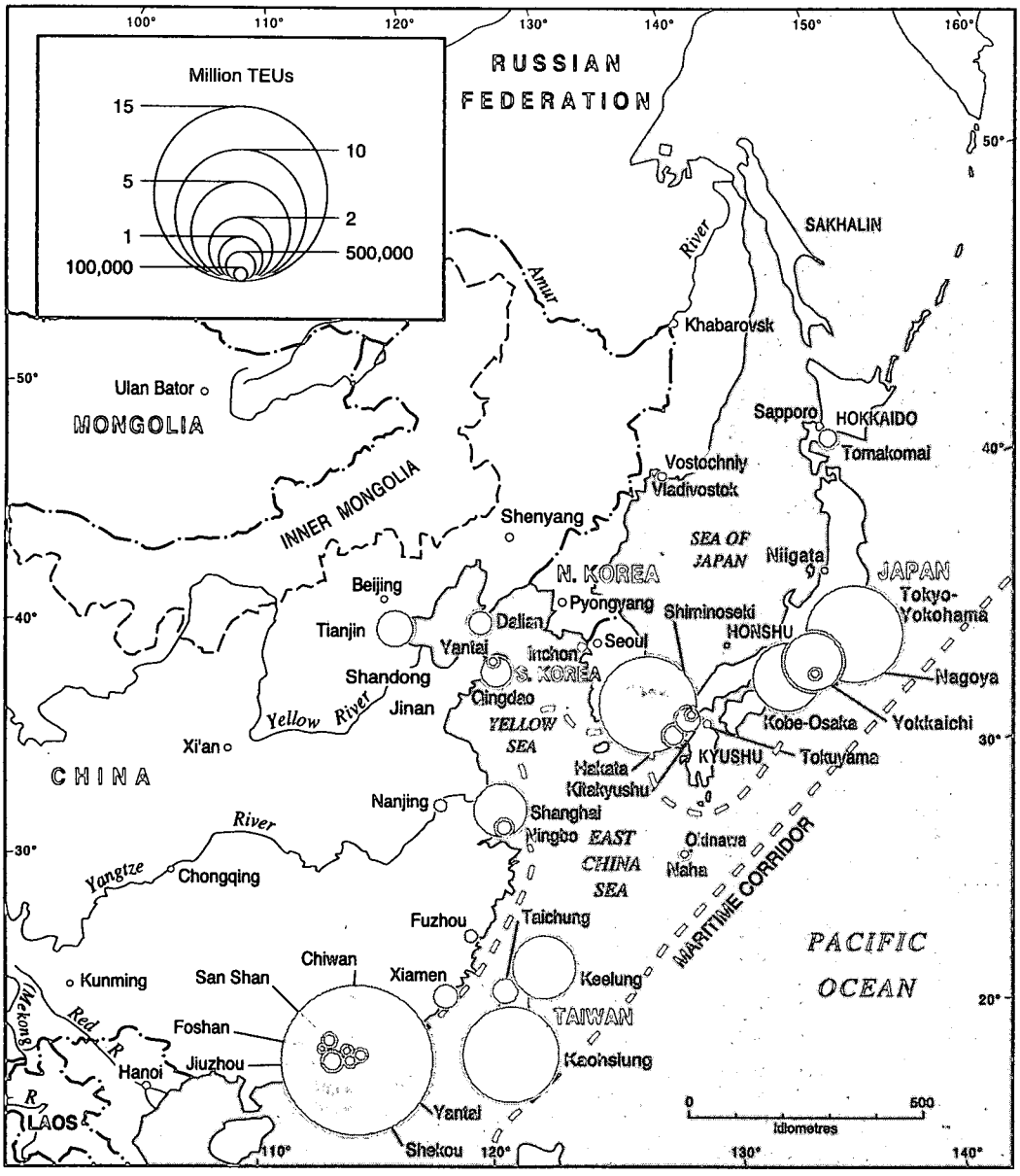


Figure 5. Location of container ports in Northeast Asia (Source: Data from CIY, 1998).

Narrowing our focus to Northeast Asia it is evident that the main container ports are concentrated near the western edge of the maritime corridor (Fig. 5). A major problem is that the container flows are not disaggregated to reflect the way in which hub ports are served by large mother vessels and are, in varying degrees, transhipment centres for cargo from feeder ports in both Northeast Asia and Southeast Asia. As revealed by an analysis of intra-Asian container shipping patterns the formation of an integrated transport system separate from Southeast Asia may be a difficult task (RG, 1999).

A convenient distinction based on whether transhipments contribute more than 50 per cent of the port's total throughput can be made between main and secondary hubs. On this score both Hong Kong (55 per cent transhipment contribution) and Kaohsiung (50 per cent) would be classified as main hubs and Pusan (18 per cent) as a secondary hub (Chan 1999). As it is not possible to rank all Northeast Asian ports in this way all that be done with the data on ports is to consolidate them to gauge the development and relative strength of port city-regions since 1970 (Table 5).

This exercise highlights the emergence of six port complexes paralleling the progressive growth of containerisation over time from Japan through the Newly Industrialising Economies of Hong Kong, Taiwan and Korea to China/ The complexes comprise Hong Kong, Kaohsiung, Pusan, Tokyo Bay, Osaka Bay and Shanghai and the associated Changjiang Delta. Also the study highlights the stalled growth at Keelung and Nagoya and the promise of Qingdao and the Pearl River Delta ports. The latter, combined with Hong Kong, comprise the emerging South China superhub port area.

The key port-city regions are linked to inland transport corridors along which container movements are concentrated (Fig. 6). The classic case is the Tokaido corridor between Tokyo and Osaka. Others include the Kyongbu corridor between Pusan and Seoul; the Liaoning corridor betwenn Dalian and Shenyang; the Bohai corridor between Tianjin and Beijing; the Changjian corridor between Shanghai and Nanjing; the West Taiwan corridor between Taipei and Kaohsiung; and the Zhujiang corridor between Hong Kong and Guangzhou (Rimmer, 1997b). Other potential corridors are those in Shandong between Qingdao and Jinan and in Fujian between Fuzhou and Xiamen. Clearly, the next step is to link the Liaoning, Bohai, Changjiang and Zhujian corridors into an integrated land transport system. Although most containers are moved by road these longer connections would offer opportunities for rail transport (though there are breaks of gauge between the

Table 5. Container Throughput for Port Groupings in Northeast Asia

Ports	1970	1975	1980	1985	1990	1995	1996*	1997*
Tokyo Bay	202	689	1,354	2,331	3,203	4,934	4,659	4,670
Ise Bay	50	111	214	433	911	1,514	1,507	1,575
Osaka Bay	120	1,038	1,725	2,280	3,082	2,624	3,406	3,149
Others (26 ports)	1	32	125	413	757	1,530	1,347	1,422
JAPAN	373	1,870	3,418	5,457	7,953	10,602	10,919	10,816
HONG KONG	36	802	1,465	2,289	5,101	12,550	13,460	14,567
Kaohsiung	0	225	979	1,901	3,495	5,232	5,063	5,693
Keelung	0	246	660	1,158	1,828	2,170	2,109	1.981
Other(1port)	0	0	6	16	128	447	695	842
TAIWAN	0	271	1,645	3,075	5,451	7,849	7,867	8,516
Pusan	0	173	633	1,115	2,348	4,503	4,725	5,234
Other	0	16	40	0	0	0	352	403
KOREA	0	189	673	1,115	2,348	4,503	5,077	5,637
Shanghai/Yangtze ports	0	0	30	202	456	2,081	2,174	3,002
Qingdao	0	0	0	31	135	600	810	1,030
Pearl River Delta ports	0	0	7	47	111	339	700	1,127
Others (8 ports)	0	0	17	167	472	1,663	354	638
CHINA	0	0	54	447	1,174	4,683	4,038	5,797
RUSSIAN FAR EAST	0	0	0	0	0	0	34	47
NORTHEAST ASIA	409	3,332	6,664	12,383	22,077	40,187	41,395	45,380

Notes: * Preliminary figures (many non-returns from ports in China).
Source: CIY, 1975-1998.

Russian Far East and other parts of Northeast Asia). There will still be missing links between the Liaoning and Kyongbu corridors and the Kyongbu and Tokaido corridors which need to be resolved before the benefits of Korea's pivotal position can be realised (Rimmer, 1995).

The lack of suitable data on container movements means that it has not been possible to track the rapid growth of trade between port-cities within Northeast Asia. Again all that can be shown are annual container movements between China/Hong Kong, Japan, Korea and Taiwan for 1995 and 1998 (Table 6). Although these statistics reflect the downturn in intra-regional movements in 1998 following the Asian Crisis there is a pressing need for figures that reflect the dynamics of the container industry and flows between port-cities.

