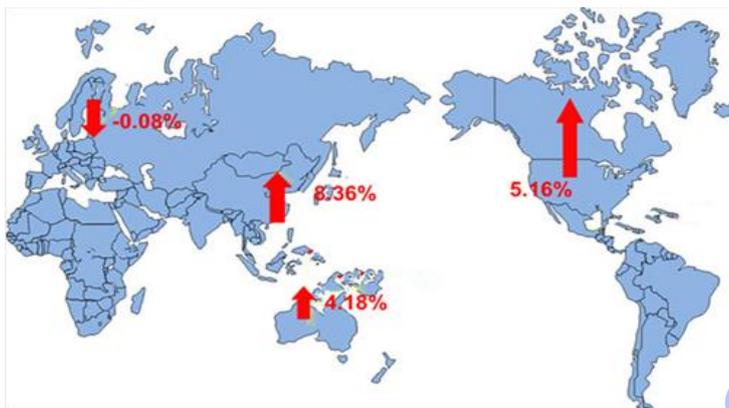


Global Port Review

Quarter 3 · December 2018

—Global economy grew moderately and port production remained steady.

◇ Growth Rates of Cargo Throughput of Major Ports

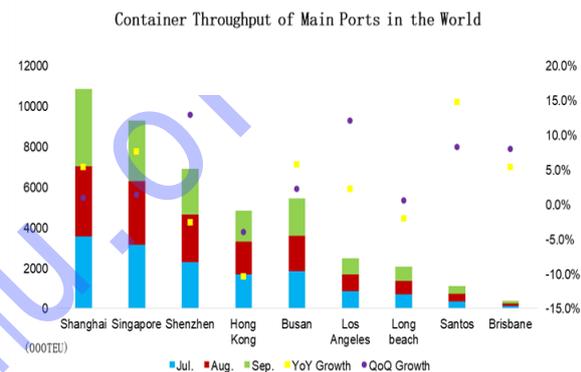


- Major global ports continue to see production improving.** The world economy grew mildly and the trade growth rate declined in Q3 2018. Under the circumstances, the cargo throughput of major global ports saw a steady development, increasing by 7.4% year-on-year to 3.01 billion tons. The container throughput of major global ports increased by merely 2.7% year-on-year to 92.57 million TEUs and underperforming the 7.7% year-on-year growth in the same period last year.
- Global terminal operation market loses steam.** Major global terminal operators secured high container throughput. However, the escalating Sino-US trade war and shipping alliances' trim or shutdown of liners and control on shipping space among other factors resulted in a further decline in the growth rate of equity throughput of major global ports in Q3 to 5.83%, a new low in the past two years.

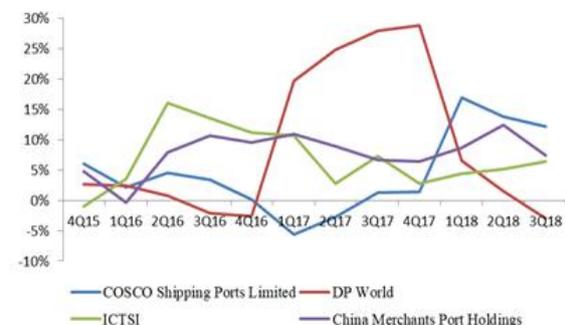
Topics Inside ▶▶▶

- Free Trade under Port Reform
- Review of Global LNG Terminal Development

Panorama on Global Ports ▶▶▶



The growth of equity throughputs of major terminal operators in the world



Side Products ▶▶▶

- Rankings of Global Ports with Greatest Potential
- Comments on comprehensive services of coastal container ports in China

Port Development Dept.▶▶▶

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I . Overview of Global Port Production in Q3

- Cargo throughput of major global ports constantly improved.
- Container throughput growth of global ports continued the slowdown.
- Dry bulk throughput on the global scale followed a downcurve.
- Liquid bulk cargo throughput of global ports welcomed growth.

1.1 Overview of global port operation

In Q3 2018, the global economic recovery landscape polarized, with the US presenting robust economic growth and China maintaining its steady development, against the slightly declining economic growth in the Eurozone and Japan, and some emerging economies showing signs of running out of steam. It is estimated that the GDP of Q3 this year may grow by 3.30%, declining by 0.1 percentage points quarter-on-quarter. Overall, global economy maintained steady growth, and the growth rate of global trade fell a smidgen in this quarter. Major global ports recorded a cargo throughput of 3.01 billion tons, increasing by 7.36% year-on-year.



Note: Left coordinate represents quarterly port throughput growth rate and global GDP growth rate. Right coordinate represents global PMI index.

Source: The website of The Ministry of Transport of People's Republic of China, JPMorgan and China Bank.

Figure 1-1 Global Economy and Growth Rate of Port Throughput from 2015.Q4 to 2018.Q3

In the short run, the global economy maintained a steady growth and the growth rate of global trade remained high. But Q4 is a traditional off season for port production, and some cargoes have been shipped in advance out of concerns over the Sino-US trade war. It is estimated that global cargo throughput growth in Q4 may slow down. In the long run, the global economy remains subject to multiple tests from the deteriorating trade, the upside risks of inflation, the global contraction of

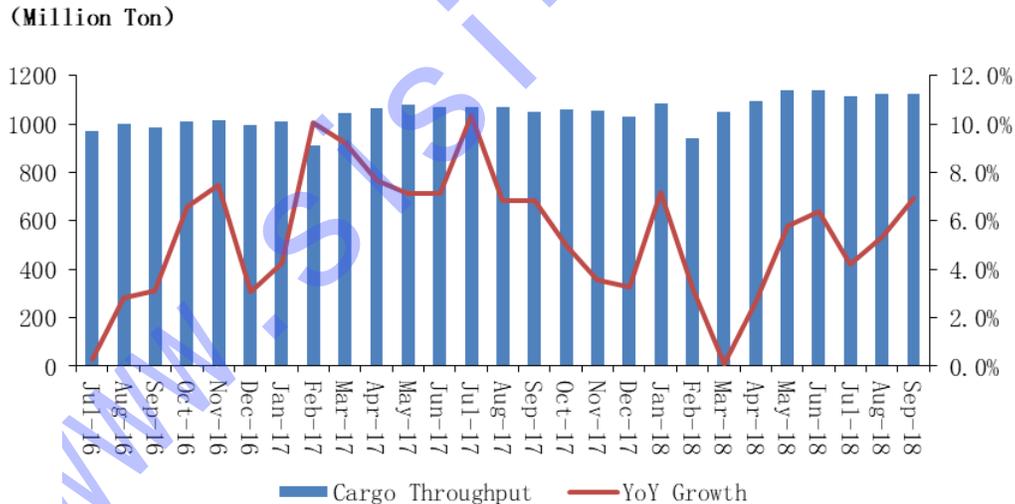
liquidity and financial volatility of emerging economies, continuing to pose increasing downside risks on production of global ports.

1.1.1 Cargo throughput of Asian ports maintain steady growth

In Q3 2018, Asian economy grew steadily. China and South Korea maintained their stable economic performance. Japan saw a slowing growth following a short-term economic recession in Q1. Overall, Asian economy presented favorable development in this quarter. Major ports in Asia completed a cargo throughput of 2.50 billion tons, increasing by 8.48% year-on-year.

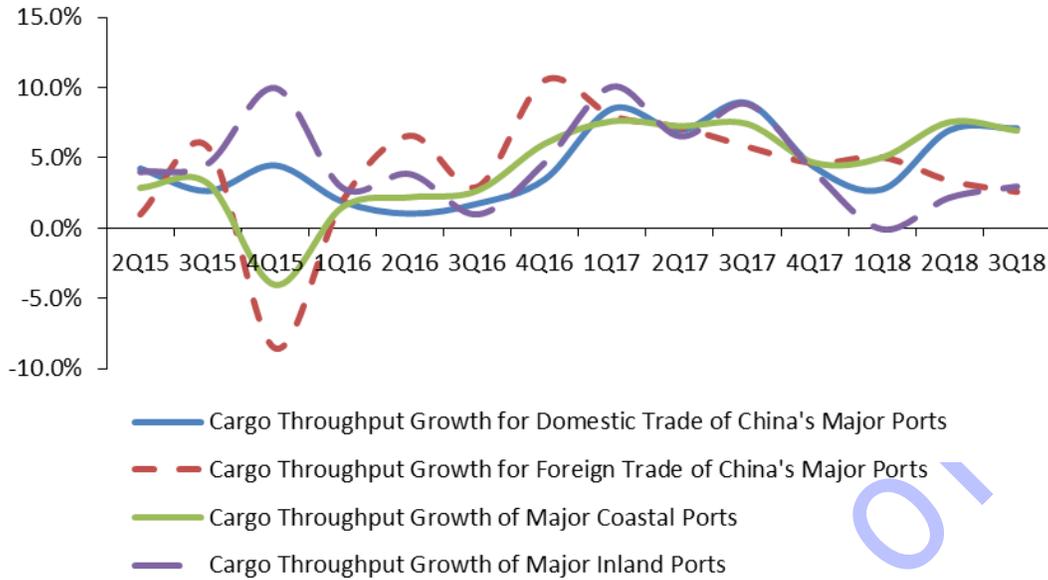
- **Cargo throughput of Chinese ports grow steadily**

In Q3, China's economic growth eased slightly and came under increasing downside pressure. The deteriorating trade environment as a result of the Sino-US trade frictions, as well as the lasting impact of tightened domestic financial regulation, deleveraging and real estate control policies, caused a slight decline in GDP growth in Q3 by 0.2 percentage points quarter-on-quarter, namely 6.5% of growth. However, with China's economic transformation and upgrading, domestic demand plays an increasingly important role in economic growth, and China's economy will remain stable in the future. Driven by imports and exports growth in this quarter, China's port production displayed an upward trend overall. Chinese ports above designated scale registered 3.41 billion tons of cargo throughput throughout Q3, increasing by 5.67% year-on-year.



Source: Websites of Port Authorities, sorted by SISI.

Figure 1-2 Cargo Throughput and Growth Rate of China's Ports from Jul-16 to Sep-18



Source: Websites of Port Authorities, sorted by SISI.

Figure 1-3 Cargo Throughput Growth Rate of China's Ports from 2015.Q2-2018.Q3

Among major ports, Yantai Port and Rizhao Port in Shandong province recorded significant rises in cargo throughput by 64.06% and 24.03%, respectively. Both ports entered top 10 this year for the first time in terms of cargo throughput. Tangshan Port and Guangzhou Port continued the growing momentum since Q1 this year, handling the cargo throughput of 459 million tons and 447 million tons, ranking 3rd and 4th, respectively. Shanghai Port secured its 2nd place on the list. However, despite a rise in this quarter, the cargo throughput of Shanghai Port from January to September fell by 2.69 percentage points year-on-year because of the cargo type restructuring and continuous typhonic days in Q2. Tianjin Port managed to shake off the declining tendency caused by the ban on trucked shipping of coal in this quarter, seeing its throughput going up by 4.29% year-on-year. While, major bulk cargo ports in north China are plagued by overstock, which may impact the cargo throughput growth of ports in north China to some extent.

Table 1-1 Ranking of China's Above-Scale Ports by Cargo Throughput from Jan to Sep in 2018

