Equity Research
Asia/Pacific

Industry

China Logistics

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Industry Overview

October 5, 2001

Spot the Early Bird

COMPANIES FEATURED

Sembcorp Logistics (SWMS.SI, S$1.66)	Outperform
China Eastern Air (0670.HK, HK$0.79)	Neutral
CNAC (1110.HK, HK$0.92)	Outperform
China Southern Air (1055.HK, HK$1.60)	Outperform-V

RECENT REPORTS

Sembcorp Logistics: Defensive Qualities Command Valuation Premium
J. Kuek/ C. Lim September 26, 2001

Sembcorp Logistics: Regional Focus, Global Reach
C. Lim/ J. Kuek August 16, 2001

- **Logistics is an old but key process in all businesses**
  We estimate China's annual logistics bill to be more than US$200 billion and that third-party logistics (3PL) providers account for about 2% of the logistics market.
- **Outsourcing of logistics is a growing trend in China**
  Most logistics services in China are handled in-house. With WTO entry and SOE privatization, efficiency and cost control will drive outsourcing of the logistics function to 3PL service providers.
- **Logistics suppliers range from single function to integrated services**
  The logistics industry in China ranges from servicing of a single segment of the total process (such as warehousing and point-to-point transportation) to integrated service providers.
- **Integrated logistics is a young and fast-growing industry in China**
  The essence of logistics management is to use a systematic approach to lower *total* logistics costs and fill customer needs. The one-stop service providers have high ROE and we expect this segment to experience revenue growth of 20% for the next 10 years.
- **The first-mover advantage**
  We believe there is a clear advantage to positioning early to secure customers and scale. One of the key ingredients in building a competitive nationwide logistics operation in China is time. Investors should be ready to spot the early bird.
- **Service providers are striving to become more integrated**
  Most of the listed transport and logistics companies are in the early stages of evolving to higher ROE 3PL businesses. Sembcorp Logistics is our key recommendation for its 3PL subsidiary in China.

Contents

We would like to thank Jessica Yang and Ralph Kent for their help in preparing this report. Rob Hart, Tim Bacchus and Jacqueline Kuek contributed the individual company profiles.

Spot the Early Bird

Executive Summary

Supply chain management involves the planning, implementation and control of the flow and storage of goods, services and information from origin to the point of consumption in order to meet customers' requirements. It is a key part of all businesses. Just think of the newspaper you picked up from your doorstep this morning. From the raw materials, e.g. ink and newsprint, to articles from reporters and advertisers, to the editing and printing process, then delivery to customers, getting the paper to your door is a complicated and coordinated process. With China expected to become a huge manufacturing base for the world, logistics is an already large industry set to expand. We estimate the size of the country's annual logistics bill at more than US$200 billion for 2000.

An Undeveloped and Segmented Industry

Many Chinese enterprises take care of their logistics process – ranging from the acquisition of raw materials through to final product fulfillment – in-house, owning vehicle fleets, warehouses and labor. Outsourcing has been limited. Due to geographic and regulatory constraints, the logistics industry in China is mostly confined to a segment of the total process, such as warehousing or point-to-point transportation. There are few integrated service providers. The essence of logistics management is to use a systematic approach to lower *total* logistics costs and to fill customer needs. The current practice of achieving the lowest cost for single functions is sub-optimal.

A Fragmented Industry With Emerging Opportunities

There are many industry players. Most have developed from their respective areas of specialization, such as land transport, shipping, warehousing/ports and airfreight. Small operators are abundant, for example, there are 2.7 million road transport service providers in China but these average only 1.43 operational vehicles per outfit. The majority are unlikely to catch up with the pace of China's development of national brands and potential entry into WTO, given their limited resources/skills. Inefficient delivery of goods to customers throughout China frequently ranks top of companies' 'headache list'. They are willing to pay for service, and logistics companies that can transform will win higher market shares and returns.

A Low ROE Industry for Most, but High ROE for a Few

The more integrated the service, the higher the customer loyalty. A single-function logistics operator is essentially an asset owner and capacity provider, who in China often faces severe oversupply, as there are many new entrants. Contract logistics companies and third-party logistics (3PL) providers that provide one-stop packages are more skill-based and can benefit from this oversupply as a buyer of capacity. A typical 3PL provider tends to be asset-light and nimble and has high ROEs. Our base-case forecast assumes an annualized growth rate of 20% for China's 3PL market for the next 10 years.

Growing Outsourcing, Consolidation of Service Providers

With China integrating into the global economy and with continuing privatization of the state-owned enterprises (SOEs), efficiency and cost control will drive companies to outsource logistics. China's logistics industry can build on the experience of the developed economies and lower costs. The government is aware of the need to develop logistics and is committed to building efficient infrastructure such as regional distribution centers in the Tenth 5-Year Plan. Foreign logistics companies lack experience, local networks, distribution centers, local knowledge and domestic customer relationships to attract business. We believe mergers and alliances between local and foreign players will mushroom. For the asset-heavy transportation companies, we believe consolidation to achieve economies of scale will be key to competitiveness.

Existing Listed Chinese Companies Are Not Integrated 3PL Service Providers

The bulk of the revenue of the listed Chinese logistics companies is essentially from capacity provision (or two-party logistics [2PL]), though most firms aspire to become 3PLs. Of these transportation companies, we find the port operators more attractive due to their monopolies, such as Hutchison Port Holding (an unlisted subsidiary of Hutchison Whampoa) and China Merchant Holdings. As for the 3PL arena, the Singapore-listed Sembcorp Logistics is our key recommendation for its 3PL subsidiary in China. We expect some unlisted companies will come to the market when their 3PL business are more developed in the next two years. A partnership combining a local network with foreign expertise appears to be a winning formula.

Why Look at Logistics?

"…a force without significant transportation must lose; one without provisions must lose; one without supply caravans must lose." The Art of War, Sun Zi (circa 480 - 221 BC)

It has been suggested that the concept of logistics was first used in 1905 by an American major (James C. Johnson and Donald F. Wood, Contemporary Logistics, Macmillan, 1990). It is true that military operations involve substantial movement of bodies and supplies with tight precision and time constraints to achieve the goal of victory. World War II also contributed to operations research, which has wide applications in logistics. Over the past few decades, logistics has become a key element in the competitive world of business, too. Techniques such as total quality management have expanded quality requirements from the manufacturing of goods to moving goods to the final consumer, and from minimizing divisional costs to total cost optimization. The logistics revolution is just beginning in China.

Opening up an Underdeveloped Industry

Logistics is an industry that will benefit from outsourcing, the opening up of China and, more importantly, potentially high returns on equity for investors. While most industries have large state-owned incumbents and over-capacity problems, the 3PL segment is virgin territory. Local industry players have only started their 3PL operations in the past few years and remain small, while foreign players are yet to build a substantial presence.

Not a Fad Industry

Logistics has received unprecedented attention in China since last year: the government has made it a focal point in the Tenth Five-Year-Plan. Is this just a fad? We believe not. With foreign companies entering China's vastly different operating environment, SOEs are being asked to survive on their own, and with more local companies emerging to become national brands (Exhibit 1), the costs of their supply chain and their ability to deliver efficiently are under scrutiny. The key to survival is to become efficient and competitive. Enterprises need integrated logistics services that are more reliable than the traditional transportation and storage services.

Characteristics of the China Market

In-house logistics at SOEs is a legacy of the planned economy. According to *Containerisation International* (September 2001), only 18% of raw material logistics in industrial companies in China is handled by third parties. When it comes to final products, third parties handle even less, at 16%. Even some enterprises with sales of about Rmb10 million still have their own trucks and warehouses. The rapid changes in the post-Deng era lead to a massive shift in logistics requirements, but traditional transportation companies have been slow to respond to these changes and have fallen behind customer requirements. This means a huge expectation gap is there to be filled. Moreover, geographic constraints and regulatory complexities make logistics operations a headache for most enterprises, which are willing to pay specialists who can meet their needs.

Exhibit 1
Rise of Local National Brands

Brand	Product	Estimated Brand Value (in Rmb Bn)
Hongtashan	Cigarettes	43.90
Haier	Electronic appliances, general	33.00
Changhong	TVs	26.00
Wuliang Ye	Rice Liquor	12.06
TCL	TVs	10.59
Legend	Computers	10.32
Number One Auto	Auto	9.66
Kelon	Air Conditioners	9.62
Konka	TVs	9.54
999	Pharmaceuticals	7.39
Midea	Air Conditioners	6.38
Qingdao	Beer	5.95
Little Swan	Washing machines	5.68
Rongsheng	Refrigerators	5.22
Yanjing	Beer	4.57

Source: Beijing Famous Brand Estimate Report, 2000, Morgan Stanley Research

Geographical Considerations

Logistics cannot be looked at in isolation; geography is important. China covers around 3.7 million square miles, slightly more than the US. Superimposing maps of the two countries shows some interesting similarities. Beijing and New York are roughly on the same latitude, as are Shanghai and New Orleans. However, a topographical map shows huge differences. While the US has both east and west coasts, the west of China is full of mountains, plateaus and deserts. Transportation between the east and west of China is like playing squash, while in the US it is like golfing (Exhibits 2 and 3).

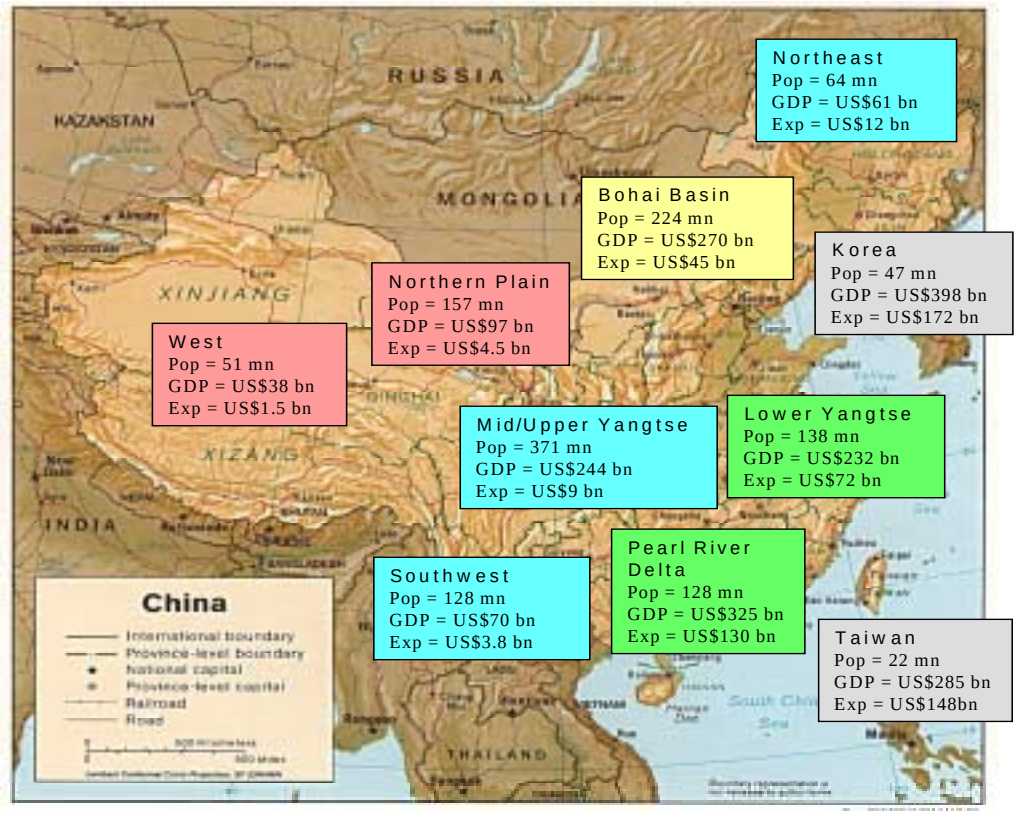
Exhibit 2

Geographical Comparison of China and United States

Source: "Understanding China", John B. Starr, 1997. Hill and Wang, Morgan Stanley Research

Exhibit 3

Topography and Concentration of Population



Source: CIA, Morgan Stanley Research

In the US, the ocean jet stream brings moisture to the west, while the west of China gets the dry monsoon in the winter from Siberia. Annual rainfall along the Mongolian borders is below 5 inches, while in areas on the southwest coast like Guangdong and Zhejiang it exceeds 75 inches. The east has developed over time into a relatively rich region with a strong agriculture base and ports to support international trade. Hence there is a wide discrepancy of goods transported between the prosperous east and the poor west of China. Moreover, in the US about a third of the land area is mountains and deserts, while the rest is reasonably flat. In China, the proportions are almost the opposite, resulting in population density concentrated in the east.

A Difficult Operational Landscape

As a result of the above geographic characteristics, logistics is a huge operational challenge. Matching goods transportation orders is difficult and vehicles are often empty on return trips. Most containerized goods move east to west, logged wood from northeast to southeast, and coal, oil and minerals from west to east. For example, a multi-national corporation in the food industry interviewed in this study had looked at selling its premium brand ice cream in Xinjiang in the summer. While a normal truck would cost around Rmb9 per ton per km, even at a premium charge of Rmb12, few truckers would undertake this long journey. There is little produce that requires a refrigerated truck for the return journey from Xinjiang. An integrated logistics service provider with a large-scale operation should be in a better position to exploit these imbalances, thus lowering its cost of service. A client's problem becomes the provider's opportunity, hence the scale of operation advantage.

Regulatory Constraints

As a result of the numerous cities with 10 million-plus populations such as Beijing, Shanghai and Chongqing, traffic control is necessary. For example, a licensed truck from Beijing could operate in all cities, but is prohibited from driving within Shanghai from early morning till late evening. Only Shanghai-registered trucks can perform deliveries during the day. Furthermore, the Ministry of Communications, Ministry of Foreign Trade, Civil Aviation Administration of China (CAAC), China State Post Bureau and different local authorities are all involved in regulating and licensing (Exhibit 4), resulting in lack of coordination, low flexibility, poor response to market needs and local protectionism. These complex conditions make an integrated logistics service all the more valuable. How will integrated companies cope with such constraints? By having the right connections, licenses and networks built over time, hence the first-mover advantage.

Exhibit 4

Regulatory Framework for Sub-sectors with Foreign Participation

Sub-sectors	Foreign participation	Related Authority for license approval
Int'l freight forwarding	Regulated	MOFTEC
Air freight forwarding	Regulated	CAAC, MOFTEC
Logistics center	Encouraged	MoC, MOFTEC
Domestic trucking	Regulated	MoC, MOFTEC
Consolidation	Regulated	MoC, MOFTEC
Warehousing	Encouraged	MoC, MOFTEC
Customs brokerages	Heavily regulated	CGA, MOFTEC
Shipping line	Regulated	MoC, MOFTEC
Airline	Heavily regulated	CAAC, MOFTEC

Source: Hong Kong Trade Development Council, Morgan Stanley Research

Exhibit 5

A Huge Market Calling for Efficiency

	China	Savings for China if...	Other Countires
Total logistics cost /GDP 2000	20%	→ 10%, US$108 bn	US: 10%
Logistics cost/total industry product cost 1999	40%	→ 20%, US$95.3 bn	World: 15-20% MNCs: 5-8%
Accumulated inventory /GDP 2000	50%	→ 4%, US$495 bn	US: 3.8%

Source: Potential and Outlook of Logistics Industry in China, Wenling Chen, (Director General of Industry, Transportation and Trade Department, State Council), CEIC, Morgan Stanley Research

Why Should Investors Look at This Industry?

1) A huge market: According to a research report by the State Council, China's total logistics cost in 2000 was 20% of its GDP, double the level of the US. *Containerisation International* (September 2001) estimated the cost of logistics at 16.7% of GDP. On average, 90% of a manufacturer's time is spent on logistics, with only 10% on manufacturing. It is apparent that substantial inefficiency exists in China, with high inventory and slow goods movement. Most enterprises still adopt the antiquated model of minimizing individual transportation items, which minimizes total cost. Logistics management instead adopts a systematic approach. For example, while rail is cheaper, it often pays to deliver DRAM chips by air to optimize total costs. The benefits of short delivery time, low inventory and low material price risk all contribute to total cost reduction. Exhibit 5 shows some potential cost savings from improved logistics.

2) Exponential 3PL growth: The 3PL penetration rate for China is estimated to be 2%, much lower than the US (8%) and Europe (10%). Hence, the potential growth for 3PLs in

China is significant. We forecast 16% to 25% annualized growth for 3PLs in China for the next 10 years. There are good reasons to believe that the 3PL market in China will take off. On one hand, China's vast service market has yet to open up, which means a lot of pent-up potential for foreign 3PLs. By borrowing the most advanced logistics management technologies from the West, the development of 3PL could be revolutionary rather than evolutionary.

3) Consolidation ahead: China will open up most of its logistics sector to foreign competition in 3 to 4 years' time. 3PLs need to quickly achieve economies of scale and geographical coverage to satisfy customers' one-stop shopping demands. We expect China's logistics industry to see major consolidation through M&As in the next five years, which will result in a few big players that could be profitable investments. We estimate logistics cost was around 20% of China's GDP, or US$215 billion, in 2000.

Exhibit 6
Outlook for Logistics Sectors

Sector	Foreign Ownership now	Expected changes
Trucking	<50%	100% in 3 years
Freight forwarding	<50%	100% in 4 years
Customs brokerage	<50%	100% in 4 years
Mail & Parcel (Int'l)	<50%	100% in 4 years
Mail & Parcel (Domestic)	0%	100% in 4 years
Rail services	<50%	No estimate
Air cargo, ground service	Local license	No estimate
Warehousing	100%	No change
Domestic Maritime/Shipping	0%	Minority foreign ownership with Chinese flag

Source: Industry interviews, Morgan Stanley Research

Clear and Future Danger – Oversupply

Oversupply is the most common landmine for investors looking at an exciting market of 1.2 billion people. We believe there will eventually be an oversupply in logistics providers as well. However, the characteristics of the more profitable 3PL segment are customer stability and low asset deployment, which makes it an attractive industry in China, where others face the threat of oversupply at some stage of their life cycle. The closer the service is to the customer, the more likely the customer will stay. An integrated logistics service essentially means the provider is becoming the back office of the customer. Work by Dr. Robert Lieb of Northeastern University in Boston found that the average contract renewal rate for 3PL stands at 93%. As explained later in this report, 3PL providers outsource most of their asset requirements to capacity providers, thus avoiding and to some extent benefiting from over-capacity in areas where barriers to entry are low. We believe there is a clear advantage in positioning early enough to secure a customer base and scale of operation. An early mover is in a good strategic position to stay ahead when competition intensifies.

How This Report Helps Investors

By drawing an overall picture of the current logistics industry in China, we aim to help investors identify the potential and the risks and how listed players are positioning. We also attempt to anticipate the M&A patterns of the industry and develop evaluation frameworks for picking the potential winners.

The Logistics Players – From 1PL to 5PL

What Is Supply Chain Management?

Since last year, logistics has been a hot topic in China, with 3PL the most abused word. From giant container liners to single-vehicle truckers, everybody claims to be a 3PL. We would like to clarify our definitions.

We define logistics as the part of the supply chain process that plans, implements and controls the efficient, effective flow and storage of goods, services and related information from the point of origin to the point of consumption to meet customers' requirements.

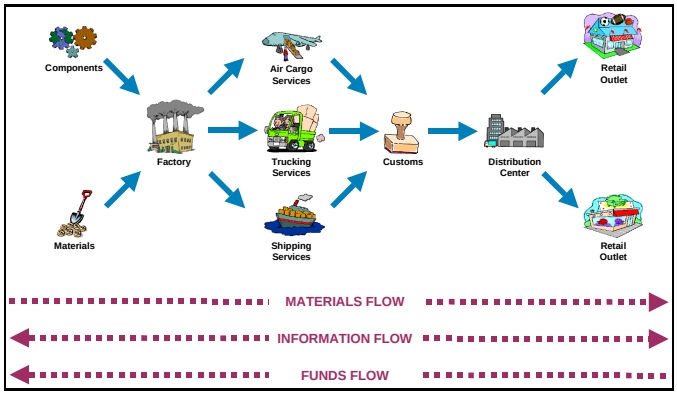
What Do the Numbers Mean?

The concepts of 3PL (Third-Party Logistics) and 4PL (Fourth-Party Logistics) reflect the evolving demands of supply chain management. A 1PL (First-Party Logistics) manufacturer essentially owns and handles all logistics functions, such as trucking and warehousing. Most small businesses buying and selling in the same location are 1PLs. As the business expands geographically, the manufacturer will seek a 2PL (Second-Party Logistics) provider to share its growing logistics burden. A 2PL provider is generally a commodity capacity provider, such as a trucking company or a warehouse operator. A 2PL provides service for a single (or a small number of) functions in the supply chain. They face low returns, with high levels of asset intensity but low barriers to entry. Next come the distributors, who through a dense network or legislative protection have achieved higher returns, albeit on a sizeable cost base. Examples are the express parcel operators, which charge premium pricing for timely delivery, and the postal operators.

With the increasing need for one-stop solutions, many 2PLs have evolved into 3PLs by adding new logistics capabilities and integrating their operations to offer one-stop packages. 3PL is involved in the management of the supply chain. It may or may not involve asset ownership. 3PL is a broader term that is frequently used to cover businesses in freight forwarding or contract logistics. It performs all or a large portion of a client's supply chain logistics activities, and its value-add is based on information and knowledge versus a non-differentiated transportation service at the lowest cost. 3PL tends to be asset-light and has high returns. The 4PL provider is essentially a logistics integrator or a one-point contact for the manufacturer's logistics outsourcing requirements. It is responsible for contracting various 2PL and 3PL providers, and for assembling and managing those end-to-end solutions. The 4PL provider, with its complete overview of the supply chain as well as strong logistics and IT capabilities, can also offer high value-added advisory services to the manufacturer.

Exhibit 7

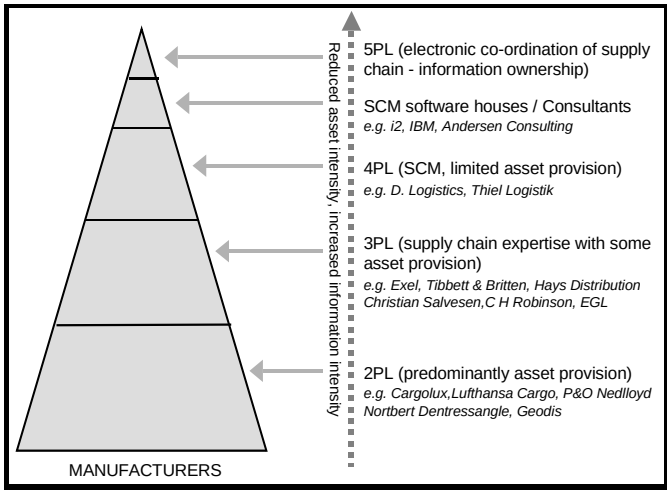
The Supply Chain



Source: Morgan Stanley Research

Exhibit 8

1PL to 5PL— Varying Degrees of Supply Chain Sophistication



Source: Morgan Stanley Research

From Trucks to Technology – Different Returns for Different Players

Within the supply chain and distribution space there is a wide variation in asset utilization and returns. As a rule, the lower one is in the food chain, the more physical assets are employed. The higher one is, the more knowledge and experience are required, i.e. intellectual property. *The*

higher companies therefore have higher asset turnover and return on capital, and have higher scalability. These characteristics are also attributable to traditional accounting systems, which have evolved from measuring physical assets and are not designed to measure intellectual property.

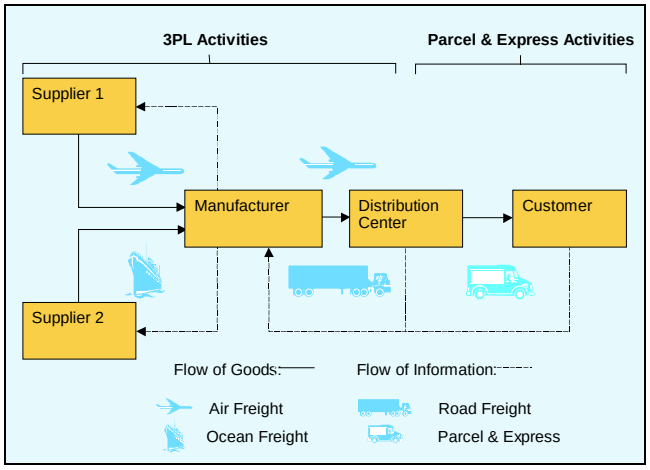
2PLs Are Capacity Providers

As a general rule, the commodity capacity providers (2PLs) face the worst return outlook, with high levels of asset intensity but low barriers to entry. Basic transportation providers such as truckers, air freighters and container lines fall into this category. With a high fixed cost base and a volatile revenue stream, the outcome is usually low and unpredictable earnings. Airports and seaports as capacity providers are also categorized as 2PLs, but their returns are generally better and more stable than the basic transportation providers due to their relative scarcity, natural monopoly geographically and relative insulation from the fluctuations of fuel prices.

A level up, we have the express parcel operators. They earn higher margins as they can charge a premium for expedited delivery. They are the best at door-to-door services but the limitation is that they are not built to handle bulky cargoes. They can be either 2PL or 3PL depending on the degree of sophistication of their services. The major global express parcel operators are all seeking to combine 3PL and express parcel activities to provide integrated total supply chain logistics (Exhibit 9).

Exhibit 9

Combination of 3PL and Parcel Activities



Source: Morgan Stanley Research

3PLs Are Supply Chain Managers

Most 2PLs and express companies strive to become 3PLs for higher returns. While 3PLs do own some assets such as key distribution centers in strategic locations or a small trucking fleet to fill emergency needs, they contract out most of their capacity needs to 2PLs. Hence the terms 3PL and contract logistics are frequently used interchangeably. 3PL providers focus on logistics solutions and look for the optimal combination of assets available from capacity providers. 3PLs are less asset intensive and are thus nimbler in operation, and therefore have higher returns on assets employed. Their supply chain management expertise makes them increasingly counter-cyclical; the worse the cycle, the more companies need to optimize their supply chain. Moreover, the more integrated the service of a 3PL, the closer they are to the customers' operation. This closeness makes 3PL indispensable to the customer, as the 3PL provider becomes more a partner than a supplier. *A customer is more reluctant to change its 3PL provider than a 2PL. There is therefore higher customer loyalty and revenue stability*.

However, 3PLs do not deliver the kind of outrageous margins many in China are looking for. This is simply because 3PLs make money by helping customers save. It offers higher return than traditional transport because of higher growth of demand. Economies of scale are crucial for 3PLs to be profitable, as they need to support extensive logistics networks. Lack of scale is the reason why some Chinese logistics players see lower profitability for their 3PL business than traditional logistics services.

4PLs and 5PLs

The services of 3PLs sometimes overlap with the 4PLs. The 4PL segment is more lucrative because these firms charge consulting fees. The top three segments, namely 4PL, SCM software houses and 5PL solutions providers represent a small, but rapidly growing segment of the competitive market place for logistics. The three top segments focus on providing total logistics solutions for the entire supply chain management.

The Development of Logistics in China

A Look at the China Marketplace

Low visibility of inventory in motion and at rest is a major cause of the high logistics cost in China. Even the State Statistics Bureau does not have a logistics category, let alone other parameters. We extrapolate below some results of a survey done by the China Storage Association (CSA) of 2000 manufacturing, commercial and logistics companies this year:

- 87% of commercial enterprises handle 1-100,000 types of merchandise and another 7% handle more than 100,000 types. **Implication:** the diversification of merchandise entails high carrying and sorting cost, which demands complicated 3PL services.

- 57% of the manufacturing enterprises sell globally and 43% of all kinds of enterprises sell nationally. **Implication:** nation-wide and cross-border capability is a winning point for logistics providers.

- Inventory turnover of finished goods of manufacturing enterprises is 51 days (Exhibit 10). **Implication:** cost savings can be achieved by IT-based inventory management systems.

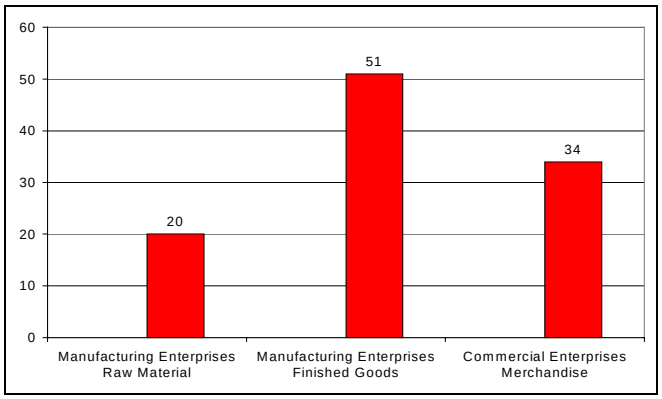
- For all logistics providers, the damage rate is higher than 2% and on-time rate lower than 90% (Exhibit 11). **Implication:** service quality is a major concern for outsourcing and could be a key differentiating factor.