② Air Cargo

Fortunately, figures are available for on-flight origin and destination of air cargo for city pairs. The most detailed information, however, is confined to flows between Japanese cities and their

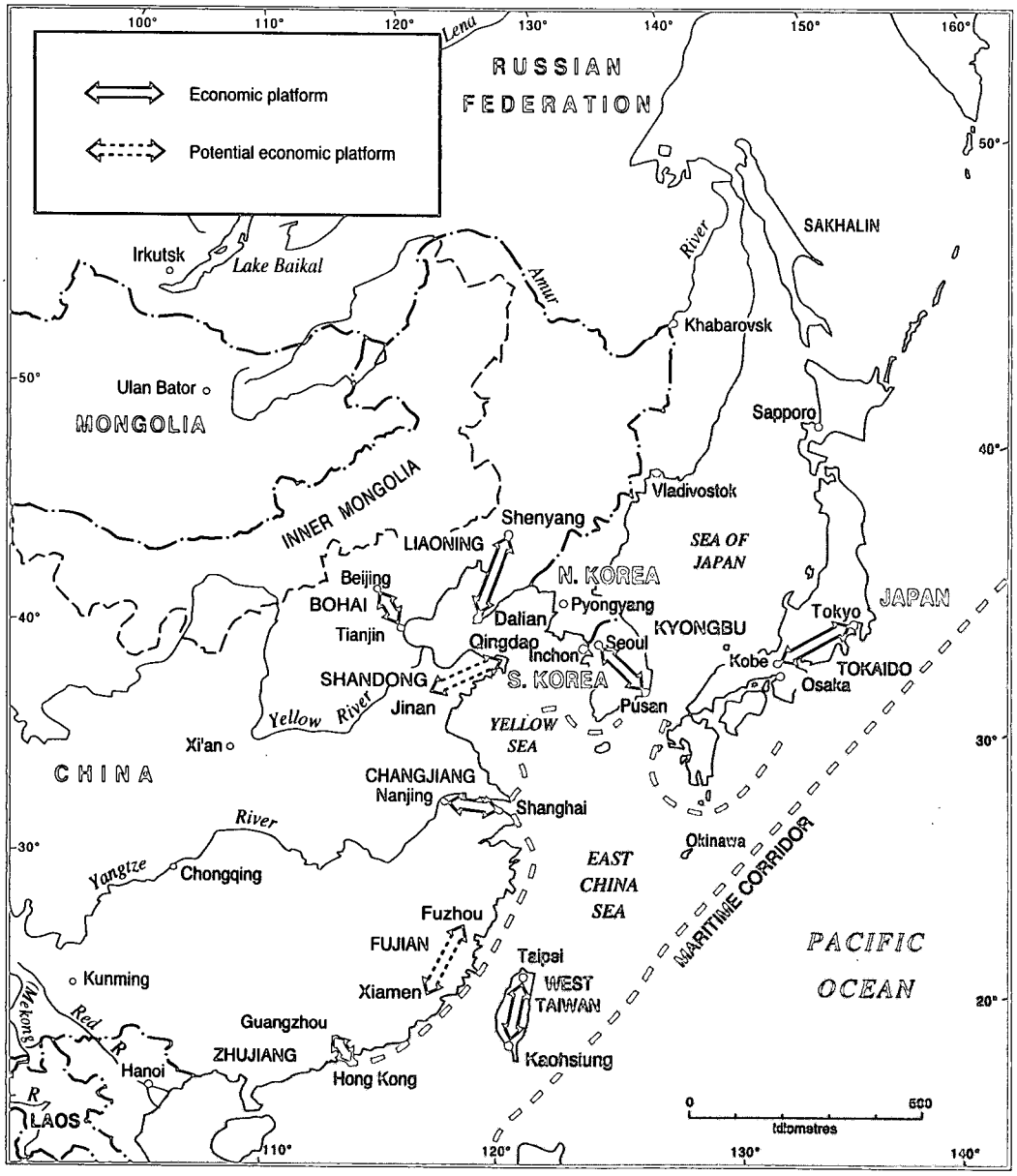


Figure 6. Location of Transport Platforms in Northeast Asia (Source: Based on Rodrigue, 1996 and Rimmer and Comtois, 1997).

counterparts around the world. Nevertheless, there is a statistical series produced by the International Civil Aviation Organization (ICAO) which is based on information reported by operating airlines. Although not all operating airlines report their figures this series offers a starting point for investigating movements of goods between major cities in Northeast Asia

Table 6. Container Movements between Northeast Asian Countries, 1995 and 1998

	China, Hong Kong	Japan	Korea	Taiwan	Northeast Asia
1995					
China, Hong Kong	0	153	53	89	295
Japan	311	0	187	296	794
Korea	215	267	0	70	552
Taiwan	252	222	39	0	513
Northeast Asia	778	642	279	455	2,154
1998					
China, Hong Kong	0	163	57	95	315
Japan	332	0	41	316	689
Korea	229	284	0	74	587
Taiwan	267	237	41	0	545
Northeast Asia	828	684	139	485	2,136

Source: UNCTAD, 1998: 101.

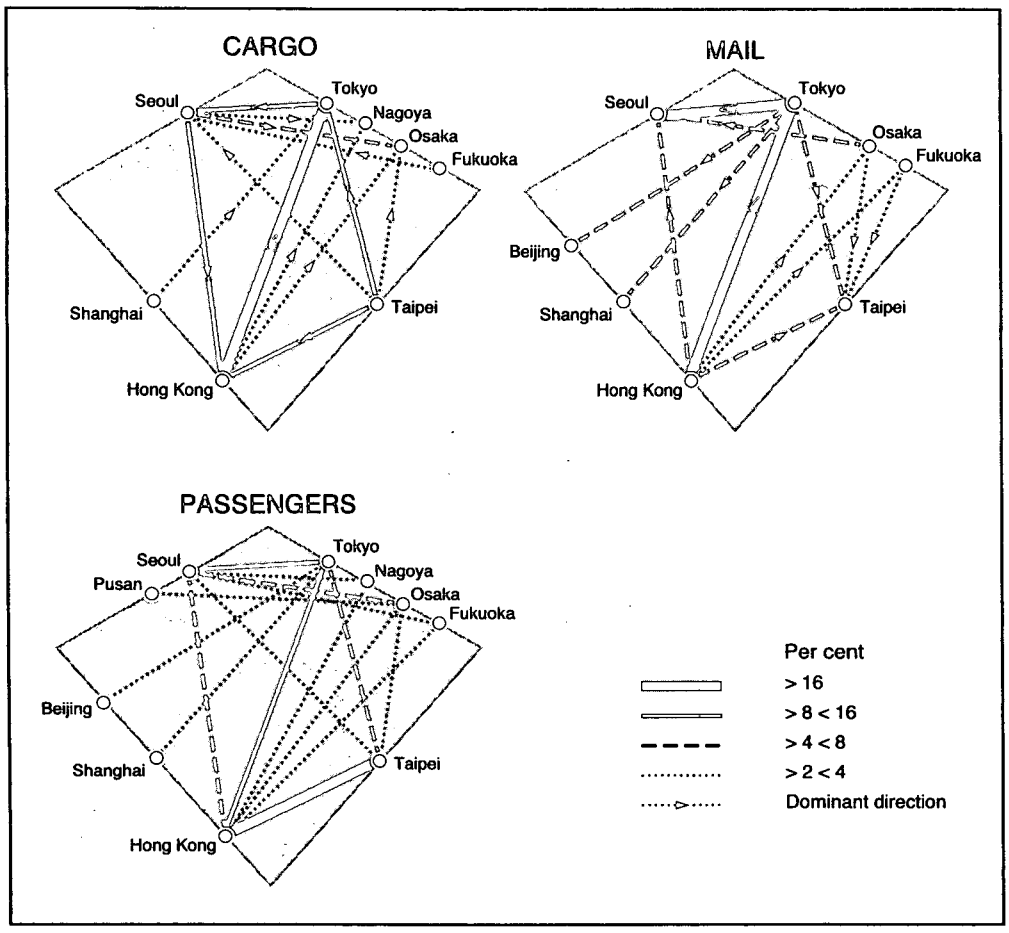


Figure 7. Schematic Diagram Showing Relative Importance of City Pairs in Air Cargo, Air Mail and Air Passenger Movements (Source: Data from ICAO, 1997).

and comparing them with mail and passenger movements which are reported in the same publication. An analysis of these flows in 1995 highlights that the airports in China, Japan, Korea and Taiwan have the potential to comprise a daily economic region. For example, a one-to-four hour time zone linking Bejing, Harbin, Osaka, Pusan, Seoul, Shenyang and Pusan could be formed to facilitate movements of electronic components as air cargo (see Lu, 1994).