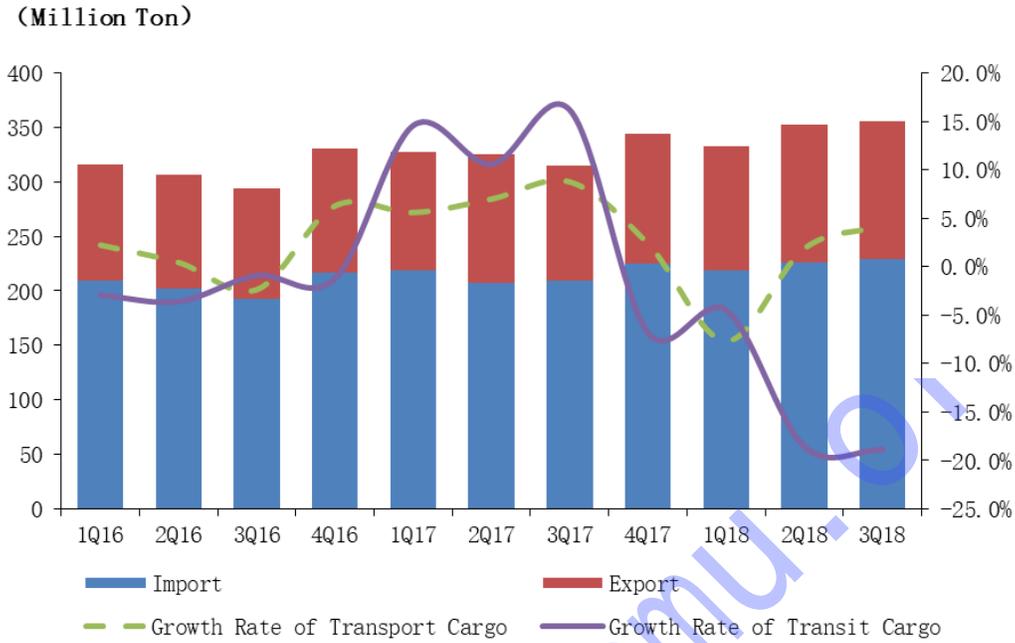
Port Ranking		Port	Cargo Throughput (Million ton)		YoY Growth
Jan. to Sep.			Jan. to Sep.		
2018	2017		2018	2017	
1 [↕]	1 [↕]	<u>Ningbo-Zhoushan</u> [↕]	829.52 [↕]	770.60 [↕]	7.65% [↕]
2 [↕]	2 [↕]	<u>Shanghai</u> [↕]	546.69 [↕]	561.83 [↕]	-2.69% [↕]
3 [↕]	4 [↕]	<u>Tangshan</u> [↕]	459.18 [↕]	429.29 [↕]	6.96% [↕]
4 [↕]	5 [↕]	<u>Guangzhou</u> [↕]	446.94 [↕]	415.70 [↕]	7.52% [↕]
5 [↕]	3 [↕]	<u>Suzhou</u> [↕]	398.70 [↕]	461.50 [↕]	-13.61% [↕]
6 [↕]	6 [↕]	<u>Qingdao</u> [↕]	397.72 [↕]	381.90 [↕]	4.14% [↕]
7 [↕]	7 [↕]	<u>Tianjin</u> [↕]	371.15 [↕]	377.99 [↕]	-1.81% [↕]
8 [↕]	8 [↕]	<u>Dalian</u> [↕]	356.46 [↕]	348.88 [↕]	2.17% [↕]
9 [↕]	12 [↕]	<u>Yantai</u> [↕]	349.31 [↕]	212.91 [↕]	64.06% [↕]
10 [↕]	10 [↕]	<u>Rizhao</u> [↕]	329.08 [↕]	271.90 [↕]	21.03% [↕]
11 [↕]	9 [↕]	<u>Yingkou</u> [↕]	287.41 [↕]	283.57 [↕]	1.35% [↕]
12 [↕]	11 [↕]	<u>Zhanjiang</u> [↕]	231.76 [↕]	217.92 [↕]	6.35% [↕]
13 [↕]	13 [↕]	<u>Huanghua</u> [↕]	212.40 [↕]	206.21 [↕]	3.00% [↕]
14 [↕]	15 [↕]	<u>Nanjing</u> [↕]	191.25 [↕]	180.27 [↕]	6.09% [↕]
15 [↕]	16 [↕]	<u>Shenzhen</u> [↕]	186.81 [↕]	178.94 [↕]	4.40% [↕]
16 [↕]	17 [↕]	<u>Nantong</u> [↕]	185.93 [↕]	173.10 [↕]	7.41% [↕]
17 [↕]	14 [↕]	<u>Qinhuangdao</u> [↕]	180.41 [↕]	182.31 [↕]	-1.04% [↕]
18 [↕]	19 [↕]	<u>Beibuwan</u> [↕]	178.29 [↕]	156.34 [↕]	14.04% [↕]
19 [↕]	18 [↕]	<u>Lianyungang</u> [↕]	177.06 [↕]	157.16 [↕]	12.66% [↕]
20 [↕]	20 [↕]	<u>Taizhou</u> [↕]	176.69 [↕]	144.94 [↕]	21.91% [↕]

Source: Websites of Port Authorities, sorted by SISI.

● **Cargo throughput of South Korean ports grow slightly**

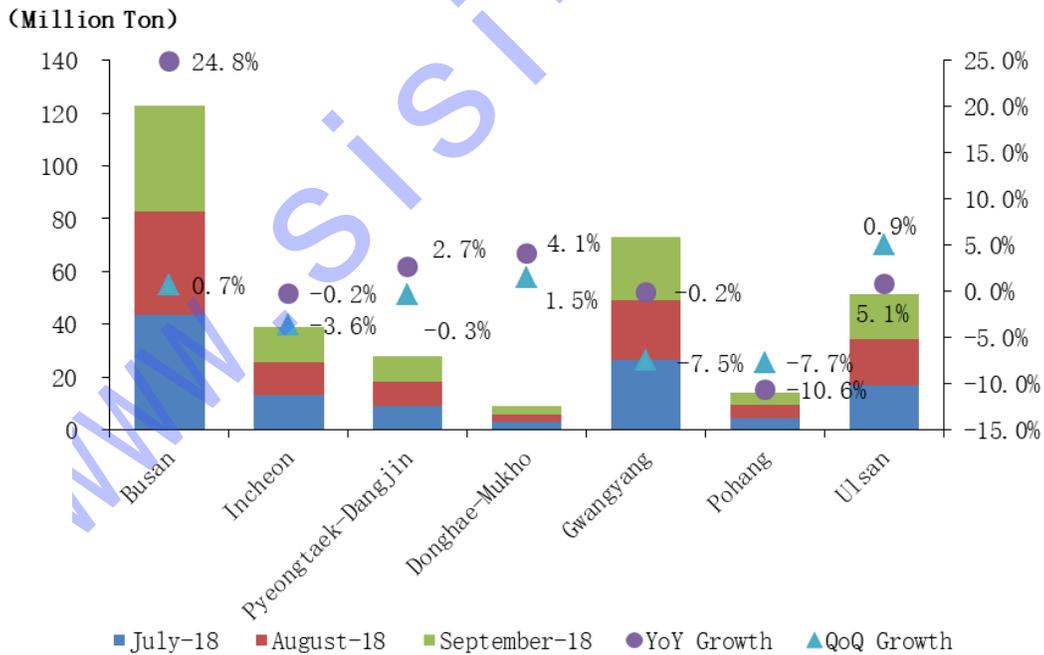
In Q3 2018, the growth rate of South Korea's GDP fell to a nine-year low in this quarter, namely 2.0%, as a result of the US' protectionism, the trade stalemate between South Korea and its largest trade partner China, and South Korea's domestic limitation on real estate prices. However, the sustained recovery of South Korean economy and the rapid growth of export trade since the beginning of this year managed to secure cargo throughput growth of South Korean ports. In this quarter, the cargo throughput of South Korean ports above designated scale totaled 406 million tons, an increase of 4.19% year-on-year. Moreover, as South Korea attaches importance to developing its own imports and exports, transshipment throughput plummeted for two months in a row. In addition, South Korea's economy was low-performing in this quarter, which will gradually impact the trade and cargo

throughput. It is estimated that South Korean ports may see slowed growth of cargo throughput in the future.



Source: Websites of Port Authorities, sorted by SISI.

Figure 1-4 Cargo Throughput and Growth Rate of South Korea’s Ports from 2016.Q1-2018.Q3



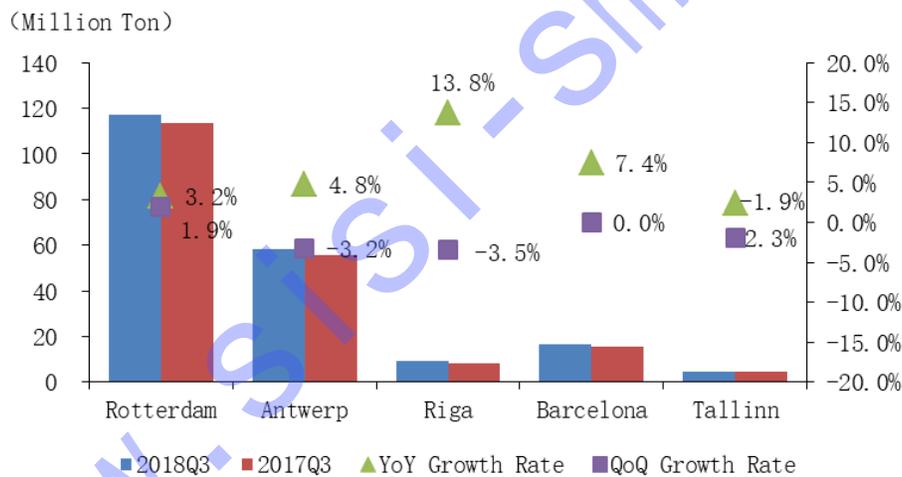
Source: Websites of Port Authorities, sorted by SISI.

Figure 1-5 Cargo Throughput and Growth Rate of South Korea’s Major Ports in 2018.Q3

1.1.2 Cargo throughput of European ports grow mildly

In Q3 2018, the Eurozone maintained mild economic growth overall, with the GDP growth rate of 2.1%, which has facilitated the positive growth momentum in cargo throughput of major ports in Europe. European ports accomplished a total cargo throughput of 205 million tons, rising by 3.8% year-on-year, and 2.7 percentage points higher than the growth rate of the same period last year.

Specifically, Port of Rotterdam recorded a cargo throughput of 117 million tons, rising by 3.20% year-on-year, primarily as a result of the rapid growth of LNG throughput. Specifically, the port registered a record high of 800,000 tons throughput in September, and the ro-ro cargo throughput shipped to Iberian Peninsula increased as well. Port of Barcelona accomplished a cargo throughput of 16.75 million tons thanks to the robust growth of bulk cargoes and transshipment cargoes. Despite a slight decline, the cargo throughput growth rate of port of Barcelona remained as high as 7.48%. Port of Antwerp registered a cargo throughput of 58.38 million tons in this quarter, rising by 4.78% year-on-year. Benefiting from the recovery of traditional general cargoes and the quick pickup of liquid bulk cargo throughput following the slump in Q1, the liquid bulk cargo throughput of the port increased by 5.7% year-on-year from January to September.



Source: Websites of Port Authorities, sorted by SISI.

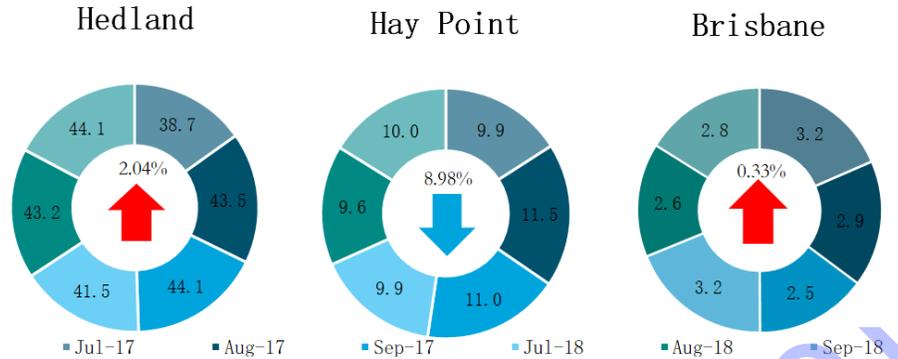
Figure 1-6 Cargo Throughput and Growth Rate of European Major Ports in 2018.Q3

1.1.3 Cargo throughput of Australian ports see slower growth

In Q3, Australian economy grew steadily, with its GDP growth rate registering 2.9%. However, the throughput of iron ores and coal, major sources of cargo throughput of Australian ports, declined against the trend. As a result, the cargo throughput of major ports in Australia in Q3 grew by -0.18% year-on-year to 167 million tons, with a falling by nearly 10 percentage points quarter-on-quarter.

Specifically, Port of Hay Point accomplished a cargo throughput of 29.49 million tons, falling by 8.98% year-on-year in this quarter subject to influences from China's suspension of coal purchase from Australia and the limitation of Paris Agreement. Port Hedland also saw a declining throughput of

129 million tons in Q3, growing by 2.04% year-on-year and 2.4 percentage points lower quarter-on-quarter. Port of Brisbane accomplished a cargo throughput of 85.88 million tons, rising by 3.25% year-on-year.



Unit: Million Tons

Note: The left semicircle represents the throughput in 2018, the right semicircle represents the throughput in 2017.

Source: Websites of Port Authorities, sorted by SISI.

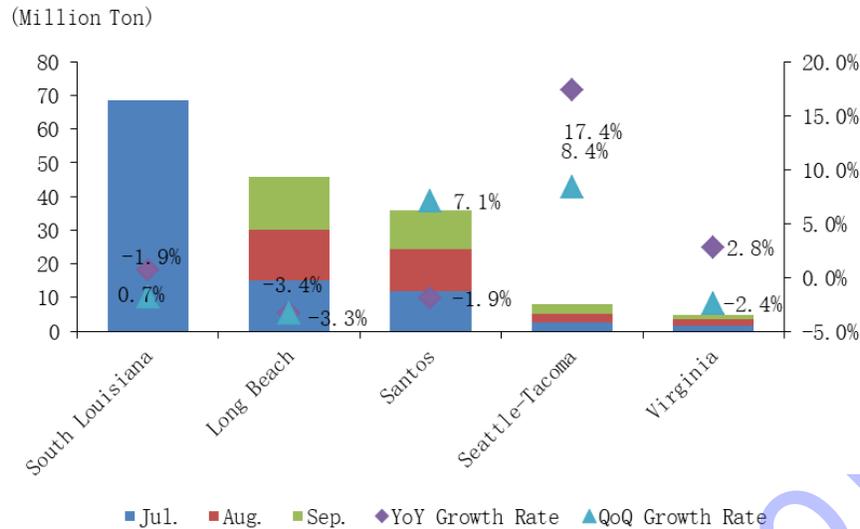
Figure 1-7 Cargo Throughput of Australian Major Ports in 2017.Q3 and 2018.Q3

1.1.4 American ports embrace recovery overall in cargo throughput

Boosted by multiple favorable factors including the tax reform and real estate pickup, the US economy continued the robust recovery since 2018. It is estimated that the annualized quarter-on-quarter growth rate of US GDP in Q3 may hit 3.0%.

In this quarter, the US imports and exports maintained a steady performance as the impact of the Sino-US trade frictions has yet to surface fully. Most ports in the America saw steadily increasing cargo throughput.