- 21% of manufacturing enterprises and 13% of commercial enterprises outsourced their logistics in 2000 (Exhibit 12), a total increase of 5% over the previous year. **Implication:** growing outsourcing market.

- Supply of logistics capacity is greater than demand. **Implication:** single-function logistics are segmented and redundant, while information-based, integrated logistics are underserved.

Exhibit 10

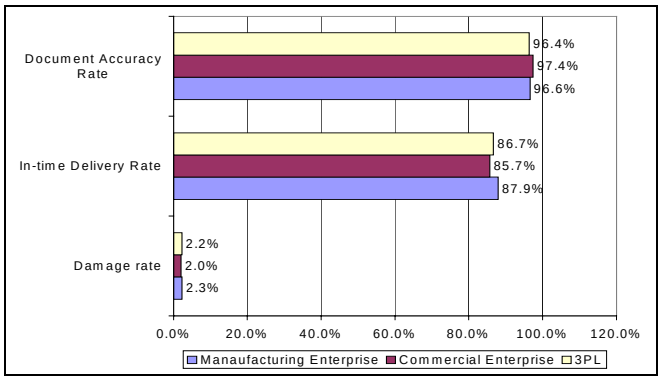
CSA Survey: Inventory Days of Chinese Companies



Source: China Storage Association (CSA), Morgan Stanley Research

Exhibit 11

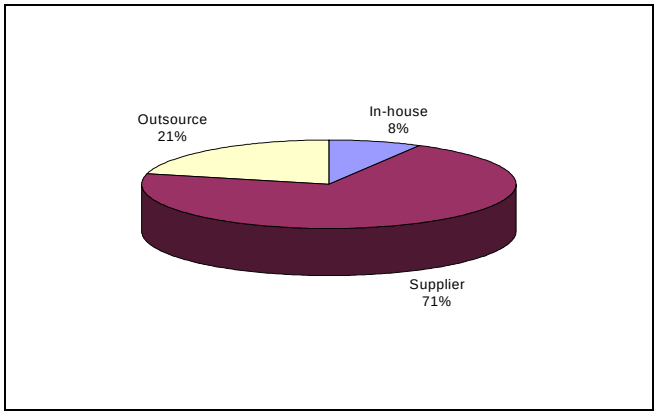
CSA Survey: Quality of Logistics Providers



Source: China Storage Association (CSA), Morgan Stanley Research

Exhibit 12

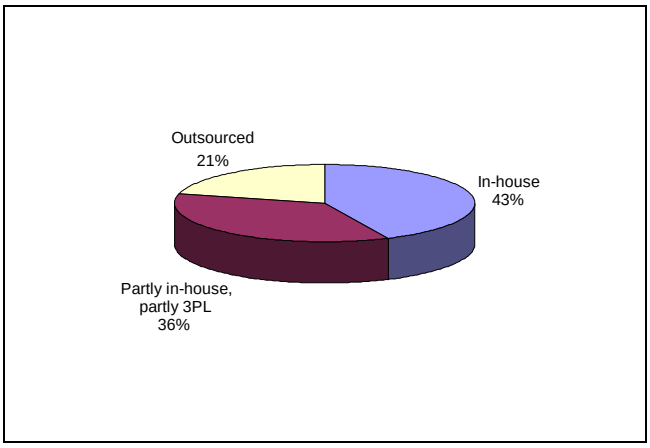
CSA Survey: Logistics Providers for Manufacturing Enterprises – Raw Materials Provision (2000)



Source: China Storage Association (CSA), Morgan Stanley Research

Exhibit 13

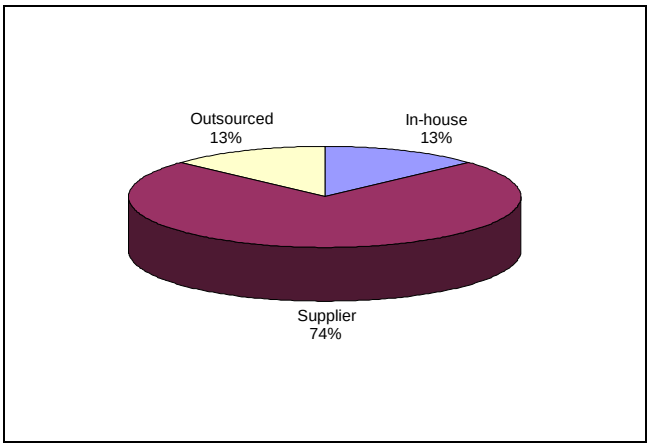
CSA Survey: Logistics Providers for Manufacturing Enterprises – Finished Goods



Source: China Storage Association (CSA), Morgan Stanley Research

Exhibit 14

CSA Survey: Logistics Providers to Commercial Enterprises



Source: China Storage Association (CSA), Morgan Stanley Research

The Segmented 2PL Market in China

As reflected by the CSA survey, logistics in China today is still more about the physical movement of goods than the management of supply chains. Companies outsource some basic functions but still organize the whole supply chain by themselves. Value-added services such as supply chain solutions and integrated logistics services are still in their infancy, while basic transportation is not hassle-free owing to inefficiencies of the transportation infrastructure. The major handicaps are outdated transportation and storage facilities, lack of modal points between modes, local and ministry protectionism, lack of logistics standards in technology, equipment and facilities, transport licensing across provincial borders and differential tax treatment of 3% or 5% on revenue. As the government has included the development of logistics services, especially 3PL services, in the Tenth Five-Year Plan, the above problems should be addressed.

Goods In Motion and At Rest, and Information Flow

Goods in Motion: Land, Water and Air

We will examine the various modes of transport in this section. Of goods transported domestically, the most popular mode is the highways, followed by railways and then the waterways (Exhibit 16).

Land

Trucking: Trucking in China is an extremely fragmented sector due to several structural factors. As a legacy of the planned economy, many manufacturers have their own fleets, with low utilization rates. Trucking services for hire has remained a cottage industry and barriers to entry are low. Due to the small size of most operators, only 20% of freight trucks in China are containerized. For long hauls, local protectionism is a big problem, which results in reloading of goods and empty returns. For example, non-Shanghai trucks are not allowed to enter Shanghai from 0700 to 2100 for traffic control, while Shanghai licensed trucks have full access. Road tolls represent 15-20% of trucking cost, proportionately 9 times higher than Europe. Because of these inefficiencies, electronics and food products cost 40-50% more to ship in China than in US.

The flipside of inefficiencies is always opportunities. Given its flexibility, trucking is still the mode of choice for finished goods producers in most mature economies: in US the trucking industry's share of the nation's freight bill increased to 81.5% in 2000. We expect this would be the same case in China. With China's WTO accession ahead, demand will be even stronger as foreign companies will be allowed to enter the wholesale and distribution sectors. The direction for truckers is clear: find out where money is being made and lost. With the government determined to eliminate local protection, industry leaders should be able to emerge from companies that can best meet rapidly emerging customer needs for containerization, cross- border transportation, reliable, guaranteed service and value-added services.

Rail: China had 68,000 km of railway tracks by October 2000, with only 27% double-tracked. The system is heavily used as it is cheap. The general policy is to give priority to passengers, and then to basic commodities from the agricultural and extraction industries, as shown in Exhibit 17. This policy results in seasonal availability of services. Passengers travelling during the long holidays

Exhibit 15

Cargo Transported in PRC (1999)

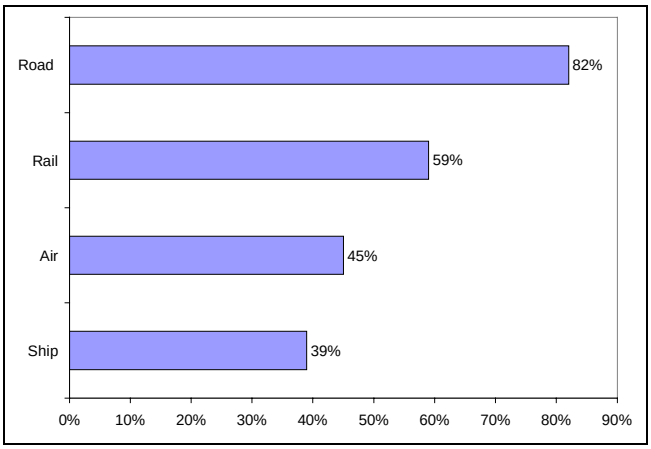
Mode	Vol. (mn tons)	Grth Y-Y	Length ('000km)	Grth Y-Y	Avg.Dist (km)	Grth Y-Y
Railways	1,672	1.9%	57.9	0.5%	768	0.7%
Highways	9,904	1.5%	1,352	5.7%	58	3.6%
Waterways	1,146	4.6%	117*	5.6%	1,855	4.7%
Civil Aviation	1.7	21.4%	1,522	1.1%	2,482	3.9%

Source: China Statistical Yearbook, Morgan Stanley Research

Note: *navigable inland waterways only

Exhibit 16

Preferred Transportation Modes of MNCs (1997)



Source: US-China Business Council, Morgan Stanley Research

in May, October and New Year, and agriculture harvests means little capacity for the free market. On frequently serviced routes such as Beijing to Shanghai, bookings can be made a week in advance. However, for less frequent routes such as to Xinjiang, bookings up to 30-40 days can be necessary. Transit times are long and service reliability is poor. A number of service elements taken for granted elsewhere, such as notification of arrival at rail stations, automated wagon tracking, and integrated information technology do not exist in China. Loss of refrigeration after reconfiguration of compartments at changeovers is not uncommon.

Foreign-trade related companies tend to use trucks instead of rail because the railway containers are not compatible with those used by shipping companies. Cargoes have to be unloaded and reloaded when using rail, resulting in higher handling costs and, more importantly, higher damage rates. However, a number of 3PLs such as PG Logistics and ST

Anda are heavy users of rail, as they have the scale to charter certain rail routes and thus are able to better control time scheduling and physical transportation operations. The net cost is around a third of trucking. APL Logistics, a wholly owned subsidiary of Neptune Orient Lines, went a step further in signing a memorandum of understanding with Eastern China Railway Express (ECRE) to take advantage of ECRE's comprehensive inland supply chain networks with its 160 rail hubs.

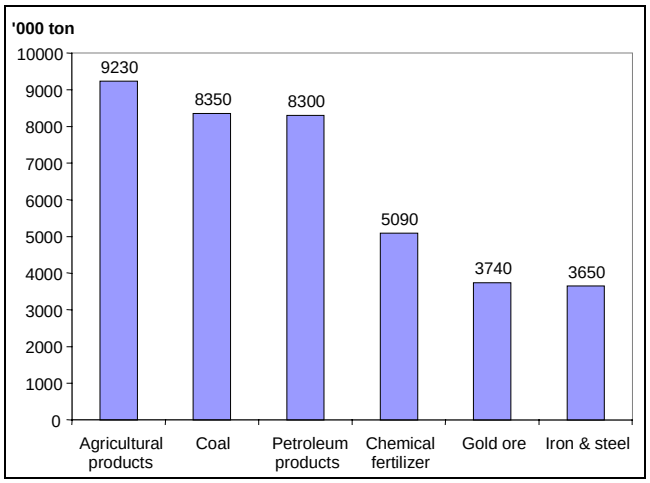
We expect deregulation of the rail system to move into high gear soon in order to meet the changing requirements of users of logistics services. For example, rail freight infrastructure has yet to meet containerized multi-modal transport demand. As China enters the WTO, China Rail will be under pressure to restructure to attract more commercial business, and to achieve higher efficiency. It is looking for foreign participation in rail freight-related business opportunities. According to a report in *Cargo News China*, the restructuring will establish separate market-oriented corporations to manage freight transport, passenger transport and railway infrastructure. It is likely that the authorities will release control over the transportation of "general merchandise" and free up prices step by step. Railway operators will compete with one another for market share, which is expected to raise efficiency and benefit shippers.

Water

River Shipping: River development has long been forgotten compared with rail and roads. State statistics show that the country has only spent about US$145 million on Yangtze shipping since 1978, less than the cost of building a single expressway. This is despite the fact the Yangtze's 55,300 kilometres of waterway represent half of the country's total river course and account for a significant share of its cargo traffic. Shipping along the Yangtze could be revived thanks to China's decision to open up and develop its western regions and the expected entry into the WTO. Cargo volume along the Yangtze trunk river is expected to rise to 300 million tones by 2010, compared with 186 million tonnes in 1999. By 2020, western regions should be able to sail to the sea by river, which will also mean that ocean-bound container vessels will be able to sail the other way to Chongqing. Changjiang Group, the largest river carrier in the country, carried a record-breaking 85 million tonnes of cargo in 1999, 46% of the total throughput of the river, thanks to the revival of trade. Containers and mineral-ore transportation were the major contributors to the growth.

Exhibit 17

Top Commodities Shipped by Rail (1999)



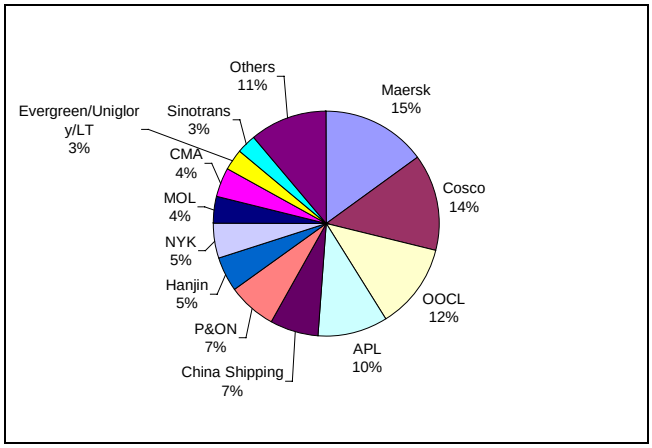
Source: Yearbook of China Transportation and Communications, Morgan Stanley Research

Another active river in China is the Pearl, with gross cargo volume second only to the Yangtze. However, water transport has fallen short of expectations in the past decade, despite the fast growth registered by bordering economies.

Ocean Shipping: Shipping has been among the most open sectors on the mainland for years. By the end of June 2000, there were nearly 80 wholly owned foreign shipping companies and branches, plus 120 joint-venture shipping companies operating in China. In general, many people in the industry welcome WTO accession, which means more competition but a larger pie. If China enters the organization in 2001, cargo destined for international markets is expected to rise to 650-700 million tones by 2005, compared with 400 million tones in 1999.

Container volumes are predicted to rise above 40 million TEUs by 2005, compared with 15 million TEUs in 1999. Once China joins the WTO, more than 100 countries will give it most favored nation treatment (MFN) and US MFN treatment for China will be settled once and for all. Chinese cargo dealers will be in a better position to expand overseas because in return WTO also provides China equal market entry opportunities in other member countries. The largest three Chinese carriers – COSCO, China Shipping Group and Sinotrans – will be the major beneficiaries. Small carriers will be driven out of the market.

Exhibit 18
Share of China Container Shipping Market, 2000



Source: Drewry Shipping Consulting, Morgan Stanley Research

Air

Air Express: Air express is the most lucrative segment among all cargo sectors. Over the past decade, the volume of air express has grown at about 20% per annum, while several Sino-foreign joint ventures have achieved a 30-45% growth. Forecasts in the Chinese media predict a doubling of air express volume in the coming five to seven years, thanks to rising foreign trade and bilateral air agreements.

Currently, foreign companies need to sign joint-venture agreements with Chinese partners in order to enter the market and are not allowed to operate domestic air express. After WTO entry, China will have to lift all restrictions on its air express market in the next four years, after which the competition ground will level.

Express mail services (EMS) under China Post dominate 70% of the domestic express market owing to China Post's extensive network and legislative protection. In the international arena, joint ventures between UPS, DHL, TNT and Fedex with Chinese companies have captured 50% share. Domestically, EMS also faces serious threats. In September 1993, China Rail established China Railway Express (CRE). Availing itself of the railway network, CRE has reached more than 150 cities and is planning to link its 5,500 railway stations to form a network. In February 1996, China Air Express (CAE) was founded by a consortium of airlines and airports. Within four years, its turnover has risen at about 20% a year for the past four years and the company has established more than 30 branch companies and 40 or so allied partners, capable of reaching more than 200 Chinese cities. Despite the competition among domestic players, we still envision EMS as a winner given its unparalleled network.

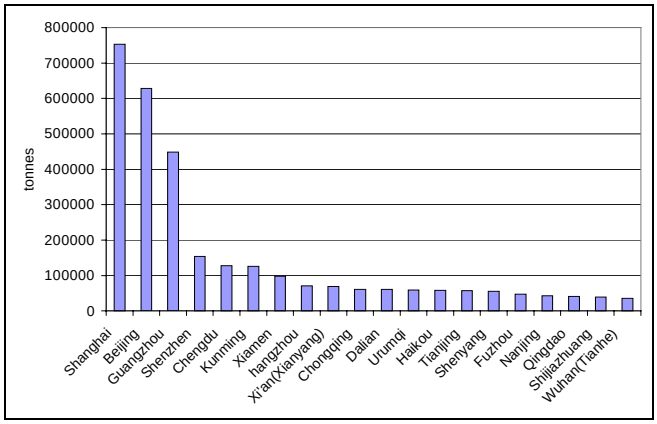
Air cargo: the air cargo sector is one of the biggest beneficiaries of China's WTO entry, as the trade of electronics and telecom equipment, the top commodity transported by air, is expected to get stronger. Last year, the electronics sector grossed US$118 billion in industrial output, up 34% from 1999, with exports up 41%. The Ministry of Information Industry announced recently that this sector was expected to double its gross industrial output by 2005.

Airline industry consolidation will also improve efficiency. After the consolidation, Air China will still carry the largest share of international air cargo, followed by China Eastern and China Southern. China Eastern is expected to benefit more from China's WTO entry, as it flies more international routes than China Southern. Moreover, its alliance with China Airlines, a leading global air cargo carrier from Taiwan, through equity investment in China Airlines Cargo, will help develop the infant air cargo market in China. Dragonair is also a winner of the industry consolidation and WTO entry. Air China is likely to realign its cargo capacity and work closely with Dragonair, to accommodate rising demand in the region.

Between Modes – Airports and Seaports

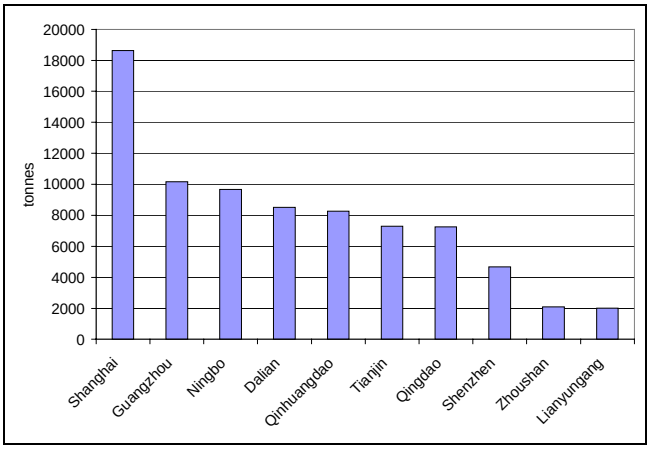
Both airports and seaports will benefit from China's entry to WTO, due to the sheer increase of cargo volume. Ports are also a highly concentrated industry, with high entry barriers and different ports do not often compete with each other directly due to geographical distance. The listed ports companies are Beijing Capital International Airport, Hutchison Whampoa, Cosco Pacific and China Merchants.

Exhibit 19
Top Airports for Cargo/Parcels – 1999



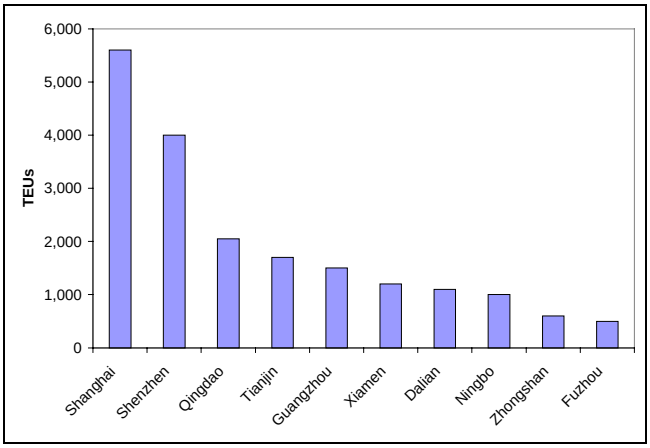
Source: China Cargo News, Morgan Stanley Research

Exhibit 20
Top 10 Coastal Ports by Throughput in China – 1999



Source: Yearbook of China Transportation and Communications, Morgan Stanley Research

Exhibit 21
Top 10 Container Ports by Throughput in China – 2000



Source: Cosco Pacific, Morgan Stanley Research

Goods at Rest – Warehousing

Warehousing in China barely meets customer needs due to poor infrastructure and inadequate information systems. High discrepancies in actual and recorded inventory data, high damage and missing rates, and a general lack of real-time product and order tracking have forced manufacturers to build their own facilities. Realizing these deficiencies, government and companies have been building modern logistics centers in major cities. With government support, this can be quickly addressed. Other than specially built warehouses, construction time is generally shorter and projects can be completed in a matter of six months.

Information and Fund Flows

The lack of visibility of inventory in motion and at rest is a major reason for the high logistics cost in China. While supply chain management is about delivering the right goods to the right place at the right time at the right price and in the right quantity, in China it is hard to get everything right due to the poorly designed, unlinked information systems of different modes. According to the CSA survey, 61% of Chinese logistics providers do not even have a logistics information system. Of the 39% with an information system, only 36% provide financial summaries of inventory to their clients. While 7% of the commercial enterprises hoped their logistics providers would collect payments for them, so far only EMS has been able to do so thanks to the backup of China Post and Post Savings. It is hard for others to do this due to a lack of trust from both shippers and recipients.

The Evolving 3PL Market in China

Moving Up the Ladder

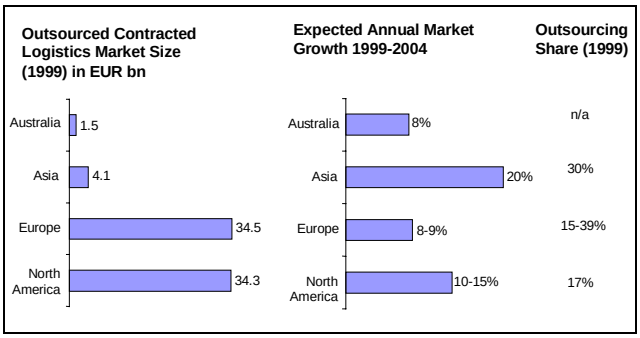
The value of a logistics service is in its ability to solve the customer's problem. The more difficult the transportation system and the higher the logistics costs, the better is the potential for 3PL scale and skill to end the state of segmentation. Though still tiny, China's 3PL landscape is evolving quickly, from traditional freight forwarding to more value-added contract logistics. Currently, most 3PLs we have come across cover the part of the supply chain from manufacturers to retailers.

Freight forwarding: Freight forwarders are brokers of transport space, managing the spread between demand for freight and the supply of dedicated freighter capacity. In China, the leading freight forwarders are Datian in airfreight forwarding, and Sinotrans and EAS in both air and sea freight forwarding. To date, these freight forwarders have benefited from overcapacity in the freight market, as they use a larger number of carriers. They will also be among the prime beneficiaries of the WTO entry. Apart from an increasing foreign trade volume, high value-added imports by China will prop up the actual worth of the agency trade. Such imports could include automobiles and parts, machinery and electrical products, and petrochemical products.

However, with increased visibility between shippers and carriers through the Internet, freight forwarders are facing the threat of being disintermediated. To avoid that, freight forwarders have to provide value-added services such as customs clearance and dedicated capacity.

Contract Logistics: Chinese logistics providers are increasingly moving from ad-hoc 2PL services to this subset of 3PL, which involves subcontracting transport tasks such as trucking and warehousing to capacity providers, although frequently 3PLs will retain their own operation capability in this field to ensure product integrity. The projects that normally fall under this category include a) warehouse management (b) customs broking/clearance and (c) trucking/distribution. Globally, logistics contracts usually last between three to five years. With asset ownership falling, and increased preference for shared use over dedicated facilities emerging among most 3PLs, we would expect contract periods to shorten, or at least become more flexible. Most logistics contracts in China are on one-year terms subject to renewal.

Exhibit 22
Global Contract Logistics Markets



Source: Datamonitor, HIDC Netherlands, TNT Post Group, Morgan Stanley Research

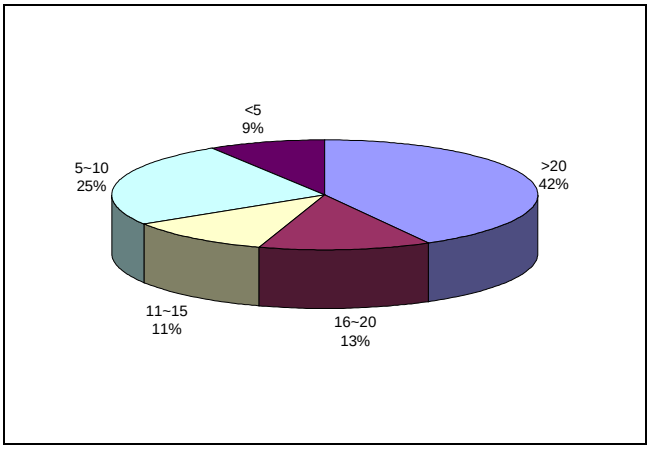
Drivers for 3PL Development in China

Global outsourcing to China: China is becoming the manufacturing center of the world, as MNCs increase outsourcing to China, which in turn drives the revenue growth of 3PL providers. Sembcorp Logistics estimates that logistics costs account for 5-8% of an MNC's selling costs and that for every 1% improvement in the logistics margin, the profit margin of an MNC could be boosted by 5-20%. Hence, we think the MNC has a strong incentive to shop for the most innovative global 3PL providers that can provide domestic solutions in China to improve on its logistics function.

Another factor leading to the trend of using third-party logistics is the shift in geographical trade patterns. A study by the US-China Business Council found that over 42% of foreign industrial and retail firms distributed their products in over 20 provinces in China (Exhibit 23) and more than 50% sold to more than 50 cities in China (Exhibit 24). This pattern requires logistics providers to focus more on rendering total distribution solutions, rather than just transportation services.

Exhibit 23

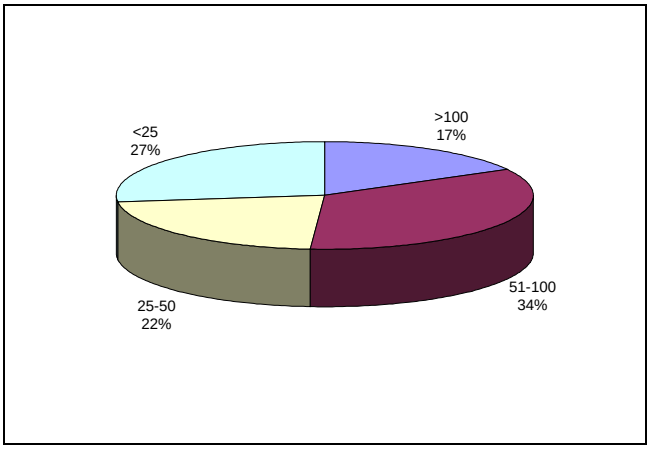
Number of Provinces in the Sales Network of MNCs in China



Source: US-China Business Council, Morgan Stanley Research

Exhibit 24

Number of Cities in the Sales Network of MNCs in China



Source: US-China Business Council, Morgan Stanley Research

An integrated East Asia around China: household demand must lead the economy for China to sustain high growth, which can be expected to sharply increase Chinese demand for goods from its Asian neighbors. Integration between China and Japan will continue to be driven by the huge difference in capital-labor ratios of these two economies. The integration of China and Southeast Asia through the goods market and China and Japan through the capital markets could eventually lead to one integrated economy in East Asia, which would demand regional 3PLs.

Emergence of mega-cities and national brands: we believe the only way for China to solve the rural income disparity is low-cost urbanization toward mega-cities. Cities with populations of 20 million or more will become common in China in 15 years' time. Densely populated cities cut down distribution cost, and hence increase the value of branded consumer franchises, leading to the emergence of large chain stores and hypermarkets with national brands, which calls for national 3PLs.