In air cargo a strong quadrilateral structure links Tokyo-Seoul-Hong Kong-Taipei (Fig. 7). This is bifurcated by the dominant Hong Kong-Tokyo axis. Other features are: the importance of Taipei as a net generator of air cargo; strong flows into Seoul from Tokyo; and the small involvement of Chinese airports. Mail movements differ from air cargo movements in that the dominant axis is Hong Kong-Tokyo-Seoul. Conversely, air passenger movements differ from air cargo flows in that the dominant axis is between Hong Kong and Taipei although the Hong Kong-Tokyo-Seoul link is still pronounced. Osaka also plays a more significant role. No dominant directions are shown for passengers as they are more or less equally balanced.

A comparison of the top-25 city-pairs for 1995 and 1997 highlights the volatility in air cargo movements within Northeast Asia (Table 7). Marked gains in tonnes generated reflect the opening of Osaka's Kansai airport and the much stronger showing of Shanghai. Apart from those no longer ranked in the top-25 city pairs the main loss was recorded between Tokyo and Seoul and Taipei and Tokyo. Too much emphasis should not be put on these results because of the developmental nature of this statistical series. In 1997 information was provided on seventy-nine city-pairs compared with forty-eight city pairs in 1995 a net gain of twenty-two airports in two years. This volatility prompted a search for alternative statistical sources for exploring air passenger movements.

3) People

Information on passenger movements is available for the region's leading domestic and international airports (Fig. 8). In 1995 Hong Kong, Osaka, Seoul and Tokyo (Haneda and Narita combined) figured prominently (IATA, 1996). These airports, within a radius of 2,100 km and 150 minutes of Seoul, were supported by the strong showings of Sapporo and Fukuoka in Japan, and Beijing, Shanghai and Guangzhou (though they still have relatively low traffic bases relative to their populations). Another marked feature in China has been the proliferation of airports away from the coastal provinces.

Table 7. Top 25 City Pairs in International Air Cargo Flows within Northeast Asia (thousand tonnes).

	City pair		1995		City-pair		1997		1995-97	
			tonnes	%			tonnes	%	tonnes	%
1	Hong Kong	Tokyo	98.0	11.8	Hong Kong	Tokyo	100.4	9.7	2.4	-2.1
2	Tokyo	Seoul	64.1	7.7	Tokyo	Seoul	59.4	5.8	-4.7	-1.9
3	Tokyo	Hong Kong	61.0	7.4	Tokyo	Hong Kong	71.3	6.9	10.3	-0.5
4	Taipei	Tokyo	60.5	7.3	Taipei	Tokyo	52.4	5.1	-.8.1	-2.2
5	Seoul	Hong Kong	53.5	6.5	Seoul	Hong Kong	56.7	5.5	3.2	-1.0
6	Seoul	Tokyo	48.1	5.8	Seoul	Tokyo	58.0	5.6	9.9	-0.2
7	Taipei	Hong Kong	45.7	5.5	Taipei	Hong Kong	60.0	5.8	14.3	0.3
8	Tokyo	Taipei	43.6	5.3	Tokyo	Taipei	45.9	4.4	2.3	-0.9
9	Hong Kong	Seoul	40.5	4.9	Hong Kong	Seoul	45.2	4.4	4.7	-0.5
10	Hong Kong	Taipei	34.7	4.2	Hong Kong	Taipei	39.3	3.8	4.6	-0.4
11	Seoul	Osaka	34.2	4.1	Seoul	Osaka	42.2	4.1	8.0	0.0
12	Osaka	Seoul	28.1	3.4	Osaka	Seoul	31.5	3.1	3.4	-0.3
13	Hong Kong	Osaka	22.7	2.8	Hong Kong	Osaka	53.5	5.2	30.8	2.4
14	Taipei	Osaka	21.6	2.6	Taipei	Osaka	31.5	3.0	9.9	0.4
15	Taipei	Seoul	16.9	2.0	Taipei	Seoul	14.9	1.4	-2.0	-0.6
16	Seoul	Taipei	15.1	1.8	Seoul	Taipei	15.3	1.5	0.2	-0.3
17	Hong Kong	Nagoya	15.0	1.8					-15.0	-1.8
18	Shanghai	Tokyo	10.5	1.3	Shanghai	Tokyo	17.6	1.7	7.1	0.4
19	Osaka	Hong Kong	10.0	1.2	Osaka	Hong Kong	26.5	2.6	16.5	1.4
20	Osaka	Taipei	9.6	1.2	Osaka	Taipei	25.1	2.4	15.5	1.2
21	Seoul	Nagoya	8.3	1.0	Seoul	Nagoya	8.9	0.9	0.6	-0.1
22	Nagoya	Seoul	8.2	1.0	Nagoya	Seoul	8.2	0.8	0.	-0.2
23	Fukuoka	Seoul	8.1	1.0					-8.1	-1.0
24	Seoul	Fukuoka	7.7	0.9	Seoul	Fukuoka	9.7	0.9	2	0.0
25	Tokyo	Shanghai	6.1	0.7					-6.1	-0.7
NR					Shanghai	Osaka	11.5	1.1	11.5	1.1
NR					Shanghai	Seoul	10.5	1.0	10.5	1.0
NR					Seoul	Shanghai	8.1	0.8	8.1	0.8
	Sub-total		771.8	93.2	Sub-total		903.6	87.5	131.8	-5.7
	Others (23)		56.1	6.8	Others (50)		130.1	12.5	74	5.7
	Total		827.9	100.0	Total		1,033.7	100.0	205.8	0

Note: Rounding errors
Source: Derived from ICAO, 1995; 1997.

As our interest is on movements rather than terminal totals recourse is made to information on air transport movements in Northeast Asia which is provided by ICAO's Asia/Pacific Traffic Forecasting Group (APA TFG). The Group has extended its activities to cover the top 40 busiest routes ranked in terms of the number of international passengers carried in the Asia-Pacific. A higher percentage of business traffic is noted in the intra Asia Pacific market than in the Trans-Pacific market. Subsequently, these city-pairs are subdivided into short, medium and long haul categories. However, only nine of these routes originated and terminated in Northeast Asia: three short, five medium and one long haul (Table 8).

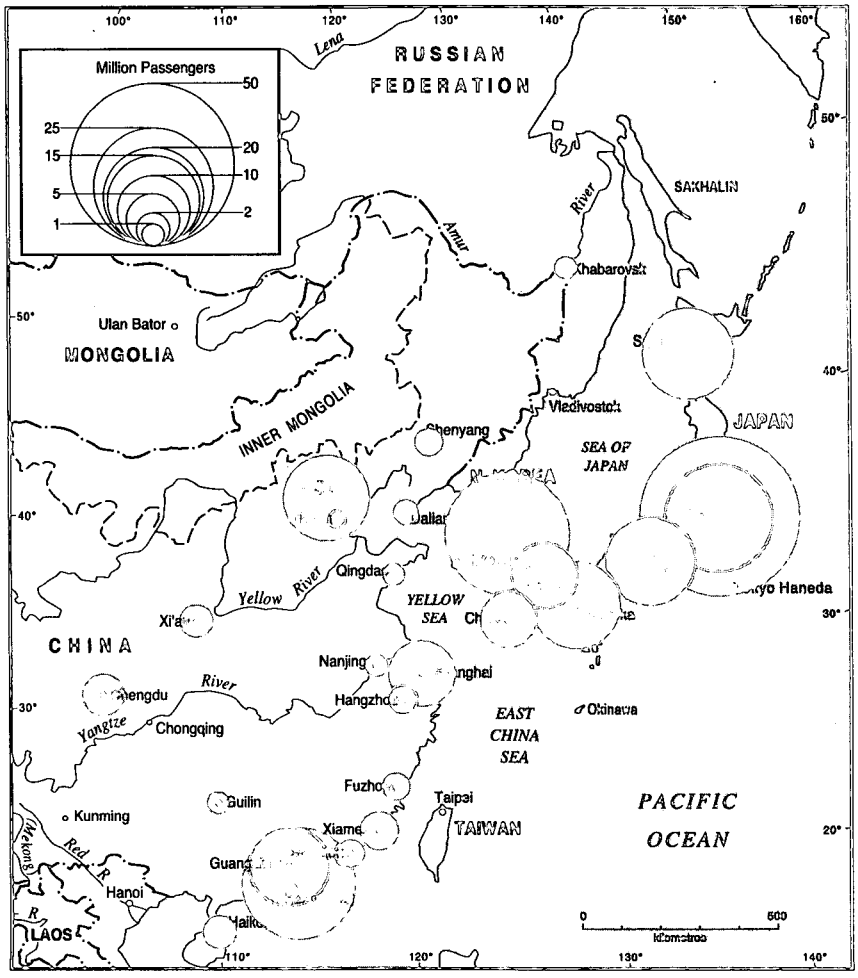


Figure 8. Location of the Major Airports in Northeast Asia (Source: Data from ICAO, 1995). Note no data is provided for Kaohsiung and Taipei.