Specifically, Seattle-Tacoma Port and Port of Virginia both witnessed rises to varied degrees, by 5.1%, 17.4% and 2.8%, respectively. Apart from the robust economic recovery of the United States, the growth was also partially attributed to the Sino-US trade frictions. Overcast by the upcoming tariffs slapped on multiple imported consumer goods, importers chose to import the cargoes in advance, driving up the throughput of ports in the US. Port of South Louisiana and Port of Long Beach suffered declining throughputs of most of the cargo types subject to tariffs to varied degrees, with their cargo throughputs falling by 1.9% and 3.4% year-on-year, respectively. In addition, multiple countries rolled out monetary tightening policies, leading to a slowdown of Brazilian economic recovery. Port of Santos registered a cargo throughput of 35.93 million tons in Q3, falling by 1.9% year-on-year.



Note: The throughput of South Louisiana is the third-quarter throughput

Source: Websites of Port Authorities, sorted by SISI.

Figure 1-8 Cargo Throughput and Growth Rate of American Major Ports in 2018.Q3

1.2 Container throughput of global ports

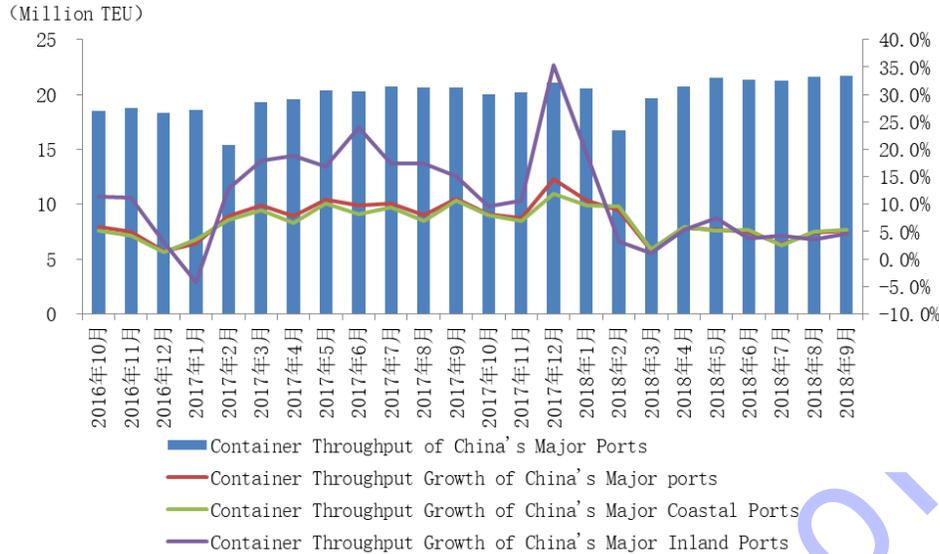
Q3 is a traditional peak season for shipping. Yet the performance of global container ports in this quarter failed to be satisfactory. In this quarter, the container throughput growth of global ports continued the slowdown. Container throughputs of major global container ports aggregated 92.57 million TEUs, rising by 2.69% year-on-year, slowing down against the 7.71% growth last year.

1.2.1 Asian regions see slower growth in container throughput

The aftermath of Sino-US trade frictions began to emerge and extended to containerizable cargoes in Q3. The growth rate of container throughput of major container ports in China and South Korea gradually slowed down. Major container ports in Asia recorded a total container throughput of 71.71 million TEUs in this quarter, rising by 2.75% year-on-year, falling by 0.39 percentage points from that in the previous quarter.

- **Container throughput growth of China's ports slows**

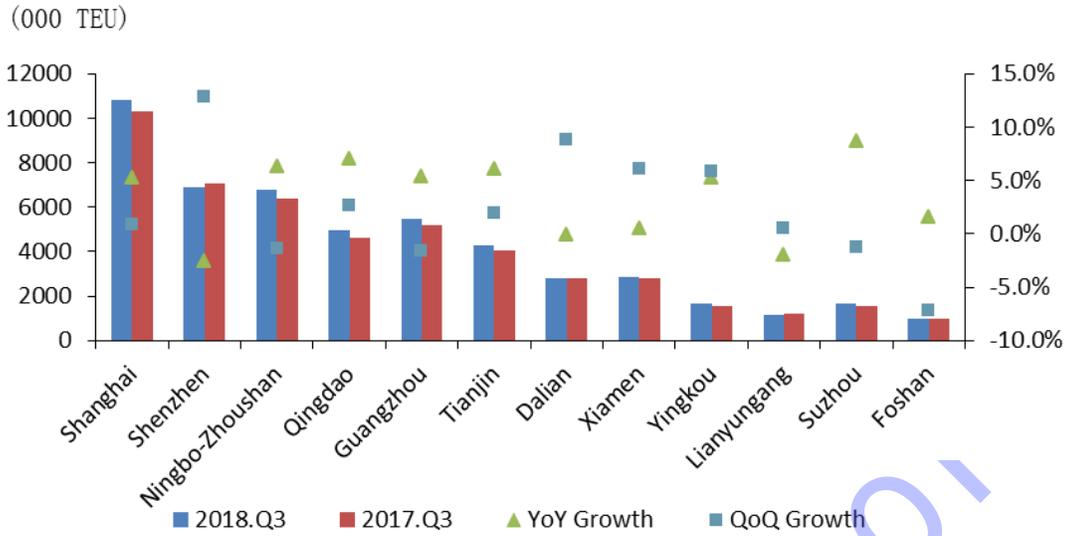
Ports in mainland China accomplished a total container throughput of 64.93 million TEUs in Q3, rising by 4.71% year-on-year and falling by 1.1 percentage points from that in Q2. Specifically, the coastal container throughput hit 57.39 million TEUs, rising by 4.27% year-on-year



Source: The Ministry of Transport of People's Republic of China, sorted by SISI.

Figure 1-9 Container Throughput and Growth Rate of China's Ports from Oct-16 to Sep-18

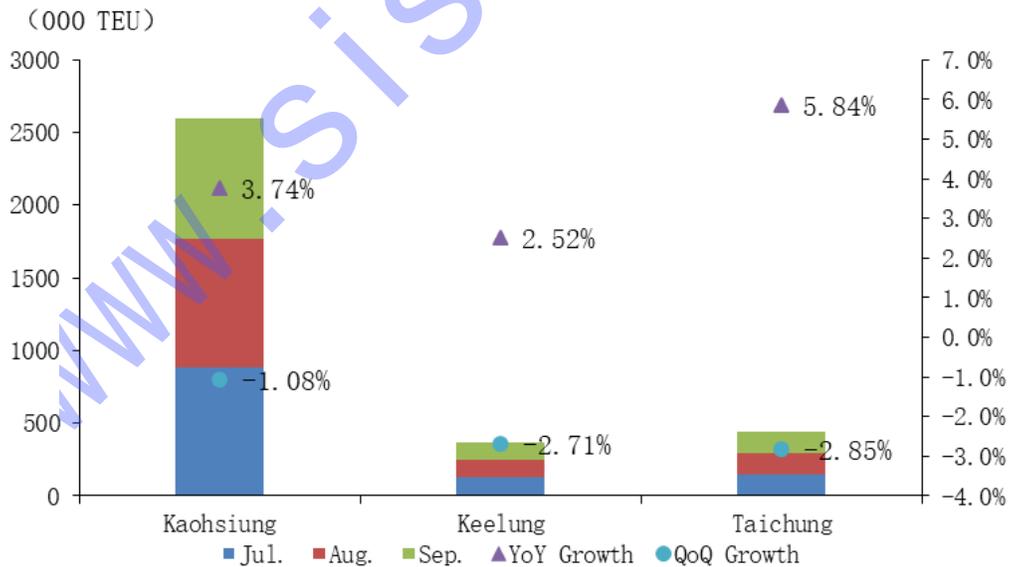
In Q3, the container throughput of major coastal ports in Chinese mainland maintained the growing momentum, with a small fiction suffering declines by smaller margins. Specifically, ports in the Yangtze River Delta demonstrated stronger performance. Shanghai Port secured its global No.1 position in terms of throughput in this quarter with 10.83 million TEUs, rising by 5.29% year-on-year. Ningbo-Zhoushan Port registered 6.79 million TEUs of container throughput in this quarter, rising by 6.38% year-on-year. In the Bohai Sea Rim, Qingdao Port and Tianjin Port enjoyed fast growth by 7.02% and 5.44%, respectively, with their container throughputs being 4.96 million TEUs and 4.28 million TEUs, respectively. Yingkou Port vigorously pushed forward bulk-to-container transformation. The container shipping of its wood, ore, fertilizer, starch and sugar cargoes formed new growth poles, resulting in a year-on-year growth rate of 5.27% in this quarter. In the Pearl River Delta, Guangzhou Port and Shenzhen Port became polarized in development. The former saw steady growth in foreign-trade container shipping routes. Its sea-railway combined transport liners and "shuttle bus" business contributed significant growth. Guangzhou Port accomplished a container throughput of 15.96 million TEUs in the first three quarters, increasing by 5.44% year-on-year. Shenzhen Port undertakes the biggest share of container shipping on China-US shipping routes, for example, taking 27% of the throughput of international shipping routes of Shenzhen Port. It is estimated that its international shipping routes were impacted by 4.5%. Against the escalating Sino-US trade frictions, the port's throughput growth was snubbed, growing by -2.62% year-on-year to 6.9 million TEUs.



Source: The Ministry of Transport of People’s Republic of China, sorted by SISI.

Figure 1-10 Container Throughput and Growth Rate of China's Major Ports in 2018.Q3

The economy of Chinese Taipei presented a growing momentum since last year. However, its annual growth rate of industrial production index fell all the way to less than 1% from nearly 10% starting May this year, and export growth rate declined to around 2% from higher than 10%. Its GDP growth rate also dropped to 2.69% from the 2.89% at the beginning of the year. Major container ports in Chinese Taipei maintained stable growth, completing a total container throughput of 3.4 million TEUs, or a rise of 3.87% year-on-year.

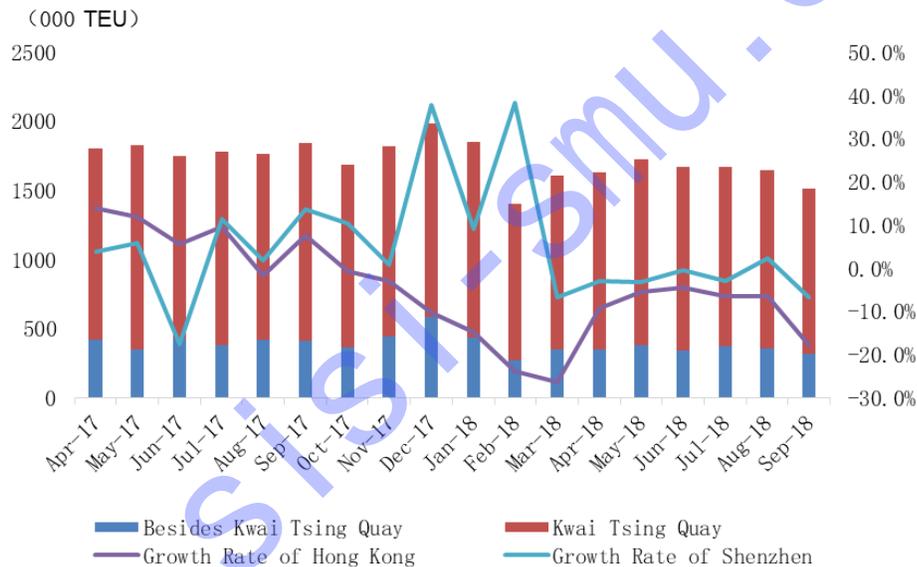


Source: Websites of Port Authorities, sorted by SISI.

Figure 1-11 Container Throughput and Growth Rate of Ports in Chinese Taipei in 2018.Q3

● **Container throughput of Hong Kong Port loses steam for growth**

Ports in Hong Kong, China saw slowed exports growth in Q3. Coupled with the waning volume of containers to be transshipped to Europe, the container throughput of ports in Hong Kong was negatively impacted. From July to August, the volume of containers for transshipment of Hong Kong ports fell by 6.1% and 2.7%, respectively. In Q3, Hong Kong exports grew by 3%, declining from the 6%, and the export index plummeted to 35.8 in the contraction realm. In addition, the trade value index (44.8), the purchase index (45.5) and the employment index (47.9) all fell to the contraction realm, manifesting the fact that Hong Kong economy remains sluggish overall. Against the economic and trade development stalemate, ports in Hong Kong witnessed container throughput declines across the board in this quarter, with the container throughput recording 4.82 million TEUs, a year-on-year decline of 10.4%. Specifically, the container throughput of Kwai Tsing Container Terminal hit 3.77 million TEUs, falling by 9.65% year-on-year. The container throughput of other terminals of Hong Kong port fell by 13.0% year-on-year.

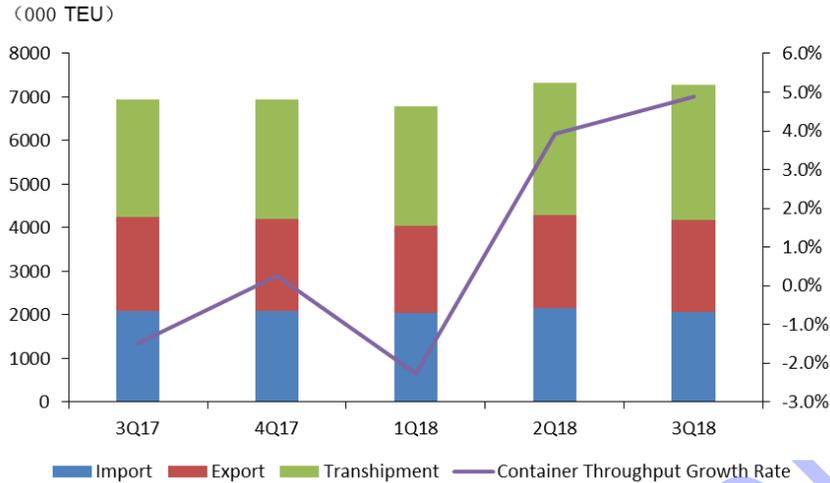


Source: Hong Kong Port Development Authority.

