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On: 28 April 2014, At: 01:10

Publisher: Routledge

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Transport Reviews: A Transnational Transdisciplinary Journal

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/ttrv20>

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Published online: 26 Nov 2010.

To cite this article: Cheng-Min Feng & Kai-Chieh Chia (2000) Logistics opportunities in Asia and development in Taiwan, Transport Reviews: A Transnational Transdisciplinary Journal, 20:2, 257-265, DOI: [10.1080/014416400295284](https://doi.org/10.1080/014416400295284)

To link to this article: <http://dx.doi.org/10.1080/014416400295284>

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Logistics opportunities in Asia and development in Taiwan†

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(Received 15 February 1999; accepted 2 March 1999)

The economy in Asia is growing rapidly. As a consequence, transportation and communication technologies and the changing needs of customers and shippers have resulted in Asian and Taiwan's logistics being in transition. This paper discusses why logistics changes, and explores the opportunities for Asian logistics development. The issues of logistics perspectives of private sectors in Taiwan are then raised. Finally, logistics development in Taiwan is described.

1. Why does logistics change?

Logistics has rapidly changed as a result of the growing globalization of business, changing technologies, organizational patterns, deregulation policies and governmental infrastructure. For example, the multinational company, which is engaged in multinational production, is the typical organization in the free enterprise world of today. Also multiple-site manufacturing and assembly is the usual practice.

There is a variety of reasons for the needs of production dispersal. One main reason is the existence of comparative advantage, which leads to trade between two regions. Trade is generally beneficial if transport costs are relatively small compared with production cost. If the net gains from trade are considered to be positive, specialization in production will occur. Global trade, based on factor endowment and government regulations, covers the transfer of resources, including capital, labour, technology, management and know-how, as well as raw materials, semi-manufactures, components and end-products, from one nation to the other. The supply-chains and the movements of all those materials and products are the subject matter of logistics.

2. Opportunities for Asian logistics

Some indicators (CEPD 1998, IATA 1997) used to show the growing Asian markets are as follows.

- Gross domestic product (GDP) for Asia-Pacific will be higher than that for either North America or Europe by 2010. Among these three regions the market share of Asia-Pacific will be 37.1% by 2010.
- Relaxation of government regulations on trade and transportation has resulted in free flow of cargoes, passengers, information and capital.

†This article continues the *Transport Reviews* series in memory of Jim Cooper. [Editor]

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- According to the IATA, the Asia air cargo market accounted for well over one-half the world market (59%) in 1992, and is expected to continue to grow.
- According to Boeing World Air Cargo forecast (Boeing 1998), the air cargo growth rate in 1992–2010 is 9.3% for Intra-Asia, 7.9% for USA-Asia and 7.4% for Europe-Asia, all of which are above the world average of 6.8% . Intra-Asian growth has been the most rapid, due to the rapid market development in Japan, Hong Kong, Taiwan, and China during 1980–90.
- Asia air express cargo is also growing very fast, with volume at least double that of other major markets. For example, the express cargo growth rate in 1991–93 was 25% in Asia, 12% in Europe and 8% in North America. The customers in Asia rely heavily on the services of express carriers, especially on those of the integrated carriers.
- Between 1995 and 2010, Asia-Pacific international scheduled passenger traffic will grow at a projected average annual rate of growth of 7.4% . At the same time, international scheduled traffic for the rest of the world is forecast to grow by 4.4% per annum on average.
- By 2010, Asia-Pacific traffic will amount to 393 million passengers. This is an almost three-fold increase in the 15-year forecast period.
- The global share of Asia-Pacific international scheduled passenger traffic increased from 26.2% in 1985 to 35.2% in 1995. It will increase to nearly 50% by 2010.
- Europe was and will remain the most important world region for long-haul international passenger traffic to and from Asia-Pacific. By 2010, there will be 57.8 million passengers between Europe and Asia-Pacific. The main region-pairs, within North-east Asia, between North-east–South-east Asia and within South-east, will remain within the Asia-Pacific Area.
- Asia is particularly attractive in container shipping because return on sales was 5.7% in 1992 for transpacific routes, the only profitable long-haul routes, while it was – 22.3% for transatlantic routes and and – 6.8% for North Europe-Far East routes.