WTO effects: increased trade volume and FDI will translate into not only out-in and in-out logistics demands but also in-in logistics demands. Foreign 3PLs' entry serves to propel the domestic market and to make companies more mature through collaboration and competition.

In addition to the above macro trends, SOE reform will lead to spin-offs of non-core business and assets, fledgling private-sector development, e-commerce development, and companies' embracing the notion of mass customization, JIT and total cost concept, which will also boost 3PL growth.

Exhibit 25

Global 3PL Logistics Market by Geographic Theatre

Market	Market size (€ bn)	Growth rate (%)
UK	8	4
Continental Europe	85	10
US	92	20
Rest of the World	30	10
Total	**215**	

Source: Tibbett & Britten, Morgan Stanley Research

How Big Is the Market?

Potential Market for China Logistics

If one were to quantify the potential for the China logistics market, the words frequently used are "*big, enormous, substantial upside, low market penetration and virgin territory*." In our research on Asian logistics and particularly on China logistics, we find very little literature on the topic, whereas logistics research for the European and US markets is exhaustive.

What is the size of the logistics market in China? In this section of the report, we will quantify the current market for logistics and logistics service providers and the potential growth for these two markets. To assess the market potential for these two markets, our analysis will draw upon inferences from the US economy and that country's experience with logistics development. The current components of nominal GDP data for China do not include a breakdown of the logistics data that we need to build a logistics cost framework similar to those found in the developed economies. In the absence of reliable logistics data, we will estimate the total logistics costs for the China market by drawing upon the experiences of the US economy.

US Logistics Market

In "Managing Logistics in a Perfect Storm" by Wilson and Delaney (Prologis and Cass Information Systems, Inc, June 2001), the authors provide an interesting history of the development of the logistics market in the US. The three major cost components of logistics operation, according to the report, are inventory carrying, transportation and administration. In 2000, total business logistics costs exceeded US$1 trillion and accounted for 10.1% of the country's nominal GDP.

- *Inventory carrying costs:* The major cost components are interest charges, taxes, obsolescence, depreciation, insurance and warehousing. The inventory-carrying rate for the past 40 years has remained relatively steady at about 25%, except for periods of recession when the rate increased to above 30%.

- *Transportation costs:* In the US, the trucking industry has accounted for the bulk of the transportation costs, with inter-city trucking as the key contributor.

- *Administrative cost:* This cost is attributable to logistics administration and it accounts for less than 5% of the total logistics costs.

Wilson and Delaney separated the analysis of the US logistics market into two periods: (a) 1960-1979 and (b) 1980-2000. In the first 20 years (1960-1979), logistics costs averaged about 14.4% of nominal GDP. Transportation costs, which were economically regulated, averaged 8.2% of nominal GDP for the first 20 years (Exhibit 26). The authors calculated the averages using the numbers in the exhibit.

Exhibit 26

US Market: Cost of Business Logistics, 1960-1979

Year	Nominal GDP US$ tn	Business Inventory US$ bn	Inventory Carrying Rate %	Logistics Costs: Inv Carry US$ bn	Logistics Costs: Transp'n US$ bn	Logistics Costs: Admin US$ bn	Total U.S. Logistics US$ bn	Logistics % of GDP	Inventory as a % of GDP	Transp'n as a % of GDP
1960	0.53	125	25.0	31	44	3	78	14.7	5.8	8.3
1961	0.55	125	25.1	31	46	3	80	14.6	5.6	8.4
1962	0.59	133	25.0	33	52	3	88	14.9	5.6	8.8
1963	0.62	137	25.0	34	56	4	94	15.2	5.5	9.0
1964	0.66	141	25.0	35	60	4	99	15.0	5.3	9.1
1965	0.72	152	25.0	38	64	4	106	14.7	5.3	8.9
1966	0.79	168	25.0	42	68	4	114	14.4	5.3	8.6
1967	0.83	181	25.0	45	72	5	122	14.7	5.4	8.7
1968	0.91	194	25.0	48	78	5	131	14.4	5.3	8.6
1969	0.99	210	25.0	53	82	5	140	14.1	5.4	8.3
1970	1.04	222	25.0	56	91	6	153	14.7	5.4	8.8
1971	1.13	236	25.0	59	91	6	156	13.8	5.2	8.1
1972	1.24	256	25.0	64	97	6	167	13.5	5.2	7.8
1973	1.39	304	27.2	83	108	8	199	14.3	6	7.8
1974	1.50	360	29.0	104	116	9	229	15.3	6.9	7.7
1975	1.64	384	25.3	97	116	9	222	13.5	5.9	7.1
1976	1.82	408	25.0	102	133	9	244	13.4	5.6	7.3
1977	2.03	444	25.0	111	150	10	271	13.4	5.5	7.4
1978	2.30	517	27.0	140	175	13	328	14.3	6.1	7.6
1979	2.57	616	30.0	185	193	13	393	15.3	7.2	7.5

Source: National Income and Products Accounts - Levels; Survey of Current Business March 2001. U.S. Statistical Abstract: U.S. Department of Commerce. Transportation in America: Rosalyn Wilson, 2000, ENO Transportation Foundation, Washington, DC; ProLogis and Cass Information Systems, Morgan Stanley Research

In the second half of 1970s, manufacturing and distributing businesses were required to invest in excessive inventory due to unreliable transportation services, and the surplus inventory was warehoused within the major metropolitan areas. The only exception was the surface transportation industry, which experienced significant growth because the private trucking was operated by the manufacturing and distributing businesses.

In the second 20 years (1980-2000), suppliers came out with innovations to lower logistics costs within the transportation industry. Transportation costs, which accounted for 7.6% of nominal GDP in 1980, declined to 6% in the 1990s. In the early 1980s, express parcel operators like Federal Express created the time-critical shipment industry and United Parcel Service took fast-cycle procurement to a much higher level (Exhibit 27).

Exhibit 27

US Market: Cost of Business Logistics, 1980-2000

Year	Nominal GDP US$ tn	Business Inventory US$ bn	Inventory Carrying Rate	Logistics Costs: Inv Carrying US$ bn	Logistics Costs: Transp'n US$ bn	Logistics Costs: Admin US$ bn	Total U.S. Logistics US$ bn	Logistics % of GDP	Inventory as a % of GDP	Transp'n as a % of GDP
1980	2.80	692	31.8%	220	214	17	451	16.1	7.9	7.6
1981	3.13	747	34.7%	259	228	19	506	16.2	8.3	7.3
1982	3.26	760	30.8%	234	222	18	474	14.5	7.2	6.8
1983	3.54	758	27.9%	211	243	18	472	13.3	6	6.9
1984	3.93	826	29.1%	240	268	20	528	13.4	6.1	6.8
1985	4.21	847	26.8%	227	274	20	521	12.4	5.4	6.5
1986	4.45	843	25.7%	217	281	20	518	11.6	4.9	6.3
1987	4.74	875	25.7%	225	294	21	540	11.4	4.7	6.2
1988	5.11	944	26.6%	251	313	23	587	11.5	4.9	6.1
1989	5.44	1005	28.1%	282	329	24	635	11.7	5.2	6.0
1990	5.80	1041	27.2%	283	351	25	659	11.4	4.9	6.1
1991	5.99	1030	24.9%	256	355	24	635	10.6	4.3	5.9
1992	6.32	1043	22.7%	237	375	24	636	10.1	3.8	5.9
1993	6.64	1076	22.2%	239	396	25	660	9.9	3.6	6.0
1994	7.05	1127	23.5%	265	420	27	712	10.1	3.8	6.0
1995	7.40	1211	24.9%	302	441	30	773	10.4	4.1	6.0
1996	7.81	1240	24.4%	303	467	31	801	10.3	3.9	6.0
1997	8.32	1280	24.5%	314	503	33	850	10.2	3.8	6.0
1998	8.79	1323	24.4%	323	529	34	886	10.1	3.7	6.0
1999	9.30	1379	24.1%	332	554	35	921	9.9	3.6	6.0
2000	9.96	1485	25.4%	377	590	39	1006	10.1	3.8	5.9

Data Sources: National Income and Products Accounts - Levels; Survey of Current Business March 2001. U.S. Statistical Abstract: U.S. Department of Commerce.
Transportation in America: Rosalyn Wilson, 2000 ENO Transportation Foundation, Washington, DC; ProLogis and Cass Information Systems, Morgan Stanley Research

Since 1980, transportation costs have declined to 5.9% of nominal GDP, even with the 1991-92 recession and low growth. More importantly, the average inventory-carrying cost, which exceeded 6% of nominal GDP during the 1980s, declined to 3.8% of nominal GDP during the 1990s and 2000. Put simply, logistics has changed the fundamental business operating models of developed economies.

Implications for the China Logistics Market

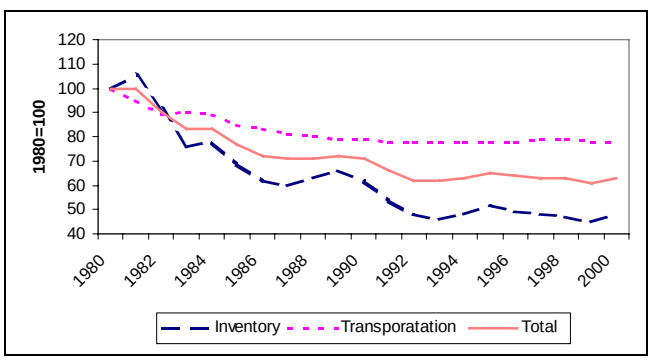
With a nominal GDP of Rmb8,940 billion (US$1,077 billion) at the end of 2000, we estimate China's economy is roughly equal to the size of the US economy in 1970. For the past 10 years, China nominal GDP (1990-2000) grew at annualized 17%, significantly higher than the growth rate for the US economy of 7% from 1960-1970.

In 1970, logistics costs in the US accounted for 14.7% of the country's nominal GDP. Inventory-carrying cost accounted for 5.4% of the nominal GDP, while transportation cost accounted for 8.8%. While the nominal GDP of China was US$1,077 billion in 2000, we think the logistics cost for the China market might be higher than US$158 billion, or 15% of the country's nominal GDP, for two reasons:

- The transportation industry is highly fragmented, and the relative inefficiency in most of the transportation modes – railroads, trucking, and shipping – could result in significantly higher transportation costs.
- Warehousing infrastructure is relatively poor and is not structured to meet even the basic requirements of MNCs. This would lead to increased inventory-carrying costs due to the higher levels of inventory maintained by the production facilities.

Exhibit 28

US: New Index of Business Logistics Costs, 1980-2000



Source: ProLogis, Morgan Stanley Research

A more realistic estimate of the total logistics costs for the China market could be 20% of the country's nominal GDP, or about US$215 billion at the end of 2000. This estimate is broadly supported by various government statistical sources and logistics journals. We think the bulk of the logistics costs are in inventory carrying and transportation. China's entry to the WTO should lead to lower logistics costs, as significant improvement in the inefficiency of the logistics market will be imperative.

According to Bo Grabowski, general manager for distribution for Maersk Logistics China, "China is a market that will continue to increase in importance, not least due to its continued integration into the world economy." Moreover, Maersk believes the demand for better and more cost effective distribution will increase exponentially, particularly when China enters the WTO.

Significant Upside for 3PL Service Providers in China

According to various leading industry publications, the market penetration of 3PLs in US is estimated to be about 8%; in Europe the penetration rate is believed to be about 10%. In Asia, we believe the penetration rate is significantly below 5% and we estimate the market penetration for 3PLs in the China logistics market to be about 2%. This would suggest a 3PL market of US$4.3 billion last year, less than a tenth of the US 3PL market.

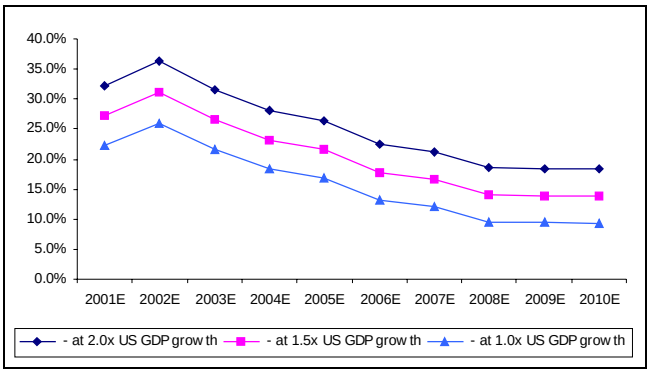
For the next 10 years (2000-2010), we think the annualized growth of the 3PL service providers could be 20%. Our conservative and aggressive annualized growth assumptions for the next 10 years are 16% and 25%, respectively. However for 2002-2005, we believe the annualized growth rate could be 30% or higher, because WTO entry could stimulate huge demand for 3PL services.

Our base-case growth assumption for the 3PL market is that the nominal GDP growth rate of China will be 1.5 times the growth rate of the US, and is compiled using the following three factors:

1) Higher growth of China's nominal GDP: In 1980-2000, China's nominal GDP growth was about 2.7 times that of the US for the period 1950-1970. For 2000-2020, we have assumed the nominal GDP growth rate will be between 1.0 and 2.0 times higher than the US nominal GDP growth rate between 1970-1990 (Exhibit 30).

Exhibit 29

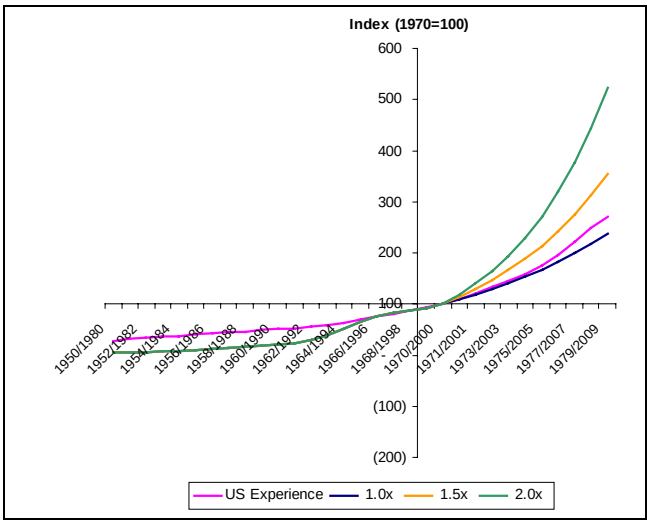
China's 3PL Growth Rate, 2001-2010E



E = Morgan Stanley Research Estimates
Source: Datastream, Morgan Stanley Research

Exhibit 30

Nominal GDP Growth: China versus US

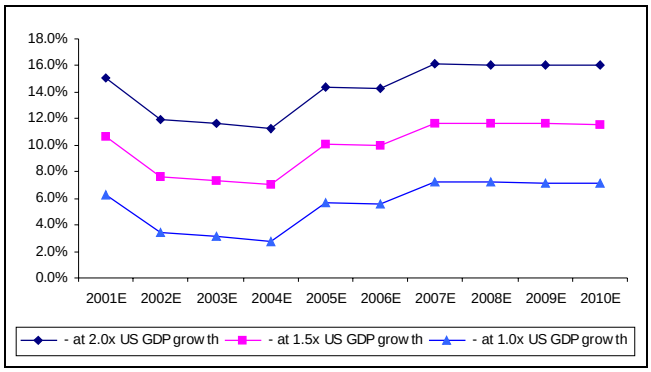


Horizontal scale = US/China nominal GDP corresponding year
Source: Datastream, Morgan Stanley Research

2) Logistics cost to decline as efficiency improves: As China opens its economy and trade to the global market, we think the influence of the multinational corporations and foreign logistics service providers could drive innovations in supply chain management. In the 1980s, operators like Federal Express and United Parcel Services drove down the logistics cost in the US economy using their innovative delivery operations. We think total logistics cost could decline to 15% of nominal GDP in 2010, from the current estimated level of 20%, as foreign logistics players are allowed to participate in the market (Exhibit 32).

Exhibit 31

China's Logistics Market Growth Rate, 2001E-2010E



E = Morgan Stanley Research Estimates
Source: Datastream, Morgan Stanley Research

3) Increased 3PL market penetration: We expect the market penetration of 3PL service providers to increase to 5% in 2010 from the current 2%. Driving the 3PL growth in China will be outsourcing of MNC's supply chain management functions to those 3PL service providers that can provide a global logistics network and quality service at a reasonable cost.

We think our base-case growth rate for 3PL is a realistic and conservative estimate, as the global 3PL market is assumed by most of the leading research publications on logistics to be able to sustain an annualized 15% growth rate for the next 5-10 years.

Exhibit 32

Assessing China's 3PL Market Potential, 2000-2010E

	2000	2001E	2002E	2003E	2004E	2005E	2006E	2007E	2008E	2009E	2010E
Nominal GDP (US$ bn)											
- at 2.0x US GDP growth	1,077	1,271	1,500	1,770	2,088	2,464	2,908	3,431	4,048	4,777	5,637
- at 1.5x US GDP growth	1,077	1,223	1,388	1,575	1,787	2,029	2,303	2,613	2,966	3,367	3,821
- at 1.0x US GDP growth	1,077	1,174	1,280	1,395	1,520	1,657	1,806	1,969	2,146	2,339	2,550
Nominal GDP (Rmb bn)											
- at 2.0x US GDP growth	8,940	10,549	12,448	14,689	17,332	20,452	24,133	28,476	33,602	39,649	46,785
- at 1.5x US GDP growth	8,940	10,147	11,517	13,072	14,836	16,839	19,112	21,692	24,620	27,943	31,715
- at 1.0x US GDP growth	8,940	9,745	10,622	11,578	12,620	13,755	14,993	16,342	17,813	19,416	21,163
Logistics market as a % of GDP	20.0%	19.5%	18.5%	17.5%	16.5%	16.0%	15.5%	15.3%	15.0%	14.8%	14.5%
Logistics market (Rmb bn)											
- at 2.0x US GDP growth	1,788	2,057	2,303	2,571	2,860	3,272	3,741	4,343	5,040	5,848	6,784
- at 1.5x US GDP growth	1,788	1,979	2,131	2,288	2,448	2,694	2,962	3,308	3,693	4,122	4,599
- at 1.0x US GDP growth	1,788	1,900	1,965	2,026	2,082	2,201	2,324	2,492	2,672	2,864	3,069
3PL penetration rate	2.0%	2.3%	2.8%	3.3%	3.8%	4.2%	4.5%	4.7%	4.8%	4.9%	5.0%
3PL market (Rmb bn)											
- at 2.0x US GDP growth	35.8	47.3	64.5	84.8	108.7	137.4	168.3	204.1	241.9	286.6	339.2
- at 1.5x US GDP growth	35.8	45.5	59.7	75.5	93.0	113.2	133.3	155.5	177.3	202.0	229.9
- at 1.0x US GDP growth	35.8	43.7	55.0	66.9	79.1	92.4	104.6	117.1	128.3	140.3	153.4
3PL market (US$ bn)											
- at 2.0x US GDP growth	4.3	5.7	7.8	10.2	13.1	16.6	20.3	24.6	29.1	34.5	40.9
- at 1.5x US GDP growth	4.3	5.5	7.2	9.1	11.2	13.6	16.1	18.7	21.4	24.3	27.7
- at 1.0x US GDP growth	4.3	5.3	6.6	8.1	9.5	11.1	12.6	14.1	15.5	16.9	18.5
Logistics market growth rate (%)											
- at 2.0x US GDP growth		15.0	11.9	11.6	11.3	14.4	14.3	16.1	16.1	16.0	16.0
- at 1.5x US GDP growth		10.7	7.7	7.4	7.0	10.1	10.0	11.7	11.6	11.6	11.6
- at 1.0x US GDP growth		6.3	3.4	3.1	2.8	5.7	5.6	7.2	7.2	7.2	7.2
3PL market growth rate (%)											
- at 2.0x US GDP growth		32.3	36.3	31.6	28.1	26.5	22.5	21.3	18.5	18.4	18.4
- at 1.5x US GDP growth		27.3	31.1	26.5	23.2	21.6	17.8	16.6	14.0	13.9	13.9
- at 1.0x US GDP growth		22.2	25.9	21.5	18.3	16.8	13.1	12.0	9.5	9.4	9.3

E = Morgan Stanley Research Estimates

Source: Company data, Morgan Stanley Research

Beyond The Yellow Brick Road – Where the Future Lies

Given its current segmented 2PL market, evolving 3PL landscape and strong 3PL growth potential, where is China's logistics market heading? We forecast the following trends for the future.

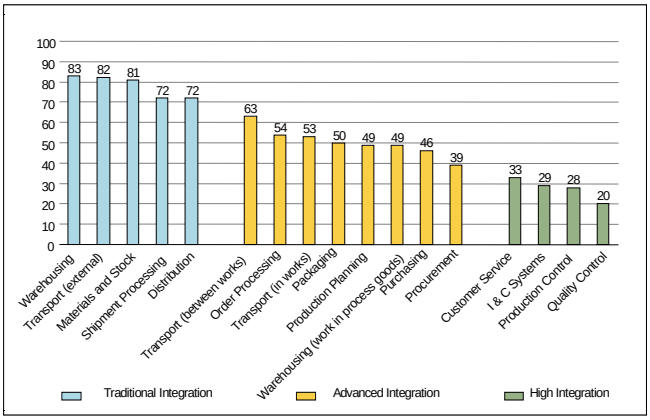
From segmentation to integration: As customers increasingly demand hassle-free seamless integrated logistics services and foreign logistics players and leading domestic logistics providers push to achieve that, segmentation will likely end. Near term, the seamless integration might be disrupted by the recent terrorist attacks in the US, where our chief economist thinks that growing fragmentation could lead to the world turning its back on globalization. However, we think the emergence of China as a key player in world trade growth is unstoppable and globalization and seamless integration of logistics services would prevail over the longer term.

From fragmentation to consolidation: With foreign competition coming along with WTO entry, inefficient smaller companies will be driven out of the market. Only strong firms that can quickly adapt will survive and develop. Consolidation will result in a few industry leaders worth investing in, in our view. This is in line with experience overseas. For example, the express companies in the US have undergone significant consolidation from 1975 to 1995. During this time FedEx, UPS, Airbourne and Emery increased their aggregate US express market share from 20% to 75%.

From basic logistics to value added: From the differences between the services provided by European 3PLs (Exhibit 33), the 'so-called' Chinese 3PLs (Exhibit 34) and the gap between customer needs (Exhibit 35) and services offered, we can see that Chinese logistics providers need to extend their services to more advanced logistics integration.

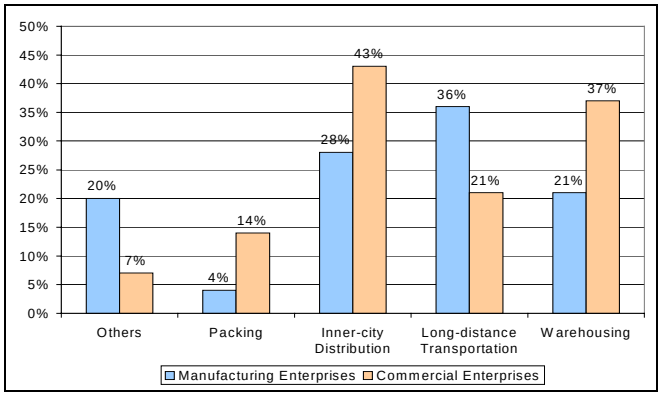
From generalist to specialist: Two areas of specialization should emerge. One is the specialization of commodities handled, such as fast-moving consumer goods and high value items like PCs and mobile phones. The other is inter-city versus intra-city. As explained in the geography section, mega-cities will evolve due to China's landscape. Moreover, traffic controls in a city mean trucks from other cities are not allowed in during the day. Specialists for logistics within a city to the last mile, such as the logistics subsidiaries of Tingyi and Dazhong Development, should also evolve.

Exhibit 33
Activities of European 3PL Providers



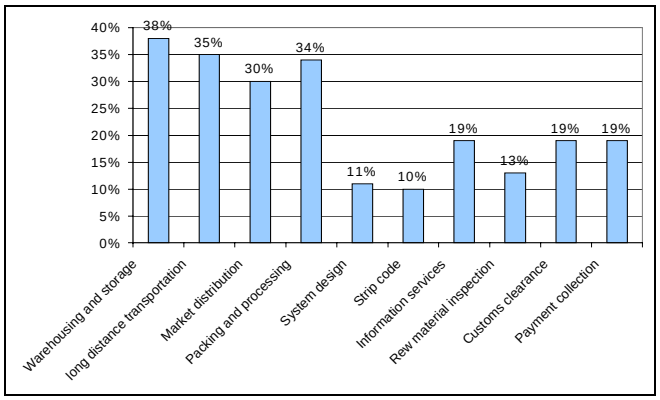
Source: China Storage Association, Morgan Stanley Research

Exhibit 34
CSA Survey: Activities of Chinese 3PL Providers



Source: China Storage Association, Morgan Stanley Research

Exhibit 35
CSA Survey: 3PL Services Demanded by Companies



Source: China Storage Association, Morgan Stanley Research

From scale to skill: 3PL is increasingly driven by consultancy style, open-book contract wins, rather than volume-based mandates. Furthermore, growth in 3PL is not just a product of economic growth – it is a function of companies paying more attention to supply chain inefficiencies at bad times.

From asset heavy to tech savvy: Reduced asset intensity increases nimbleness. As a corollary to increased partnership, quality 3PLs are assuming lower fixed-cost risks, and are instead being remunerated for their abilities as information managers. In the US, non-asset based logistics providers trade at higher valuation multiples than their asset-based peers. There is evidence that asset-based operators are actually being "punished" by the market for not being as flexible as their non-asset-based peers. However, in China, a strategic stock of assets is necessary to ensure quality of service and customer trust.

From closed contract to open contract: New logistics contracts awards frequently involve the formation of partnerships and the sharing of savings with the clients.

From national to regional/global: As large corporations become increasingly multinational, 3PL providers with international credentials stand to gain, at the expense of local operators. One of the key factors in the selection of a global logistics provider is its footprint of operations and infrastructure that enables management of the majority of the customer's multi-continent sourcing, transportation, warehousing, distribution and delivery needs.

To summarize, supply chain management provides total cost optimization by an integrated approach and customer focus by value-added services through a combination of skill, technology and physical assets. Logistics companies that recognize the trend will emerge as winners, in our view.

The Existing Players

While most of the logistics providers claim to be 3PLs, most in fact offer a mixture of 2PL and 3PL services, with the bulk of business being 2PL. It is difficult to find pure 3PLs in China, as the quality of transportation services is poor. 3PL providers tend to perform some essential 2PL functions to assure service quality. In this section, we look at the various firms from the basic business they emerge from and their pedigree (foreign, JV and local).

By Business Origin

Goods in motion. Most logistics providers start out handling goods in motion. They are mainly express mail/parcel deliverers, freight forwarders or shipping companies. The national players are SOEs originally set up by various ministries, such as Sinotrans (Foreign Trade), COSCO (Shipping), and China Post, China Rail and EAS (Public Security). Most of them have large assets, administrative advantage and strong relationships with other SOEs. However, their strengths could also be a burden in transforming to a higher value-added service provider. With their key assets in and revenue from transportation, management focus is unlikely to be fully devoted to developing a 3PL business. Moreover, these assets may not meet the quality required for modern logistics services. Finally, the companies lack the skill and experience of integrated logistics management, and significant effort is required to strengthen existing management. Most of the listed transportation companies, such as China Eastern Airlines, China Southern Airlines, Cosco Pacific, China Merchant Holdings and China Shipping, remain more transportation oriented than 3PLs.

Goods at rest. These are the warehouse providers. The main player is China Material Storage and Transportation Company. With the government keen to build regional distribution centers, there are significant opportunities in this area. While land is not rare, skill is in terms of provision of comprehensive storage, packaging, light assembly, and sorting and labelling.

The last mile. At argued earlier, large city populations and traffic restrictions make door-to-door delivery a specialist business. Companies in this area tend to be either to be unlisted small companies or subsidiaries of listed companies like Tingyi and Dazhong Development.

Foreign players. These tend to be JV logistics companies such as ST Anda (Sembcorp Logistics), APL Logistics, Danzas, TNT, Maersk Logistics and Inchcape. These groups have the advantage of skills and experience in modern logistics and a global network. We believe the foreign-local joint ventures are formidable players for their complimentary combination, while the pure foreign set-ups lack the physical and customer network in China to build a critical mass in time for the competition.