Figure 1-12 Container Throughput and Growth Rate of the Ports in Hong Kong and Shenzhen from Apr.2017 to Sep.2018

- **Container throughput of South Korean ports rose slightly**

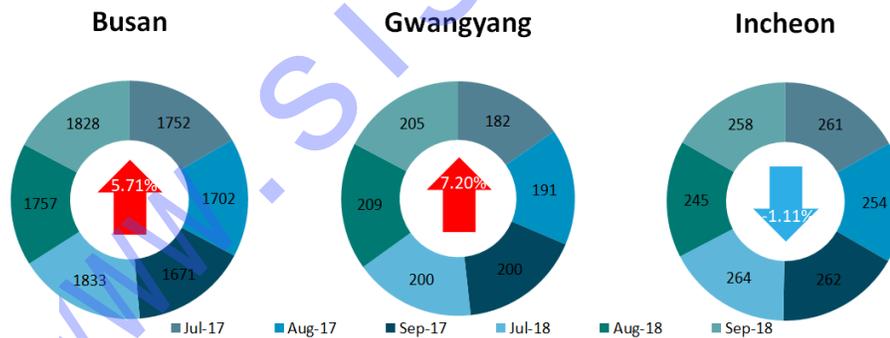
In Q3, container throughputs of South Korean ports continued the growing momentum from the previous quarter, increasing by 4.88% year-on-year to 7.27 million TEUs. The volume of imported containers ran flat with that in the same period of last year, while the volume of containers for export dropped slightly by 2.32% year-on-year. The growth was primarily contributed by containers for transshipment. In this quarter, containers for transshipment at South Korean ports totaled 3.09 million TEUs, surging by 14.6% year-on-year.



Source: Websites of Port Authorities, sorted by SISI.

Figure 1-13 Container Throughput and Growth Rate of the Ports in South Korea from 2017.Q3 to 2018.Q3

In Q3, the container throughput of Busan Port in September increased by 11.4%, the first time for the port’s container growth to break the double-digits mark, primarily because of the surging containers for transshipment at Busan Port as a result of the bad weather at China’s ports in Sept, and the steady growth of container throughput at Busan New Port. The container throughput of the port increased by 5.71% year-on-year to 5.42 million TEUs throughout the quarter, and that of Gwangyang Port increased by 7.2% year-on-year to 614,000 TEUs. The container throughput of Port of Incheon in this quarter dipped by 1.11% year-on-year to 767,000 TEUs on the contrary.



Unit: Thousand TEUs

Note: The left semicircle represents the throughput in 2018, the right semicircle represents the throughput in 2017.

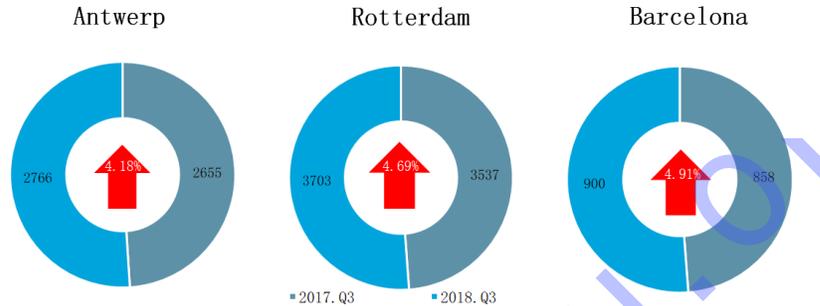
Source: Websites of Port Authorities.

Figure 1-14 Container Throughput of South Korea’s Major Ports in 2018.Q3

1.2.2 European ports enjoy faster growth in container throughput

The container throughput of major European ports in Q3 increased by 4.4% year-on-year, the rate being 7.4 percentage points lower than that for the same period last year. Among the major ports, the Port of Rotterdam maintained steady growth, accomplishing 3.7 million TEUs of container throughput

in Q3, rising by 4.69% year-on-year. The container throughput of Port of Antwerp, benefiting from the container trade boom in Europe and North America as well as the steady growth of imported containers from China, increased by 4.18% year-on-year to 2.77 million TEUs in Q3. The volume of containers for transshipment at the Port of Barcelona witnessed significant growth in this quarter, namely 394,000 TEUs by a year-on-year growth rate of 18.6%. In addition, the increasing containers for railway-water multimodal transportation drove the container throughput to grow by 4.91% year-on-year to 900,000 TEUs.



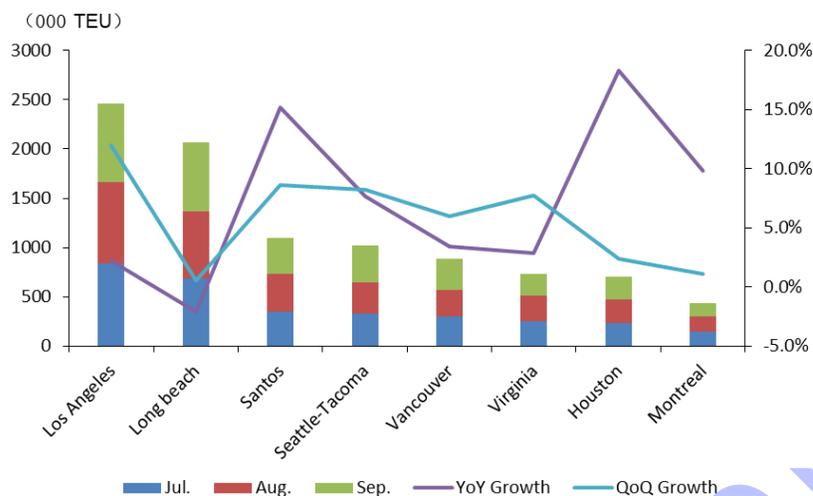
Unit: Thousand TEUs

Source: Websites of Port Authorities.

Figure 1-15 Container Throughput of European Major Ports in 2018.Q3

1.2.3 American ports see fluctuations in container throughput

In Q3, the container throughput of major American ports increased by 4.70% year-on-year thanks to the strong performance in both imports and exports. Specifically, the throughput of Port of Long Beach declined by a narrow margin of 2.13% year-on-year in this quarter. Ports of Los Angeles accelerated inventory liquidation as the year end approached and increased cargo shipment to minimize the impact from punitive tariffs arising from Sino-US trade frictions. As a result, the port completed a container throughput of 2.46 million TEUs in this quarter, increasing by 2.20% year-on-year. Seattle-Tacoma Port saw 7.64% of throughput growth year-on-year in this quarter. The capacity of Port of Houston for receiving large container ships was enhanced because of the smooth progress of its channel broadening. Besides, as the port had a small base figure resulting from the hurricane strike in Q3 last year, the container throughput of Port of Houston soared by 18.32% year-on-year in this quarter. Canadian ports continued the growth in this quarter, with the Port of Vancouver and Montreal Port registering 3.46% and 9.86% of growth year-on-year, respectively.



Source: Websites of Port Authorities, sorted by SISI.

Figure 1-16 Container Throughput and Growth Rate of American Ports in 2018.Q3

1.3 Dry-bulk cargo throughput of global ports

In Q3, the international dry bulk cargo shipping market experienced drastic ups and downs in shipping freight. The BDI rose all the way to 1,774 points in July, touching the highest record since January 2014, followed by several steep falls beginning from early August, bringing the index to as low as less than 1,400 points. From the supplier and demander perspectives, Australia, a major coal and iron ore exporter, suffered a bottleneck for staple bulk cargo exports, coupled with tepid turnover of iron ore. China's iron ore import demand displayed unsubstantial recovery, with its import volume declining by 0.5% year-on-year from January to August. Besides, the Sino-US trade war slashed the grain shipping capacity. In general, the dry bulk cargo throughput on the global scale followed a down curve.

Table 1-2 Dry Bulk Throughput of Global Major Ports in 2018.Q3

Port	3Q2018 (000 Ton)	3Q2017 (000 Ton)	同比增长 (%)	2Q2018 (000 Ton)	环比增长 (%)
Qinhuangdao	53105	52311	1.52%	56736	-6.40%
Hedland	126649	124020	2.12%	134870	-6.10%
Santos	18120	18920	-4.23%	16857	7.49%
Antwerp	2846	3080	-7.61%	3064	-7.13%
Rotterdam	19643	19800	-0.79%	18219	7.82%
Hay Point	29492	32400	-8.98%	28480	3.55%

Source: Websites of Port Authorities, sorted by SISI.

1.3.1 Iron ore throughput of global ports dulled

In this quarter, as Iron ore imports of China continued to slow down and Australia's iron ore

exports to China were slashed, major international mining enterprises, except Vale which enjoyed a significant turnover rise, all suffered declines to varied degrees, represented by RioTinto, BHPBilliton and Anglo American. Overall, the iron ore throughput of global ports went downward in Q3 2018 with no significant poles of growth in sight.

- **China's iron ore imports fall slightly year-on-year**

In this quarter, China's demand for imported iron ores picked up only merely. On the one hand, China tightened its environmental protection policies. On the other hand, the country had a high stock of iron ore at its ports. After production curtailment measures in autumns and winters were enforced, steel plants in China increased their stock of high-grade ores, pellets and steel scraps. Besides, the successive commissioning of electric-arc furnaces left a large amount of low-grade ores to stockpile at ports, further cutting down China's demand for imported iron ores. Although China's iron ore imports in this quarter picked up a little as compared with the nose-dive in this June, registering 273 million tons of imports in total, the figure was still 1.79% less than that in the same period of last year. September marks a traditional peak season for steel imports as China's steel plants step up production before the winter curtailment. Yet the modest growth of iron ore imports in Sept, though recording a four-month high, was still 9.1% lower than that in the same period last year.

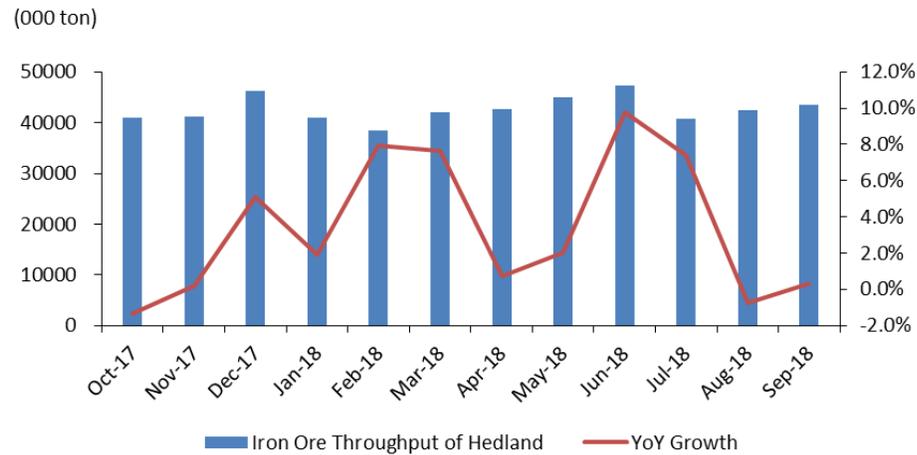


Source: Websites of China Customs, sorted by SISI.

Figure 1-17 Iron Ore Imports and Growth Rate of China from Oct.17 to Sep.18

- **Iron ore throughput of Port Hedland rises slightly**

China, Australia's biggest iron ore trade partner, had a declined demand for iron ores in Q3. In August, Australian mines saw increased railway maintenance as aftermath of the iron ore industry adjustment, leading to further slowdown in Australia's iron ore exports. In this quarter, Port Hedland, welcomed slight growth in iron ore throughput, namely 2.12% year-on-year, bringing the throughput to 127 million t, falling by 6.10% quarter-on-quarter.



Source: Website of Headland Port Authority.

Figure 1-18 Iron Ore Throughput and Growth Rate of Port Hedland from Oct.17 to Sep.18

1.3.2 Coal throughput of global ports volatile

Coal trade entered the traditional off season in this quarter. However, major coal importers headed by China saw increasing coal imports against the trend. China has trimmed its coal imports from Australia and the US. However, the gap was bridged by increased coal imports from Indonesia and Russia. This has led to the two ups and downs of coal exports of the top four coal exporters in the world in this quarter. In general, the global coal shipping market was volatile in Q3 2018, yet stable on the whole.

- **China's coal imports rise and then fall**

China's coal supply tumbled in Q3 as a result of the supply side reform in the country. The coal costs in Australia and Indonesia were still lower than that for Chinese coal enterprises, which has created rigid and stable market demand, attracting China's coastal power plants by virtue of competitive prices and geographical locations. Besides, China's coal grade is low and hard to meet environmental management requirements. These jointly contributed to the high coal imports of China. In Q3 2018, China imported 82.82 million tons of coal, rising by 15.33% year-on-year.