According to the above indicators, opportunities for Asian logistics development are as follows: (1) strong economic growth in Asia Pacific area, (2) increasing disposable income, (3) intensification of inter- and intra-Asia-Pacific trade, (4) continuing deregulation and liberalization policies and (5) significant development of transport infrastructures.

3. Perspectives on the private sector in Taiwan

The total area of Taiwan is 36 300 km² (14 000 square miles), which is slightly smaller than The Netherlands and Switzerland. Since the island is largely mountainous, Taiwan is the second-most densely populated country in the world, with a population of over 21 million, or 582 persons per km². The change in industrial structure in Taiwan has been accompanied by sustained economic growth. Table 1 reflects the growth of both GDP and GNP over the past few years.

Taiwan's economy is highly dependent on foreign trade. Accordingly, most major industries are export-oriented or are suppliers for export industries. The appreciation of the New Taiwan dollar and increasing wage costs mean that labour-intensive industries are facing fierce competition from neighbouring lower-cost countries. Consequently, Taiwan is focusing increasingly on higher-value quality

products and on high-technology industries for domestic production and is moving labour-intensive industries to South-east Asia and Mainland China.

International trade is the mainstay of Taiwan's economy. Table 2 summarizes major import and export commodities and trading partners. Taiwan has since the end of the 1980s embarked on a policy of reducing or removing controls on imports and reducing import tariffs.

Below is a summary of the report of the Council for Economic Planning and Development (CEPD) of Taiwan, where Taiwan's existing strengths and weaknesses in developing into a regional centre in the Asia-Pacific area are assessed through interviews (CEPD 1994). The selected managers of local and foreign private sectors are grouped into two categories: transportation logistics companies and production logistics companies. The former category represents companies whose core business is freight transportation, and with which the multinational has established a long-term relationship. Federal Express (FedEx) and United Parcel Service, Inc. (UPS) are two examples of these companies. The latter category represents companies whose core business is supply chain-related manufacturing and assembly, and the logistics function in these companies may be operated by an in-house department. Examples are the computer companies of ACER and Compaq.

Table 1. GNP, GDP, NI and economic growth rate of Taiwan from 1991 to 1997.

	1997	1996	1995	1994	1993	1992	1991
GNP (million USD)	285 300	274 600	263 000	243 900	226 200	216 300	185 600
Per capita GNP (USD)	13 233	12 838	12 396	11 579	10 852	10 470	8 982
GDP (million USD)	283 636	272 307	260 175	240 986	222 604	212 150	179 370
Economic growth rate (%)	6.81	5.67	6.03	6.54	6.32	6.76	7.55
Per capita national income (USD)	12 019	11 635	11 276	10 566	9 872	9 536	8 189

Source: Directorate-General of Budget, Accounting and Statistics (1998).

Table 2. Major trading commodities and partners.

Major import commodities	Oil, machinery, electrical products, chemicals, steel, steel work, beverages, tobacco, motor vehicles, delivery equipment, metal products, electrical machines
Major export commodities	Electronic products, garments, yarns, shoes, toys, sporting goods, base metal, metal products, machinery, motor vehicles, delivery equipment, plastics
Major trading partners	USA, Japan, Hong Kong, Germany, Singapore, UK

Source: CEPD (1994).

The comments on the perspectives of private sectors in Taiwan are as follows.