Table 8. Passenger Movements on Major Northeast Asia City-Pairs, 1984, 1990, 1995 and 2000 (Estimated)

	Passengers (calendar year)			Growth	Forecast	Growth
	1984 (000)	1990 (000)	1995 (000)	1984-95 (per cent)	2000 (000)	1995-2000 (per cent)
Short haul						
Hong Kong-Taipei	864	1,815	2,556	10.4	3,791	8.2
Tokyo-Seoul	837	1,966	1,910	7.8	2,161	2.5
Seoul-Osaka	381	799	838	7.4	1,242	8.2
Medium haul						
Hong Kong-Tokyo	1,243	1,984	2,043	4.6	2,734	6.0
Tokyo-Taipei	781	1,073	965	2.0	1,092	2.5
Hong Kong-Osaka	441	698	708	4.4	934	5.7
Seoul-Taipei	239	582	523	7.4	667	5.0
Tokyo-Beijing	133	150	546	13.7	972	12.2
Long haul						
Seoul-Hong Kong	271	621	1,027	12.9	1,818	12.1

Note: Full data set covers top-40 city-pairs within TransPacific and Asia/Pacific
Source: Derived from APA TFG, 1996: 25, 1997:25.

Table 9. Major Weekly Aircraft Movements in Northeast Asia, 1990-1995

	1900	1991	1992	1993	1994	1995
Tokyo-Hong Kong	176	172	164	171	169	166
Tokyo-Seoul	204	205	193	175	155	152
Tokyo-Taipei	145	128	117	118	115	124
Osaka-Seoul	52	50	47	52	52	104
Seoul-Hong Kong	83	102	97	97	104	98
Seoul-Taipei	126	136	144	50	101	78
Tokyo-Shanghai	29	34	33	44	63	69
Tokyo-Beijing	39	46	50	56	70	68
Osaka-Hong Kong	37	36	48	47	48	56
Osaka-Taipei	48	51	51	45	47	56
Fukuoka-Taipei	n.a	28	28	29	28	46
Fukuoka-Seoul	34	46	47	45	44	45
Naha-Taipei	37	47	44	43	42	42
Nagoya-Taipei	27	30	30	30	30	34
Nagoya-Hong Kong	19	26	32	32	32	31
Osaka-Kimhae	37	33	36	28	32	28

Note: Based on a weekly sample taken July 1-7. Full data set covers the top 56 city-pairs based on aircraft movements through the Tokyo/Naha area traffic control centre.
Source: Derived from APA TFG, 1996: 28.

Further the Group argued that the more reliable approach was to develop country-pair forecasts instead of city-pair forecasts because they are more amenable to analysis using economic and demographic factors.

> Traffic on a city-pair basis is often substantially influenced by a range of other factors such as airport saturation or expansion, re-routing of airline schedules, designation of(additional) airports, types of aircraft available and more point-to-point services. Consequently, city-pair traffic forecasts can vary substantially from year-to-year whereas the country-pair approach provides a more reliable basis for forecasts (APA TFG, 1997: 2).

Consequently, the Group regards the present city-pair forecasts based on historical series as preliminary. Reflecting strong economic growth buoyed by greater disposable income and relaxation of travel restrictions the results from these earlier analyses are being revised because they were carried out prior to the Asian Crisis.

As only nine Northeast Asian city-pairs are represented in the Traffic Forecasting Group's analyses attention turned to international aircraft movements. These have been collected for fifty-six city-pairs to forecast air traffic for the first week in July for each year between 1990 and 1995. Information was provided for sixteen city-pairs in Northeast Asia (Table 9). Although the flight data has historical value, for example, in charting the increased interaction between Tokyo and Beijing and Shanghai, we have no idea of the total flight situation.

A fresh study has thus been undertaken using air timetables for August 1995 to record the number of direct flights per week from twenty-seven airports in Northeast Asia (Table 10). Of the 17,877 flights half were generated by the 'Big Five' airports: Tokyo, Taipei, Osaka, Seoul and Hong Kong, which together with Beijing and Shanghai are being planned by national governments as continental superhubs (Tong, 1999). Aggregating flights in this way, however, is misleading and they have to be subdivided into:

(a) *domestic flights* originating and terminating within Northeast Asian countries (Hong Kong and Macau have no domestic flights);
(b) *regional flights* originating and terminating between cities in Northeast Asian countries; and
(c) *extra-regional flights* originating in an airport within Northeast Asia but terminating outside the region.

Domestic movements accounted for almost 72 per cent of all flights from the selected airports in 1995, regional less than 14 per cent and extra-regional over 14 per cent.

Domestic flights are only intelligible

by discussing them on an economy-by-economy basis. An analysis of domestic flights in 1995 highlighted the strong connections between first and second cities: Taipei and Kaohsiung (536 flights per week in each direction); Seoul and Pusan (294); Tokyo and Osaka (155); and Beijing and Shanghai (86). In Japan stronger competition to air transport from high-speed rail over shorter distances resulted in the Tokyo-Osaka connection being ranked after Tokyo's links with the more distant Sapporo (252) and Fukuoka (210). Other significant airports in domestic traffic in their own right are Guangzhou, Xiamen and Hangzhou in China and Sendai in Japan.

Extra-regional traffic should also not be disregarded in assessing the importance of major cities in Northeast Asia. When this information is mapped, together with the regional traffic data for city-pairs with more than 21 flights within the Asian-Pacific Rim, the pivotal positions of Tokyo and Hong Kong are immediately apparent (Fig. 9). Strategically, Tokyo mediates air traffic between Northeast Asia and Hong Kong between Northeast and Southeast Asia. Together with Seoul, Taipei and Osaka these

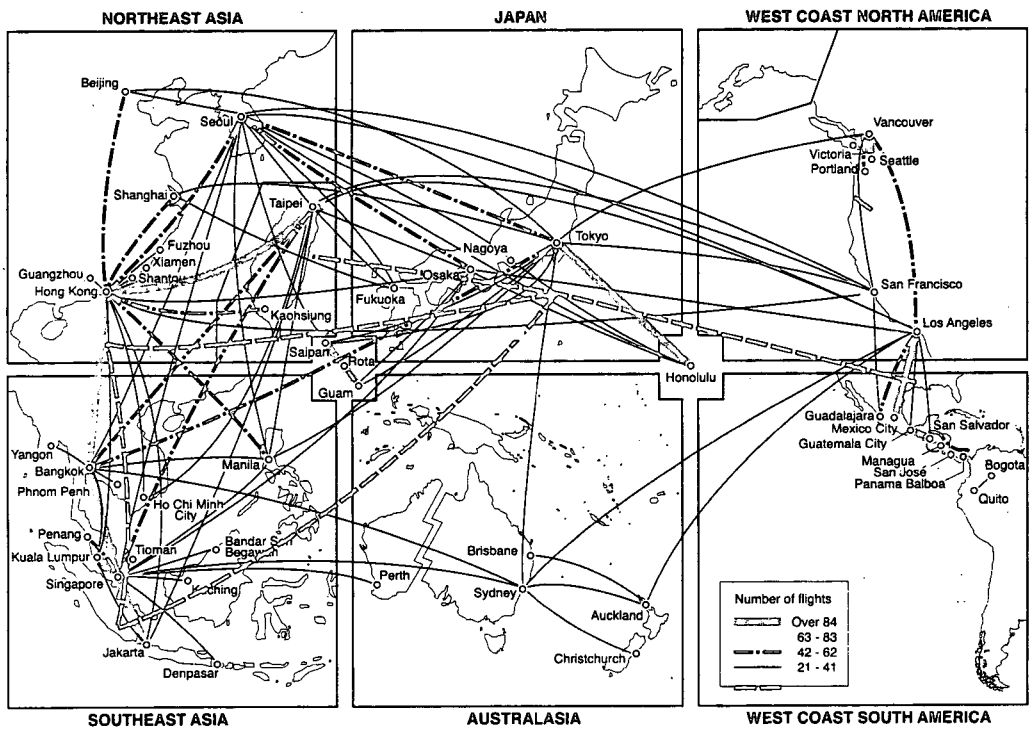


Figure 9. Air passenger Flights within the Asia-Pacific Region, 1995 (Source: Based on Data from ABC, 1995).