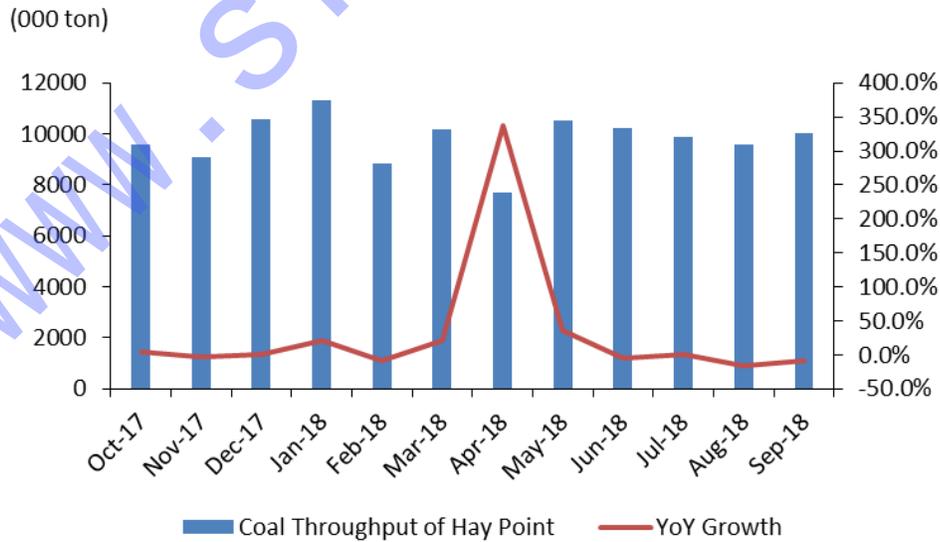


Source: Websites of China Customs, sorted by SISI.

Figure 1-19 Coal Imports and Growth Rate of China from Oct.17 to Sep.18

● **Coal throughput at Port of Hay Point plunges**

In Q3, international trade tensions and Australian economic recession forced Australian dollars into the downside in 2018, which, adding to the political instability, resulted in the less-than-expected economic growth of Australia in this quarter and a bigger downside risk in the future. Australia was China’s biggest source of coal exports in 2017. But China is reducing coal imports from Australia. From the data for January to September this year, Indonesia has replaced Australia to become China’s biggest source of coal exports. Under the dual effects of sluggish domestic economy and loss of China the biggest coal trade partner, Port of Hay Point completed 29.49 million tons of coal throughput in Q3, plunging by 8.99% year-on-year.



Source: Websites of China Customs, sorted by SISI.

Figure 1-20 Coal Throughput and Growth Rate of China from Oct.17 to Sep.18

1.4 Liquid bulk cargo throughput of global ports

Both the demand and supply surged in the international crude oil market in Q3. The capacity surge of OPEC drove up global crude oil output significantly. The capacity surge of OPEC drove up global crude oil output significantly. As a result, major liquid bulk cargo ports in the world welcomed growth, though by modest margins in general. Major liquid bulk cargo ports accomplished 233 million tons of liquid bulk cargo throughput in Q3, rising by 1.53% year-on-year, or 2.21% quarter-on-quarter.

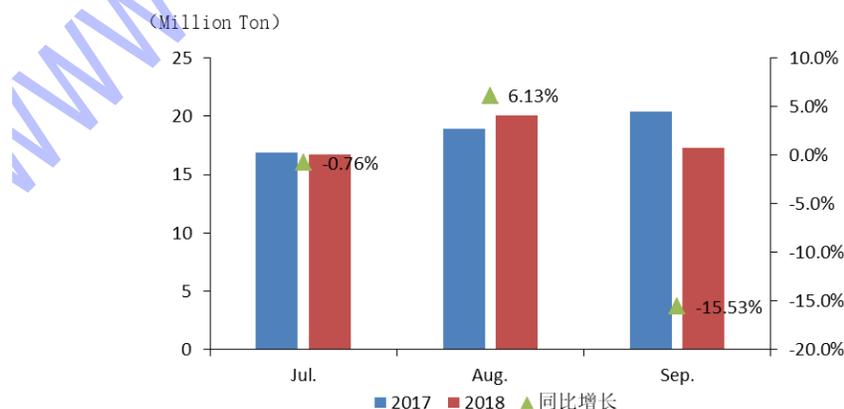
Table 1-3 Liquid Bulk Throughput of Global Major Ports in 2018.Q3

Port	3Q2018 (000 Ton)	3Q2017 (000 Ton)	同比增长 (%)	2Q2018 (000 Ton)	环比增长 (%)
Rotterdam	52370	49697	5.38%	51128	2.43%
Singapore	58602	56242	4.20%	53206	10.14%
Ulsan	32609	35548	-8.27%	32182	1.32%
Kwangyang	34106	33015	3.31%	33602	1.50%
Taishan	16040	15594	2.87%	16888	-5.02%
Incheon	12671	11999	5.60%	12836	-1.29%
Antwerp	19356	18419	5.09%	19745	-1.97%
Santos	4305	4702	-8.44%	4335	-0.68%
Barcelona	3889	3998	-2.73%	3760	3.42%

Source: Websites of Port Authorities, sorted by SISI.

● Oil products throughput of Singapore port first goes up and then falls

Port of Singapore saw its oil product throughput follow a rise-and-fall curve in Q3. In August, Port of Singapore handled 20.09 million tons of oil bulk cargoes, the highest since 2018. But the figure in September dropped by 15.53% to 17.26 million tons, the lowest since July 2017. On the whole, Port of Singapore failed to get rid of the malaise since the first half of 2018 in Q3 during which period the oil bulk cargo throughput grew by -3.81% year-on-year to 54.1 million tons.

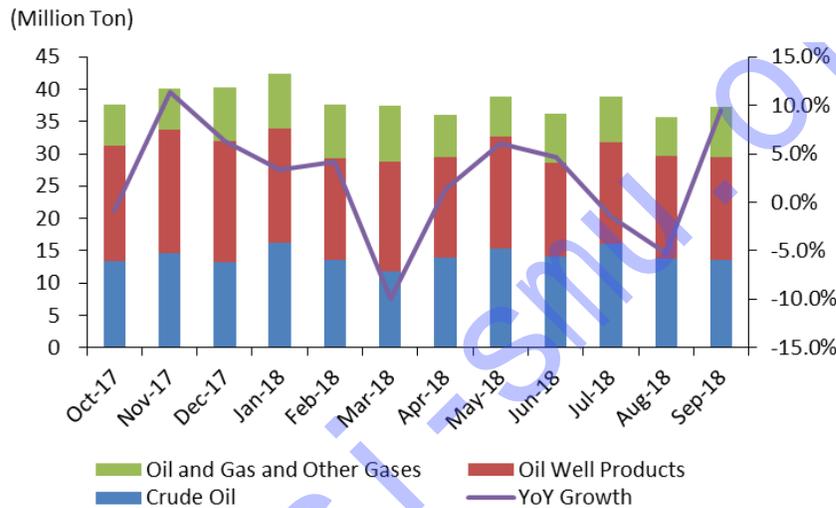


Source: Singapore Port Group.

Figure 1-21 Oil Bulk Throughput and Growth Rate of Singapore Port in 2018.Q3

- **Oil cargo throughput of South Korean ports increases steadily**

In Q3, the robust international crude oil demand drove the aggregate oil cargo throughput of South Korean ports steadily to 112 million tons, registering 0.62% growth year-on-year. Specifically, oil and gas products welcomed significant increases, namely by 15.08% year-on-year to 20.81 million tons. Crude oil throughput also increased by 4.87%, but oil well product throughput further declined by 7.81% to 47.75 million tons. Major oil bulk cargo ports demonstrated polarized performance. Among major ports, Port of Gwangyang, Port of Taesan and Port of Incheon saw their oil bulk cargo throughputs rising by 3.31%, 2.87% and 5.60%, respectively, the growth rates being slightly smaller than those in the previous quarter.

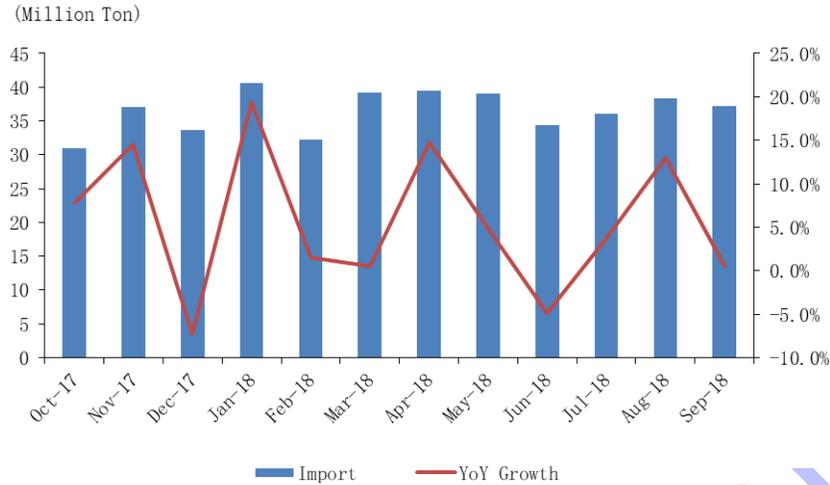


Source: Website of Korean Port Authority.

Figure 1-22 Liquid Bulk Throughput of Korea Ports in Cargo Type from Oct.17 to Sep.18

- **China's oil product throughput on the upswing**

The international crude oil trade market demonstrated brisk demand and supply in Q3. With the hangover of the crude oil import right and right of use policies and production capacity expansion of China's refinery plants, China's crude oil imports continued to climb in this quarter, importing a total of 111 million tons of crude oil, rising by 5.56% year-on-year. Specifically, the daily average imports in September even hit a four-month high. According to customs data, China imported 37.21 million tons of crude oil in Sept, that is, around 9.05 million barrels per day on average, a five-month high.

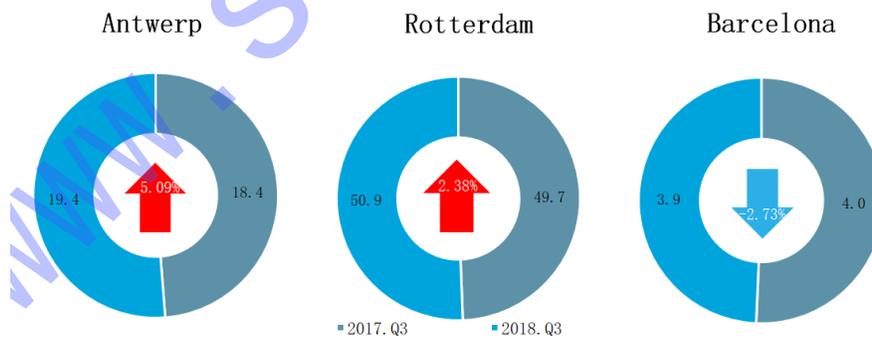


Source: Websites of China Customs, sorted by SISI.

Figure 1-23 Crude Oil Imports and Growth Rate of China from Oct.17 to Sep.18

● **Liquid bulk cargo throughput of European ports stays stable**

The liquid bulk cargo throughput of European ports in Q3 increased by 2.79 percentage points year-on-year on the whole, with the liquid bulk cargo throughputs of major ports relatively stable. Specifically, Port of Rotterdam registered 52.37 million tons, rising by 5.38% year-on-year, primarily contributed by liquefied natural gas. Port of Antwerp experienced a short-lived dip in Q1 in terms of liquid bulk cargo throughput and then enjoyed stable growth for two quarters in a row, which managed to reverse the liquid bulk cargo throughput trend back to the growth track for the first three quarters. In this quarter, the port handled 19.36 million tons of liquid bulk cargoes, an increase of 5.09% year-on-year. Port of Barcelona, after continuing the two-digit growth since Q1 2017, suffered negative growth this quarter in liquid bulk cargo throughput by -2.73% year-on-year to 3.89 million t.



Unit: million Tons

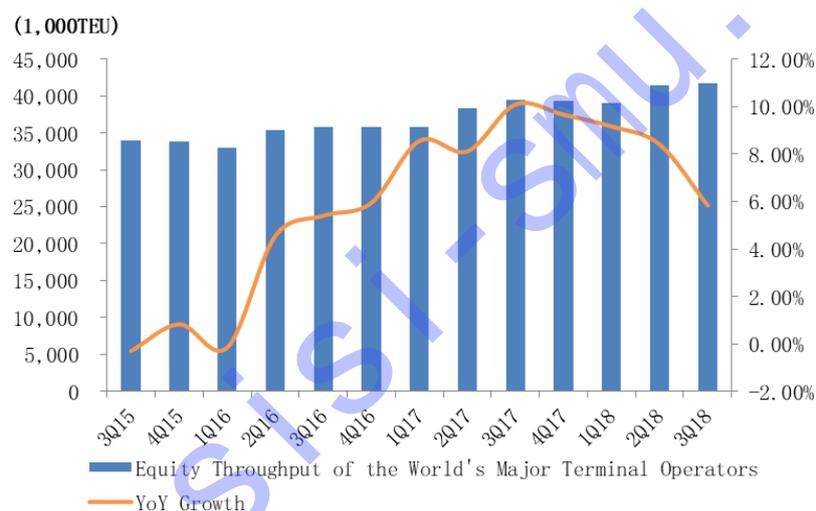
Source: Websites of Port Authorities.