(1) Transportation logistics companies

- An air hub is needed in Taiwan to cope with the strong growth of the Asian market.
- A regional hub in Asia is needed to serve the rapidly growing Intra-Asia volumes.
- There is a growing opportunity in express air cargo for Taiwan to meet the needs of just-in-time (JIT) delivery.
- Since the logistics business is very sensitive to time, the less time the transportation takes the better.
- Airports serving the express cargo business and providing efficient operations are needed. Those airports that have strict regulations will be significantly less attractive.
- Customs services in airports operating on a 24-h basis are needed. Customs paperwork should be replaced with EDI (electronic data interchange), which can immensely accelerate customs clearance.
- A good network of flights would help provide flexibility in scheduling and goods delivery. It is better to have direct access to Mainland China, which has a fast-growing market.
- Current regulations and restrictions constrain shipping operations in distribution activities and in utilizing berth and warehouse capacity.
- Foreign ocean carriers demand to extend their marine transport to the inland trucking market on condition of reciprocity.

To improve company competitiveness, the Taiwan and foreign managers of express carriers call for their own facilities to get control over their cargo handling, efficient customs procedures and 24-h operations for fast throughput time, and frequent flights to many regional destinations, including China.

(2) Production logistics companies

- Products can be developed quickly enough without a good industry infrastructure and supplier network.
- A more open trade relationship is needed, especially with mainland China.
- Partnerships with foreign multinational companies are needed.
- Attracting more foreign direct investment will help Taiwan to further improve productivity.
- Low cost of land and labour for manufacturing our products are required.
- Language barriers exist, as English is not sufficiently used in many situations.
- An advanced information and telecommunications infrastructure is required.
- Entering the global trade economy and in particular joining the World Trade Organization (WTO), is essential.

The Taiwan and foreign managers of production firms require a good industry infrastructure and supplier network to manufacture competitive products, fewer restrictions on trade with mainland China,

extensive partnerships with foreign companies, low costs for land and labour for manufacturing, an advanced information and telecommunications infrastructure, and membership in the global trade economy.

4. The development of logistics in Taiwan

Taiwan is an export-oriented country. Along with the increase of international trade and economic development, the volume of logistics has increased rapidly. According to the 1996 survey of the Institute of Transportation, Ministry of Transportation and Communications, the total amount of the logistics flow, including sea transport, ground transport and air transport, is nearly 13% of the total GDP with 973 billion NT dollars (nearly US\$35.40 billion) annually (Institute of Transportation, MOTC 1998).

4.1. *The problems*

Facing the quickly changing environments, some problems of Taiwan's local logistics firms arise as follows:

- (1) Infrastructure. Traffic congestion is an obstacle to the growth of logistics. The loading and unloading of cargoes during normal working hours is considered to be the main cause of congestion in urban areas. A lack of parking space and traffic congestion in urban areas has become a common phenomenon and leads to rapidly increasing transport costs. Consequently, as far as cost is concerned, the domestic transport system may not support the JIT delivery requirements.
- (2) Economic and financial. Mounting demand and international competition have influenced the structure and location of industry as well as the local and international division of labour. Some advanced large companies in Taiwan could adopt new organizational structures and use advanced logistics services to maximize profit. However, most middle-sized and small logistics firms in Taiwan cannot react quickly to the changing market and new technologies. As a result, their competitiveness will not be based on efficiency but rather on drastically reduced prices.
The high land prices and land-use limitations are hindering the development of the logistics industry. The high cost of labour and labour shortage had resulted in increasing logistics costs.
- (3) Legal and administrative. The current land-use regulations do not give enough incentives to the establishment of a distribution centre. The current regulations in the areas of Aviation and Harbour are outdated. The result is that airport and harbour pricing are less attractive and customs procedures are not efficient.

To enhance efficiency and competitiveness, the logistics firms have focused on the following areas:

- making smart investments on infrastructure equipment;
- supporting the usage of new technologies such as EDI to rationalize their distribution channels;
- encouraging multi-modal and cooperation between international logistics firms;
- developing joint distribution centres in the vicinity of metropolitan areas;

- improving the existing distribution channels to achieve an advanced logistics system; and
- enhancing the safety of distribution process.