Table 10. Domestic, Regional and Extra-Regional Flights for 27 Northeast Asian Airports, August 1995

	Domestic		Regional		Extra-regional		Total	
	No.	%	No.	%	No.	%	No.	%
Tokyo	1,979	15.42	266	10.77	712	27.63	2,957	16.54
Taipei	1,453	11.33	369	14.94	338	13.12	2,160	12.08
Osaka	1,425	11.11	147	5.95	265	10.28	1,837	10.28
Seoul	1,138	8.87	329	13.32	351	13.62	1,818	10.17
HongKong	0	0.00	710	28.74	600	23.28	1,310	7.33
Beijing	906	7.06	119	4.82	95	3.69	1120	6.27
Guangzhou	933	7.27	40	1.62	26	1.01	999	5.59
Kaohsiung	802	6.25	49	1.98	75	2.91	926	5.18
Fukuoka	752	5.86	71	2.87	51	1.98	874	4.89
Sapporo	852	6.64	9	0.36	11	0.43	872	4.88
						0.00		0.00
Shanghai	619	4.82	137	5.55	18	0.70	774	4.33
Pusan	410	3.20	48	1.94	0	0.00	458	2.56
Xiamen	241	1.88	21	0.85	17	0.66	279	1.56
Sendai	196	1.53	13	0.53	11	0.43	220	1.23
Hangzhou	159	1.24	13	0.53	1	0.04	173	0.97
Shenyang	148	1.15	16	0.65	0	0.00	164	0.92
Fuzhou	142	1.11	21	0.85	0	0.00	163	0.91
Dalian	134	1.04	21	0.85	0	0.00	155	0.87
Harbin	124	0.97	5	0.20	0	0.00	129	0.72
Qingdao	112	0.87	16	0.65	0	0.00	128	0.72
Khabarovsk	86	0.67	12	0.49	4	0.16	102	0.57
Vladivostok	89	0.69	3	0.12	0	0.00	92	0.51
Niigata	70	0.55	11	0.45	0	0.00	81	0.45
Tianjin	60	0.47	12	0.49	0	0.00	72	0.40
Ulan Bator	0	0.00	12	0.49	0	0.00	12	0.07
Pyongyang	0	0.00	0	0.00	2	0.08	2	0.01
Macau	0	0.00	0	0.00	0	0.00	0	0.00
Total	12,830	100.00	2,470	100.00	2,577	100.00	17,877	100.00

Source: Data derived from ABC, 1995.

airports account for over 88 per cent of all extra-regional traffic. No other airport has more than 100 extra-regional flights per week.

The stranglehold exerted by the Big Five airports over regional traffic originating and terminating within Northeast Asia is reduced to less than 73 per cent. Collectively, Beijing and Shanghai account for more than 10 per cent of the traffic and Fukuoka, Kaohsiung and Guangzhou also make significant contributions. The pivot of regional traffic, however, is not Tokyo but Hong Kong by virtue of its connections with China. Indeed, Tokyo's regional connections are smaller than both Taipei and Seoul. Further Osaka fares little better than Beijing and Shanghai.

These observations on regional traffic are confirmed by examining a range of different flight thresholds (Fig. 10). The strategy highlights that all regional connections with more than 21 flights per week are concentrated within a pod-like structure. Adding connections with between 7 and 21 flights per week did not alter the pattern as most flights were still confined within the pod (except for connections from Hong Kong to the inland centres of Chongqing and Chengdu). Even bringing in links with more than 4 and less than 7 flights per week highlighted that there were few connections outside the pod. These included flights from: Beijing to Ulan Bator; Hong Kong to Guilin and Guiyang; Niigata to Khaborovsk; Shenyang to Irkutsk; and Seoul to Sapporo, Sendai, Shenyang, Niigata and Toyama.

Only when less than 4 flights per week are analysed are many connections established outside this structure (e.g. between Dalian and Sendai; Harbin and Chita; Khaborovsk and Aomori and Irkutsk; Seoul and Khabarovsk and Vladivostok; Ulan Bator and Irkutsk and Ulan-Ude; and Vladivostok and Niigata and Toyama). Most of the other less frequent links were between Hong Kong and Chinese centres largely within the pod and between Seoul and a string of minor airports in Japan and China. Recognition of city pairs inside and outside the pod is but a short step from discussing alternative spatial visions of Northeast Asia.

4. Spatial Visions

Policymakers in Northeast Asia are concerned that the region lacks the inland transport and communications infrastructure to meet the growing demand for the movement of goods, people and information between its city-regions. Consequently, they are giving a high priority to making Northeast Asia's transport and

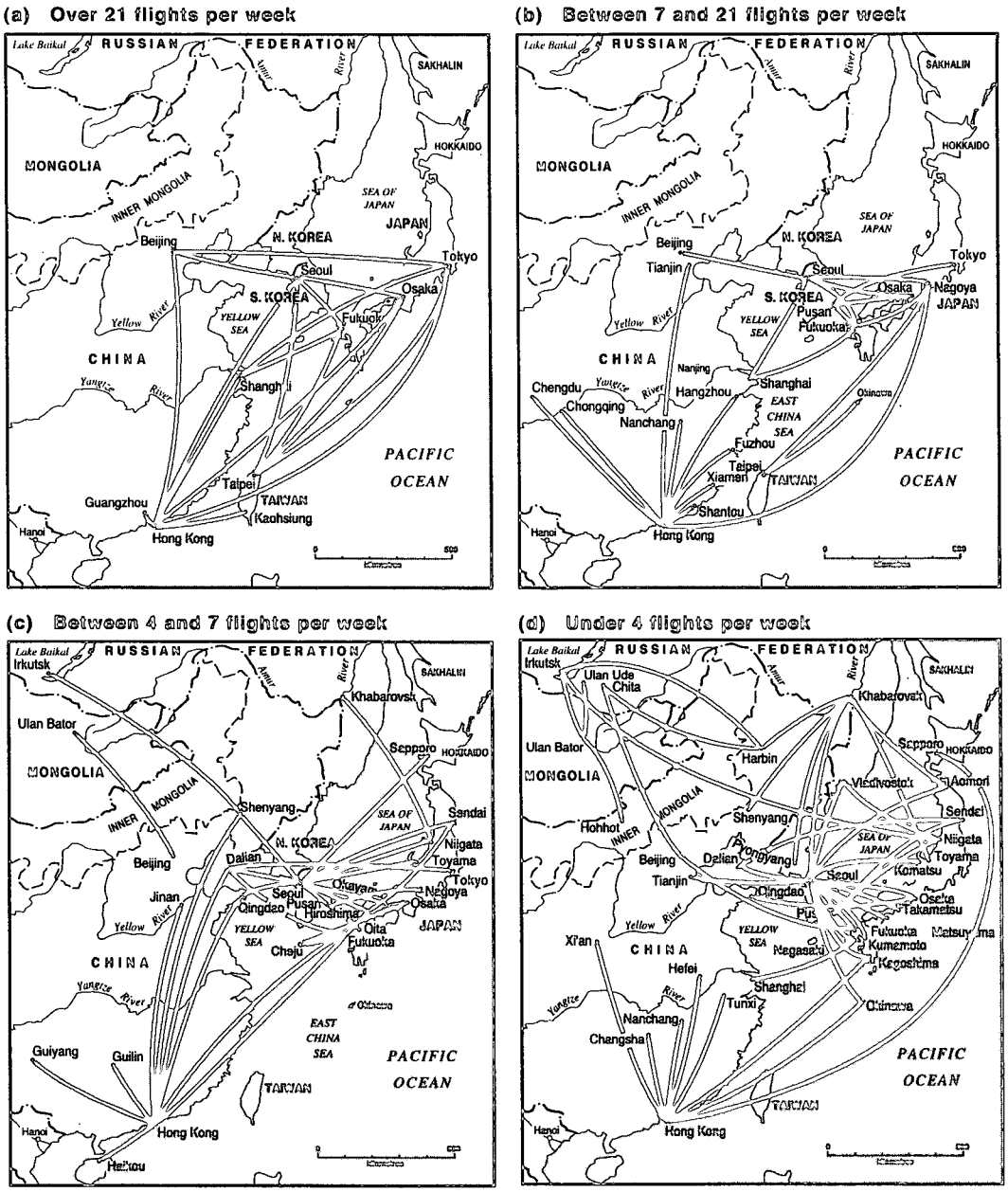


Figure 10. Regional Connections Between Major Airports in Northeast Asia (Source: Data from ABC, 1995).

communications network as extensive as that in Europe. Not surprisingly, policymakers are captivated by alternative spatial visions of the European Union's regional development and the prospects for translating them into a Northeast Asian context (Rimmer forthcoming).