Users of logistics services. A number of manufacturing and distribution companies are entering the competition. Examples are Haier Logistics and Tingtong (a subsidiary of Tingyi), which has transformed its in-house distribution division into an independent logistics services company. They have the advantage of an existing critical mass to build a network of regional distribution centres and significant volume to outsource. For example, 8% of Tingyi's 2000 revenue amounts to US$560 million, a conservative starting point for in-house logistics operation.

By Ownership

Due to licensing restrictions and historical factors, this classification would divide the players into pure domestics, JV and foreign. With WTO entry, China will open up most of its logistics sector to foreign competition. We expect the industry to see major consolidation through M&A activities.

Listed Companies and M&A Potential

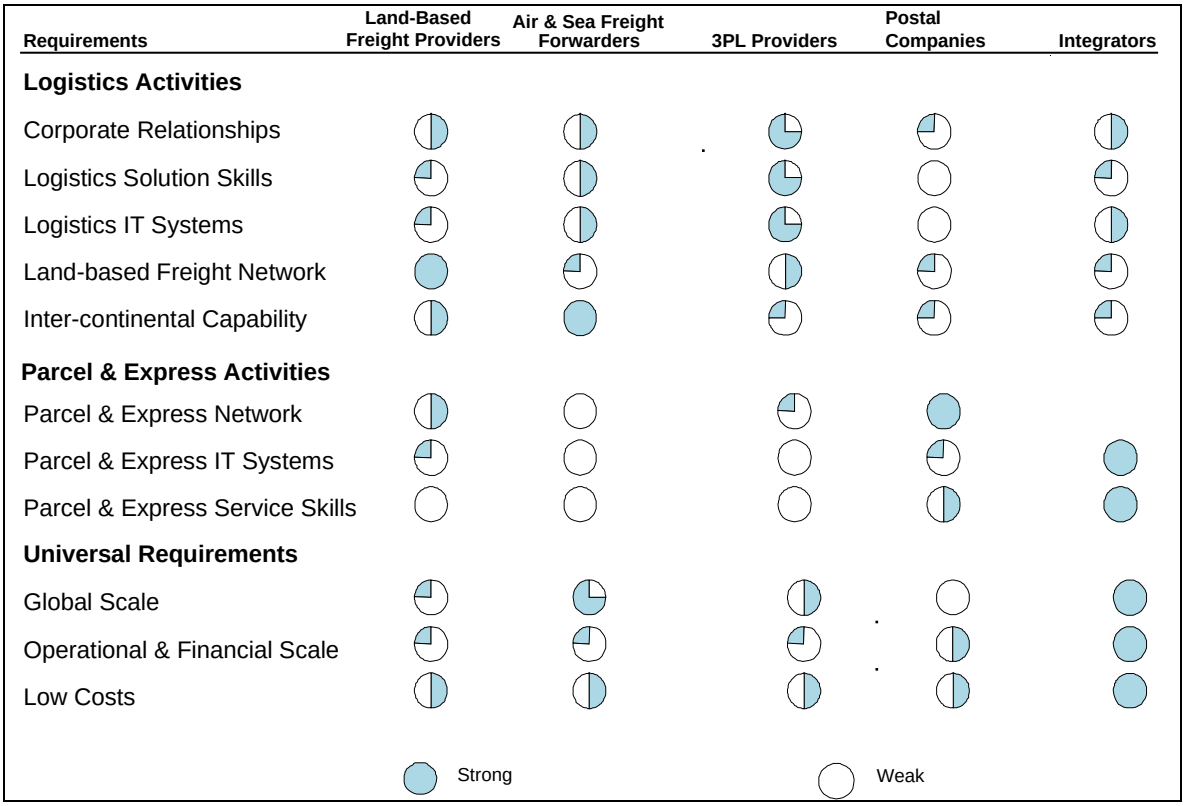
Spotting the Winners

There is no single winning strategy in the logistics industry. Both full service providers and sector niche players could be winners, as long as they can leverage their strengths.

Exhibit 36 lists key attributes for different players in the logistics arena that serve as a checklist for selecting winners.

Exhibit 36

Key Attributes for Successful Logistics Providers



Source: Morgan Stanley Research

Existing listed companies. China Resources Enterprise (CRE) has announced a plan to transform itself from a diversified conglomerate into a leading distribution business in Hong Kong and China, though its distribution and logistics services are quite different from our definition of 3PL. Moreover, CRE is still in the process of negotiating with its parent on the acquisition of distribution assets in China and little information is available.

Hutchison Whampoa owns significant port assets, which, out of the spectrum of transportation assets, we view favorably. Industry sources suggest that Hutchison Whampoa has teamed up with Tibbett & Britten to handle hypermarket chain store logistics in Beijing. While 3PL requires the right blend of asset control, client relationship, geographical coverage, supply chain management skills and technology (Exhibit 36), we do believe these two companies have 3PL potential. Both do not have the legacy of a large pool of transportation assets, although Hutchison has its international network of strategically located seaports.

Other listed logistic plays still adopt 2PL niche strategies. Cosco Pacific, China Shipping development, China Eastern, Dragonair and Beijing Capital International Airport have yet to demonstrate any significant moves into 3PL services. These companies do not seem to possess as many winning attributes for full-service 3PLs as China Resources and Hutchison Whampoa, but as 2PL niche players they are well positioned to capitalize on the logistics development in China and to reap further benefits. (The Cosco group has some logistics operations in China, but it is uncertain whether these will be injected into Cosco Pacific or Cosco International.) China Merchant Holdings has substantial port assets. However, a profitable logistics joint venture with Sembcorp Logistics – a 3PL in Shekou called ST Anda – is being held at the unlisted parent level. SembCorp Logistics is listed in Singapore.

China Merchants also has a small stake in a 4PL/5PL provider called Dichain, which is a consultancy and software company specializing in logistics management that has just started generating revenue in 2001. Both companies' developments need monitoring, specifically regarding the injection of logistics assets from parents. Among these 2PLs, we like the port plays more than the shipping companies and airlines. From Exhibits 37 and 38, we can see that the port businesses enjoy both higher margins and higher returns because of the high throughput concentration at the major ports. In contrast, shipping and airline companies have to compete in markets with over-capacity, low margins and low returns.

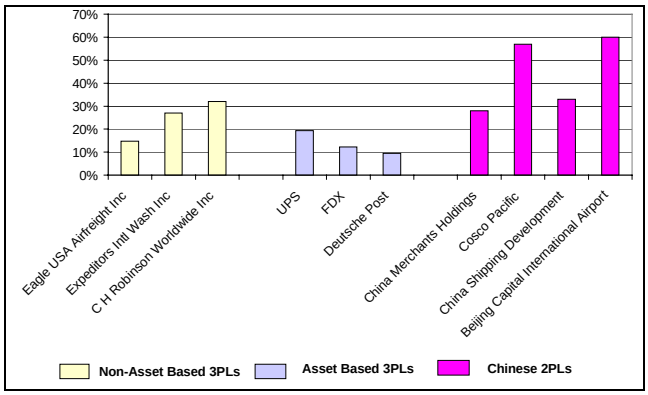
Watch for Transformation from 2PL into 3PL

To show why many 2PLs are moving towards 3PLs and asset-based 3PLs towards non-asset based 3PLs, we compared the margins (Exhibit 37) and asset provisions (Exhibit 38) among these different groups of players. As we said earlier, 3PLs cannot make exceptional EBITDA margins, since they make money by helping clients to save. 2PLs have higher EBITDA margins than 3PLs because they have higher operating leverage and assume higher market risks, but asset turnover is lower due to the asset base. The beauty of 3PLs is high ROE from high sales with a low assets base plus high growth. Post-tax ROE for Exel was 25.7% in 1999, versus the less than 10% ROE for 2PLs in China. To seek higher returns and growth, many 2PLs are transforming themselves into 3PLs and some asset-based 3PLs are migrating to non-asset based 3PLs.

Though the unlisted Sinotrans, COSCO Group, China Post, EAS and PG Logistics are still small in terms of their 3PL business, they can always seek M&As to jump-start their transformation. The first three names have plans for overseas listings. We include comparable valuations for selected logistics companies in Exhibit 42.

Exhibit 37

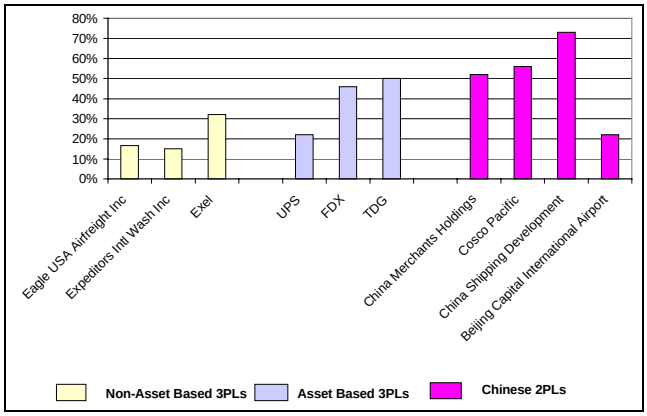
EBITDA Margins for Different Logistics Players (2000)



Source: Morgan Stanley Research

Exhibit 38

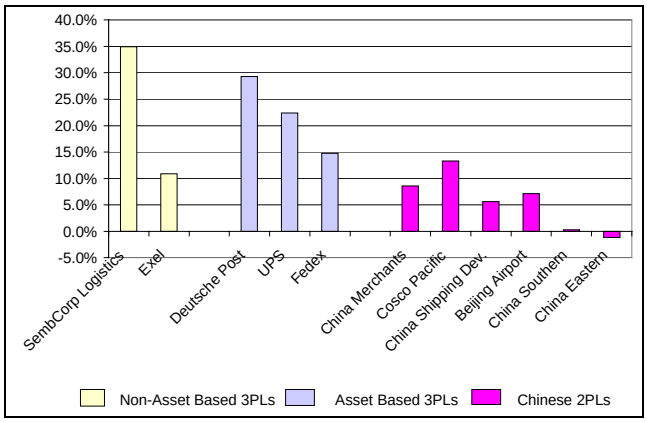
Depreciation as a Proportion of EBITDA for Logistics Providers (1999)



Source: Morgan Stanley Research

Exhibit 39

ROE of Different Logistics Players (2000)



Source: Company data, Morgan Stanley Research

Exel's ROE is based on 2001 estimate. Prior to the merger, the ROE for Exel was 26% in 1999; after the merger, ROE declined to 2% due to post-acquisition goodwill writedown. The normalized ROE is about 10-11% as indicated by our 2001 estimate.

Exhibit 40

Capex Ratio, Margin and ROE Comparison Among Logistics Players (2000)

Companies (%)	Depre/EBITDA	Gross Margin	EBITDA Margin	EBIT Margin	ROE
China Merchants	42	35	28	18	8.6
Cosco Pacific	54	60	57	23	13.3
China Shipping Dev.	61	19	33	11	5.6
Beijing Airport	39	60	60	36	7.1
China Southern	61.7	9.0	22.0	8.4	0.2
China Eastern	66.1	6.3	24.5	8.3	-1.2
SembCorp Logistics	24.8	20.4	32.2	24.2	34.9

Source: Factset, Company data, Morgan Stanley Research

Exhibit 41

Comparison of Assets of Chinese Companies

Company	Vehicles Vessel (dwt)	Bulk-cargo ships	Container freighters	Warehouses sq m	Stockpiling sq m	Domestic offices	Overseas offices	Countries
Sinotrans	>3,000	2,000,000	75	5,600,000	n/a	>300	37	15
EAS	>800	n/a	2	20,000	93,000	93	9	5
COSCO Group	1,290	6,000,000	118	n/a	1,600,000	>300	>100	>80
China Post	>32,000	n/a	n/a	>10,000,000	n/a	>66,000	0	n/a

Source: Company data, Morgan Stanley Research

Exhibit 42

Global Logistics Companies: Comparable Valuations, 2001E-2002E

Company	Country	Shr Price (2/10/01)	Mkt Cap (US$mn)	P/E 2001E	P/E 2002E	LT Proj Growth	PEG 2001E	PEG 2002E	EV/EBITDA 2001E	EV/EBITDA 2002E	EV/EBIT 2001E	EV/EBIT 2002E	P/BV 2001E	P/BV 2002E
USA - Non-Asset Based														
CH Robinson*	USA	US$27.80	2,351	27.8	24.2	15%	1.9	1.6	14.0	12.3	16.0	13.7	6.6	5.5
EGL*	USA	US$8.58	419	NM	21.5	15%	NM	1.4	NM	7.8	NM	14.7	1.1	1.1
Expeditors Int'l**	USA	US$46.44	2,440	25.8	22.3	21%	1.2	1.0	NAV	NAV	NAV	NAV	NAV	NAV
Average				26.8	22.6		1.5	1.4	14.0	10.1	16.0	14.2	3.8	3.3
Median				26.8	22.3		1.5	1.4	14.0	10.1	16.0	14.2	3.8	3.3
USA - Asset Based														
Federal Express*	USA	US$36.50	10,860	18.3	24.3	13%	1.4	1.9	5.4	5.5	11.7	14.4	1.8	1.7
United Parcel Services*	USA	US$50.10	12,762	24.1	22.3	15%	1.6	1.5	2.8	2.6	3.7	3.4	5.4	5.0
Ryder System*	USA	US$19.59	1,185	13.1	10.9	10%	1.3	1.1	4.2	3.7	16.3	10.5	0.9	0.9
CNF Inc.*	USA	US$22.26	1,087	63.6	24.7	13%	4.9	1.9	7.0	6.0	24.3	12.9	1.0	1.0
Average				29.8	20.6		2.3	1.6	4.8	4.5	14.0	10.3	2.3	2.2
Median				21.2	23.3		1.5	1.7	4.8	4.6	14.0	11.7	1.4	1.4
Europe - 3PLs														
Kuehne & Nagel**	Switzerland	SFr60.50	902	9.3	8.5	17%	0.6	0.5	2.3	2.0	3.5	3.2	1.5	1.4
Tibbett & Britten**	UK	£5.30	377	10.7	9.6	8%	1.3	1.2	4.8	4.6	8.3	7.7	2.2	2.0
Exel*	UK	£5.19	2,280	12.3	11.3	6%	2.0	1.9	6.2	5.6	10.7	9.3	1.8	1.7
Deutsche Post*	Germany	€ 16.66	17,063	12.0	12.9	6%	2.0	2.2	5.5	5.2	8.8	8.1	3.6	2.9
TNT Post Group*	Nederlands	€ 21.87	9,645	14.9	13.4	10%	1.5	1.3	8.3	7.8	11.7	10.8	3.7	3.2
Stinnes**	Germany	€ 19.68	1,377	9.5	8.4	15%	0.6	0.6	4.4	4.0	7.9	7.0	1.1	1.0
Brambles*	UK	£3.19	3,403	23.2	22.8	9%	2.5	2.5	5.5	4.7	11.9	8.9	4.8	3.4
Average				13.1	12.4		1.5	1.4	5.3	4.8	9.0	7.8	2.6	2.2
Median				12.0	11.3		1.5	1.3	5.5	4.7	8.8	8.1	2.2	2.0
Europe - 4PLs														
Microlog Logistics**	Germany	€ 16.15	64	36.5	14.9	128%#	0.3	0.1	3.8	2.3	6.5	3.6	0.6	0.6
D. Logistics**	Germany	€ 6.19	155	9.4	5.5	67%#	0.1	0.1	3.2	2.4	5.2	3.5	0.7	0.6
Thiel Logistik**	Luxembourg	€ 14.34	845	20.3	13.2	66%#	0.3	0.2	11.2	7.9	15.2	10.1	3.9	3.0
SwissLog**	Switzerland	SFr32.75	280	22.1	12.4	21%	1.1	0.6	7.5	6.4	8.9	8.7	3.1	3.7
Average				22.1	11.5		0.5	0.2	6.4	4.8	8.9	6.5	2.1	2.0
Median				21.2	12.8		0.3	0.2	5.6	4.4	7.7	6.1	1.9	1.8
Asia														
Nippon Express*	Japan	¥471	4,145	25.4	23.6	3%	9.4	8.7	6.2	6.2	17.9	17.7	1.5	1.4
Kintetsu World Express**	Japan	¥750	211	9.0	7.5	12%	0.7	0.6	4.4	3.9	5.4	4.7	0.8	NAV
Yusen Air & Sea Svc**	Japan	¥721	105	5.1	4.8	9%	0.6	0.5	2.3	2.0	3.1	2.6	0.4	NAV
Lang Corp**	Australia	A$11.28	905	26.9	24.3	10%	2.7	2.5	14.4	12.7	21.3	18.3	2.4	2.3
Toll Holdings**	Australia	A$23.60	720	24.6	21.1	13%	2.0	1.7	10.7	9.2	14.8	12.4	6.8	5.7
Mayne Nickless*	Australia	A$7.37	2,897	23.0	21.1	8%	3.1	2.8	19.9	18.5	32.9	27.3	2.2	2.3
Neptune Orient Lines*	S'pore	S 0.81	536	NM	22.8	15%	NM	1.5	6.4	6.1	20.1	18.9	0.6	0.5
Average				19.0	17.9		3.1	2.6	9.2	8.4	16.5	14.6	2.1	2.5
Median				23.8	21.1		2.3	1.7	6.4	6.2	17.9	17.7	1.5	2.3
SembCorp Logistics*	S'pore	S$1.66	795	19.6	18.5	14%	1.4	1.3	10.8	10.9	12.5	12.3	5.6	4.7

** Morgan Stanley Research Estimates ** IBES estimates # projected growth from 2000-2002 by IBES*

NM = Not Meaningful NAV = Not Available

Source: Bloomberg, FactSet, IBES, Morgan Stanley Research

Exhibit 43

Who Are the Likely 3PL Winners?

Players	Asset Control	Client Relationship	Geographic Coverage	SCM Skills	SCM Technology	Full Services 3PL potential
Beijing Airport	Medium	Weak	Medium	Weak	Weak	Weak
China Eastern	Medium	Medium	Strong	Weak	Weak	Weak
China Merchant	Strong	Medium	Medium	Weak	Medium	Medium
China Post	Strong	Weak	Strong	Weak	Medium	Strong
China Resources	Strong	Strong	Medium	Medium	Strong	Strong
China Southern	Medium	Medium	Strong	Weak	Weak	Weak
China Shipping	Medium	Weak	Medium	Weak	Weak	Weak
COSCO Group	Strong	Strong	Strong	Medium	Medium	Strong
Cosco Pacific	Strong	Weak	Strong	Weak	Medium	Weak
Dragonair	Medium	Medium	Medium	Weak	Medium	Weak
EAS	Strong	Strong	Strong	Medium	Medium	Strong
Hutchison Whampoa	Strong	Strong	Strong	Medium	Strong	Strong
Sinotrans	Strong	Strong	Strong	Medium	Strong	Strong

Source: Morgan Stanley Research

M&A the Route to Success

We believe local 2PLs and foreign 3PLs are theoretically a perfect match. However, from a deal point of view, there are two main obstacles. The differing ROEs make joint venture terms difficult to agree. Also, the Chinese accounting system poses a problem. The 2PL puts in hard cash or tangible assets, while the 3PL puts in intellectual property, which is intangible. Striking a deal needs some creativity. Arrangements such as those between hotel owners and operators via management, or variants of this theme may be an option. As there is so much potential, we believe more JV deals are only a matter of time.

We have identified the following M&A models and analyze their pros and cons. We think in the next five years, China's logistics industry will likely see M&As in the 3PL+3PL, Express buys 3PL and 2PL+2PL models.

3PL+3PL: We have seen a lot of cases where a 3PL has bought or merged with another 3PL for complementary attributes, such as international franchise, local advantages, and industry expertise. Usually, a 3PL will buy another that is light in assets to avoid dragging down its ROE. We believe this will be a successful model.

Express buys 3PL: We believe this is the best model for an express company. Express firms see slower, more volatile growth because express earnings are entirely reliant on volume, and express operators are network businesses with significant amounts of sunk costs. By buying an asset-light 3PL, the express company can move into the high-growth, counter-cyclical 3PL business, thus increasing ROE. It will also be able to complement its physical network with 3PL skills.

3PL buys 2PL: This happens rarely. A 3PL is a supply chain manager or in essence a knowledge manager whose task is to utilize the best resources in the market to achieve ultimate savings for its client. Owning physical assets can be a hindrance because using its own capacity may not be in its customers' best interests. Heavy assets drag down ROE too. However, in China, due to market inefficiencies such as high contract default rates and inadequate facilities, 3PLs have to own some strategic assets to ensure quality of service, e.g. a small fleet of trucks for backup.

2PL buys 3PL: This model has the same downside as 3PL buys 2PL: The tendency to use its own capacity may not be in customers' best interest. A 2PL intending to expand into 3PL thus faces a painful decision: it must divest some of its own capacity and then buy a 3PL. This may not be a bad move. Most 2PL segments have seen over-capacity with razor-thin margins, while 3PL is still an underdeveloped market with a lot of room for growth and differentiation. One key problem is to find a buyer for the assets at the right price. As discussed earlier, some 2PLs are developing 3PL businesses in-house. While some may succeed, we believe the more secure route is to go for a joint venture with a foreign partner skilled in 3PL.

2PL+2PL: For years the global transportation sector has been synonymous with low returns. One answer to this is consolidation, which we have seen a lot of among airlines and container liners. Horizontal consolidation is preferred to vertical consolidation in the 2PL arena, as the former improves management focus and reduces costs through economies of scale.

Exhibit 44

M&A Patterns of the Logistics Industry

		Acquirer	
		2PL	**3PL/Express**
Acquired	**2PL**	**Drives: to survive the competition** * for scale in one segment (horizontal) e.g.: Maersk bought Sealand * to diversify to other modes (vertical), e.g rare	**Drives: to acquire transport/storage capacity** e.g.: Rare
	3PL	**Drives: to move up to 3PL** e.g.: NOL bought GATX Logistics (through APL Logistics)	**Drives: for complementary attributes** * international franchise e.g.: EGL bought Circle * industry expertise e.g.: Exel bought Werthmann & Koster * SCM expertise e.g.: UPS bought Fritz

Source: Morgan Stanley Research

Company Profiles

China Eastern Airlines

China National Aviation Company

China Post

China Southern Airlines

EAS International Transportation Ltd. (EAS)

Hutchison Port Holdings

SembCorp Logistics

Sinotrans

China Eastern Airlines (HK$0.79, Neutral)

Company Background

China Eastern Airlines (CEA) is one of the Big Three airlines in China, with its headquarters and primary hub in Shanghai. CEA flies to 72 domestic cities and Hong Kong, and serves 21 international destinations in 10 countries. Its primary geographic strengths are along the eastern coastal provinces of China, and its international services are focussed on Japan and Korea, with some long-haul services to the US, Europe, and Australia. CEA is also one of the largest cargo airlines in China, and owns 70% of the only all-cargo airline in the PRC, China Cargo Airlines (CCA). CCA operates three dedicated MD-11 freighter aircraft, two of which are leased from CEA, and has plans to convert three more CEA passenger MD-11s to freighters in the next few years.

Business Strategy

CEA's current strategy is that of a 2PL player, or primarily a pure capacity provider. CEA's logistics services are entirely airport-to-airport heavy air freight and mail. It does not operate in the express market. It also handles cargo at it own cargo handling terminal at its primary cargo hub at Shanghai Pudong airport. While CEA had planned to build a logistics center at the Pudong site, its entry into this higher-value business appears to be postponed in the current slump in global cargo.

Logistics Services

Air cargo operations. CEA's cargo operations are composed of two primary elements: a dedicated freighter operation, and the cargo moved by its passenger fleet. The freighter operation is flown with a fleet of three MD-11F freighters and conducted through its CCA subsidiary. The all-cargo CCA operation is one of the largest in China, with about 66 flight segments flown per week along nine return routes to 13 online ports in China, the US, Japan, Korea and France. CEA's passenger operation carries cargo in the belly space of its 61-strong fleet of jet passenger aircraft to all 94 online passenger destinations. Based on 1999 data, about 38% of CEA's cargo traffic was carried by its pure freighters, with the remainder in the bellies of its passenger fleet. The operation is primarily non-express heavy-air freight and some mail. CEA does not have a branded, guaranteed express product.

Cargo terminals. CCA owns a cargo-handling terminal that provides the majority of throughput capacity at Shanghai's Pudong airport.

In 1H01, CEA's cargo revenue actually declined by 3%, even as traffic rose 15%, due to a 15.7% drop in cargo yield. Domestic yield fell 27% due to system over-capacity, while international rates fell 14.5% on increased competition. Cargo revenue was 16.5% of total revenue, and international cargo revenue was 76.7% of all cargo revenue. CEA gets about 30% of cargo revenue from its US routes, and a similar proportion from Japan. CEA's cargo revenue grew between 1996 and 2000 at a 17.6% CAGR compared with passenger revenue CAGR of 10% in the same period.

Near-Term Objectives

CCA development: CEA plans to develop its CCA operation through expansion of the share register and capital base. It recently signed a landmark deal to sell 15% of its CCA stake to global cargo heavyweight China Airlines (CAL) of Taiwan. The deal, which is awaiting government approval, would mark the first significant cross-Straits aviation investment. CAL would take a total 25% stake and CCA's capital would be tripled to Rmb1,500 million. CCA's fleet could potentially double to six MD-11 freighters through conversion of CEA's remaining three passenger planes in the coming periods if demand is strong. Though CCA operates under CEA's authority, it is planned in future to receive its own operating license and IATA two-letter flight codes.

Increase inbound cargo traffic. CEA is working to increase loads on poorer-traffic inbound flights to China by establishing circular routes on the US east and west coasts, which may pick up increased volumes.

Consolidation of merger partner operations. While CEA's merger partners in the consolidation process do not operate pure freighters, their passenger-belly operations will add to CEA's overall market share of Chinese airfreight. Post-consolidation, CEA would have a No. 2 26.4% pro-forma market share based on 2000 traffic.

Logistics center at Pudong. CEA has previously announced its intention to build a logistics center at Pudong, in addition to expanding its handling capacity there. A budget of Rmb200 million had been mentioned; however, the project has been postponed in the current environment. The logistics center could be expected to provide value-added services such as sorting, packing, repacking and barcode scanning.

Investment Positives

While there is over-capacity in both international and domestic cargo markets, we believe CEA's cargo growth prospects appear positive due to a number of factors:

Shanghai hub. CEA should benefit from the strong economic growth and industrial and consumer demand in its Shanghai home base. It has a dominant cargo market share and the Shanghai region should also be prime beneficiary of China's WTO accession.

CCA cargo fleet and network. CEA, through its CCA operation, has one of most extensive international freighter fleet operations in China (along with Air China, which flies four 747 freighters). CCA also has built-in scope for expansion through CEA MD-11 conversions when demand warrants.

CAL investment in 25% CCA stake. CAL, as the eighth-largest international freighter operation, should bring significant global experience to CCA's growing China-based operation. The investment may also position CCA for any resumption in cross-straits flights to Taiwan.

Risks

Global downturn/US exposure. CEA is more exposed to global recession risk in the wake of the US terrorist attacks than some of its peers, as it derives 30% of its cargo revenues from the US market. Demand from the US could remain depressed for some time.

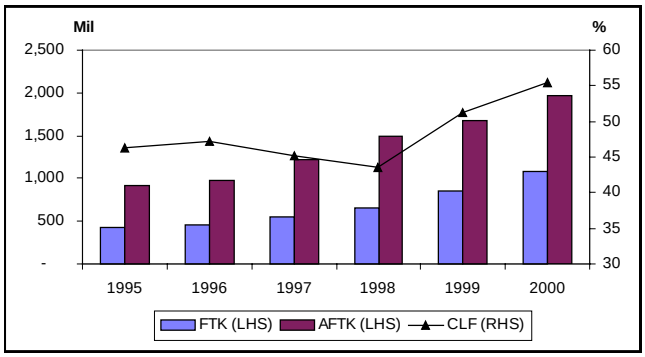
Domestic yield instability. Chinese regulator CAAC has focussed more effort on stabilizing domestic passenger yield. However, lack of measures to combat cargo yields has caused severe discounting and competition in domestic cargo markets, causing yields to fall 27% in 1H01.

International competition. CEA is facing more sophisticated international competition from the likes of UPS, as China liberalizes its aviation.