4.2. *Governmental actions*

In addition to supporting a well-developed distribution and manufacturing centre in Asia-Pacific region, Asia-Pacific Regional Operation Centre (APROC) plan has been in place for 3 years. However, government agencies have spared no effort in carrying out market liberalization and internationalization. The current logistics-related actions taken by governments are described as follows.

- (1) Transport infrastructure construction. The infrastructure projects of air, sea and ground transport have been continuously undertaken and government agencies are engaged in the introduction and operation of new transport technologies to improve the service level of the transportation systems.
- (2) Developing Taiwan as the operation centre of the Asia-Pacific region. The purpose of developing Taiwan as an Asia-Pacific operation centre is to attract enterprises to use Taiwan as their production, logistics and marketing bases for delivering high value-added goods to this region. The APROC plan will develop six specialized centres. In these, 'software' programs are being re-engineered for the purpose of revamping the legal and macro-economic environment on Taiwan. Of these six centres, three will be aimed at developing the air transport, sea transport and telecommunications, which will lead to providing high quality infrastructure services to logistics firms.
- (3) Civil aviation law amended. Revisions involving 117 articles of the Civil Aviation Law were adopted by the Legislative Yuan of Republic of China on 30 December 1997, with two revisions directly affecting foreign airline companies. First, the new provisions stipulate that for air cargo-forwarding companies, ground stations and cargo distribution companies, foreign capital shares and the number of foreign board members may represent 50% of the total shares or board seats, compared with only one-third in the previous regulations. Second, airline companies can adjust their international flight fares on their own and later file a report with the authorities. This dispenses with the prior-approval system on pricing schedule for international flights.
- (4) Customs surcharge reduced. The Ministry of Finance (MOF 1998), under a customs regulation revision finalized in February 1998, drastically reduced the customs surcharge on export inspections to save time and to reduce costs of exporters.
- (5) EHU (Express Handling Units) clearance limitations relaxed. Efficiency of customs clearance should be improved. Reducing the present customs clearance down to a par with Singapore's 2–4 h or Hong Kong's 2–6 h customs clearance is planned under which the average clearance time for air cargo will be reduced to 4 h from 3 days.

New clearance regulations which became effective in August 1997 scrapped the old rules that stipulated that EHU cargoes could not exceed NTD20 000 for non-export-and-import-controlled goods. The new regulations only prescribe that EHU cargoes shall not exceed 70 kg compared with 40 kg in the old regulations. The value requirement has also been

scrapped. Goods that are subject to import and export control can also go through the EHU.

After the establishment of EHU at the CKS airport in December 1995, incoming cargoes into the units increased by nine times and outgoing ones jumped by 30-fold, representing 1.3% of the cargo handling in the airport. Adding those handled in the on-board-courier handling units (OBC), cargoes handled at OBC and EHU accounted for 3.3% of the total air cargo volume of CKS airport.

- (6) Twenty-four-hours customs clearance at CKS International Airport. The CKS international airport announced that 24-h cargo claims would be expanded to general commodities, which had been inspected and checked in the past. Those eligible for 24-h claim include cargoes that do not require paper verification and inspection, cargoes which have passed paper verification and inspection, and those imported to export processing zones and science-based industrial parks. The 24-h cargo claim operation is open 7 days a week.
- (7) Pre-clearance system for air cargo. The implementation of preclearance system will significantly improve the efficiency of import clearance. Under the new system, airline companies can send through a computer network the manifest, declaration paper and other documents to customs before the arrival of cargo. Customs may inform the customs agents whether those cargoes must proceed for inspection. If not, cargo can be cleared within 24 h of arrival.
- (8) Harbour charges lowered and foreign investment limitation reduced. The government finalized the revision of relevant rules in September 1997 and reduced the harbour construction fee from the previous 0.5% of cargo value to 0.4%. Also, the government raised the foreign investment ceiling in container yards.