Recognition of Northeast Asia's pod-like structure is not unreminscent of the European Union's 'macroeconomic corridor' (see Fig. 11). Stretching from southeast England through northern France and the industrial belts of northern and southern Germany to northern Italy and southern France, this infrastructural arena is popularly known as the 'blue banana'. The

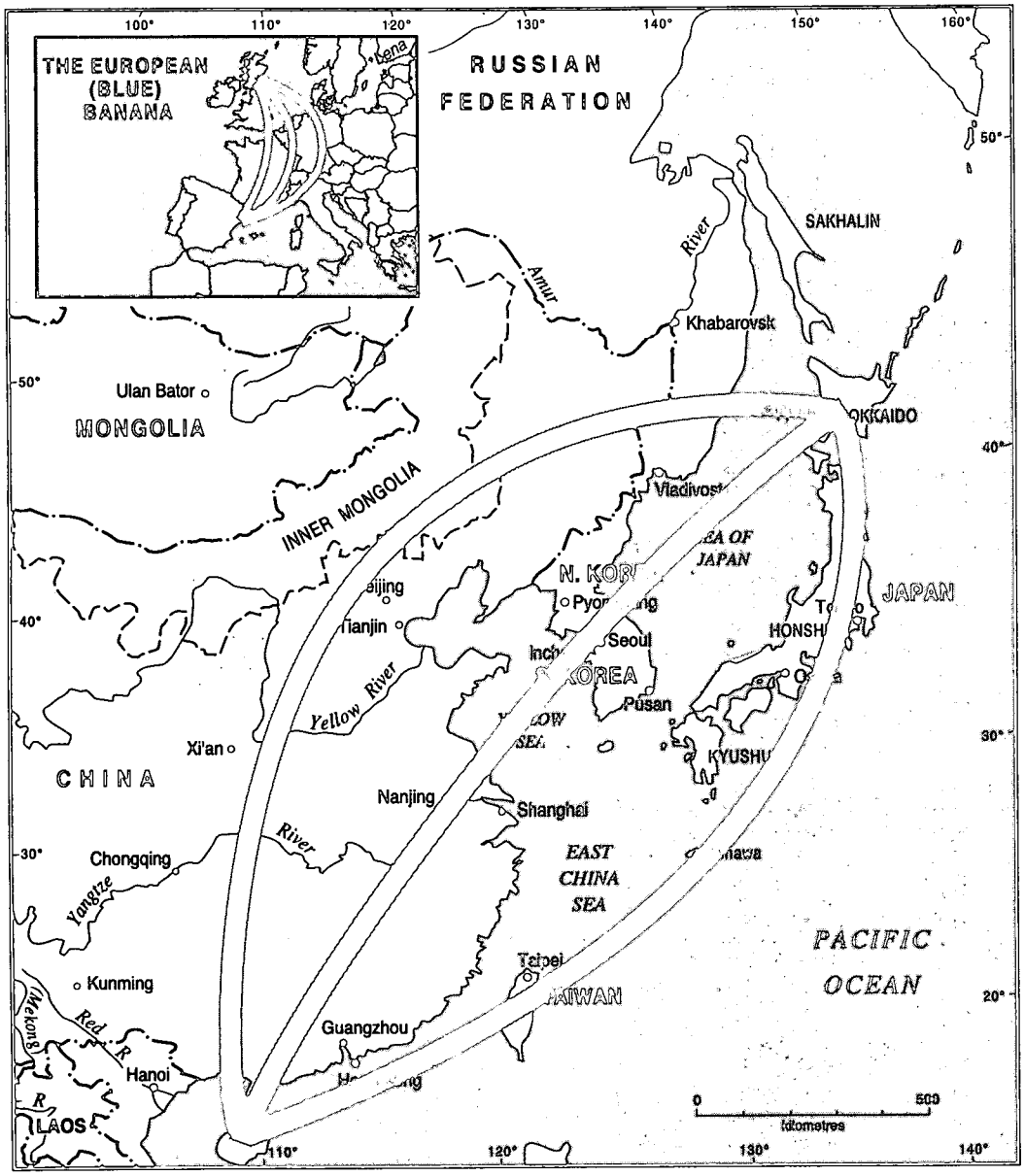


Figure 11. Northeast Asias Macroeconomic Corridor with Inset Showing the European (Blue) Banana (Source: Inset from Kunzmann, 1998, Rimmer, 1998).

corridor's denser and synergistic networks based on worldwide air and telecommunications connections have allowed ever-expanding multinational corporations to arrange production and distribution in smaller units and to take advantage of coastal and continental locations with good profit potential. Since the inception of the single European project new infrastructural

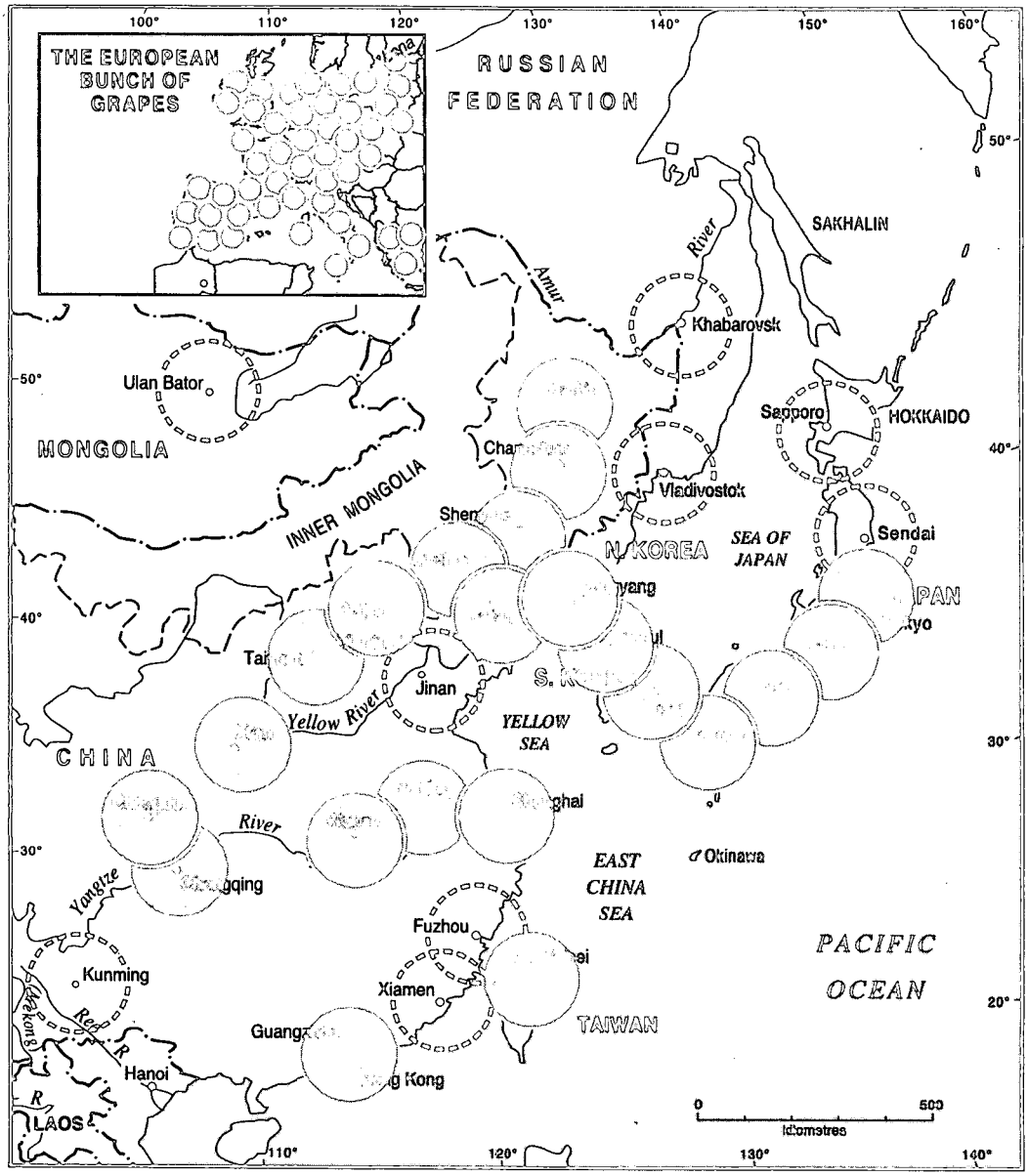


Figure 12. Northeast Asias City-Regions with Inset Showing the European Bunch of Grapes (Source: Inset from Kunzmann, 1998, Rimmer, 1998)

investment has been concentrated outside this core area.

Subsequently, the blue banana concept has been criticised. Although initially attractive, it is now seen as being obsolete because it excludes such powerful urban agglomerations as Berlin, Madrid and Paris. An alternative European vision based on a 'bunch of grapes' metaphor has been enunciated (Kunzmann and Wegener, 1991). This so-called European 'bunch of grapes' metaphor is focused on the development of self-contained urban regions which are recognised as the key nodes of rail and air infrastructure networks (Fig. 12). These nodes have 200 km hinterlands which benefit from their hub functions (i.e. through either their economic trickle down effects or as environmental compensation spaces). This strategy also presupposes that city-regions have much in common.