Figure 1-24 Liquid Bulk Throughput of European Major Ports in 2018.Q3

II . Global Port Operation and Management in Q3

2.1 Overall development of global terminal operators

The global terminal operation market saw business performance setback in Q3 2018. Although major terminal operators in the world accomplished an equity throughput of 41.69 million TEUs, the total number of containers remained in high level. However, following the growth slowdown in Q2, the escalating Sino-US trade war and shipping alliances' trim or shutdown of liners and control on shipping space among other factors jointly contributed to a further decline of the equity throughput growth rate of global terminal operators to 5.83%, hitting a two-year low. Despite the continued recovery of world economy, it is estimated that the equity throughput growth of global terminal operators will continue to slow down under the intensified uncertainty of the trade environment in Q4.



Note: The world's major terminal operators include COSCO Shipping Ports, CM Port, DP World, ICTSI, APMT.

Figure 2-1 Equity Throughput and Growth Rate of Global Major Terminal Operators from 2015.Q3-2018.Q3

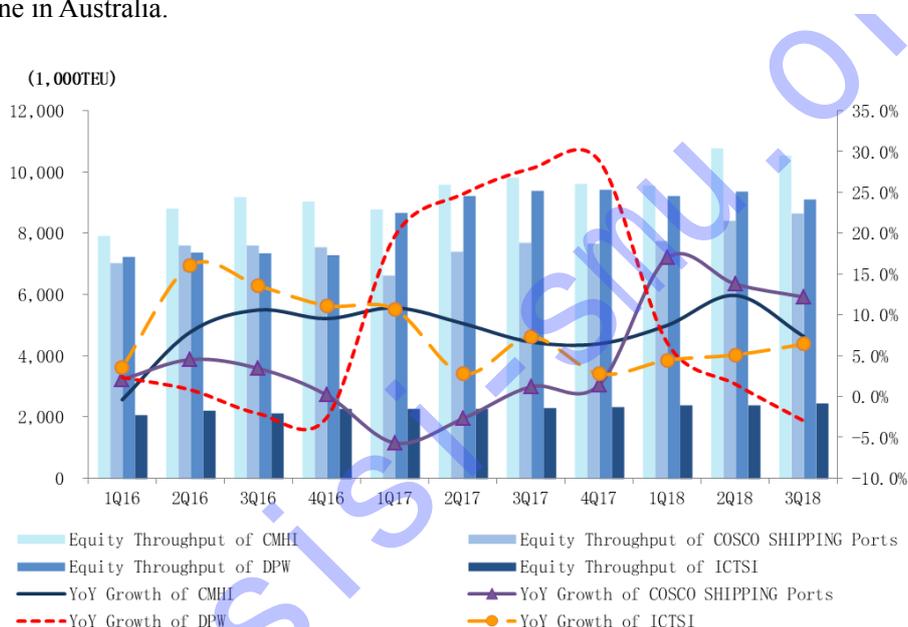
Table 2-1 Equity Throughput of Global Terminal Operators in 2018.Q3

Rank	Operators	2018.Q3 (,000TEU)	YoY Growth /%	2017.Q3 (,000TEU)	YoY Growth/%
1	APMT	10965	7.50	10200	7.37
2	CM Port	10535	7.38	9801	6.56
3	DP World	9107	-2.96	9385	27.91
4	COSCO Shipping Ports	8641	12.18	7579	-0.42
5	ICTSI	2438	6.41	2291	7.30

Date source: websites of various terminal operators.

Note: Statistics for PSA International and Hutchison Whampoa are not included; scaled value for 2018.Q3 statistics for APM Terminals.

All terminal operators in the world, except DP World, welcomed positive growth of equity throughput in this quarter. Specifically, COSCO SHIPPING Ports saw its equity throughput surge by 12.18% year-on-year, thanks to its entry into the Ocean Alliance and newly added terminals' contribution in container volume. China Merchants Port experienced slower but positive growth of 7.38% year-on-year. In addition, APM Terminals, supported by its parent company, maintained a good momentum, and saw its equity throughput grow by 7.50% year-on-year. The equity throughput of DP World declined in the third quarter, due the UAE's severance of ties with Qatar and the company's business reshuffle. Although DP World added new terminals and invested and acquired Unifeeder, the investment and acquisition benefits are yet to be shown. ICTSI saw steady growth of 6.84% year-on-year in equity throughput, thanks to the contribution of container volumes in the newly added terminals in Lae and Motukea in Papua New Guinea and the Port of Melbourne in Australia.

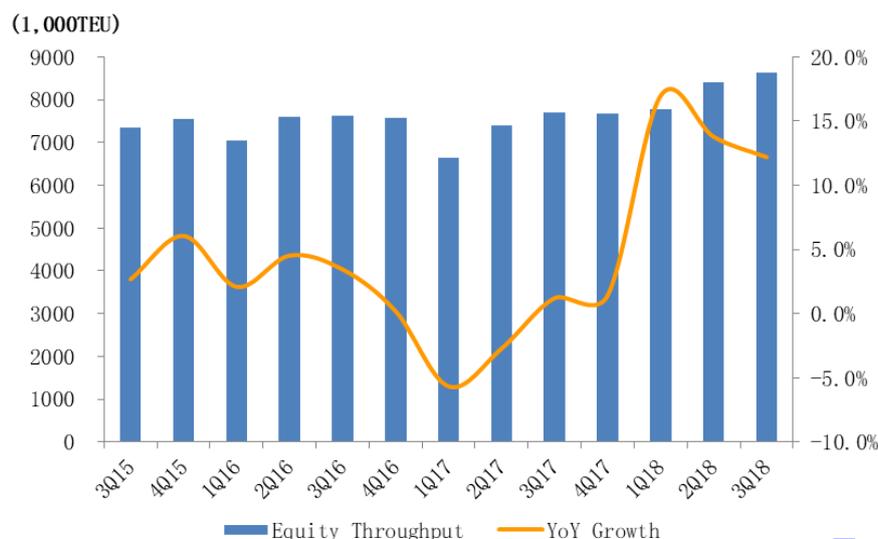


Source: Websites of Port Authorities.

Figure 2-2 Equity Throughput and Growth Rate of Major Global Terminal Operators from 2016.Q1-2018.Q3

2.2 Throughput analysis of COSCO SHIPPING Ports

COSCO SHIPPING Ports continued its satisfactory operation in Q3 2018 benefiting from the Ocean Alliance which enabled more calls at the container terminals of the company, coupled with the container throughput of Tonghai Terminal of Nantong Port in China which just commenced operation. In Q3, COSCO SHIPPING Ports completed a container throughput of 25.84 million TEUs with an year-on-year increase of 11.80%, and an equity throughput of 8.64 million TEUs with an year-on-year increase of 12.18%. The growth rate slowed down, yet remained in high level.



Source: Website of COSCO SHIPPING Ports, sorted by SISI.

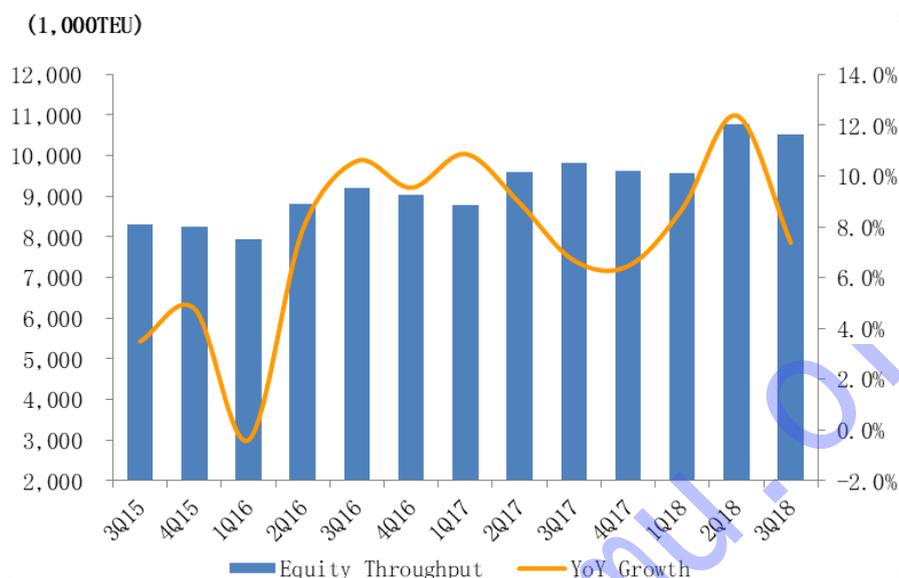
Figure 2-3 Equity Throughput and Growth Rate of COSCO SHIPPING Ports from 2015.Q3-2018.Q3

Region specific, the equity container throughput of COSCO SHIPPING Ports in Chinese mainland accounted for 67.39% of the enterprise's total, rising by 1.76% year-on-year. Specifically, Dalian Container Terminal and Jinzhou New Age Container Terminal in the Bohai Sea Rim demonstrated robust growth, driving the equity container throughput of the region up by 8.3% to 1.28 million TEUs. The official commissioning of Tonghai Terminal of Nantong Port in the Yangtze River Delta and the intensified shipping routes centering around the Maritime Silk Road and the Yangtze River Economic Belt contributed to the equity container throughput growth, namely 3.67% year-on-year, with the equity container throughput rising to 1.50 million TEUs. Xiamen Ocean Gate Container Terminal in the southeast coastal area of China registered a 14.6% growth rate of throughput thanks to the increased calls from the Ocean Alliance, driving the equity throughput of the entire region up by 6.13%. Qinzhou International Container Terminal was clouded by the unfavorable impact in August and September, resulting in the negative growth of equity throughput for the southwest coastal area of China. The equity throughput of Pearl River Delta declined by 4.12% year-on-year overcast by the slashed container throughput of Hong Kong Port. In overseas regions, the new berths of Singapore COSCO – New Port Terminal entered operation, skyrocketing the terminal's throughput. In addition, COSCO SHIPPING Ports purchased 51% stock of Noatum Ports and increased its holding share of Zeebrugge Port. The increased containers resulting from the increased shareholding made the equity container throughput of COSCO SHIPPING Ports' overseas businesses to 2.82 million TEUs, recording a growth rate of as high as 51.82%.

2.3 Throughput analysis of China Merchants Port Holdings

In Q3, China Merchants Port Holdings Company Limited completed a container throughput

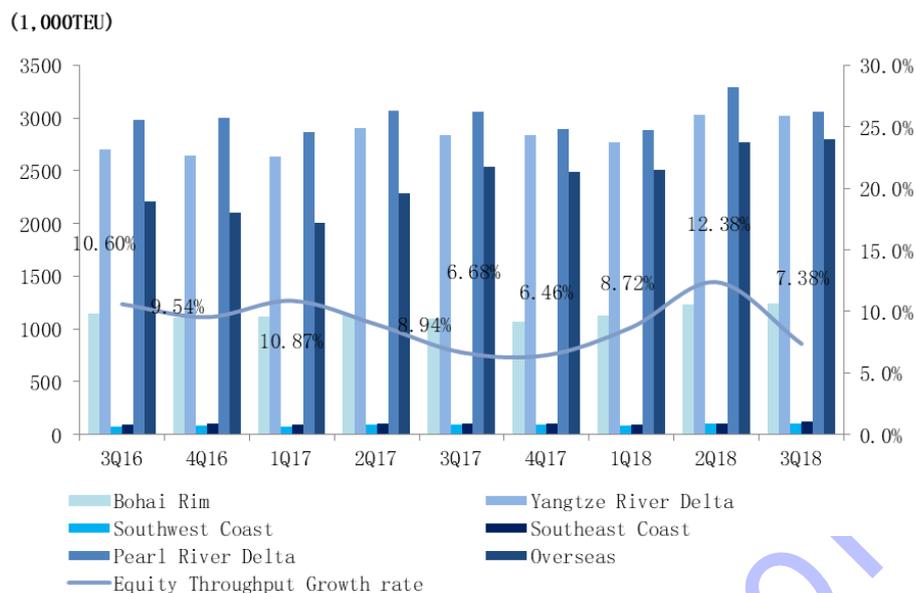
of 28.37 million TEUs, a year-on-year increase of 5.44%, and an equity throughput of 10.54 million TEUs, a year-on-year increase of 7.38%. The equity throughput growth had been picking up slowly starting Q4 2017 and reached a peak in Q2 2018 before a setback, which was primarily a result of the production depression in overseas areas such as Port of Lagos and Port of Djibouti.



Source: China Merchants Port Website.

Figure 2-4 Equity Throughput and Growth Rate of CM Port from 2015.Q3-2018.Q3

Region specific, the equity container throughput of China Merchants Port Holdings in overseas areas increased by 10.11% year-on-year in Q3, the growth rate falling by 5.07 percentage points year-on-year. The sluggish growth of overseas ports in the quarter was primarily because of the epidemic empty containers at the Port of Lagos of the company, causing severe delays of cargoes and undermining further growth of the company's throughputs in overseas regions. Domestically, China Merchants Port Holdings paid continuous attention to the integration of existing domestic port businesses and coordinated port-city development. The company welcomed sound equity container throughput in Q3 overall. Specifically, the Yangtze River Delta, benefited from the strong growth of imports and exports in Daxie, Ningbo, recorded 6.35% year-on-year growth in equity throughput. In the southeast coastal region, the company invested in Shantou Port in August 2017. As a result, the container throughput growth of the company was as high as 144.37%, mirroring the robust growth of equity throughput in the region. In the southwest coastal region, the addition of the "Northeast China-Zhanjiang-Qingzhen (Guizhou)" container sea-railway multimodal transportation and the "bulk-to-container" transformation of the shipping mode of Zhanjiang Port had boosted the amount of containers in the region greatly, namely a year-on-year growth rate of 3.35% for equity throughput. The Pearl River Delta saw its equity throughput declining by 0.18% year-on-year as aftermath of significant asset restructuring of Chiwan Port Shipping.