In September 1997, the MOTC adjusted many tariff changes at international ports. The tugboat charge was reduced to 30% from 50%. Warehousing and container yard rental fees will be given a 20% discount. Warehousing charges will be voided for bulk carrier goods which stay in warehouses no more than 5 days. The loading cost of refrigeration boats will be reduced by 10%, while the rental of cranes and other machinery will be reduced by 20%.

- (9) Warehousing centres in Kaohsiung, Taichung launched. The Taiwan Export Processing Zone Administration formally established a branch office in Taichung Harbour and two branch offices in Kaohsiung Harbour in December 1997 to promote the transforming of processing zones into warehousing centres.

The warehousing centre will attract high-tech manufacturing enterprises, warehousing and distribution companies, and other related service firms.

- (10) Airport city development plan. The airport city development plan was approved in October 1997, and the local government started land acquisition. This marked the beginning of constructing a large-scale airport city, covering a total of 63 hectares of land around the CKS international airport, and accommodating a projected cargo volume of 1.2 million tons per year, up 10.4% from the present 732 000 tons.

The government plans the construction of the bonded warehouse, value-added operations and distribution centres. The primary construction plan will be finished by 1999. Private participation will be encouraged.

- (11) Federal Express, UPS and DHL expand operations. The UPS Logistics Centre in Taiwan began operation in November 1997 to provide value-added distribution, inventory management and warehousing services to customers all over the Asia-Pacific region. This could drastically reduce the time and cost of inland transport and warehousing.

The Federal Express CKS transport centre covering 1700 m² began operations on 11 November 1997. The transport centre provides 24-h customs clearance services. Its speedy sorting system can process 3000 pieces of cargo per h. The new centre will be able to provide more streamlined services.

DHL has upgraded its competitiveness by enhancing its point-to-point international courier services with distribution functions. It is constructing its distribution and inventory centre near the CKS Airport.

The integrated logistics firms, e.g. UPS, FedEx and DHL, combine distribution, transport and advanced electronic-data-interchange (EDI) know-how to serve industries in inventory management, warehousing, sorting or assembling, and overnight handling to provide fast delivery service for high-tech industries.

- (12) Air cargo terminal privatized. Privatizing the cargo terminal in CKS airport is the government policy. It is expected that privatization and integrating the upstream and downstream delivery services will make proper adjustments in hardware installation and will streamline procedures to upgrade clearance efficiency.
- (13) New highway law takes effect. The revised Highway Law took effect on 1 November 1997, opening the market for the leasing of small passenger cars, automobile cargo transport, and automobile container transport to foreign investors.
- (14) Land use release. Some farm and open land will be released for use such as car parks and distribution operation centres by logistics firms.

5. Conclusion

With the growth of globalized business, advanced technologies development, international specialization of labour, continuing deregulation and liberalization policies and governmental infrastructure improvement, the logistics market opportunities in Asia are attractive. But the logistics services required by customers have also become increasingly more complex and demanding. Faster and more sophisticated logistics for companies are needed to meet the changing needs of customers and shippers.

The results of interviewing managers of logistics companies showed that the managers within transportation logistics companies recommended that government authorities continuously improve infrastructure facilities and develop regional hub operations to serve the rapidly growing freight demand. The express carriers' managers call for efficient cargo handling and 24-h operations in airports to improve company competitiveness.

On the other hand, the managers in production logistics companies focused on the macroscopic recommendations of Taiwan's logistics development, such as

gradually eliminating political barriers with mainland China, establishing partnerships with multinational companies, and entering the international World Trade Organization (WTO).

Following the perspectives of local and foreign logistics companies and reviewing the existing difficulties of logistics development in Taiwan, government agencies in Taiwan have taken several logistics-related actions to deal with aspects of the infrastructure, finance, legal regulations and administration to reduce the obstacles such as tariffs, import restrictions, etc. that the private sector encounters in conducting international business. Confronted with a fierce and constantly changing competitive environment, even with numerous opportunities, the government still has to improve the hardware and software performance to enhance the competitiveness of the logistics industry.

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