Extrapolating these criteria to Northeast Asia's twenty-two urban agglomerations are recognised with populations over two million and functioning as key air hubs (fout have twin cities with populations over two million). Eight agglomerations below the two-million threshold are also identified as potential nodes. However, most of these nodes fall within the previously identified pod-like structure. This suggests that the most appropriate spatial metaphor for Northeast Asia is not a 'blue banana' or a 'bunch of grapes' but as shown before a 'peas-in-a-pod' structure.

This 'peas-in-the-pod' vision provides the basis for a debate on the desirable criteria for a Network Northeast Asia. How can the core economy be integrated into a larger system of corridors? Before this debate could proceed Northeast Asia was affected by the Asian Crisis in mid-1997. Consequently, it behoves us to discuss the effects of the Crisis on places inside and outside the pod, particularly as there is no model to cover this type of distress situation (Stuart, 1998).

5. The Asian Crisis

Detailed information of the affect of the Asian Crisis on passenger flows is not yet available. Beyond noting that Seoul and Pusan were worst hit commentaries have been sparse (OA, 1998/99). Consequently, a comparison was made between the direct flight schedules of the twenty-nine airports for August 1995 with those for August 1998 as a means of distilling the short-term effects of the Asian Crisis. Between the two dates the total number of flights from the twenty-nine selected airports had increased to

Table 11. Weekly Domestic, Regional, Extra-Regional and Total Aircraft Movement in 1998 and Absolute and Relative Changes Since 1995

	Domestic				Regional				Extra-regional				Total	
	1998		1995-98		1998		1995-98		1998		1995-95		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Tokyo	2279	14.3	300	-1.0	258	8.3	-8	-2.5	753	25.5	41	-2.1	3290	15.0
Taipei	2373	14.9	920	3.6	469	15.1	100	0.2	408	13.8	70	0.7	3250	14.8
Osaka	1541	9.7	116	-1.4	216	7.0	69	1.0	385	13.0	120	2.8	2142	9.8
Seoul	1262	7.9	124	-0.9	363	11.7	34	-1.6	292	9.9	-59	-3.7	1917	8.7
HongKong	0	0.0	0	0.0	749	24.1	39	-4.6	679	23.0	79	-0.3	1428	6.5
Beijing	1080	6.8	174	-0.3	131	4.2	12	-0.6	136	4.6	41	0.9	1347	6.1
Guangzhou	908	5.7	-25	-1.6	42	1.4	2	-.03	30	1.0	4	0.0	980	4.5
Kaohsiung	1459	9.8	657	2.9	81	2.6	32	0.6	75	2.5	0	-0.4	1615	7.4
Fukuoka	982	6.2	230	0.3	100	3.2	29	0.3	49	1.7	-2	-0.3	1131	5.2
Sapporo	994	6.3	142	-0.4	9	0.3	0	-0.1	13	0.4	2	0.0	1016	4.6
Shanghai	798	5.0	179	0.2	176	5.7	39	0.1	69	2.3	51	1.6	1043	4.8
Pusan	474	3.0	64	-0.2	59	1.9	11	0.0	0	0.0	0	0.0	533	2.4
Xiamen	282	1.8	41	-0.1	38	1.2	17	0.4	17	0.6	0	-0.1	337	1.5
Sendai	251	1.6	55	0.1	15	0.5	2	0.0	17	0.6	6	0.1	283	1.3
Hangzhou	166	1.0	7	-0.2	14	0.5	1	-0.1	2	0.1	1	0.0	182	0.8
Shenyang	136	0.9	-12	-0.3	23	0.7	7	0.1	0	0.0	0	0.0	159	0.7
Fuzhou	187	1.2	45	0.1	38	1.2	17	0.4	0	0.0	0	0.0	225	1.0
Dalian	167	1.1	33	0.0	.36	1.2	15	0.3	0	0.0	0	0.0	203	0.9
Harbin	69	0.4	-55	-0.5	5	0.2	0	0.0	0	0.0	0	0.0	74	0.3
Qingdao	190	1.2	78	0.3	30	1.0	14	0.3	2	0.1	2	0.1	222	1.0
Khabarovsk	81	0.5	-5	-0.2	11	0.4	-1	-0.1	3	0.1	-1	-0.1	95	0.4
Vladivostok	67	0.4	-22	-0.3	3	0.1	0	0.0	2	0.1	2	0.1	72	0.3
Niigata	98	0.6	28	0.1	9	0.3	-2	-0.2	2	0.1	2	0.1	109	0.5
Tianjin	59	0.7	-2	-0.1	25	0.8	13	0.3	0	0.0	0	0.0	83	0.4
UlanBator	0	0.0	0	0.0	15	0.5	3	0.0	3	0.1	3	0.1	18	0.1
Pyongyang	0	0.0	0	0.0	6	0.2	6	0.2	2	0.1	0	0.1	8	0.0
Macau	0	0.0	0	0.0	179	5.8	179	5.8	12	0.4	10	0.3	191	0.9
Total	15902	100	3072	0.0	3100	100	630	0.0	2951	100	374	0.0	21953	100

Source: Data derived from ABC, 1995 and 1998.

21,953 flights the additional 4076 flights comprising 3,072 domestic, 630 regional and 374 extra-regional (Table 11). The Big Five airports Tokyo, Taipei, Osaka, Seoul and Hong Kong still generated more than half of the flights. There was also little change in the split between domestic (over 72 per cent), regional (over 14 per cent) and extra-regional flights (13 per cent).

An analysis of the changes in domestic flights between 1995 and 1998 highlighted that most of the growth in flights occurred between first and second cities: Taipei and Kaohsiung (an extra 309 flights per week in each direction suggests the deployment of small aircraft); Seoul and Pusan (40); Tokyo and Osaka (27); and Beijing and Shanghai (37). In Japan the increase between Tokyo and Osaka was less than between these centres to Sapporo and Fukuoka respectively (all over 42 flights). Significantly, the only sign of the Asian Crisis was in Korea with the marked reduction in flights from Seoul to the tourist island of Cheju (76 flights from 268 in 1995 to 192 in 1998).

The effect of the Asian Crisis was more pronounced in extra-regional flights to destinations outside Northeast Asia. Seoul recorded an absolute decline in the number of flights.

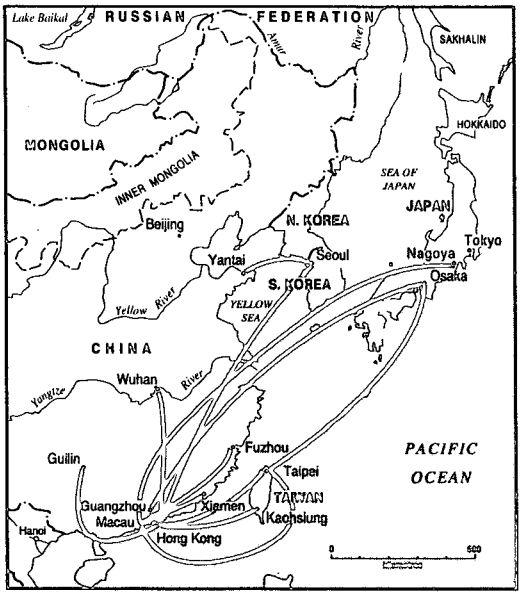
Table 12. Top 10 Gains and Losses in Extra-Regional Flights between August 1995 and August 1998

Gains					Losses				
		1995	1998	Change			1995	1998	Change
Taipei	Los Angeles	33	66	33	Seoul	Guam	24	0	-24
Osaka	Bangkok	16	42	26	Tokyo	Honolulu	84	60	-24
Taipei	San Francisco	21	41	20	Seoul	Saipan	19	7	-12
Hong Kong	Singapore	70	89	19	Taipei	Jakarta	23	11	-12
Hong Kong	Manila	60	76	16	Tokyo	Saipan	26	14	-12
Tokyo	Guam	21	36	15	Hong Kong	Jakarta	21	10	-11
Tokyo	Bangkok	42	56	14	Seoul	San Francisco	31	20	-11
Hong Kong	Vancouver	19	32	13	Seoul	Honolulu	24	14	-11
Tokyo	Detroit	0	13	13	Seoul	Manila	21	13	-8
Shanghai	Sydney	0	12	12	Fukuoka	Honolulu	14	7	-7
Tokyo	Brisbane	2	14	12	Fukuoka	Saipan	7	0	-7
Tokyo	Los Angeles	63	75	12	Hong Kong	San Francisco	21	14	-7
					Taipei	Manila	29	22	-7
					Tokyo	Denpasar	14	7	-7

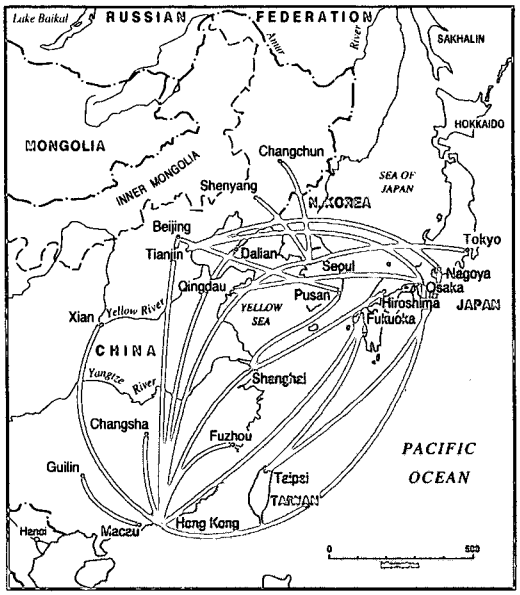
Source: Data derived from ABC, 1995 and 1998.