Source: China Merchants Port Website.

Figure 2-5 Equity Throughput and Growth Rate of Investment Regions of CM Port from 2016.Q3-2018.Q3

Table 2-2 Total Throughput of Investment Regions and Subordinate Companies of Chinese Terminal Operators in 2018.Q3

(Unit:1,000TEU)

Investment Region and its Subsidiaries	COSCO SHIPPING Ports		Investment Region and its Subsidiaries	CMHI	
	3Q	YoY Growth (%)		3Q	YoY Growth (%)
Bohai Rim	5,217.10	22.50%	Bohai Rim	5,629.00	7.02%
Qingdao Qianwan Container Terminal	—		Tianjin Port	717.00	0.70%
Dalian Container Terminal	2755.40	49.50%	Qingdao Port	1,743.00	19.22%
Dalian Dagang Container Terminal	5.60	-10.30%	Dalian Port	3,169.00	2.69%
Tianjin Port Eurasia Terminal	717.10	5.90%			
Tianjin Five Continents Terminal	705.60	-0.90%			
Yingkou Terminal	698.90	-4.30%			
Jinzhou New Era Container Terminal	171.70	26.60%			
Qinhuangdao New Harbor Container Terminal	162.80	3.60%			
Yangtze River Delta	5113.20	3.00%	Yangtze River Delta	11,649.00	6.00%
Shanghai Pudong Container Terminal	683.40	0.80%	Shanghai Port	10,849.00	5.52%
Shanghai Mingdong Container Terminal	1618.10	-0.80%	Ningbo Daxie	800.00	12.83%
Ningbo Yuandong Terminal	770.60	4.90%			
Lianyungang Container Terminal	715.10	-0.80%			
Zhangjiagang Yongjia Terminal	185.10	-6.00%			
Yangzhou Yuanyang Terminal	131.70	6.50%			
Nanjing Port Longtan Terminal	785.40	5.60%			
Taicang International Terminal	158.50	19.20%			
Nantong Tonghai Port	65.30	—			
Southwest Coast	341.10	-6.80%	Southwest Coast	247.00	3.35%
Guangxi Qinzhou International Container Terminal	341.10	-6.80%	Zhanjiang	247.00	3.35%
Southeast Coast	1446.50	7.10%	Southeast Coast	944.00	39.44%
Xiamen Yuanhai Container Terminal	475.50	14.60%	Kaohsiung Port	476.00	8.92%
Quanzhou Pacific Terminal	405.00	12.30%	Zhangzhou	121.00	23.47%
Jinjiang Pacific Terminal	89.30	-35.20%	Shantou	347.00	144.37%
Kao Ming Container Terminal	476.70	9.10%			
Pearl River Delta	7320.20	-2.10%	Pearl River Delta	4,668.00	-2.12%
Yantian International Container Terminal	3729.20	-0.10%	West Shenzhen	2,709.00	-9.22%
Guangzhou Terminal	2822.80	-0.10%	CKRTT	359.00	6.53%
Hong Kong Terminal	768.20	-16.70%	Hong Kong	1,542.00	7.98%
			Shunde Terminal	58.00	190.00%
Overseas	6403.70	36.60%	Overseas	5,236.00	5.45%
Piraeus Container Terminal S.A.	1165.90	22.60%	Colombo	677.00	7.46%
Suez Canal Container Terminal S.A.E.	700.10	25.70%	Lagos	101.00	-28.87%
Kumport Liman Hizmetleri ve Lojistik Sanayi ve Ticaret AS	316.80	-6.00%	Djibout	221.00	-15.33%
Antwerp Gateway NV	557.30	-4.00%	Terminal Link	3,403.00	2.93%
CSP Zeebrugge Terminal NV	106.80	13.90%	Togo- Lome	295.00	-0.34%
COSCO-PSA Terminal	788.30	54.60%	Turkey-Kumport	317.00	-5.93%
Busan Port Terminal	945.70	6.40%		220.00	—
SSA Terminals (Seattle), LLC	40.70	-23.70%		2.00	—
Euromax Terminal Rotterdam B.V.	823.20	17.00%			
Reefer Terminal S.P.A.	14.80	27.90%			
Noatum Port Holdings	944.00	n.a.			
Total Throughput	25841.70	11.80%	Total Throughput	28371.00	5.44%
Equity Throughput	8641.634	12.18%	Equity Throughput	1053.50	7.38%

2.4 Throughput analysis of DP World

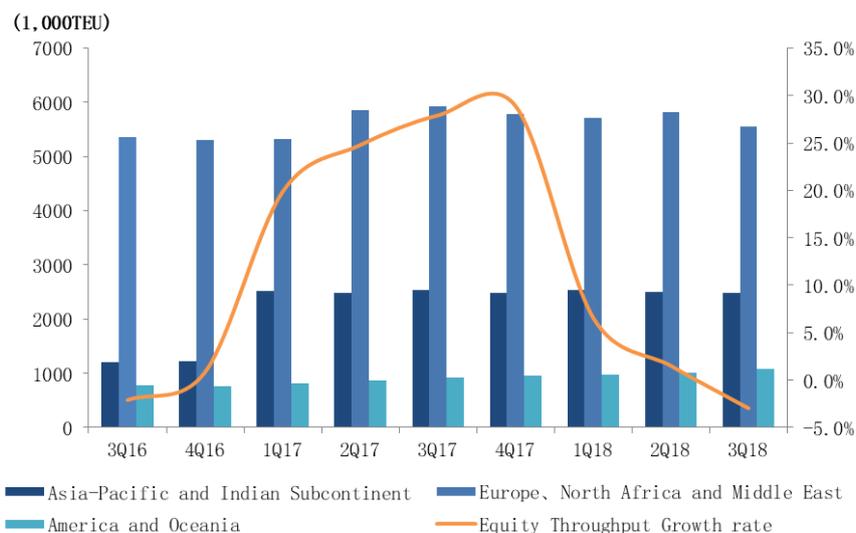
In Q3 2018, terminals under DP World completed a container throughput of 18.02 million TEUs, down by 1.4% year-on-year, and an equity container throughput of 9.11 million TEUs, down by 2.96% year-on-year. DP World throughput growth followed a declining curve for three consecutive quarters, which may attributed to the port business cut from the group's trimming of low-profit terminal businesses to consolidate profit and the depressed business volume of Jebel Ali Port from cutting ties with Qatar.



Source: DP World Website.

Figure 2-6 Equity Throughput and Growth Rate of DP World from 2015.Q3-2018.Q3

Region specific, DP World delivered outstanding performance in America and Oceania, with the equity container throughput rising by 17.47% year-on-year. This is partially because of the Peru business development after the company purchased Cosmos AgenciaMaritima S.A.C. in the previous quarter, and partially because of the long-term partnership extension agreement with CMA-CGM in last quarter which has consolidated the company's presence in Australia. Despite the roaring throughput growth in Europe in Q3, the group cut some of its less profitable businesses in north Africa and the Middle East, narrowing the group's equity container throughput in Europe, north Africa and the Middle East by 6.2 percentage points. In addition, the group's investment in Continental Warehousing Corporation in India failed to show effect, causing the group's equity throughput in the Asia-Pacific and Indian subcontinent region to fall by 2.7% year-on-year.



Source: DP World Website.

Figure 2-7 Equity Throughput and Growth Rate of Investment Regions of DP World from 2016.Q3-2018.Q3

2.5 Throughput analysis of ICTSI

In this quarter, ICTSI completed an equity container throughput of 2.44 million TEUs with a year-on-year growth rate of 6.41%. The growth rate was on a rise. The sound performance of ICTSI throughput was primarily a result of the group’s new terminals Lae and Motukea in Papua New Guinea and the containers of Port Melbourne, Australia. In Q3, the group enhanced its capacity of receiving large container ships at Basra Terminal (BGT) in Iraq and Port Melbourne, attracting more ships, and more containers, to these ports. In addition, ICTSI won the 20-year franchise for Sudan South Port Container Terminal (SPCT), which would give a new impetus for the group’s business growth.



Source: ICTSI Website.

Figure 2-8 Equity Throughput and Growth Rate of ICTSI from 2015.Q3-2018.Q3

2.6 Throughput analysis of APM Terminals

In Q3 2018, APM Terminals completed a container equity throughput of 10.97 million TEUs, rising by 7.5% year-on-year. The sound development of the company's port business was primarily credited to its parent company's synergy in businesses and shipping routes, adding to it the synergistic effect from integration with Hamburg Sud. As a result, the terminal business achieved strong development. However, as the 2M alliance that Maersk is in announced suspension of TP1 from Asia to Pacific Northwest, APM Terminals faced decreasing businesses and slower container equity throughput growth.



Source: APMT Website.

Note: In the first quarter of 2018, APMT used moves as the statistical unit, # is the converted value.

Figure 2-9 Equity Throughput and Growth Rate of APMT from 2015.Q3-2018.Q3

Table 2-3 Equity-Weighted Volume of APMT in 2017.Q3 and 2018.Q3

(Unit: Million Moves)

Area	3Q2018	3Q2017	YoY Growth
Americas	1.2	1.0	28.9%
Europe, Russia and Baltics	0.7	0.7	-5.2%
Asia	1.9	1.8	1.3%
Africa and Middle East	0.5	0.5	-4.7%
Total	4.3	4.0	6.0%

Source: Maersk Website.

Special Report I: Free Trade under Port Reform

The high-profile World Bank published the *Doing Business 2019* in October 2018. In the report, the trading across borders indicator related to port logistics and port clearance development reflects the logistic performance and port efficiency of major cities or regions of a country in the cross-border trade area, thus having enhanced reference significance for multinational enterprises and international traders to select production and processing locations.

Doing Business 2019 points out that the ease of doing business score of China improved from the 65.00 in the 2018 report to 73.64 points (100 points in total), making China ranked 46th globally among the total 190 countries. Specifically, China's border compliance cost for cross-border trade reduced from 745 US dollars to 326 US dollars, pushing China's trading across borders score from the original 69.91 points up to 82.59 points. However, a more in-detail study on the World Bank's evaluation methodology and standards renders a more comprehensive interpretation of the report necessary.

I. Limitations of World Bank's evaluation in the report

Taking trading across borders score for example. 16 countries shared the first place with their border compliance cost being nearly zero, while their compliance time being only 1 hour. Most of these countries are in the European Union, and their cross-border trade modes covered in the statistics are all land transport to neighboring countries. Subject to EU trade agreements, such transport modes are similar to domestic transport. That is why these countries' trading across borders scores far exceed those of other countries. Likewise, most of the top 40 economies on the trading across borders ranking list rely on land transport for imports and/or exports, typical examples being the United States, Britain, and Hong Kong of China. In the statistics, Hong Kong's export destination is Chinese mainland, while its import trade partner is Japan. The differences in trade modes and agreements between traders result in unfair evaluation criteria (the World Bank uses the most widely used approach by the country and its trading partners in transport modes for import and export, that is, seaports or land border crossings).

Second, World Bank's criteria for selecting traded products of various countries for statistics are also controversial. For selection of China's traded products for import and export case studies, World Bank used export-advantageous products and imported auto parts as the targets for cross-border trade time and cost accounting. But the classification of parts at customs declaration is relatively complicated, and the occurrence of clearance abnormalities is higher than that of general cargoes, lowering down the cross-border trade efficiency.

In addition, World Bank's statistics are based on a questionnaire survey of local freight

forwarders, customs brokers, port authorities and traders, featuring relatively high subjectiveness. Relevant data was not from actual statistics but the empirical judgment by respondents. Moreover, the limited sampling survey also poses a risk of overgeneralization.

II. Data-powered comparison of port environment

The whole process of cargo import and export, embodied in World Bank's statistics, involves three major sections: the documentary compliance¹, the border compliance² and the domestic transport. Domestic transport was not included in cross-border trade, leaving documentary compliance and border compliance only for the process. Besides, the cross-border trade data of surveyed cities is more shaped by the cities' most widely used ports.

(1) Southeast Asian countries deliver higher port efficiency

World Bank averaged the time and cost scores of documentary compliance and border compliance for import and export businesses in the report. But out of the fact that documentary compliance and border compliance may proceed in parallel, the bank presented the data in form of breakdown comparison. From the comparison, we can discover that countries usually adopt strict management over imported cargoes. The time spent on import border compliance of Shanghai, Mexico, Singapore, Japan and Malaysia is all longer than that on export border compliance, largely because imported cargoes are subject to strict inspection & quarantine as well as customs duty checks to curb tax defraudations and security risks. Likewise, document review for import is also time-consuming as it involves product classification, import licensing and other documentation formalities. But in general, the customs clearance time of major ports is all within 48 hours. Specifically, the time for Shanghai, Mexico and Japan is longer than 40 hours, while the situations of Singapore and Malaysia among other Southeast Asian countries seem better, credited to the information-based port facilities and clearance facilitation measures.

(2) Asian countries demonstrate lower port cost

With regard to the country-specific port cost statistics by World Bank, the import and export compliance costs of European and American countries are higher, subject to labor and exchange rate factors among others (excluding the trade statistic samples in EU³), while the total port costs of Asian countries such as South Korea, Malaysia, Japan and Singapore are lower. Meanwhile, the export-related cost is lower than import-related cost in the current context in favor of exports. Cost

¹ Documentary compliance (in hours): Documentary compliance time and cost includes the time and cost for getting, preparing, processing, presenting and submitting the documentation.