Exhibit 45

China Eastern Airlines

Cargo Traffic and Capacity Trend, 1995-2000



Source: Sino Aviation News, Morgan Stanley Research

Exhibit 46

China Eastern Airlines

Cargo Operation, 1999 - 2003E

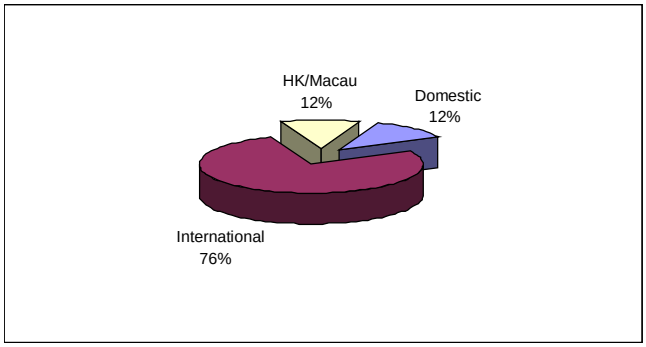
(Rmb mn)	1999	2000	2001E	2002E	2003E
Cargo Rev	1,730	2,124	1,965	2,187	2,523
Total Operating Rev	10,163	11,220	12,051	13,223	14,517
% Cargo Rev	17.0	18.9	16.3	16.5	17.4
FATK (mil)	2,194	1,611	1,826	1,995	2,165
FRTK (mil)	689	891	947	1,042	1,195
Cargo Load Factor (%)	31.4%	55.3%	51.9%	52.2%	55.2%

E = Morgan Stanley Research Estimates
Source: Company Data, Morgan Stanley

Exhibit 47

China Eastern Airlines

Cargo Revenue Breakdown 1H01



Source: Company Data, Morgan Stanley Research

China Eastern Airlines: Financial Summary

Profit and Loss Statement

Rmb Millions	1999	2000	2001E	2002E	2003E
Passenger revenue	8,031	8,644	9,590	10,491	11,383
Cargo revenue	1,730	2,124	1,965	2,187	2,523
Other revenue	402	452	497	545	612
Total Revenue	**10,163**	**11,220**	**12,051**	**13,223**	**14,517**
Labor	724	798	918	980	1,047
Fuel	1,685	2,327	2,598	2,618	2,768
Depreciation	1,621	1,636	1,760	1,880	2,020
Operating leases	732	852	1,020	1,260	1,070
Other expenses	4,479	4,828	4,893	5,407	6,189
Total Operating Exp	**9,241**	**10,442**	**11,189**	**12,146**	**13,094**
Operating Profit	**921**	**778**	**862**	**1,077**	**1,423**
Net interest inc/(exp)	(966)	(814)	(830)	(840)	(870)
Gain/(loss) from aircraft sales	80	106	-	-	-
Other inc/(exp)	92	235	140	80	70
Exceptional items (EI)	-	-	-	-	-
Pre-tax profit	**128**	**305**	**172**	**317**	**623**
Taxation	(27)	(100)	(57)	(105)	(206)
Minority interest	(17)	(29)	35	10	(20)
Net profit	**84**	**176**	**150**	**223**	**397**
EBITDA	**2,698**	**2,726**	**2,797**	**3,047**	**3,493**
EBITDAR	**3,430**	**3,578**	**3,817**	**4,307**	**4,563**
EPS (Rmb)	**0.02**	**0.04**	**0.03**	**0.05**	**0.08**
Recurrent EPS* (Rmb)	**0.01**	**0.00**	**0.02**	**0.05**	**0.08**

Balance Sheet

Rmb Millions	1999	2000	2001E	2002E	2003E
Net fixed assets	19,230	20,802	20,542	19,612	18,542
Long-term investments	4,119	3,200	3,238	3,278	3,278
Intangible assets	107	102	45	40	40
Other non-current assets	814	939	950	850	870
Total Non-Current Assets	**24,271**	**25,044**	**24,775**	**23,780**	**22,730**
Cash & other liquid assets	958	1,284	1,699	1,622	1,830
Non-cash assets	3,032	2,699	2,700	2,700	2,760
Total Current Assets	**3,990**	**3,983**	**4,399**	**4,322**	**4,590**
Current borrowings	2,201	2,140	2,430	2,450	2,414
Other current liabilities	2,446	2,701	2,610	2,610	2,437
Total Current Liabilities	**4,647**	**4,842**	**5,040**	**5,060**	**4,851**
Net Assets	**23,614**	**24,186**	**24,135**	**23,042**	**22,469**
Long-term debt	14,668	14,572	14,812	13,662	12,698
Other long-term liabilities	1,755	2,201	1,881	1,863	2,003
Shareholders equity	**7,013**	**7,189**	**7,242**	**7,367**	**7,667**
Minority interests	177	224	200	150	100
Capital Employed	**23,614**	**24,186**	**24,135**	**23,042**	**22,468**

Cash Flow Statements

Rmb Millions	1999	2000	2001E	2002E	2003E
Pretax profit	**128**	**305**	**172**	**317**	**623**
Add: Depreciation	1,621	1,636	1,760	1,880	2,020
Less: Profit on sale of assets	(179)	(106)	-	-	-
Less: Tax paid	-	-	-	-	-
Other non-cash items	154	(40)	(5)	70	100
Gross Cash Flow	**1,724**	**1,795**	**1,927**	**2,267**	**2,743**
Capex	(1,811)	(1,229)	(1,600)	(1,100)	(1,100)
Working capital adj	(185)	282	50	50	50
Free Cash Flow	**(273)**	**849**	**377**	**1,217**	**1,693**
Sale of fixed assets & invmts	1,415	326	-	50	50
Others	(785)	(692)	(492)	(215)	(536)
Net Cash Flow	**357**	**483**	**(115)**	**1,053**	**1,207**
Beginning Cash/(Debt)	**(16,268)**	**(15,911)**	**(15,428)**	**(15,543)**	**(14,490)**
Ending Cash/(Debt)	**(15,911)**	**(15,428)**	**(15,543)**	**(14,490)**	**(13,283)**

** Recurrent EPS excludes aircraft sales and exceptional items;*

E = Morgan Stanley Research Estimates; NA = Not Applicable; NM = Not Meaningful; Source: Company Data, Morgan Stanley Research

Ratio Analysis

	1999	2000	2001E	2002E	2003E
Growth (%)					
Passenger revenue	22.8	7.6	10.9	9.4	8.5
Cargo revenue	38.4	22.8	(7.5)	11.3	15.3
Total revenue	24.4	10.4	7.4	9.7	9.8
Operating profit	428.1	(15.5)	10.7	25.0	32.1
Pretax profit	NM	138.0	(43.7)	85.0	96.3
Net profit	NM	109.0	(14.6)	48.5	78.5
EBITDA	55.5	1.5	(10.1)	12.5	15.7
EBITDAR	65.3	4.7	(1.4)	11.8	6.6
EPS	NM	109.0	(14.6)	48.5	78.5
Recurrent EPS*	NM	(45.0)	378.9	91.2	78.5
CEPS	67.0	6.3	5.4	10.1	15.0
Margins (%)					
EBITDA margin	26.6	24.3	23.2	23.0	24.1
EBITDAR margin	33.8	31.9	31.7	32.6	31.4
Operating margin	9.1	6.9	7.1	8.1	9.8
Net profit margin	0.8	1.6	1.2	1.7	2.7
Return (%)					
ROE	1.3	2.5	2.1	6.0	10.4
ROA	0.3	0.6	0.5	0.8	1.4
Gearing (%)					
Net Debt/Equity	226.9	214.6	214.6	196.7	173.2
Long-term Debt/Equity	209.1	202.7	204.5	185.5	165.6
Total Debt/Equity	240.5	232.5	238.1	218.7	197.1
Net Interest Coverage (x)	1.12	1.34	1.25	1.39	1.69

Operational Analysis

	1999	2000	2001E	2002E	2003E
Pax Capacity (bil ASKs)	22,479	22,597	25,326	27,448	29,235
Pax Traffic (bil RPKs)	13,257	14,102	15,740	17,194	18,416
Pax Load Factor (%)	59.0	62.4	62.2	62.6	63.0
Pax Yield (Rmb/RPK)	0.61	0.61	0.61	0.61	0.62
Cargo Capacity (bil AFTKs)	2,194	1,611	1,826	1,995	2,165
Cargo Traffic (bil RFTKs)	689	891	947	1,042	1,195
Cargo Load Factor (%)	31.4	55.3	51.9	52.2	55.2
Cargo Yield (Rmb/RFTK)	2.51	2.38	2.07	2.10	2.11
Overall Capacity (bil ATKs)	3,351	3,644	4,105	4,465	4,796
Overall Traffic (bil RTKs)	1,829	2,161	2,364	2,589	2,853
Overall Load Factor (%)	54.6	59.3	57.6	58.0	59.5
Average Yield (Rmb/RTK)	5.34	4.98	4.89	4.90	4.87
Unit Cost (Rmb/ATK)	2.76	2.87	2.73	2.72	2.73
Growth (%)					
Pax Capacity	21.2	0.5	12.1	8.4	6.5
Pax Traffic	21.7	6.4	11.6	9.2	7.1
Pax Load Factor	0.3	3.4	(0.3)	0.5	0.4
Pax Yield	0.8	1.2	(0.6)	(0.5)	1.3
Cargo Capacity	NAV	(26.6)	13.4	9.2	8.5
Cargo Traffic	40.3	29.3	6.3	10.0	14.7
Cargo Load Factor	NAV	23.9	(3.5)	0.3	3.0
Cargo Yield	(1.4)	(5.1)	(13.0)	1.2	0.5
Overall Capacity	18.8	8.8	12.6	8.8	7.4
Overall Traffic	26.3	18.1	9.4	9.5	10.2
Overall Load Factor	3.2	4.7	(1.7)	0.4	1.5
Average Yield	(0.8)	(6.6)	(1.9)	0.2	(0.5)
Unit Cost	(2.7)	3.9	(4.9)	(0.2)	0.4

Valuation

	1999	2000	2001E	2002E	2003E
P/E	47.3	22.6	26.5	17.8	10.0
Relative P/E	1.6	1.6	1.9	1.4	0.8
P/CEPS	2.3	2.2	2.1	1.9	1.6
P/BV	0.57	0.55	0.55	0.54	0.52
EV/EBITDA	7.4	7.1	7.0	6.1	4.9
Dividend yield	0.0	2.6	2.6	2.6	2.6

China National Aviation Company (HK$0.92, Outperform)

Company Background

China National Aviation Company (CNAC) was incorporated in Hong Kong on February 3, 1997, to acquire the equity interests of CNAC Group and CNAC (HK) in Dragonair (passenger and cargo air transportation services), Jardine Airport Services Limited (airport ground handling services), Sinobest and Prosperoad (property subsidiaries). The corporate structure was formed on October 18, 1997, and the company listed on the Hong Kong Stock Exchange on December 17, 1997. The company owns 43% of Dragonair, Hong Kong's second-largest airline.

Valuation Perspective

We believe CNAC's share is extremely attractive for four reasons:

- The value of the Dragonair franchise is not fully reflected in the CNAC stock price. The implied market capitalization for Dragonair's franchise is about HK$2.65 billion (US$340 million), which equates to a prospective P/E of 4.6 and an EV/EBITDA of 3.4.
- No valuation premium has been assigned to CNAC's new business initiatives, particularly for the logistics operation, which include the cargo operation.
- CNAC will be a key player in the consolidation of the airline industry in China and we believe it could align with Air China.
- CNAC could emerge as the alternative carrier for the Hong Kong market.

Our fair valuation of HK$1.50 for CNAC shares assumes the stock will trade to an 18% discount to our 2002 net asset valuation (NAV) of HK$1.85 (Exhibit 48). We rate CNAC Outperform.

Logistics Operation

In 1999, cargo revenues accounted for about 14% of Dragonair's operating revenues. Cargo was carried in the belly space of the passenger aircraft and was primarily driven by the air cargo market in China. However, in 2000, Dragonair was awarded the right to serve as the second Hong Kong-based cargo carrier, after Cathay Pacific, for long-haul routes to America and Europe. To boost immediate capacity for the cargo operation, the carrier wet-leased a B747 freighter from Atlas Air in 2H00.

Exhibit 48

CNAC: Valuation Matrix, 1998-2003E

(HK$ mn)	1998	1999	2000	2001E	2002E	2003E
BV (HK$/shr)	0.53	0.59	0.66	0.74	0.83	0.95
NAV (HK$/shr)	0.91	0.92	1.22	1.44	1.85	2.41
Net Cash	648	673	667	888	1,158	1,517
Property -Mkt Val	608	387	405	450	475	500
Dragonair	1,699	1,894	2,815	3,219	4,225	5,651
JASL	16	73	103	148	163	179
Net Asset/ (Liab)	-29	-45	-45	-45	-45	-45
Net Asset Value	2,943	2,983	3,945	4,661	5,976	7,802

E = Morgan Stanley Research Estimates

Source: Company data, Morgan Stanley Research

In 2000, Dragonair bought two B747-300 Combis from Singapore Airlines and subsequently converted them into dedicated freighters to replace the aircraft wet-leased from Atlas Air. With the two dedicated freighters, we expect the carrier's cargo capacity to expand by about 90% for 2001 and a further 45% in 2002.

Cargo to grow faster than passenger. In 1999, Dragonair's freight capacity was 136 million FATK (freight available tonne kms) and accounted for 25% of the overall ATK (available tonne kms) capacity. As the entire cargo capacity was carried in the belly space of the passenger aircraft, the carrier's cargo load factor was only 57%. With the arrival of the two dedicated freighters, we expect freight capacity to increase threefold to 447 million FATK at the end of this year, or about 45% of the of the overall ATK capacity. In 2003, we project the cargo capacity will reach 707 million FATKs, or about 49% of the overall ATK capacity (Exhibit 49).

Cargo traffic was 77 million FRTKs (freight revenue tonne-km) in 1999. Our projection is for cargo traffic to grow almost fourfold to 306 million FRTKs at the end of this year and to reach 481 million FRTKs at the end of 2003. With the dedicated freighters, we expect cargo load factor to be around 66-68% despite the global economic crisis. The bulk of the cargo traffic growth will be generated from the long-haul routes in and out of Hong Kong and would benefit from the feeder traffic from the carrier's route networks to the major cities of China and Hong Kong.

Exhibit 49

Dragonair: Cargo Operation, 1999-2003E

(HK$ mn)	1999	2000	2001E	2002E	2003E
Cargo Rev	447	793	936	1,126	1,308
Total Operating Rev	3,266	4,158	4,821	5,680	6,650
% Cargo Rev	13.7	19.1	19.4	19.8	19.7
FATK (mil)	136.2	292.8	446.9	598.0	706.6
Psgr FATK (mil)	136.2	148.6	172.9	200.6	229.8
Freighter FATK (mil)	0.0	144.2	274.0	397.3	476.8
FRTK (mil)	77.1	223.1	306.4	398.5	481.2
Psgr FRTK (mil)	77.1	97.2	106.3	120.4	137.9
Freighter FRTK (mil)	0.0	125.9	200.0	278.1	343.3
Cargo Load Factor (%)	56.6	76.2	68.6	66.6	68.1
Psgr aircraft	56.6	65.4	61.5	60.0	60.0
Freighter	0.0	87.3	73.0	70.0	72.0

E = Morgan Stanley Research Estimates
Source: Company Data, Morgan Stanley

We believe Dragonair management would like to grow cargo revenues to about 25% of the operating revenues. The carrier is planning to raise overall capacity by at least 20% per year for the next five years by expanding on its unused bilateral rights to fly to a further 54 destinations, of which 28 are new destinations in China.

Aviation services are small now but could be big. In 1989, CNAC bought a 26% equity stake in Jardine Airport Services Limited (JASL) from the Jardine group. It raised its equity holding to 40% in 1992, with Jardine group retaining control of the remaining 60%. Since then, both CNAC and Jardine have managed airport ground handling services in Hong Kong, initially at Kai Tak airport and now at Chek Lap Kok. There are long-term plans for the group to expand its management expertise in regional airports, and particularly in China international and regional airports.

In 2H00, CNAC invested a 25% equity stake in Tradeport Hong Kong, a logistics business consortium. Tradeport recently secured a contract to build a HK$530 million logistics center on a 1.38-hectare site in the south commercial district of the airport. The consortium will be responsible for the design, development, operation and management of the center.

As the China aviation industry consolidates, we believe CNAC will emerge as a key player in both the aviation and logistics markets in China. Its alliance with the Air China group and the experience of managing airport ground handling services in Hong Kong would be a tremendous asset as the group breaks into the China aviation market.

Fleet Development Plan

Dagonair has embarked on an ambitious fleet-expansion program to take advantage of positive economic factors and strong growth potential, particularly in China and the regional Asian markets. Over the next two years, Dragonair plans to expand its operational fleet by seven aircraft, or its capacity by about a third (Exhibit 50).

In 2001, two A330-300s – one on a financing lease and the other on an operating lease – will join the fleet. Moreover, a leased-out A320 will be returned to Dragonair's fleet in 2001. In 1H01, three aircraft – a newly purchased A330 (May), a A330 on operating lease (June) and a A320 (March) returned from an operating lessee were added to Dragonair's fleet.

The main reason for the accelerated aircraft order program is the reallocation of Hong Kong/China routes in favor of the Hong Kong carrier. Moreover, Dragonair is aggressively ramping up its cargo capacity to take advantage of increased trade flow as China joins the WTO.

Exhibit 50

Dragonair: Fleet Development Plan, 1999-2003E

	1999	2000	2001E	2002E	2003E
Owned Aircraft					
A320-200	2	3	3	4	5
A330-300	1	1	2	2	2
B747-300F	0	0	2	2	2
Total Owned	3	4	7	8	9
Leased Aircraft					
A320-200	3	3	4	5	6
A321-200	2	3	3	3	3
A330-300	4	4	5	5	5
B747F	0	1	0	0	0
Total Leased In	9	11	12	13	14
Total Aircraft Fleet	**12**	**15**	**19**	**21**	**23**

E = Morgan Stanley Research Estimates
Source: Company data, Morgan Stanley Research

CNAC: Financial Summary

Profit and Loss Statement

HK$ Millions	1999	2000	2001E	2002E	2003E
Operating Revenue	**48**	**32**	**28**	**29**	**30**
Operating Profit	**59**	**52**	**39**	**41**	**43**
Associates	200	308	336	415	563
Exceptional items	0	0	0	0	0
Pre-tax profit	**259**	**360**	**376**	**456**	**605**
Taxation	47	49	54	68	100
Net profit	**212**	**311**	**321**	**388**	**506**
EPS (HK$)	**0.07**	**0.10**	**0.10**	**0.12**	**0.16**

Balance Sheet

HK$ Millions	1999	2000	2001E	2002E	2003E
Net fixed assets	600	600	600	600	600
Long-term investments	680	911	911	911	911
Intangible assets	0	0	0	0	0
Other non-current assets	0	0	0	0	0
Total Non-Current Assets	**1,280**	**1,511**	**1,511**	**1,511**	**1,511**
Cash & other liquid assets	673	667	888	1,158	1,517
Non-cash assets	8	5	5	5	5
Total Current Assets	**681**	**672**	**893**	**1,163**	**1,522**
Current borrowings	0	0	0	0	0
Other current liabilities	38	38	38	38	38
Total Current Liabilities	**38**	**38**	**38**	**38**	**38**
Net Assets	**1,923**	**2,145**	**2,367**	**2,636**	**2,995**
Shareholders equity	**1,922**	**2,145**	**2,380**	**2,673**	**3,083**
Capital Employed	**1,922**	**2,145**	**2,380**	**2,673**	**3,083**

Dragonair: Profit and Loss Statement

HK$ Millions	1999	2000	2001E	2002E	2003E
Passenger revenue	2,781	3,322	3,838	4,503	5,286
Cargo revenue	453	799	943	1,133	1,316
Other revenue	32	37	40	44	48
Total Revenue	**3,266**	**4,158**	**4,821**	**5,680**	**6,650**
Labor	579	709	775	850	946
Fuel	205	400	516	632	721
Depreciation	176	193	279	381	436
Operating leases	367	438	527	591	653
Other expenses	1,476	1,748	2,003	2,322	2,644
Total Operating Exp	**2,803**	**3,488**	**4,100**	**4,775**	**5,399**
Operating Profit	**463**	**671**	**721**	**905**	**1,251**
Net interest inc/(exp)	(15)	(15)	(20)	(30)	(45)
Gain/(loss) from aircraft sales	0	0	0	0	0
Other inc/(exp)	15	(11)	(10)	(10)	(10)
Exceptional items (EI)	(53)	0	0	0	0
Pre-tax profit	**410**	**645**	**691**	**865**	**1,196**
Taxation	66	103	111	138	191
Net profit	**345**	**542**	**580**	**727**	**1,004**
EBITDA	**601**	**852**	**989**	**1,276**	**1,676**
EBITDAR	**900**	**1,210**	**1,401**	**1,716**	**2,139**

Valuation

	1999	2000	2001E	2002E	2003E
P/E	12.2	8.3	8.1	6.7	5.1
Relative P/E	0.7	0.5	0.6	0.5	0.4
P/CEPS	3.8	3.9	2.9	2.2	1.7
P/BV	1.3	1.2	1.1	1.0	0.8
P/NAV	0.9	0.7	0.6	0.4	0.3
Dividend yield	1.5	1.5	1.5	1.9	1.9

CNAC: Ratio Analysis

	1999	2000	2001E	2002E	2003E
Growth (%)					
Operating revenue	(13.7)	(33.9)	(10.9)	2.5	2.5
Operating profit	(36.2)	(10.8)	(24.7)	4.3	4.2
Pretax profit	499.2	38.9	4.3	21.5	32.6
Net profit	NM	46.9	3.1	20.8	30.3
EPS	NM	46.9	3.1	20.8	30.3
Return (%)					
ROE	11.6	15.3	14.2	15.4	17.6
ROA	11.4	15.0	14.0	15.3	17.7
Gearing (%)					
Net Debt/Equity	(35.0)	(31.1)	(37.3)	(43.3)	(49.2)
Long-term Debt/Equity	0.0	0.0	0.0	0.0	0.0
Total Debt/Equity	0.0	0.0	0.0	0.0	0.0

Dragonair: Ratio Analysis

	1999	2000	2001E	2002E	2003E
Growth (%)					
Passenger revenue	3.7	19.5	15.5	17.3	17.4
Cargo revenue	52.1	76.5	18.0	20.2	16.1
Total revenue	8.5	27.3	15.9	17.8	17.1
Operating profit	12.0	44.8	7.4	25.6	38.2
Pretax profit	(0.4)	57.2	7.1	25.2	38.2
Net profit	(0.4)	57.2	7.1	25.2	38.2
EBITDA	15.0	41.8	16.1	28.9	31.4
EBITDAR	5.1	34.4	15.8	22.5	24.6
Margins (%)					
EBITDA margin	18.4	20.5	20.5	22.5	25.2
EBITDAR margin	27.6	29.1	29.1	30.2	32.2
Operating margin	14.2	16.1	15.0	15.9	18.8
Net profit margin	10.5	13.0	12.0	12.8	15.1

Dragonair: Operational Analysis

	1999	2000	2001E	2002E	2003E
Pax Capacity (mil ASKs)	4,398	4,885	5,715	6,744	7,823
Pax Traffic (mil RPKs)	2,748	3,231	3,772	4,451	5,202
Pax Load Factor (%)	62.5	66.2	66.0	66.0	66.5
Pax Yield (HK$/RPK)	1.00	1.02	1.01	1.01	1.01
Cargo Traffic (mil RFTKs)	77	223	306	399	481
Cargo Yield (HK$/RFTK)	5.80	3.55	3.06	2.82	2.72
Overall Capacity (mil ATKs)	554	754	988	1,240	1,455
Overall Traffic (mil RTKs)	363	532	672	835	994
Overall Load Factor (%)	65.6	70.6	67.9	67.3	68.3
Average Yield (HK$/RTK)	8.90	7.74	7.12	6.75	6.64
Unit Cost (HK$/ATK)	5.01	4.58	4.10	3.80	3.66
Growth (%)					
Pax Capacity	8.2	11.1	17.0	18.0	16.0
Pax Traffic	13.5	17.6	16.7	18.0	16.9
Pax Load Factor	(8.9)	2.9	3.7	(0.2)	0.0
Pax Yield	(8.6)	1.6	(1.0)	(0.5)	0.5
Cargo Traffic	55.6	189.4	37.3	30.1	20.7
Cargo Yield	(1.7)	(38.7)	(14.0)	(7.6)	(3.8)
Overall Capacity	9.1	36.1	31.1	25.5	17.3
Overall Traffic	14.7	46.5	26.2	24.3	19.1
Overall Load Factor	3.2	5.0	(2.7)	(0.7)	1.0
Average Yield	(5.4)	(13.0)	(8.1)	(5.1)	(1.6)
Unit Cost	(1.6)	(8.6)	(10.4)	(7.3)	(3.7)

NM = Not Meaningful

E = Morgan Stanley Research Estimates

Source: Company Data, Morgan Stanley Research

China Post (Unlisted)

Background

China Post (China State Post Bureau) was founded through the separation of postal services from the Ministry of Posts and Telecom in 1998. While still performing regulatory duties, it provides a wide range of postal services, including letter and parcel delivery, express mail services (EMS) and postal savings (Exhibit 51). In 2000, total turnover of the postal business reached Rmb23.06 billion, an increase of 16.4% from 1999. The turnovers of postal savings and EMS have increased by 18.8% and 21.8% respectively and these two businesses are believed to be profitable. China Post as a whole was still loss-making in 2000, though it cut loss by 50% from the previous year and aims to break even by 2003.

Logistics Services

Express services: EMS, an express mail services provider under China Post, is the first and largest domestic express player. EMS recorded revenue of Rmb3.58 billion in 1999, accounting for 10% of the total postal revenue of China Post. Though no accurate numbers are available, EMS is believed to be profitable. Owing to China Post's extensive network and legislative protection, EMS has 70% of the domestic express market.

B2C delivery: China Post's postal network makes EMS the best positioned in B2C delivery. TV sales delivery is the largest chunk of EMS's B2C revenue, accounting for about 70%. EMS also provides delivery for e-commerce dotcoms, though the market is shrinking.

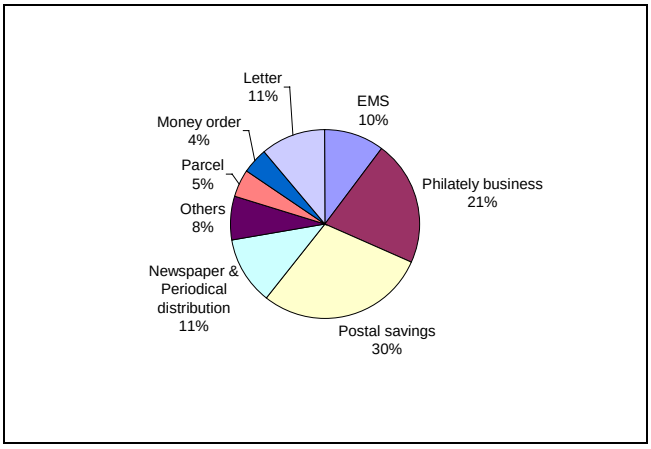
B2B distribution: China Post is also testing the waters of domestic distribution for MNCs. It now provides outbound distribution and reverse logistics for Nokia Suzhou and distribution for Dell in several provinces. China Post opened its EMS Logistics Center at the end of 1999 and has been aggressive in developing its transportation, storage and distribution services.

Business Strategy

China Post has positioned itself to be a leading logistics provider in China. To develop its logistics services, it plans to adjust its express business towards high value-added cargoes, such as computers and electronics products.

Exhibit 51

China Post Revenue Breakdown (2000)



Source: China Post

Competitive Edge

Three networks with integration potential: EMS's three networks are 1) logistics, which includes parcel and express services and logistics centers, 2) information, which links all the post offices, and 3) the postal savings network. These put China Post in an unparalleled position to expand to integrated logistics services. Notably, China Post is the only logistics player in China and one of the few in the world that owns a savings system. With over Rmb400 billion in deposits in 2000, Postal Savings is the fifth largest savings system after the Big Four state-owned banks. Postal Savings has the advantage of an extensive network across the country, and it has no NPLs, as its revenues are from small collateral loans, interest of treasury bonds and the spread between the personal savings rate and its deposit rate at the central bank. China Post can leverage postal savings to win logistics contracts from clients by providing short-term logistics financing, which is a common practice among international players such as UPS.

Managing Funds Flow for Clients

Broadest domestic coverage: with more than 66,000 post offices in the country, China Post boasts the most extensive distribution network, especially in the rural areas which are underrepresented by other logistics companies. Its rural reach makes it a strong candidate for consumer goods companies targeting the rural market. Utilizing the extensive network, even the loss-making regular mail services have found a niche: grocery distribution to villages. Guangzhou Post began this service in 1998 and it has grown so popular, Coca-Cola has became its client.