GAINS

(a) Over 7 flights per week

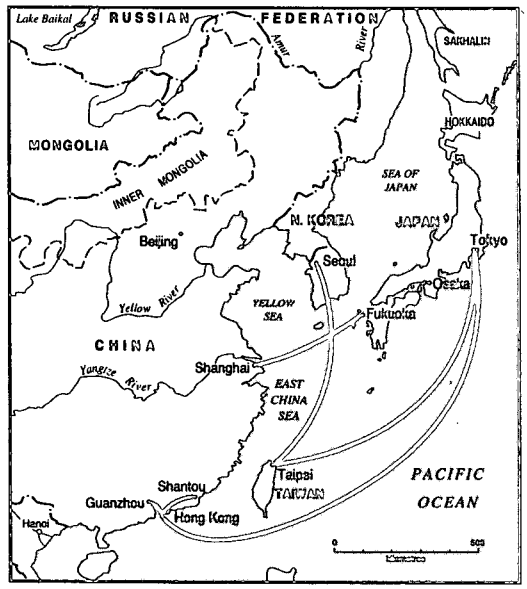


(b) Between 3 and 7 flights per week



LOSSES

(c) Over 7 flights per week



(d) Between 3 and 7 flights per week

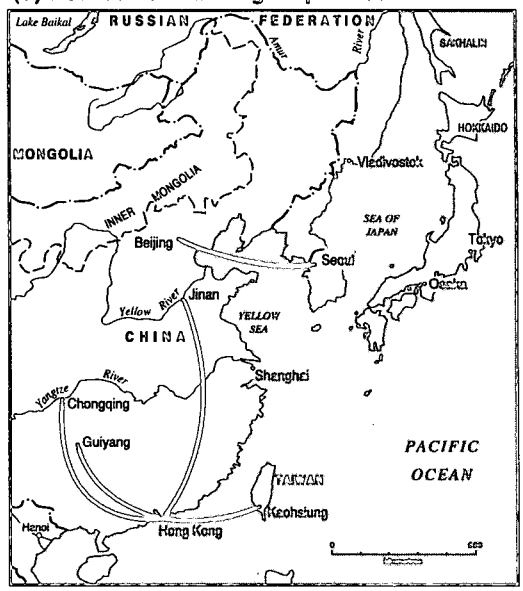


Figure 13. Gains and Losses in Flights Originating and Terminating in Northeast Asia, 1995-1998 (Source: Data from ABC, 1995 and 1998).

Collectively, however, the Big Five Airports retained 85 per cent of the extra-regional traffic. Seoul's decline and the slower growth of Tokyo and, to a lesser extent Hong Kong, were partially offset by the growth of both Osaka and Taipei. Other contributors to overall growth were Shanghai and

Beijing.

A more detailed analysis of these changes in extra-regional traffic can be derived from examining the top 10 city-pairs in terms of gains and losses between 1995 and 1998 (Table 12). Taipei doubled its flights with Los Angeles and San Franscisco to record the highest gains (presumably stemming from the open skies agreement between Taiwan and the United States). Tokyo figured in five of the top 12 city-pairs. Conversely, Seoul featured in five of the top 10 losses with a decrease in flights to Guam, Saipan, San Francisco, Honolulu and Manila. These are directly attributable to the withdrawal or reduction of services by Korean Airlines (Stuart, 1998). The effect of the Asian Crisis was also marked in the decline of flights from both Taipei and Hong Kong to Jakarta. However, the fall-off in flights to Manila had more to do with the problems experienced by airlines in the Philippines than the Crisis.

At a regional level the effects of the Asian Crisis are much more difficult to disentangle because: the factors which influence total demand may at times be more complex than in many comparable markets. Factors such as deregulation / liberalization policies, including rights for foreign carriers in each country and designation of multiple international gateways, policies toward travel, including restrictions or promotion, and settlement policies, can be complex, and affect traffic in the area. Overall economic factors, including the prospects for trading blocks, the pace of economic growth, the overall movement of business capital within the region, and the pace and cost of travel infrastructure, may be volatile (APA TFG, 1997: 5-9).

More specifically, there are new airports at Hong Kong, Macau and Osaka, open skies agreements with Korea and Taiwan and participation by regional airlines in global alliances (Oum, 1998). The share of traffic held by the Big Five airports declined with the faster growth of Osaka and, to a lesser extent, Taipei not offsetting the slower growth of Hong Kong, Tokyo and Seoul.[2] Indeed, Tokyo experienced a small absolute loss in the number of flights.

These observations on changes in regional traffic between 1995 and 1998 are elaborated by mapping gains and losses (Fig. 13). Gains between regional city-pairs in excess of 7 flights occurred within the previously identified pod structure. Most activity was focused on Guangzhou, Hong Kong and Macau and their reciprocal short-distance links with China and Taipei and long-distance links with Osaka and Seoul. This pattern persists when increases between 3 and 6 flights per week are considered. However, the pattern is overlain by a proliferation of connections between

airports in China, Korea and Japan. Access to China is critical for developing primary hub and spoke systems desired by national governments. Clearly, this increase in activity is located primarily within the pod. Only by lowering the threshold would connections with Khabarovsk, Kunming, Sendai, Ulan Bator, Urumqi and Vladivostok appear but by then the map becomes unintelligible.

Reductions in flights between city-pairs in Northeast Asia are less extensive than the gains. Only four city-pairs experienced a reduction of more than 7 flights. The reduction between Seoul and Taipei may be attributable to the Asian Crisis but other factors are also at work. Some of the decline in traffic from Tokyo and Fukuoka may be attributable as much to restructuring of flight patterns following the opening of the new Osaka airport as to the Crisis. Lowering the threshold to accommodate reductions of between 3 and 6 flights per week produced more conundrums than it solved. Although the reduction of flights between Beijing and Seoul may reflect the Crisis the other changes involving Hong Kong are more likely to be associated with adjustments due to the opening of Macau airport..

Clearly, more sensitive indicators are required to distil the effects of the Asia Crisis on the interactions between key city-regions within and outside Northeast Asia's pod-like structure. While this comparison of airline schedules was successful in unravelling the impact of the Asian Crisis in Southeast Asia, particularly within Indonesia, a myriad of factors seem to be at work within Northeast Asia masking its effect. Again this analysis highlights the need for an improvement in basic information on the flow of goods, people and information between city-regions in Northeast Asia (and the wider Asia-Pacific Rim). Such data would provide the basis for discussion of intra-regional cooperation, interdependence and trade. This discussion is pressing because there are signs of a recovery and stronger economic growth based on city-regions within Northeast Asia is expected.

Notes

1) The introductory comments draw on Dick and Rimmer (forthcoming) which seeks to apply them within Southeast Asia.
2) Since the currency crisis landing fee in Seoul for a Boeing 777-300 series is US$1,462 compared with Hong Kong (CLK) $3,011, China $3,108, Tokyo-Handa/Osaka $4,495 and Tokyo-Narita 5,993 (AE, 1999).

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ABSTRACT

An examination is made of container movements, air cargo/passengers and telecommunications traffic in Northeast Asia during 1995. A drawback to studying flows between major cities is that information on telecommunications traffic is only available between countries. Also container traffic data are restricted to individual ports. Consequently, most attention is paid to movements of passenger aircraft between major cities derived from analysing timetables, particularly as they can be related to regional development concepts applied in Europe such as the 'blue banana' and 'bunches of grapes' concepts. A 'peas in a pod' may be a more appropriate metaphor for Northeast Asia. Passenger aircraft movements are examined again in 1998 to gauge the impact of the Asian crisis.