Developing Needs

Our assessment is that China Post could develop into a competitive organization using its advantage of a public service bureau and extensive local network. The following are what we believe could be potential developments:

Restructuring from public postal service to contract based logistics: China Post's services including EMS are still mostly public services, a reason why as a whole China Post is still loss-making. Restructuring potential could come from the spinning off its profitable businesses in EMS and Postal Savings and transformation of EMS towards contract-based logistics services. The regular mail service would then by independently financed by the state rather than by China Post's commercialized siblings.

Separation of administration and managerial power: China Post decentralizes its administration and managerial functions to allow more autonomy for EMS and Postal Savings to operate according to market rules.

Global alliances: China Post moves to join the current wave of global parcel and express alliances to make a mark on the global market.

Funding needs: China Post could list EMS overseas to fund its 3PL expansion, enhance its international reputation and prepare it for imminent foreign competition.

Exhibit 52

China Post Business Performance

Service	Unit	1999	2000	Growth%
Turnover	RMB in 100 millions	198.4	230.6	16.4
Int'l services	RMB in 100 millions	5.4	5.7	6.4
Turnover in different services				
Letter	pieces in 10,000s	704,432.6	781,912.0	11.1
Domestic	pieces in 10,000s	696,139.5	775,030.5	11.5
Int'l HK & Macao	pieces in 10,000s	8,293.1	6,881.5	-17.0
Parcel	pieces in 10,000s	9,725.9	9,586.9	-1.5
Domestic	pieces in 10,000s	9,655.5	9,502.5	-1.7
Int'l HK & Macao	pieces in 10,000s	70.3	84.3	20.3
EMS	pieces in 10,000s	9,090.8	11,098.0	21.8
Domestic	pieces in 10,000s	8,743.3	10,703.0	22.4
Int'l HK & Macao	pieces in 10,000s	347.5	394.9	13.7
Money order	pieces in 10,000s	22,935.3	22,555.2	-1.7
Newspaper	pieces in 10,000s	1,959,074.6	1,847,234.2	-5.3
Periodicals	pieces in 10,000s	124,280.4	124,975.0	1.6
Postal savings	RMB in 100 millions	3,535.6	4,200.9	18.8
Philately business	pieces in 10,000s	521,789.2	452,076.3	-13.4
Others	RMB in 10,000s	260,455.8	412,293.4	58.3

Source: China Post

China Southern Airlines (HK$1.60, Outperform-V)

Company Background

China Southern Airlines is one of the Big Three airlines in China, with its headquarters and primary hub in Guangzhou. It is the largest domestic airline in China on most measures and flies to 65 domestic cities and Hong Kong, as well as 23 international destinations. Its primary geographic strengths are along the southern coastal and central provinces of China. Its international services are focussed on Southeast Asia, with only one long-haul route each to the US, Europe, Australia and the Middle East. CSA is primarily a domestic passenger business, with about 80% of revenue coming from this segment. It has only recently entered the dedicated international freighter market, wet-leasing a 747-400 freighter that began service to the US in April 2000.

Business Strategy

CSA is building up its credentials as a 2PL player, or capacity provider, in the international cargo market. Its expansion plan in 2002 is to double its freighter operations as it takes delivery of its own freighter aircraft. CSA is also marketing higher-value added services as it expands into branded express products beyond airport-to-airport heavy air freight and mail. CSA is also planning to expand its own cargo handling terminals at its primary cargo hub in Shenzhen and at the new Guangzhou airport being built, though this plan is on hold in the current market slowdown.

Logistics Services

Air cargo operations. CSA's cargo operations until April 2000 were conducted entirely through the belly space of its passenger aircraft fleet. Since then it has wet-leased one 747-400 freighter from US specialist Atlas Air, and initiated service on a triangular Shenzhen-Chicago-Shanghai-Shenzhen route three times per week. This makes CSA the smallest of the Big Three in terms of pure freighter operations. However, due to the size of its passenger fleet (109) and network (89 cities), overall cargo traffic in 1H01 was not far behind No. 2 CEA. Based on 2000 data and nine months of operation, only 22% of CSA's total cargo traffic was carried by its wet-leased freighter, though this was 60% of total international cargo traffic carried. The international operation is primarily non-express heavy-air freight.

Express service. CSA offers a domestic express product called "Cargo 5000" to 15 cities in China for delivery within 48 hours. Cargo 5000 accounts for around 35% of CSA's domestic business. It does not offer international express products.

Cargo terminals. CSA is building its own network of cargo terminals at its main airports in Guangzhou and Shenzhen. It owns 100% of the facility at Guangzhou Baiyun Airport, which has capacity for 50,000 tonnes p.a. and handles about 80% of throughput. CSA is also planning to build a 70%-held terminal at the new Guangzhou airport, with a capacity of 250,000 tonnes p.a.

Cargo forwarding. CSA offers cargo-forwarding services through subsidiary Baiyun Xinhua in Guangzhou.

In 1H01, CSA's cargo revenue increased 16.2% as traffic rose 34.6% and cargo yield fell 13.6%. Yield decline was led by weakness in domestic yield due to system over-capacity and lower international yields from new, longer international flights to US. Cargo revenue was 8.8% of total traffic revenue and international cargo revenue was 36% of all cargo revenue in 1H01. CSA's cargo revenue rose between 1996 and 2000 at a 17% CAGR, compared with a passenger revenue CAGR of 7% in the same period.

Near-Term Objectives

Introduce own 747 freighter operations. CSA will double its freighter fleet next year after it takes delivery of two 747-400Fs and returns the current wet-leased aircraft. It will need to crew and maintain the aircraft and will be faced with the challenge of deploying the new aircraft profitably on new routes.

Consolidation of merger partner operations. While CSA's merger partners, China Northern and Xinjiang Airlines, do not operate pure freighters, their passenger-belly operations will add to CSA's overall market share of Chinese airfreight. After consolidation, CSA would have a 22.6% pro-forma market share (No. 3) based on 2000 traffic.

Expand cargo terminal operations. CSA will be building a cargo handling facility at the greenfield New Guangzhou Baiyun airport, as well as determining correct timing to invest in further capacity at its Shenzhen hub. It has, to date, not indicated a move into constructing a logistics services center.

Investment Positives

We like CSA's stock primarily due to its strong domestic franchise and the growth dynamics found in that market relative to the rest of global aviation. However, there are some attractions in its cargo businesses:

Lower international exposure. As the smallest of the Big Three in terms of international cargo, CSA is less exposed to the likely prolonged slump in international cargo markets compared with its PRC peers. We expect, however, that CSA's base, the Pearl River Delta region, will be a strong beneficiary of China's WTO entry.

Express product potential. We like the fact that CSA has been proactive in creating its own branded products in the higher-margin express market. Given CSA's No.1 position in the domestic market in terms of flights and destinations, there would appear to be many opportunities to expand the service beyond the current 15 cities served.

China Post deal. CSA's exclusive deal with China Post to carry mail and assist China Post Airlines in mail and cargo transportation appears to provide an opportunity for enhanced aircraft utilization and cargo/mail revenues. However, branding and marketing looks to be under the control of China Post, with CSA merely providing capacity initially.

Risks

Global downturn/US exposure. Though less exposed to international cargo than its peers, CSA still derives significant cargo revenues from the US market. Cargo demand to and from the US could remain depressed for some time.

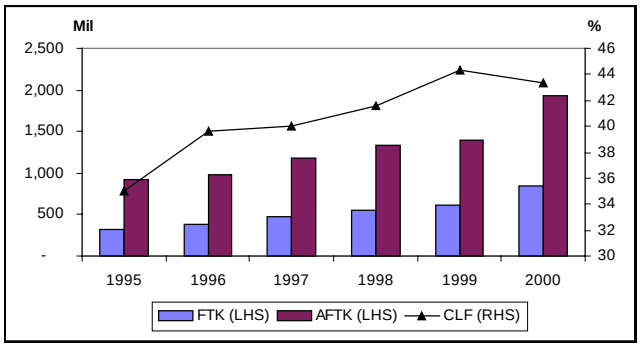
Domestic yield instability. The Civil Aviation Administration of China has focussed more effort on stabilizing domestic passenger yield. However, a lack of measures to combat declining cargo yields has caused severe discounting and competition in domestic cargo markets.

We rate CSA an Outperform-V and the stock is one of our favorites in Chinese and regional aviation in the current environment.

Exhibit 53

China Southern Airlines

Cargo Traffic and Capacity Trend, 1995-2000



Source: Sino Aviation News, Morgan Stanley Research

Exhibit 54

China Southern Airlines

Cargo Operation, 1999-2003E

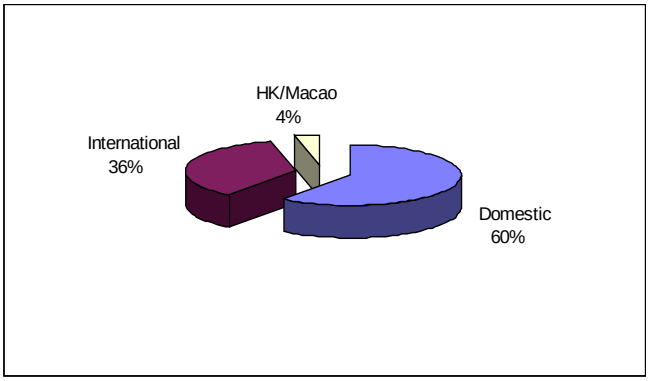
(Rmb mn)	1999	2000	2001E	2002E	2003E
Cargo Rev	1,006	1,451	1,559	1,793	1,966
Total Operating Rev	13,300	15,178	17,147	18,721	20,006
% Cargo Rev	7.6	9.6	9.1	9.6	9.8
FATK (mil)	1,396	1,892	2,165	2,390	2,563
FRTK (mil)	616	665	830	935	1,029
Cargo Load Factor (%)	44.1	35.1	38.3	39.1	40.2

E = Morgan Stanley Research Estimates
Source: Company Data, Morgan Stanley

Exhibit 55

China Southern Airlines

Cargo Revenue Breakdown 1H01



Source: Company Data, Morgan Stanley

China Southern Airlines: Financial Summary

Profit and Loss Statement

Rmb Millions	1999	2000	2001E	2002E	2003E
Passenger Revenue	11,819	13,255	15,220	16,525	17,609
Cargo Revenue	1,006	1,451	1,559	1,793	1,966
Other Revenue	475	472	369	403	431
Total Revenue	**13,300**	**15,178**	**17,147**	**18,721**	**20,006**
Labor	1,070	1,209	1,302	1,441	1,603
Fuel	2,121	3,240	3,744	3,974	4,082
Depreciation	1,808	1,864	1,919	2,069	2,269
Operating Leases	1,167	1,616	1,920	1,800	1,600
Other Expenses	5,284	6,068	6,857	7,504	8,019
Total Operating Exp.	**11,450**	**13,996**	**15,742**	**16,788**	**17,573**
Operating Profit	**1,850**	**1,182**	**1,406**	**1,933**	**2,433**
Net Interest Inc./(Exp.)	(1,085)	(984)	(860)	(910)	(930)
Gain/(Loss) on Asset Sales	(2)	373	40	0	0
Other Inc./(Exp,)	(395)	360	160	60	70
Pretax Profit	**369**	**931**	**746**	**1,083**	**1,573**
Taxation	(128)	(339)	(246)	(357)	(472)
Minority Interest	(158)	(91)	(140)	(120)	(140)
Net Profit	**82**	**502**	**360**	**606**	**961**
EBITDA	**3,103**	**3,688**	**3,385**	**3,942**	**4,632**
EBITDAR	**4,270**	**5,304**	**5,305**	**5,742**	**6,232**
EPS (Rmb)	**0.02**	**0.15**	**0.11**	**0.18**	**0.28**
Recurrent EPS* (Rmb)	**0.11**	**0.01**	**0.08**	**0.18**	**0.28**

Balance Sheet

Rmb Millions	1999	2000	2001E	2002E	2003E
Net Fixed Assets	24,501	23,645	22,686	24,917	24,588
Long-Term Investments	1,035	890	850	850	900
Other Non-Current Assets	718	500	550	480	530
Total Non-Current Assets	**26,254**	**25,035**	**24,086**	**26,247**	**26,018**
Cash/Other Liquid Assets	4,588	4,197	4,223	3,257	4,665
Non-Cash Assets	1,715	1,692	1,660	1,580	2,100
Total Current Assets	**6,304**	**5,889**	**5,883**	**4,837**	**6,765**
Current Borrowings	2,613	2,559	1,787	1,787	1,787
Other Current Liabilities	4,081	4,546	4,998	5,303	5,433
Total Current Liabilities	**6,694**	**7,105**	**6,785**	**7,090**	**7,220**
Net Assets	**25,864**	**23,819**	**23,184**	**23,994**	**25,562**
Long-Term Debt	15,915	13,205	12,177	12,197	12,697
Other Long-Term Liabilities	333	444	415	480	458
Shareholder Equity	8,380	8,881	9,241	9,847	10,808
Minority Interests	1,236	1,288	1,350	1,470	1,600
Capital Employed	**25,864**	**23,819**	**23,184**	**23,994**	**25,562**

Cash Flow Statement

Rmb Millions	1999	2000	2001E	2002E	2003E
Pretax Profit	**369**	**931**	**746**	**1,083**	**1,573**
Add: Depreciation	1,808	1,864	1,919	2,069	2,269
Less: Profit on Sale of Assets	2	(373)	(40)	0	0
Less: Tax Paid	(9)	(126)	(98)	(143)	(189)
Other Non-Cash Items	(1,776)	(2,367)	(1,880)	(1,880)	(1,930)
Gross Cash Flow	**393**	**(71)**	**646**	**1,129**	**1,723**
Capital Expenditures	(1,386)	(1,381)	(1,000)	(4,300)	(2,000)
Working Capital Adj.	2,805	2,427	1,974	2,080	1,550
Free Cash Flow	**1,812**	**974**	**1,620**	**(1,091)**	**1,273**
Sale of Fixed Assets/Invmts.	96	1,025	80	0	60
Share Issues	0	0	0	0	0
Purchase of Invmts./Subsids.	(25)	(137)	0	0	0
Others	(1,399)	(2,253)	(1,675)	125	75
Net Cash Flow	**485**	**(391)**	**25**	**(966)**	**1,408**
Beginning Cash/(Debt)	**4,104**	**4,588**	**4,197**	**4,223**	**3,257**
Ending Cash/(Debt)	**4,588**	**4,197**	**4,223**	**3,257**	**4,665**

Ratio Analysis

	1999	2000	2001E	2002E	2003E
Growth (%)					
Passenger Revenue	11.5%	12.1%	14.8%	8.6%	6.6%
Cargo Revenue	4.7%	44.2%	7.4%	15.0%	9.7%
Total Revenue	12.2%	14.1%	13.0%	9.2%	6.9%
Operating Profit	213.5%	-36.1%	18.9%	37.5%	25.8%
Pretax Profit	NM	152.7%	-19.9%	45.2%	45.2%
Net Profit	NM	509.0%	-28.3%	68.4%	58.6%
EBITDA	49.9%	18.9%	-8.2%	16.5%	17.5%
EBITDAR	24.2%	24.2%	0.0%	8.2%	8.5%
EPS	NM	509.0%	-28.3%	68.4%	58.6%
Recurrent EPS*	NM	-89.5%	569.2%	133.6%	58.6%
CEPS	48.0%	10.9%	-4.1%	19.7%	23.1%
Margins (%)					
EBITDA Margin	23.3%	24.3%	19.7%	21.1%	23.2%
EBITDAR Margin	32.1%	34.9%	30.9%	30.7%	31.1%
Operating Margin	13.9%	7.8%	8.2%	10.3%	12.2%
Net Profit Margin	0.6%	3.3%	2.1%	3.2%	4.8%
Returns (%)					
ROE	1.0%	1.0%	5.5%	3.8%	5.9%
ROA	0.3%	0.3%	1.6%	1.2%	1.9%
Gearing (%)					
Net Debt/Equity	166.4%	130.2%	105.4%	108.9%	90.9%
Long-term Debt/Equity	189.9%	148.7%	131.8%	123.9%	117.5%
Total Debt/Equity	221.1%	177.5%	151.1%	142.0%	134.0%
Net Interest Coverage (x)	1.2	1.9	1.7	2.1	2.5

Operational Analysis

Rmb Millions	1999	2000	2001E	2002E	2003E
Pax Capacity (bn ASKs)	31,846	35,831	40,605	43,876	46,495
Pax Traffic (bn RPKs)	18,685	21,653	25,071	27,246	29,053
Pax Load Factor (%)	58.7%	60.4%	61.7%	62.1%	62.5%
Pax Yield (Rmb/RPK)	0.63	0.61	0.61	0.61	0.61
Cargo Capacity (bn AFTKs)	1,396	1,892	2,165	2,390	2,563
Cargo Traffic (bn RFTKs)	616	665	830	935	1,029
Cargo Load Factor (%)	44.1%	35.1%	38.3%	39.1%	40.2%
Cargo Yield (Rmb/RFTK)	1.63	2.18	1.88	1.92	1.91
Overall Capacity (bn ATKs)	3,762	4,607	5,251	5,724	6,097
Overall Traffic (bn RTKs)	2,003	2,453	3,086	3,387	3,644
Overall Load Factor (%)	53.2%	53.2%	58.8%	59.2%	59.8%
Average Yield (Rmb/RTK)	6.40	6.00	5.44	5.41	5.37
Unit Cost (Rmb/ATK)	3.04	3.04	3.00	2.93	2.88
Growth (%)					
Pax Capacity	5.6%	12.5%	13.3%	8.1%	6.0%
Pax Traffic	2.3%	15.9%	15.8%	8.7%	6.6%
Pax Load Factor	-1.9%	1.8%	1.3%	0.4%	0.4%
Pax Yield	9.0%	-3.2%	-0.8%	-0.1%	-0.1%
Cargo Capacity	4.1%	35.5%	14.4%	10.4%	7.3%
Cargo Traffic	10.4%	7.9%	24.9%	12.6%	10.1%
Cargo Load Factor	2.5%	-9.0%	3.2%	0.8%	1.0%
Cargo Yield	-5.1%	33.6%	-14.0%	2.1%	-0.4%
Overall Capacity	5.0%	22.4%	14.0%	9.0%	6.5%
Overall Traffic	4.6%	22.5%	25.8%	9.7%	7.6%
Overall Load Factor	-0.2%	0.0%	5.5%	0.4%	0.6%
Average Yield	6.1%	-6.4%	-9.3%	-0.5%	-0.7%
Unit Cost	-3.2%	-0.2%	-1.3%	-2.2%	-1.7%

Valuation

Rmb Millions	1999	2000	2001E	2002E	2003E
P/E	67.9	11.2	15.6	9.2	5.8
Relative P/E	1.98	0.69	1.00	0.62	0.42
P/CEPS	2.9	2.6	2.8	2.3	1.9
P/BV	0.7	0.6	0.6	0.6	0.5
EV/EBITDA	6.3	4.6	4.5	4.1	3.3

** Recurrent EPS excludes asset sales and exceptional items.*

E = Morgan Stanley Research Estimates; NA = Not Applicable; NM = Not Meaningful

Source: Company Data, Morgan Stanley Research

EAS International Transportation Limited (Unlisted)

Company Background

EAS is a joint venture established in 1985 by Hua Tong Industrial Development (Chinese, 75%) and EAS Datong Air Cargo (HK, 25%). In 15 years, EAS has evolved from a small shipping forwarder with seven employees to a logistics provider of more than 3,000 employees and a turnover of Rmb1.8 billion in 2000. EAS offers integrated logistics services, airfreight services, sea freight services, express services, trucking services, storage, distribution services, exhibition services and customs services.

Logistics Services

EAS provides logistics solutions to multinational corporations in China through its network over 1,100 cities. Exhibit 56 shows EAS's logistics solution for Dell. EAS not only provides a full range of transportation and forwarding services but also designs, operates and monitors the whole logistics process according to customers' operating needs. Freight forwarding accounts for about 60-70% of EAS's revenue, 3PL solutions about 10-20% and express about 20%.

Logistics Strategy

EAS has positioned itself as a one-stop 3PL with 4PL attributes providing fast, safe, high-tech, low-cost logistics solutions to MNCs in China.

Short-term Plans

Domestic logistics and distribution network: EAS is building several logistics distribution centers (LDC) at strategically located air/sea ports in China (Beijing, Shanghai, Hong Kong, Guangzhou, Wuhan, Dalian etc). Different modes of transport (air/ocean/truck/rail) can be combined at the LDCs and value-added logistics services such as packing, repacking, customs clearance and expedient delivery will be provided at the LDCs.

GPS trucking system: EAS uses mobile phones for trucking communication, but plans to adopt a GPS system.

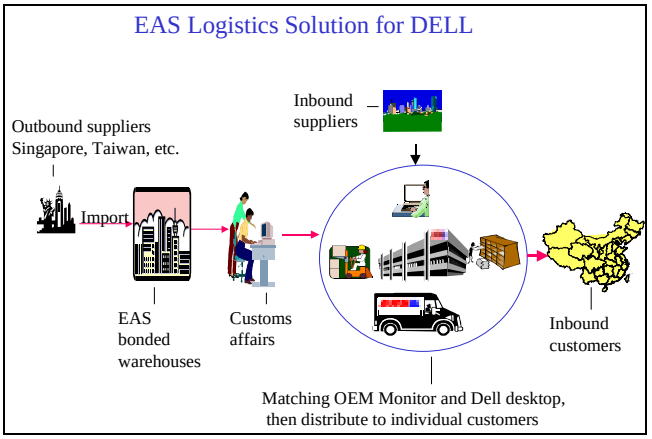
Nationwide information net: EAS plans to build a star-like nationwide information network to link its center with all its operating points.

Competitive Advantages

Top-down management model: EAS has a centralized headquarters branch model (Exhibit 57), which minimizes friction between the parent and subsidiaries.

Exhibit 56

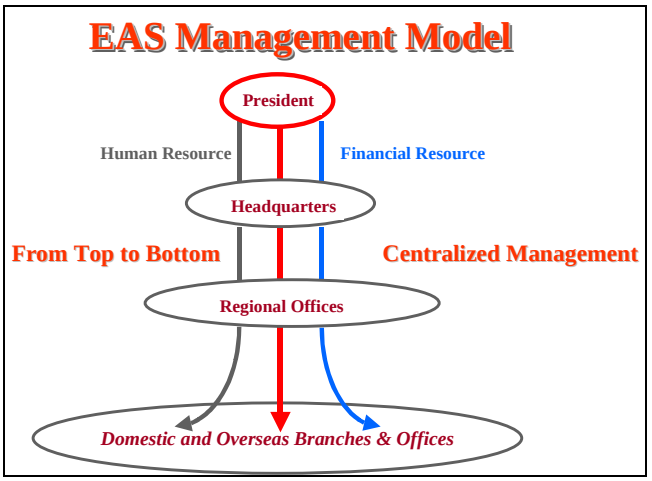
EAS Logistics Solution for Dell



Source: Company Data, Morgan Stanley Research

Exhibit 57

EAS Management Model



Source: Company Data, Morgan Stanley Research

Strategically allocated assets: EAS owns about 800 vehicles, more than 20,000 square meters of warehouses and 93,000 sq. ms of container yards in 12 cities in China. Its assets are strategically allocated, not too heavy in each segment but enough to provide credibility and flexibility to ensure timely quality service.

Extensive network: EAS has 93 branches and offices in China, nine branches overseas, a domestic network covering more than 1,100 cities and a global network reaching over 200 countries and regions through alliances and agencies.

IT supports: EAS boasts the first internal network system in China's transportation forwarding industry, which allows it to clear customs through an EDI system and track and trace express goods through Airborne FOCUS or Internet.

Client base and sector expertise: EAS has developed a large multinational client base from its traditionally strong airfreight forwarding business. It has a distinctive sector focus on high-value-added IT goods and intents to develop sector expertise in electronics.

Risk Factors

Not particularly strong in any sector: EAS aims to be a full-service 3PL, but it is not particularly strong in any segment. On one hand this is a weakness, but on the other hand EAS is forced to be a solutions provider rather than a capacity provider.

License limitation: EAS has the license for freight forwarding companies from the Ministry of Foreign Trade, but does not have the license from the Ministry of Communications for transportation companies. That means its trucks can't carry goods not related to import and export, which results in a high empty return rate.

Lack of experience with domestic clients: EAS does not have any real domestic clients. But with the emergence of national chain stores and brands, this is a market force no logistics player should ignore.

Vulnerable to foreign competition and acquisition: Though EAS is relatively more efficient and nimble compared with the SOEs, it will still have a tough time competing with foreign 3PLs given its early stage on the learning curve. However, EAS's size, assets allocation, network and human resources all make it an attractive acquisition target for foreign 3PLs eyeing the China market.

Exhibit 58

Client Base and Sector Focus

Sector	Clients
Apparel	Ispert
Automotive	Beijing Jeep, Audi, Citroen, Volkswagen
Computer/Peripherals	Dell, IBM, Acer, HP China, AMP, Samsung, NEC, Ingram Micro, LG
Construction	Fluor Danials, Bechtel
Consumer Electronics	Panasonic, Sony, Phillips, Moulinex
Consumer Goods	3M China, Castrol, Kodak, Siemens
Food & Beverage	Budweiser Wuhan, Martell, Gibson
Medical	GE Medical
Telecommunications	Motorola, Ericsson, Siemens

Source: EAS

Development Needs

Business model: Compared with Sinotrans, it is easier for EAS to adopt the Freight Forwarding + SCM model, as EAS is more asset light. Under this model, the combination of freight forwarder + SCM results in complementary customer base and integration of domestic and international capabilities, thus offering the best global solution. The flexibility to choose carriers is a better customer solution.

Global alliances: EAS has already formed an alliance with Airborne for express. We believe EAS could form more such alliances to strengthen different parts of its logistics service chain and enhance its global reach.

Mergers and acquisitions: Consolidation is a definite industry trend. EAS should consider acquiring other logistics players, especially those with SCM expertise in China to underpin its position in the logistics market. EAS itself is also an attractive M&A target for multinational logistics players. It should consider these merger opportunities as well to expand overseas.

Funding needs: We think EAS should consider going to the stock market as soon as possible to fund its 3PL expansion, enhance its international reputation and position itself for the M&A landscape.

Hutchison Port Holdings (Unlisted)

Company Background

Hutchison Whampoa (Hutchison) is Hong Kong's largest diversified investment holding company, with significant business interests in Asia/Pacific, Australia, Europe and North America. The company's core businesses include telecommunications, ports, property development and investment, retailing, energy and infrastructure.

Hutchison has been involved in ports and related business since 1866. The company has grown into the largest private port operator in the world. The group's ports are controlled by wholly owned Hutchison Port Holdings (HPH), which was formed in 1994. In the same year, Hutchison Delta Ports was established under HPH to organize the group's six Pearl River and coastal ports in China.

Current Logistic Services

HPH is a significant global port operator with 32 container terminals in Asia, Europe, the Americas and Africa. Ten of these ports are located in the top 20 busiest ports worldwide, including Hong Kong.

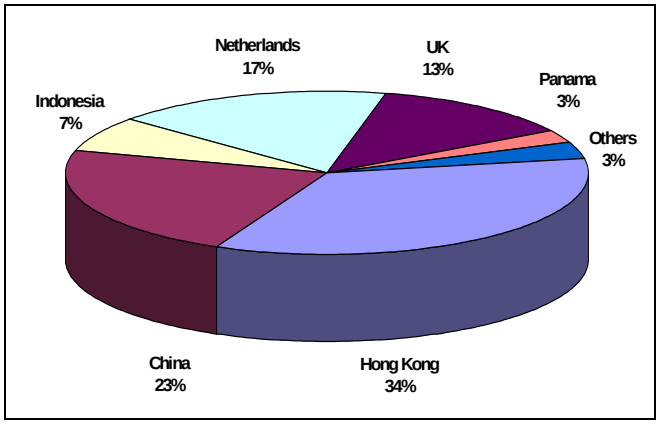
In March 2000, HPH launched a B2B Internet-based logistics company called Portsnportals.com. Since then the Internet industry has experienced severe fallout, but Portsnportals remains a going concern under the new name of LINE, which is short for Logistics Information Network Enterprise. This business is small relative to HPH's ports businesses, but has interesting longer-term prospects.

Terminal operation: HPH is the largest private port operator in the world in terms of throughput. In 2000, HPH reported a 41% YoY jump in throughput growth, extending its leading position over its peers with an 11% global market share (Exhibit 60). The company handled 25.3 million TEUs, up from 17.9 million in 1999.

The group's ports operations contributed 32% of Hutchison's total pre-exceptional profits of HK$8.4 billion in 2000. Acquisitions of existing ports and new port investment projects signed in China and South Korea should sustain the group's long-term growth profile. In our view, China has tremendous growth opportunities with its accession to the WTO and HPH is well positioned to capitalize on anticipated increased international trade.

Exhibit 59

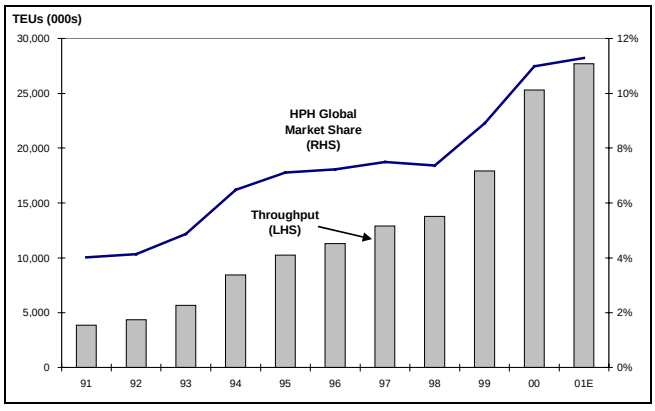
Hutchison Port Holdings
Breakdown of Throughput by Country, 2000



Source: Company data, Morgan Stanley Research

Exhibit 60

Hutchison Port Holdings
Throughput and Global Market Share, 1991-2001E



Source: Company data, Drewry Consultants

E = Morgan Stanley Research

Strengths

Market leadership: The company has stakes in nine ports in China, including deep-water ports in Shanghai and Yantian. According to our estimates, HPH is the leading private operator in the country, with about 35% market share of China's main ports. China is HPH's second largest market, representing 23% of the group's total throughput. In 2000, HPH handled 5.7 million TEUs, and this figure should grow at a healthy clip over the next several years.

Stakes in key China ports: We believe the mainland's most active ports in Shanghai and Yantian should be key beneficiaries of WTO accession due to location, facilities and deep-water status.

Further China port investments: HPH signed and sealed three new deals in China this year, with one more likely by year-end. We expect the group to sign another deal to invest in Shanghai's Waigaoqiao port. Thus far, the group has received government approval to invest further in Yantian, allowing it to help develop and operate phase three and phase two of Ningbo. Most recently, the company signed agreements to invest in Xiamen, a strategic port for trade with Taiwan. In our view, these investments should sustain its competitive edge over its competitors over the next several years.

Expansion outside China: In June, Hutchison successfully won a bid with domestic companies to operate phase two of the Kwangyang port in the southern part of South Korea. In our view, this is an important move to compete against one of the world's busiest ports, Pusan. Pusan has been ranked among the top five ports in terms of throughput volume over the past few years.

Exhibit 61

China and Hong Kong Ports
Throughput and Hutchison Market Share, 1999-2000

	TEU Mil		YoY	Est. Hutch Mkt. Share	
City	1999	2000	Change	Effective	Controlled
Hong Kong	**16.2**	**18.1**	**11.6%**	**41%**	**49%**
China's Main Ports:					
Shanghai	**4.2**	**5.6**	**33.1%**	**21%**	**52%**
Yantian	**1.6**	**2.1**	**34.7%**	**51%**	**100%**
Qingdao	1.5	2.1	37.7%	0%	0%
Xingang	1.3	1.7	31.2%	0%	0%
Huangpu	1.2	1.4	21.2%	0%	0%
Xiamen	**0.8**	**1.1**	**27.8%**	**N/A**	**N/A**
Dalian	0.7	1.0	37.4%	0%	0%
Ningbo	**0.6**	**0.9**	**50.1%**	**N/A**	**N/A**
Shekou	0.6	0.7	25.0%	0%	0%
China*	**12.6**	**16.7**	**32.9%**	**16%**	**35%**
Total	**28.8**	**34.8**	**20.9%**	**29%**	**42%**

Source: Company data, Morgan Stanley Research
Estimates = Morgan Stanley Research
N/A - Not Available
Note - Includes only the major ports*

Exhibit 62

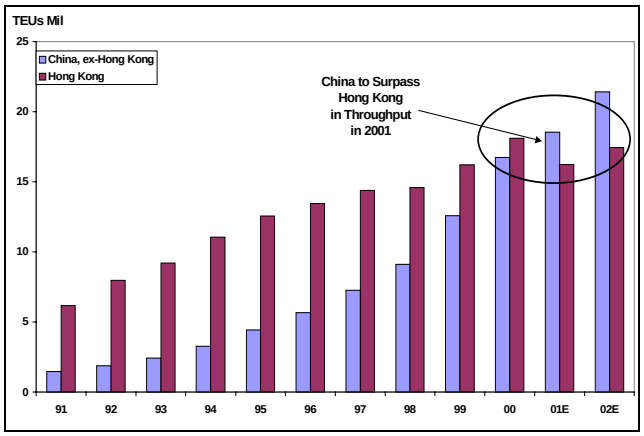
Hutchison Ports Investments: January to Sept. 2001

Port	Location	Attributable Est. HK$ mn
ICTSI (eight ports)	Various	3,120
Kwangyang (Ph 2)	Pusan, South Korea	624
Ningbo (Ph 2)	Ningbo, China	916
Yantian (Ph 3)	Shenzhen, China	1,536
Haicang	Xiamen, China	942

Source: Reuters

Exhibit 63

China and Hong Kong Ports
Throughput Growth 1990-2002E



Source: Drewry Consultants

E = Morgan Stanley Research Estimates

Company Background – LINE

LINE provides supply chain management services. Logistics companies like LINE facilitate the interaction between buyers, suppliers and other intermediaries. LINE also allows different parties to share information with each other across the supply chain, including order/delivery status, in a secure platform. The overall goal of the company, however, is to cut costs by reducing lead times and improving efficiency in the order and delivery process.

The company is organized into five business units: 1) StreamLINE, 2) TradeLINE, 3) InformationLINE, 4) MarineLINE and 5) SolutionLINE.

StreamLINE offers transportation management services to maximize capacity utilization and minimize freight handling costs.

TradeLINE aims to improve supply chain management by bringing together a vast network of buyers and suppliers to form an online trading community to facilitate transactions between various parties.

InformationLINE tries to minimize overhead and administrative costs by eliminating duplication of documentation by creating a paperless environment.

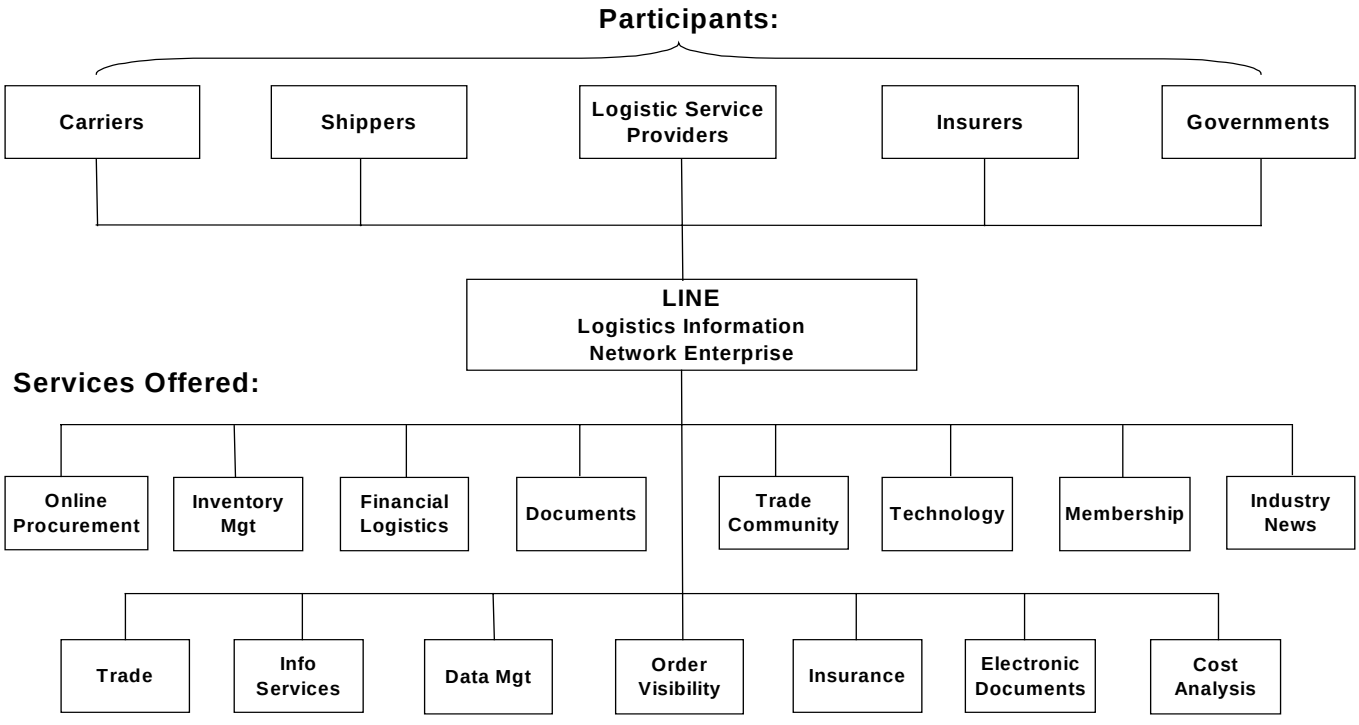
MarineLINE sources parts, supplies and provisions for ports and vessels, while SolutionLINE will present tailored industry solutions for specific business sectors.

The company is making some progress, albeit slowly. LINE has formed alliances with Reebok and most recently Yue Yuen, the world's largest branded sports and casual footwear manufacturer, to handle various aspects of their logistics operations.

LINE is relatively small and new to the industry. Big 5 consulting firms and offshoots like Accenture (formerly Andersen Consulting), IBM and others have been in this field for years. Competing against the likes of these organizations is challenging. However, we believe LINE should be able to leverage HPH's business relationships to become a niche player.

Exhibit 64

LINE Participants and Services Offered, 2001



Source: Company data, Morgan Stanley Research, Sinotrans

SembCorp Logistics (S$1.66, Outperform)

Company Background

SembCorp Logistics was formed in March 1999 through the merger of Singapore Technologies Logistics and Sembawang Marine & Logistics. It is one of the largest third-party logistics providers listed in Asia, providing supply chain management and offshore logistics services in 14 countries. It manages over 9.6 million sq. ft of warehouse space and manages an inventory of over US$1.5 billion comprising 850,000 line items. In December 2000, SCL acquired a 20% stake in Kuehne & Nagel (K&N), one of the largest ocean and air freight providers in the world, which significantly expanded its scale and geographic scope. The global network was completed with K&N's acquisition of USCO Logistics, a non-asset based logistics provider in North America.

Bullish on SCL's long-term growth

Despite the uncertainty in the global economy, we are extremely positive on SCL for four reasons:

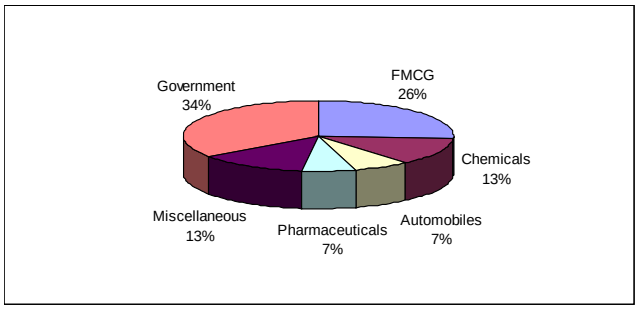
- **We think the stock is a defensive play because of its exposure to recession-proof industries**. SCL derives 60% of its revenues from the government and fast moving consumer goods sectors (Exhibit 65). We consider these sectors to be relatively recession proof.

- **We like SCL for its exposure to China**, which is expected to continue on its high growth trajectory despite the threat of a global recession. The country's impending entry into the WTO should create even more opportunities for 3PLs like SCL, as the 3PL market in China has low penetration and, hence, high growth potential.

- **It has become a global player through its alliance with K&N and USCO Logistics.** We are beginning to see synergies from the alliance. In 1H01, SCL gained four new customers through joint marketing efforts with K&N. SCL expects the number of new customers to grow to 15 by year-end.

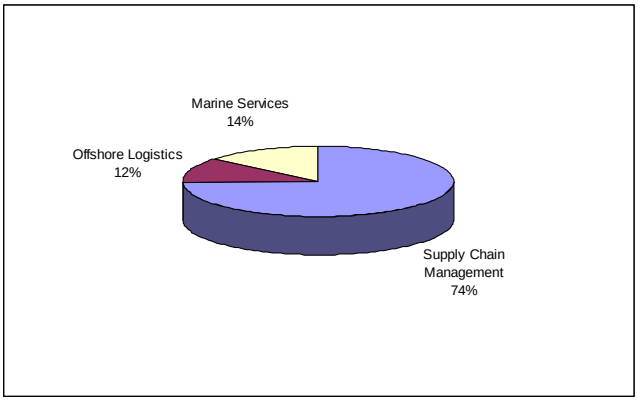
- **The stock's valuation looks attractive.** At the current share price of S$1.66, SCL's 2001 P/E of 19.6 times and EV/EBIT of 12.5 times is lower than its peers in the US, despite its much higher and resilient growth potential.

Exhibit 65
SembCorp Logistics
Estimated Industry Exposure by Revenue



Source: Morgan Stanley Research

Exhibit 66
SembCorp Logistics
Revenue Breakdown, 1H01



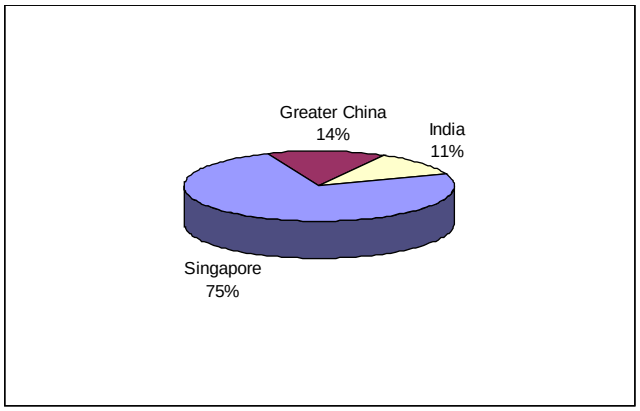
Source: Company Data, Morgan Stanley Research

Logistics Operation

SCL derives its revenues from mainly two sources, namely supply chain management and offshore logistics. Prior to June 2001, it also had a marine services division, but that business has since been divested. In 1H01, SCM accounted for 74% of SCL's operating revenues (Exhibit 66). SCL expects this business to be the key growth driver for the group for the next few years.

The SCM business derives the bulk of its revenues from Singapore, China and India. In 1H01, Singapore accounted for 75% of SCM revenues, China 14% and India contributed 11% (Exhibit 67). SCL expects China and India to contribute 50% to SCM revenues by 2003, with China growing at a faster pace than India.

Exhibit 67
SembCorp Logistics
Supply Chain Revenue Breakdown by Region



Source: Company Data, Morgan Stanley Research

Exhibit 68
SembCorp Logistics: China Network

Source: SembCorp Logistics, Morgan Stanley Research

China Operations

SCL operates in China through its 51%-owned subsidiary Shenzhen ST-Anda Logistics, a joint venture with China Merchant Holdings. SCL believes the group is one of the two leading foreign supply chain logistics providers in China. Its network includes 20 distribution centers with a combined warehousing space of 1.5 million sq. ft. It covers more than 600 cities in China and can deliver goods to 50% of these cities within 48 hours by either rail or road. By the end of this year, SCL should have expanded its network to 700 cities (Exhibit 68).

SCL provides mainly domestic distribution services to MNCs in China. Many of these MNCs are in the fast moving consumer goods sector and include well-known brand names such as Colgate Palmolive, Johnson & Johnson, Pepsi and Exxon (Exhibit 69). SCL believes that it has first-mover advantage in China, as few foreign logistics providers have obtained the necessary licenses to provide domestic distribution services and often have to team up with a local partner in order to provide such services.

Exhibit 69
SembCorp Logistics
Major SCM Customers in China

⇒ Colgate Palmolive	⇒ Johnson & Johnson
⇒ CPC Best Food	⇒ Kodak
⇒ Effem Food	⇒ Kraft Food
⇒ Eveready	⇒ L'oreal/Maybelline
⇒ Exxon	⇒ Pepsi
⇒ GE Plastics	⇒ Van Melle
⇒ Hawley & Hazal	⇒ Xi'an Janssen

Source: SembCorp Logistics

Long-Term Strategy

SCL's vision statement aptly sums up its long-term strategy, which is to be a world-class integrated logistics service provider in Asia, leveraging on technology and operational excellence to provide high value-added services for today's global businesses.

SCL's alliance with K&N and USCO Logistics will help them to achieve the global reach that today's MNCs increasingly require. With the alliance, SCL can position itself to be a one-stop logistics provider and compete with the likes of Danzas, Exel, Bax Global etc.

Regional expansion plans: SCL intends to further expand its regional network in the next few years. In 2001, it started operations in Malaysia and Australia and has plans to expand to the Philippines, Korea, Taiwan, Vietnam and Japan within the next year.

SembCorp Logistics: Financial Summary

Profit and Loss Statement

S$ Millions	1999	2000	2001E	2002E	2003E
Supply Chain Mgt Rev	290	315	386	479	601
Offshore Logistics Rev	41	51	61	72	84
Marine Services Rev	76	82	34	0	0
Other Revenue	35	0	0	0	0
Total Revenue	**441**	**448**	**481**	**551**	**685**
COGS (excluding depn)	333	351	391	461	580
Depreciation	34	27	19	16	16
Total Operating Exp	**367**	**378**	**409**	**477**	**597**
Operating Profit	**75**	**71**	**72**	**74**	**88**
Net interest inc/(exp)	(10)	(9)	(8)	1	5
Other inc/(exp)	3	(7)	0	0	0
Associates	7	10	44	47	59
Exceptional items	(29)	0	56	0	0
Pre-tax profit	**46**	**66**	**164**	**122**	**153**
Taxation	8	14	39	33	42
Minority interest	3	6	8	12	17
Net profit	**35**	**47**	**117**	**77**	**93**
EBITDA	**118**	**101**	**135**	**137**	**164**
EBIT	**84**	**75**	**116**	**121**	**148**
EPS (S$)	**0.05**	**0.07**	**0.14**	**0.09**	**0.11**
Recurrent EPS* (S$)	**0.09**	**0.07**	**0.08**	**0.09**	**0.11**

Balance Sheet

S$ Millions	1999	2000	2001E	2002E	2003E
Net fixed assets	269	198	100	104	108
Long-term investments	83	284	289	375	465
Other non-current assets	2	2	2	2	2
Total Non-Current Assets	**354**	**485**	**391**	**482**	**575**
Cash & other liquid assets	62	50	83	48	54
Non-cash assets	209	170	181	203	246
Total Current Assets	**271**	**220**	**264**	**251**	**300**
Current borrowings	28	410	110	110	110
Other current liabilities	213	181	234	246	306
Total Current Liabilities	**241**	**591**	**344**	**356**	**416**
Net Assets	**384**	**114**	**311**	**376**	**459**
Long-term debt	66	16	16	16	16
Other long-term liabilities	24	17	17	17	17
Shareholders equity	257	57	245	299	364
Minority interests	37	23	32	44	61
Capital Employed	**384**	**114**	**311**	**376**	**459**

Cash Flow Statement

S$ Millions	1999	2000	2001E	2002E	2003E
Pretax profit	**46**	**66**	**164**	**122**	**153**
Add: Depreciation	34	27	19	16	16
Less: Profit on asset sales	0	6	(56)	0	0
Less: Tax paid	(12)	(13)	(18)	(39)	(33)
Less: Associates	(7)	(10)	(44)	(47)	(59)
Other non-cash items	3	(5)	(6)	(8)	(13)
Gross Cash Flow	**64**	**70**	**59**	**44**	**64**
Capex	(37)	(28)	(20)	(20)	(20)
Working capital adj	(21)	(1)	1	2	3
Free Cash Flow	**6**	**41**	**40**	**26**	**47**
Sale of fixed assets	28	15	0	0	0
Share issues	6	210	101	0	0
Net investment sales/(purch)	26	(651)	196	(40)	(30)
Share repurchases	0	0	0	0	0
Dividends paid	(2)	(6)	(9)	(29)	(23)
Net borrowings/repayment	(56)	378	(300)	0	0
Others	6	7	6	8	13
Net Cash Flow	**15**	**(6)**	**33**	**(35)**	**7**
Beginning Cash	**35**	**50**	**44**	**77**	**41**
Ending Cash	**50**	**44**	**77**	**41**	**48**

Ratio Analysis

	1999	2000	2001E	2002E	2003E
Growth (%)					
Supply Chain Mgt Rev	627.7	8.4	22.7	24.0	25.5
Offshore Logistics Rev	(1.2)	25.4	19.1	17.9	16.8
Marine Services Rev	(3.5)	8.5	(58.3)	(100.0)	0.0
Total revenue	108.4	1.6	7.4	14.4	24.4
Operating profit	(5.0)	(5.6)	1.8	3.1	19.0
Pretax profit	92.0	44.0	148.1	(25.7)	25.3
Net profit	113.5	34.4	149.6	(34.4)	21.6
EBITDA	(12.5)	(14.0)	33.2	1.0	20.3
EBIT	(21.3)	(11.5)	55.9	3.9	22.3
EPS	22.3	32.4	113.4	(36.2)	21.6
Recurrent EPS*	(60.4)	(27.4)	28.3	6.1	21.6
CEPS	(10.8)	6.0	57.6	(33.9)	18.8
Margins (%)					
EBITDA margin	26.7	22.6	28.1	24.8	24.0
EBIT margin	19.1	16.7	24.2	22.0	21.6
Operating margin	17.0	15.8	15.0	13.5	12.9
Net profit margin	7.9	10.4	24.3	13.9	13.6
EBIT Margin Breakdown (%)					
Supply Chain Mgt	9.6	12.9	22.2	20.3	20.1
Singapore	10.2	14.1	12.7	13.0	13.0
China	6.4	5.4	8.8	8.0	8.0
India	4.2	4.1	2.5	3.0	3.5
Offshore Logistics	46.6	37.5	33.4	30.5	28.2
Revenue Composition (%)					
Supply Chain Mgt	65.8	70.2	80.2	86.9	87.7
Offshore Logistics	9.3	11.4	12.7	13.1	12.3
Marine Services	17.1	18.3	7.1	0.0	0.0
SCM Rev Composition (%)					
Singapore	88.0	77.8	71.1	62.5	53.8
China	7.5	11.7	16.2	22.1	29.1
India	4.1	10.1	12.3	14.9	16.7
Return (%)					
ROE **	28.1	29.9	40.6	28.2	28.1
ROA **	11.2	7.0	9.0	11.1	11.6
Gearing (%)					
Net Debt/Equity	12.5	662.9	17.6	26.3	19.7
Long-term Debt/Equity	25.7	29.0	6.7	5.5	4.5
Total Debt/Equity	36.6	751.6	51.5	42.3	34.7
Net Interest Coverage	8.7	8.8	14.9	(115.4)	(30.1)

Valuation

	1999	2000	2001E	2002E	2003E
P/E **	18.3	25.2	19.6	18.5	15.2
Relative P/E	1.38	2.27	1.50	1.62	1.55
P/CEPS	17.0	16.0	10.2	15.4	13.0
P/BV	4.5	20.8	5.6	4.7	3.9
EV/EBITDA	12.2	17.6	10.8	10.9	9.0
EV/EBIT	17.1	23.9	12.5	12.3	10.0
Dividend yield	0.2	0.8	2.1	1.6	2.0

** Recurrent EPS excludes assets sales and exceptional items*

*** excludes exceptional items*

E = Morgan Stanley Research Estimates; NA = Not Applicable; NM = Not Meaningful; Source: Company Data, Morgan Stanley Research

Sinotrans (Unlisted)

Company Background

Founded in 1950 as China's first foreign trade transportation company, Sinotrans is the largest freight forwarding company in China, with Rmb24 billion in assets and 64,000 employees. Sinotrans provides services covering freight forwarding, ocean shipping, ship agency, air transportation, air courier, truck and railway transportation, multi-model transportation as well as storage and warehousing.

Current Logistics Services

Global supply chain management: Sinotrans offers complex supply chain management from supplier through manufacturer, distributor, dealer and/or direct to the end user. For Motorola, Sinotrans even has a team stationed in the Tianjin manufacturing factory as part of the client's supply chain.

Inventory and warehouse management: Sinotrans uses MK Logistics, a software bought from Computer Associates in its warehouse management, through which Sinotrans not only monitors inventory but also provides purchase, sales, and financial information to clients.

Express and distribution services: Sinotrans offers e-commerce distribution (e.g. for Stone), and distribution for supermarkets (e.g. Price-smart).

Competitive Advantages

One-stop supermarket: as the country's largest sea freight forwarder, second-largest shipping agent, third-largest shipping company, earliest partner of the most profitable joint-venture express companies, a leading airfreight forwarder and trucking operator, Sinotrans is in an unparalleled position to combine land, air and sea logistics to provide clients with a one-stop service.

Global footprint: combining 47 domestic subsidiaries, 263 joint ventures throughout the country, eight representative offices and 29 enterprises overseas, Sinotrans has established an extensive network at home and abroad.

Lead in IT Adoption among domestic players: The group virtually realized online communication through EDI Network, Internet and Telecom Basic Net. Based on its network system, sharing of internal resources and information as well as worldwide online cargo tracing, booking and information retrieval can be fully realized. GPS and OmniTracs system have been introduced to Sinotrans road vehicle fleets and the advanced warehouse management system, MK Logistics, is used in its warehouses.

Exhibit 70

Logistics Capabilities of Sinotrans

Sector/services	Market position	Market share
Freight forwarding	No.1	10%
Air express	No.1	30%
Shipping agent	No.2	30%
Shipping	No.3	n/a
Logistics information Management	No.1	n/a
Supply chain management	No.1	n/a
Logistics solution	No.1	n/a
Integrated services	No.2	n/a

Source: Sinotrans, China Shipping Gazette

Exhibit 71

Client Base and Industry Focus

Sector	Clients
Telecoms	Motorola, Ericcson, Unicom, Nokia
Computers/peripherals	Acer
Consumer Electronics	Panasonic, Haier, Philips, Samsung, Sharp
Automotive	Volkswagen, Hyundai, Daewoo, Chevron
Beverage	Coca-Cola
Petroleum & Chemicals	Sinopec

Source: Sinotrans

Client base and sector expertise: Sinotrans has developed solid client relations and expertise in telecommunications, consumer electronics and food & beverage. Distinguishable from most other 3PLs, Sinotrans serves both multinational and Chinese clients and has the ability to handle both small and big cargoes.

Long-Term Strategy

Sinotrans is determined to become a leading logistics provider. It has initiated restructuring plans to transform from a basic services provider to a real 3PL provider.

Development Needs

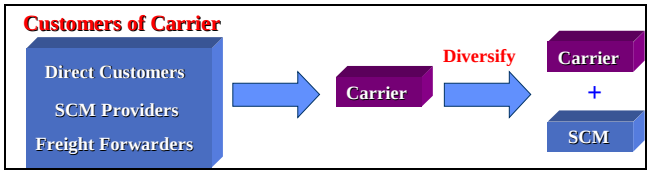
Restructuring towards the right model: as a leading freight forwarder and carrier at the same time, Sinotrans will have to choose from two models: Carrier Diversification to SCM (Exhibit 72) and Freight Forwarding + SCM (Exhibit 73). We think the latter is a better model for Sinotrans. The downside of the first is that many customers of carriers are SCM providers and freight

forwarders themselves. Carrier entry into SCM puts them in direct competition with their customers in SCM and freight forwarding. Using their own carriers may not be in customers' best interests. In the second model, the combination of freight forwarder and SCM results in complementary customer base and integration of domestic and international capabilities, thus offering the best global solution. The flexibility to choose carrier also creates better customer solution.

Global partnerships: Sinotrans is the earliest partner of global express giants DHL, UPS, TNT and OCS in China. Sinotrans is in a good position to leverage its partnerships to new logistics services like 3PL.

Exhibit 72

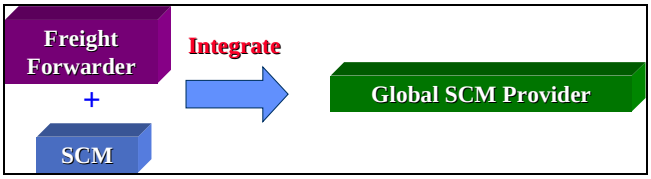
Model 1: Carrier Diversification to SCM



Source: Morgan Stanley Research

Exhibit 73

Model 2: Freight Forwarding + SCM



Source: Morgan Stanley Research

Appendix

Case Study 1: In-house or Outsource? – A Paradox for Chinese Companies

Case Study 2: Foreign 3PLs in China

Case Study 3: The End Game for Logistics – Experience from US and Europe

Case Study 1: In-house or Outsource? – A Paradox for Chinese Companies

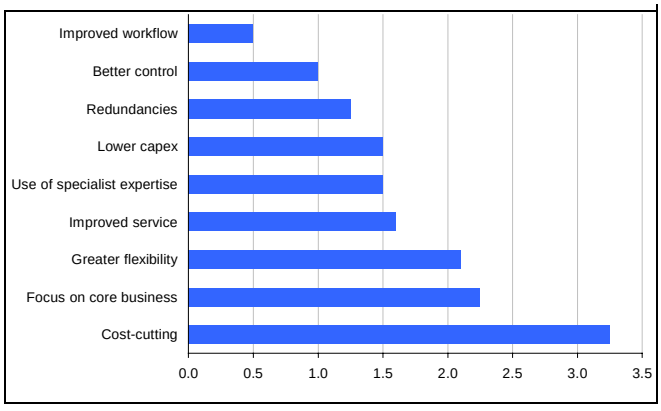
Outsourcing by corporations generally results in cost savings of between 10-20% per unit, with an average reduction in committed capital of 18%, by our estimates. Other advantages include greater flexibility, increased globalization and a desire to focus on core competencies. Hence, it could be expected that the propensity to outsource would be strong in China. To our surprise, however, the clients for 3PLs in China are mostly MNCs. The majority of Chinese companies, even national brands like Legend and Haier, are still handling logistics by themselves. Why?

The common reason cited is simply that they are frustrated by the current 3PL market. Among the above benefits of outsourcing cited by German corporations (Exhibit 74), in at least four areas Legend and Haire doubt if 3PL providers can do better than the companies themselves: cost-cutting, improved service, better control and improved workflow.

Legend established its own logistics management system in its days as an agent for AST and gradually developed two separate channels for its own and foreign brands. The latter are now managed by China Digital, a spin-off of Legend listed in June this year. With this legacy, Legend still manages the whole supply chain in-house, which it believes is a competitive advantage. However, if we compare the inventory days of Legend (28) with Dell's (six), that advantage is not apparent. We think Legend will watch the operating ratios of its foreign competitors and could choose to outsource if 3PL services improve.

Exhibit 74

Reasons Cited for Outsourcing by German Corporations



Source: Trends in Logistics 2000, Baumgarten, TU Berlin, Morgan Stanley Research

Equally frustrated by the quality of current 3PLs, Haier also decided to do its logistics in-house. By centralizing logistics functions previously scattered in dozens of product centers, Haier integrated its procurement, raw materials distribution, and finished good distribution to achieve economies of scale. The whole supply chain is order-centric. Accurate and quick information flow facilitates just-in-time procurement, production and distribution, which in turn leads to zero inventory and zero working capital (Exhibit 75).

Exhibit 75

Haier's SCM Model

	Before	After
Integrate procurement	Logistics cost: RMB15 bn Supplier: about 2000 Relation with suppliers: buyer and seller	Logistics cost: RMB14.3 bn Supplier: about 900 Relation with suppliers:partners - Suppliers participate in R&D - Suppliers establish plants near Haire
Integrate raw material distribution	Average inventory days: 30 days Warehouse area: 200,000 squr m Order fulfillment: 36 days	Average inventory days: 12 days Warehouse area: 26,000 squr m Order fulfillment: 10 days
Integrated finished goods distribution		Delivery time: Same city: 6-8 hrs Regional: <24 hrs National: avg. 4 days Global: halved

Source: Company data, Morgan Stanley Research

Utilizing its established distribution network and partnering with capacity providers such as China Post, Haier has become a 3PL for food companies such as Robust and Nestle. The logic behind the diversification is clear: while electronic appliances is a commoditized industry in China, 3PL is still a high growth industry and Haier knows how to improve the supply chain of electronic appliances. But the risk is that Haier's competitors in the electronic appliances industry will not let it handle their logistics due to conflict of interests and fear of leaking proprietary information. We believe Haier will not be content with its current client base of food companies and could spin off its 3PL business after its will to enter the 3PL arena becomes firm.

Case Study 2: Foreign 3PLs in China

SempCorp Logistics: First-Mover Advantage in China

In our view, SCL has a first-mover advantage in the China market. While there are many logistics services providers in North America and Europe, we believe their 3PL capabilities are not complete without a strong link in Asia. In particular, China is a huge production base and the start of the supply chain for many Europe and US-bound goods. We think the SCL/K&N/USCO alliance has a commanding lead over its competitors in 3PL and global supply chain management, particularly in serving the China market.

SCL operates in China through its 51%-owned subsidiary Shenzhen ST-Anda Logistics. SCL believes the group is one of the two leading foreign supply chain logistics providers in China. Its network includes 20 distribution centers throughout China, with a combined warehousing space of 1.5 million sq. ft. It covers more than 600 cities in China and can deliver goods to 50% of these cities within 48 hours by either rail or road. At the end of this year, SCL should have expanded its network to cover 700 cities.

APL Logistics: A Strong Competitor

APL, the logistics arm of Neptune Orient Lines, is a strong competitor to SCL in Asia, particularly in China, where it recently signed agreements with the Eastern China Railway Express and the Shenyang Transportation Group to further expand its supply chain capabilities. With the acquisition of GATX Logistics in 1Q01, APL Logistics will benefit from GATX's multinational clients located in China. In 2000, the Asian market contributed less than 30% of APL Logistics revenues, but with the Asian client base of GATX, we expect its Asian logistics operation will compete directly with SCL.

Inchcape, a British trading firm that has been operating in China since the 19th Century, has developed a Shanghai-based domestic distribution and marketing capability for fast-moving consumer goods and industry products. Also, through a JV with COSCO, Inchcape operates a fleet of more than 80 container trucks providing long-haul, city-to-city transport serving key port and industrial cities. Inchcape has launched a national distribution capability encompassing major cities throughout the country and has lined up a network of JV partners with distribution centers in major regions.

Exhibit 76

SembCorp Logistics: China Network

Source: Company Data, Morgan Stanley Research

Exhibit 77

SembCorp Logistics
Major SCM Customers in China

⇒ Colgate Palmolive*	⇒ Johnson & Johnson
⇒ CPC Best Food	⇒ Kodak
⇒ Effem Food	⇒ Kraft Food
⇒ Eveready	⇒ L'oreal/Maybelline
⇒ Exxon	⇒ Pepsi
⇒ GE Plastics*	⇒ Van Melle*
⇒ Hawley & Hazal	⇒ Xi'an Janssen

** Regular customers*

Source: SembCorp Logistics

Case Study 3: The End Game for Logistics – Experience from US and Europe

Ownership of the Supply Chain Is the End-Game

Within the transport and logistics environments, it is generally accepted that supply chain management is the hot area to be associated with, and being the owner of the supply chain, or the lead logistics provider (LLP), is the paragon that all logistics managers should seek to attain.

The incumbent 3PLs, with their long-standing relationships, believe they are well positioned to dominate the market. However, new 4PLs, such as Thiel and D. Logistics, believe their increased flexibility through limited asset ownership and strong knowledge of IT places them in the best position to be the new industry leaders. While the capacity providers continually strive to reinvent themselves, Europe's postal providers and US express operators are attracted by the high growth rates of logistics and are seeking to expand their presence in this area both organically and through acquisition.

In this section of our report, we attempt to quantify the market opportunity, highlight leading competitors within different segments of the distribution universe, and analyze strategies, including what we believe could be paths to winning. Providers' winning attributes, in our view, will include:

- **Evolving into 4PL from roots in 3PL**. In that way, managers have experience of what they can afford to outsource and what they have to run themselves;
- **Being global and having a multi-cultural perspective**. We think that European-based operators may enjoy an advantage over their US peers in this respect, and have commanding lead over the Asian operators;
- **Economies of skill and not on scale**. UPS, FedEx and TNT offer high-quality global express parcel distribution but express remains a network business, with ongoing fixed-asset requirements. We prefer companies that have a track record at building customer relationships over a long period; and
- **E-commerce not leading to changes in underlying demand**. We conclude that e-commerce is likely to result in channel shift above incremental volume growth, but that some peripheral benefits will flow to the 3PLs, including increased reliability and accuracy.

Size/Growth Drivers for SCM/Logistics

Logistics/SCM includes a) procurement; b) transportation and warehousing; c) order and payment processing/call-centers; d) inventory management; e) materials handling; and f) dealing with returns. Logistics is, and will increasingly be, more reliant on the smooth passage of information than the physical movements of vehicles and consignments. The most widely used 3PL services are direct transportation and warehouse management.

Exhibit 78

Most Frequently Used 3PL Services 1997-2000

% Citing Use of Logistics Function	1997	1998	1999	2000
Direct Transportation	-	63	68	49
Warehouse Management	40	46	44	56
Shipment Consolidation	49	43	40	43
Freight Forwarding	-	-	-	44
Freight Payment	-	-	-	43
Customs Brokerage	-	-	-	40
Logistics Info. Systems	40	35	24	27
Carrier Selection	39	32	33	29
Rate Negotiation	34	26	24	29
Product Returns	27	25	18	21
Fleet Management	24	25	18	21
Repackaging	31	19	27	21
Contract Manufacturing	-	-	-	16
Order Fulfillment	19	17	16	24
Assembly / Installation	19	11	11	8
Inventory Replenishment	13	6	7	10
Order Processing	14	5	9	5
Customer Spare Parts	9	5	11	2
Consulting Services	-	-	37	30

Source: The Use of Third-Party Logistics by Large American Manufacturers, 2000 Survey, Northeastern University and Andersen Consulting, Morgan Stanley Research

Researchers, including Datamonitor and Logistics 2000, have estimated the global logistics and distribution market to be worth in excess of US$720 billion. The International Monetary Fund estimates that logistics costs represent around 12% of world GDP, or around US$3,000 billion. This definition includes in-house and outsourced logistics, and will also include transportation costs and inventory-carrying costs.

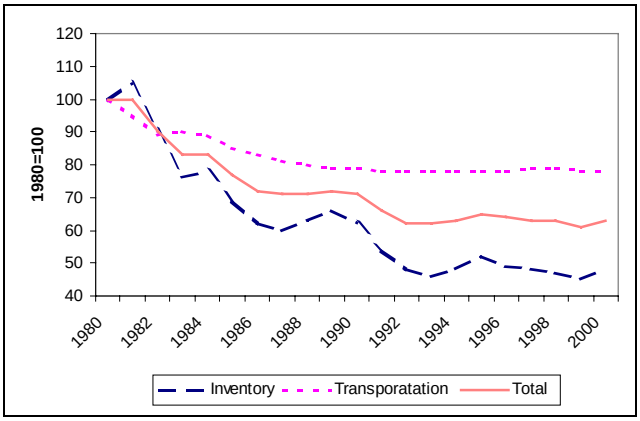
In "Managing Logistics in a Perfect Storm" by Cass Information Systems and ProLogis (June 2001), it was noted that logistics cost, as a percentage of GDP, fell from 16% in 1981 to 10% in the 1990s in the US. In 2000, logistics cost was US$1,006 billion, or 10.1% of US GDP, a ratio that is comparable to the IMF estimate of 12% of

world GDP. As indicated in Exhibit 79, transportation costs accounted for about 5.6% of GDP, while inventory-carrying costs accounted for 3.7%.

Exhibit 79

US Business Logistics System Cost

Indexed Cost as a Percent of GDP, 1980-2000



Source: ProLogis

Exhibit 80

US Business Logistics System Cost, 2000

		US$ bn
Carrying Costs - US$1,485 bn (All Business Inventory)		
Interest		95
Taxes, Obsolescence, Depreciation, Insurance		204
Warehousing		78
	Subtotal	**377**
Transportation Costs		
Motor Carriers:		
Truck - Intercity		323
Truck - Local		158
	Subtotal	**481**
Other Carriers:		
Railroads		36
Water	(International 18 Domestic 8)	26
Oil Pipelines		9
Air	(International 18 Domestic 9)	27
Forwarders		6
	Subtotal	**104**
Shipper Related Costs		5
Logistics Administration		39
	Total Logistics Cost	**1,006**

Source: ProLogis

More importantly, inventory costs have declined by more than 50% in the past 20 years (1980-2000), while transportation costs have declined by about 22%. This resulted in total logistics costs declining by as much as 37%. We believe the significant improvement in logistics costs in the past 20 years in the US market could drive the Asian markets to strive for similar cost savings from their logistics service providers.

We expect strong volume growth in global logistics and express, the growth to be driven by a number of factors:

- Globalization and the increasing importance of brands;
- Individualization / mass customization (for example, the Dell Direct model of a tailor-made PC delivered direct to your door);
- Disintermediation of the high street and the supply chain with a move to one-stop-shopping;
- Flexibility in working hours and places of work;
- Focus on core competencies by manufacturers; and
- Reduced inventory levels (just-in-time /efficient consumer response (ECR)) and increased time sensitivity through technological advances.

In 2000, 3PL revenues for the US market rose by 24% to US$56.4 billion. The key components of the 3PL revenue contribution are transportation and warehousing (Exhibit 81). Market penetration of 3PL providers on the US logistics market, excluding inventory-carrying cost, is estimated to be about 8%.

Exhibit 81

3PL Revenues in US Market, 2000

Third-Party Service Providers	2000 Gross Revenues (US$ bn)	Current Growth Rate (%)
♦ Dedicated Contract Cartage	8.7	21
♦ Domestic Transportation Management	10.0	21
♦ Value-Added Warehouse/Distribution	20.4	23
♦ U.S. Based with International Operations	13.8	15
♦ 3PL Software	3.5	17
♦ Total Contract Logistics Market	**56.4**	**24**

Source: ProLogis

We would expect skilful logistics management teams to be able to achieve high rates of organic revenue growth (in excess of 15% per annum) and the growth to be driven by three factors:

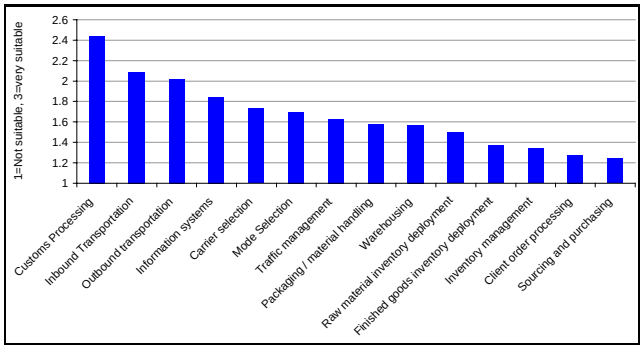
- Increased propensity to outsource logistics activities to third parties.

- Underlying growth in the overall logistics market, reflecting growth in the economy and increased globalization.

- Winning market share from competitors.

As mandates are increasingly awarded on the basis of expertise rather than pure asset ownership, we believe this growth can be achieved with only a modest fixed-asset requirement. Exhibit 82 indicates the various supply chain tasks that are normally outsourced to 3PLs.

Exhibit 82
Suitability of Supply Chain Tasks to Outsourcing by Logistics Companies



Source: Gerard Klaver Mattison & Co, Inc

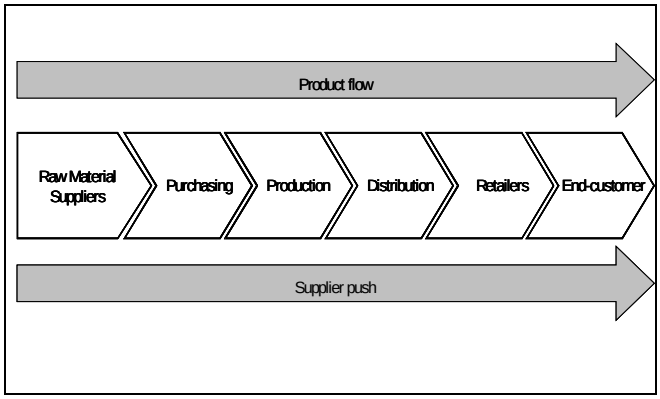
The combination of these three factors has the potential for sustainable high and increasing return on invested capital (RoIC). Moreover, the contractual nature of the business means that it should provide investors with a good degree of earnings visibility and stability.

Shift from National to Global Logistics?
As large corporations become increasingly multinational, we think that those 3PLs with international credentials stand to gain at the expense of local operators. Sectors that outsource their logistics that appear to be leading the charge towards globalization are the same ones that are going global in their operations, namely, electronics, automotive and pharmaceuticals.

One of the key factors in the selection of a global logistics provider is 'critical mass' or a global 'footprint' of operations and infrastructure that can manage the majority of the customer's multi-continent sourcing, transportation, warehousing, distribution and delivery.

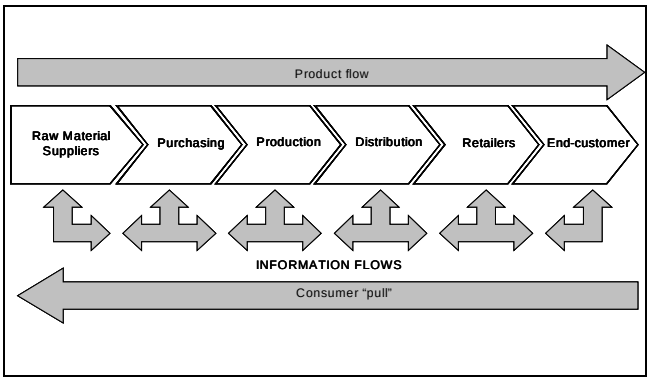
Cleverer Supply Chain: Demand-Pull, Not Supply-Push
Historically, supply chains were comparatively simple affairs: a manufacturer would fabricate something that would then be distributed to retailers, where end-customers would decide if they wanted to purchase it. Unwanted inventory would be discounted until it was sold.

Exhibit 83
Linear Supply Chains Are Being Replaced



Source: Morgan Stanley Research

Exhibit 84
In Some Cases, Demand Pull Is Replacing Supply Push



Source: Company data, Morgan Stanley Research

While this remains the dominant form of goods reaching their end market, there is a growing emergence of sophisticated supply chains, with operations such as merge-in-transit, late specification and increased customization. All these factors increase the demands on the supply chain manager.

Meanwhile, the disintermediation of the high street, as first set out by the Dell Direct model, means that in some cases the supply chain is in fact being replaced by the demand

chain. The approach is now starting to be adopted by the automotive sector.

The benefits are clear: the customer gets a customized product with precisely the features wanted, while the manufacturer does not need to worry about building unwanted inventory.

Market Share Domination

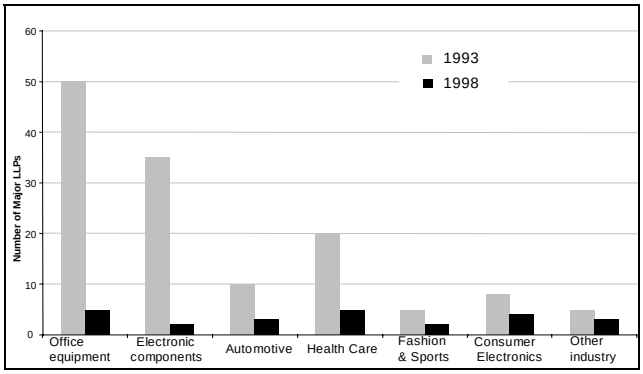
We believe market share will gravitate to those with broad skills and broad geographic coverage. As the market for logistics services becomes increasingly global, demanding a broader, yet more sophisticated set of skills, we think the most lucrative contracts will be won by a select few global players.

Despite this, we would be surprised if we see large logistics customers placing all their business in the hands of one supplier. While smaller customers may rely on a single source logistics supplier, it is unlikely that larger users of logistics services will rely on a single source global 3PL for two reasons:

- Most large customers have decentralized and have autonomous units that make local procurement decisions; and
- Most large corporations will want to diversify their systematic risk by not placing all their eggs in one basket with one 3PL.

Exhibit 85

Large Reduction in Average Number of 'Major' LLPs



Source: HIDL, Morgan Stanley Research

Pricing Environment

We think pricing will depend on ease of entry. While this remains simple at the commodity end of the market (for example pure trucking, and even express parcels to a degree), at the more sophisticated end of the supply chain, such as advance 3PL and 4PL, pricing is less of an issue.

Investors have raised concerns on declining 3PL margins. We think that much of the softness witnessed in 3PL margins can be attributed to:

- the instigation of new contracts, which frequently demonstrate front-end loaded costs as new systems are implemented; and
- a long-term reduction in margins as the industry as a whole becomes more asset light. EBIT margin partly compensates for taking on asset risk, so as asset ownership falls among 3PLs (owing to increased prevalence of shared-user facilities for example), EBIT margins should also be expected to decline.

Our analysis of contract awards points to increased evidence of historical adversarial relationships between 3PLs and their customers evolving into gain-sharing / pain-sharing partnerships, sometimes in the form of a true joint venture, as in the case of Vector SCM, the joint venture between GM and CNF Transportation.

Ford in Europe has adopted a similar format, with its recent contract award to Exel and UPS Logistics. A recent survey by North Eastern University of large American manufacturers using logistics services revealed that 25% of respondents have included gain-sharing provisions in their contracts.

Such arrangements are increasingly typical under 'open-book' contracts, which are replacing the older 'closed-book' relationships. The differences are as follows:

- **Closed book**. Under a closed-book contract, a logistics provider will typically be remunerated by volume, leaving it fully exposed to costs. We see closed-book contracts as high risk, high return, with the potential for high returns reducing as customers become more knowledgeable;
- **Open book**. Generally, under this type of contract, the customer provides most of the assets for the logistics operation, with the logistics operator collecting a fee for managing the facility. Costs and revenues are explicit (hence the 'open book') between customer and supply chain manager, with super-normal profits shared between both parties. Volumes through the facility

have limited or no effect on the fee earned by the logistics manager; and

- **Hybrids** do emerge where revenues are geared to volumes handled, but the majority of associated costs are variable, via the use of owner-drivers.

Work by Dr. Robert Lieb of Northeastern University in Boston has also shown that the average contract renewal rate for 3PL now stands at 93%. We would expect this figure to remain constant or even grow as solutions become more complex and benefits are shared by both parties.

Do Logistics Customers Want a One-Stop-Shop?

Corporate activity such as the mergers of Exel and Ocean Group and of Circle and EGL provide tangible evidence of 3PL providers' desire to increase their product offering. Convergence between forwarders and contract providers seems to be the accepted path for 3PLs. What is less clear is whether it is really necessary to have a final-mile delivery operation, namely an express parcels division (Exhibit 86).

We think a broad service – a combination of a contract logistics provider and a 3PL rather than a full-service end-to-end distribution offering – is the preferred path to sustainable growth. We think that as there are a sufficient number of high-quality, price-competitive operators in the express parcel market, an own-operated ability is not necessary.

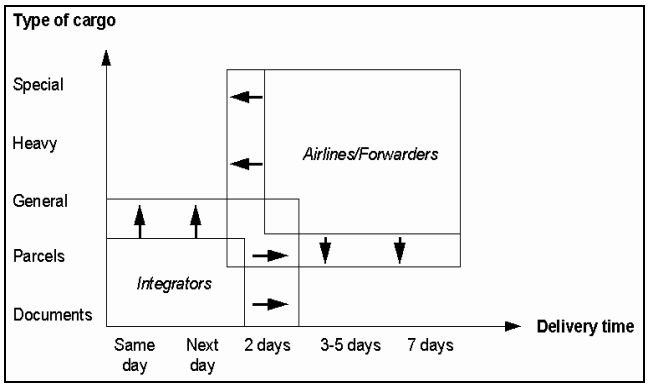
Given that the objective of many mergers that combine two different functions is to attain revenue benefits, an alternative to outright ownership is an alliance. It is interesting to note that in January 2000, Schenker and Seino Transportation formed a strategic alliance in integrated logistics and freight forwarding.

E-commerce: Change or Just Channel Shift?

We doubt that the implementation of e-commerce initiatives will lead to a material change in underlying demand for goods and services, and therefore the earnings of logistics providers. We believe that much of the transition will result in a channel shift from phone and fax to e-mail, and the Web. Indeed, it could be argued that e-commerce has formed part of logistics for years, through electronic data interchange, the proprietary data systems that many logistics providers were using to communicate with their customers.

Exhibit 86

Growing Convergence and Overlap between Express and Logistics



Source: Attwood, Morgan Stanley Research

While systems such as SCM software and application service provider (ASP) modules are unlikely to boost revenues in our view, we believe they may lead to a moderate enhancement to the cost base of logistics providers by standardizing communications around open-architecture systems (versus more expensive proprietary ones). Moreover, improved accuracy (through electronic transmission versus verbal or hand-written order transmission) is likely to reduce costs associated with processing errors.

As far as B2B exchanges are concerned, we think that while these work well for 'plain-vanilla' commodity transactions, it will be some time before they are able to provide an estimate for complex logistics movements, such as light assembly, customs broking and handling returns.

Work performed in 2000 by our US express and logistics analyst, Jim Valentine, revealed that one feature of the new economy that shippers value is track and trace software, as it allows them to plan their own process timings better.

Exhibit 87

Electronic Features That Matter to All Shippers

Feature	Score
Real-time Tracking and Tracing	9.4
On-line Service Performance Reports	7.9
Electronic Bill Presentation and Payment	7.9
Real-time Transit Calculator	7.8
Electronic Retrieval of Historical Shipping Documents	7.8
Electronic Bill of Landing / Air Bill	7.5
Electronic Request for Pick-Up	7.5
Electronic Loss and Damage Claim	7.5
Online Rate Quotes	6.8
In-Transit Re-routing of Freight	6.7
In-Transit Fax / Page Update / Alerts	6.6
Online Instructions	6.5
Online Tariff Rules	6.0

Source: Morgan Stanley Research, US Transport Research

5PL – Eradication of Contract-Based Logistics

A longer-term issue for the industry is that as logistics platforms become increasingly standardized, and as inventory levels fall to wafer-thin levels, it should become easier to hire and fire logistics providers. In the long run, we anticipate that fixed-payment contracts with three-year lives may be replaced by shorter contracts, with fees based on the volume of transactions. DHL refers to this as 5PL – or fifth-party logistics. This clearly holds serious implications for the visibility and stability of earnings, and it is interesting to note that TNT Post Group's new fulfillment venture, TNT Loop, proposes such a charging structure.

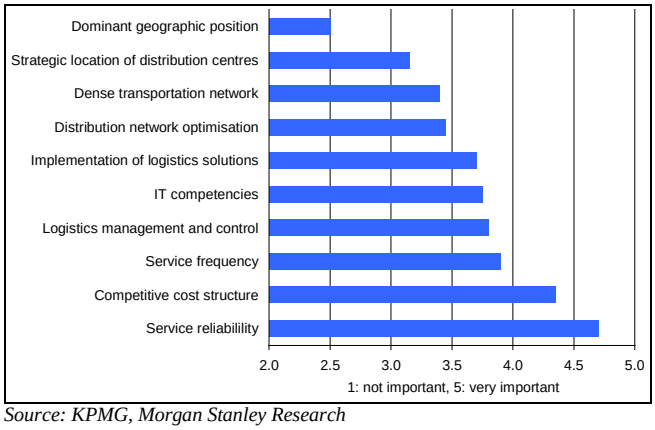
It is envisaged that 5PL will involve the management of all parties in the supply chain by using e-commerce. This is likely to involve using Artificial Intelligence (AI) to allow the 5PL manager to rapidly and accurately assess which capacity provider is offering the best cost to quality ratio.

We think that developments in this field will be extremely interesting, and as with most technological advances, represent a challenge to incumbent operators. We believe that it would be wrong, however, to become too concerned about the implications for logistics providers at present.

US company Expeditors International summarizes why this is the case: "Logistics is dynamic, it is unpredictable and it is highly time-sensitive. In order to maximize supply chain performance, the entity managing the function must be in control of all the means that impact the shipment. It is a fallacy to suggest that one can maximize logistics performance without being able to directly control the fundamental logistics process."

Exhibit 88

Competencies Required of Logistics Service Providers



Source: KPMG, Morgan Stanley Research

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