² Border compliance (in hours): Border compliance time and cost includes the time and cost for cargo loading or unloading at ports or borders and the time and cost for gaining access to, preparing and submitting documentation during declaration for clearance and inspection and quarantine.

³Germany's import cost is zero because its import traders for statistical purposes are EU countries and the transport with these traders is counted as domestic transport which is not included in the statistical scope.

type wise, the documentary compliance cost for import in Japan, Mexico and China remains high. In the latest data, the total export compliance cost is between 200 and 400 US dollars, and the total import compliance cost is between 200 and 500 US dollars, leaving limited space for further reduction.

III. Reform Path of global free trade and port

Despite being not perfect in evaluation, the World Bank's report, as it concludes, enables more than 300 items of reform across the world regarding business environment and port efficiency, the facilitating role of the report on global port environment improvement being self-evident. To this end, World Bank even summarized effective port reform measures in the world in the cross-border trade section for global port cities' reference.

(1) Electronic declaration and processing of customs information

Electronic system has become an important tool for managing information flows in a complex trade environment, such as for customs information archiving, transfer, processing and exchange. Advanced network systems allow traders to submit documents and pay taxes online. Meanwhile, electronic systems can restrict direct interactions with government officials so as to reduce the chance of bribery. In addition, the customs electronic data interchange system can help governments promote cross-border trade, combat fraud and track statistical information about foreign trade transactions. At present, more than half of the high-income economies in OECD have enabled full electronization for traders to submit trade documents without paper materials required.

(2) Enforcement of "One-window" trade platform

More and more economies are inter-connecting their one-window systems to enhance the presence of traders, customs authorities and all other institutions involved in international trade. According to the General Administration of Customs of South Korea, the one-window for trade in South Korea can generate 18 million US dollars of revenue a year. In Singapore, the implementation of the one-window mechanism greatly boosted the government efficiency. The country established the world's first one-window for trade (TradeNet) in 1989, bringing together more than 35 border authorities. Nowadays, TradeNet handles 30,000-plus declaration forms a day, and 99% of licenses within 10 minutes while accepting all collections through inter-bank deductions.

(3) Differentiated identification based on risk identification

At present, many economies use scanners to minimize the workload of physical devanning. However, inefficient use of scanners in some economies has imposed additional burden on traders, as customs officers often scan all containers, leading to delays and levying mandatory scan fees against traders. Efficient use of scanners and risk-based analysis can achieve better results during inspections.

(4) Deepened regional economic and port cooperation

Countries around the world are actively speeding up trading processes by signing more border cooperation agreements and reducing the number of checkpoints to facilitate free flow of cargoes without being suspended by customs or other inspections. Deepening regional cooperation through the establishment of trade agreements can also form regional markets, scale up economy, encourage market competition, accelerate trade and commerce, improve customs clearance procedures and ease information asymmetry.

(5) Speedup of privatization process to encourage competition

In addition to customs procedures, trade service providers, such as customs brokers, transport companies and port service providers, all have an impact on the time and cost of cross-border trade. More intense competition between trade service providers can lead to lower costs and higher quality of service. In 2016, the Russian Federation established a new maritime service zone near the Port of St. Petersburg which enabled lower terminal handling rates by terminal operators as a result of intensified competition from concentration of maritime shipping service players.

(6) Enhanced trade infrastructure development

The importance of infrastructure is prominent when port efficiency is taken into account. Efficient port is not just technically advanced (using robots and automated container handling facilities), but also uses digital platforms such as port community systems to ensure smooth and reliable information flows between all parties connected to the seaport network. Automation enhances operational reliability, predictability, security and competitive power. Meanwhile, modern automated machines are faster, more economically efficient and less costly for maintenance, and can minimize collision and other physical damages. Efficient port produces more economic benefits, including increasing the trade volume, reducing the trade cost, increasing employment opportunities and attracting foreign investment.

(7) Inspection efficiency elevation for special products

Agricultural products and other special trade products are required to undergo special inspection procedures (such as fumigation products or phytosanitary checks). The border compliance time ranges from 2 to 168 hours. For example, both Namibia and Australia mandate sanitary inspection and certificate for major export products. However, a fish exporter needs to spend 120 hours on border exporting procedures in Namibia, while a meat exporter in Australia only needs to spend 36 hours on such procedures. A main cause lies in the fact that Australia formulates special inspection and quarantine measures for meat products which involve relatively complicated trade procedures. Quarantine authorities can work closely with manufacturers and customs authorities throughout the process and the most documents are handled in the electronic approach.

(8) Enhanced business training and technical exchanges

Training for Reform is the subtitle of this year's World Bank report. Elevating the efficiency of relevant practitioners through business training and technical exchanges is regarded as an effective measure for quick improvement of business environments and port efficiency in various economies in a low-cost manner. Well-trained and well-educated workforce is equipped with the know-how for undertaking daily responsibilities and improving efficiency throughout the trade process. Enhancing workforce ability and technological competence can effectively improve organizational productivity.

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Special Report II: Review of Global LNG Terminal Development

A majority, or around 68%, of natural gas trade worldwide is pipelined, and the rest 32% is transported in form of LNG (liquefied natural gas). LNG is the liquefied form of natural gas which undergoes deep purification and is then cooled to -162°C at atmospheric pressure. Its volume is about 1/625 of that in the gaseous state. LNG transport is safer, more flexible and more efficient than pipelined transport. For this reason, LNG is listed as a preferred fuel in many countries, and LNG is growing at a rapid rate of about 12% annually, becoming one of the fastest-growing energy sectors in the world. In this context, LNG terminals are booming across the world in recent years.

I. Global LNG market warms up

LNG-based transport is more efficient, safer and more flexible than pipelined transport. This is why LNG-based transport has gained popularity on the global scale in recent years with maritime trade routes mushrooming. In the past three years, the global scale of LNG maritime shipping trade has kept hitting new highs, reaching 293 million t in 2017, a rise of 12% over that in 2016.



Figure 1 LNG Trade Volumes from 1990 to 2017

LNG market is brisk in both supply and demand. On the supply side, the US and Australia keep improving their LNG yields, increasing liners and uplifting port capacity to serve LNG shipping. In 2017, Australia's LNG supply increased by 11.9 million t, and the US' increased by 10.2 million t. On the demand side, Asia remains an important demander for LNG globally. Specifically, China has limited supply of natural gas resources and its yield is far less than its demand, widening the supply-demand gap. China has been tightening its environmental policies in recent years. LNG as a clean energy will become a pillar of China's natural gas market. In 2017, China's LNG demand increased by a remarkable sum of 12.7 million t. In addition, the LNG demand in South Korea, Pakistan, Spain and Turkey increased by 11.9 million t aggregately.

Quantity of LNG importers keeps growing. The number of LNG exporters has maintained stable since 1990. As of 2017, a total of 18 countries in the world exported LNG, running flat with that

in 1990. As environmental protection effort is intensified across the world, more and more countries are using natural gas as energy fuels, driving up the number of LNG importers. As of 2017, there were a total of 36 LNG importers in the world, 20 more than that in 1990. In the days to come, the global LNG demand will sustain its rapid growth, with Asian countries leading the wave. According to BMI Research, it is estimated that the global LNG demand in 2028 may reach 787.2 billion cubic meters, rising by 64% over that in 2018.

Asia is home to a majority of LNG trade flows in the world. Most of global LNG suppliers are located in the Asia Pacific, the Middle East and Africa regions. The Asia-Pacific region is the largest supplier market for LNG in the world. LNG supply has remained stable in recent years. LNG output reached 113 million t in 2017, up by 14 million t year-on-year. Qatar is the largest LNG supplier in the world, taking 27.6% share globally, making the Middle East the second largest LNG supplier market in the world. From the specific trade flow distribution as shown in Figure 4, shipping routes that undertake more than 10 million t of LNG transport are those from the Middle East (Qatar) to East Asia (Japan, China and South Korea) and those from Australia to East Asia (Japan, China and South Korea). LNG trade volume on Atlantic routes (trade between West US, Latin America, Africa and Europe) is generally less than 5 million t per year. In general, LNG trade flows are primarily distributed in the Asian region.

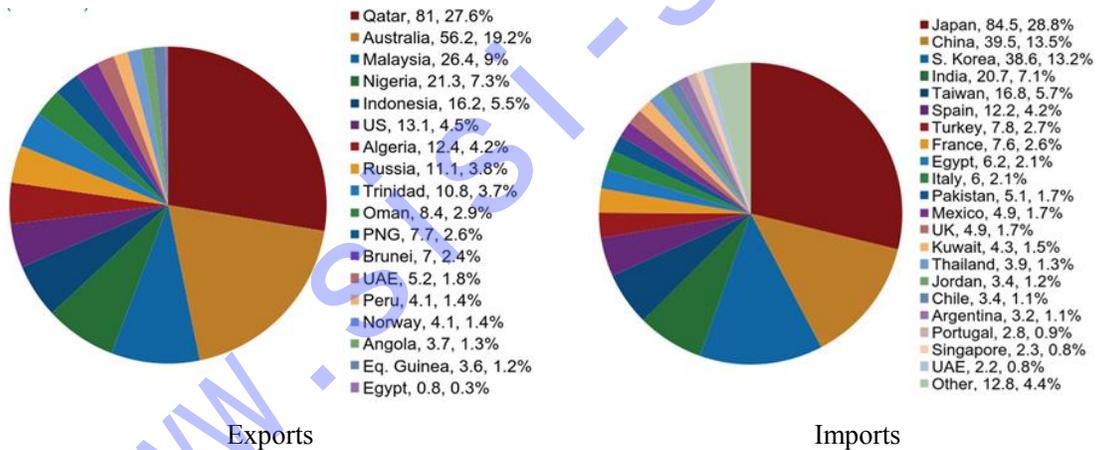


Figure 2 LNG Exports, Imports and Market Share by Country (in MTPA)

Most LNG importers in the world are in the Asia-Pacific region. The top five LNG importers are Japan, China, South Korea, India and Taiwan of China, all in Asia. Their total LNG import volume accounts for 68.3% of the global import market, making Asia the world's largest demand market of LNG.

The Asia-Pacific region is the world's largest LNG import and export trade market. Most of global LNG shipping and trading activities are in the Pacific region and on the Middle East-Pacific routes. In 2017, these areas completed 193 million t of LNG trade, accounting for 66% of the global LNG trade market.

II. Global LNG terminal construction on fast track

The expanded LNG demand globally fuels global LNG trade volume growth. In the brisk global LNG market, global LNG terminal construction also steps on a fast track. The capacity of global LNG terminals in 2017 increased by 45 million t, an increase of 60% year-on-year, another robust growth following the 47% growth in 2016. The rapid capacity growth of global LNG terminals can be primarily ascribed to the soaring number of LNG importers in the world in recent years and the resulting surge of LNG terminals in these countries.

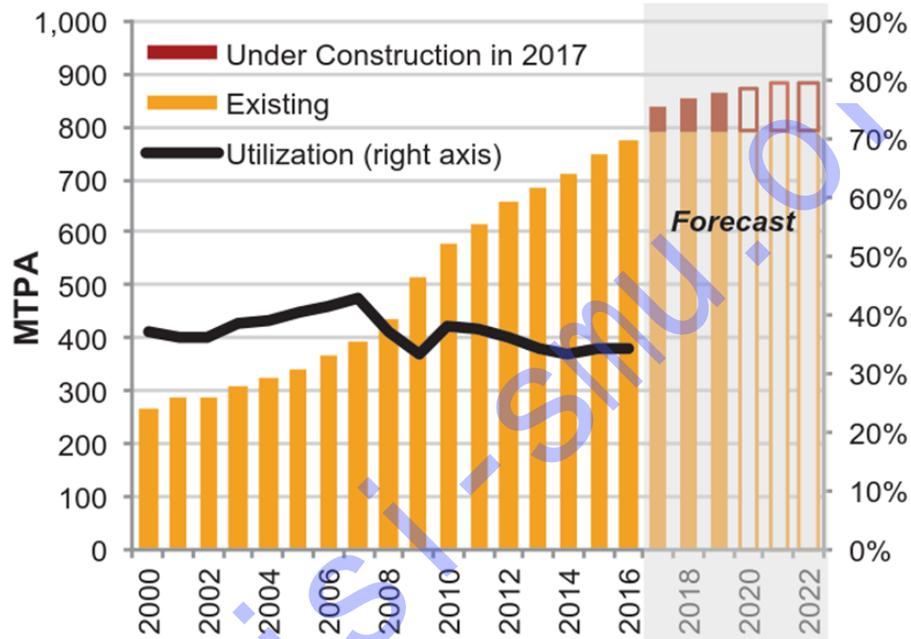


Figure 3 Global Receiving Terminal Capacity from 2000 to 2023

Most of LNG terminals in the world are in Asia, Japan in particular. As the largest LNG importer in the world, Japan records the highest LNG terminal capacity worldwide. As of 2017, the capacity of Japan's LNG terminals totaled 198 million t. China became the second largest LNG importer in place of South Korea, and is expected to further expand its LNG market and speed up LNG terminal investment and construction. LNG terminal utilization in the world is low overall, namely between 30% and 50%. Japan, South Korea and Britain see low utilization of LNG terminals overall, while China, India, Taiwan of China and other regions have higher utilization of LNG terminals. In specific, China's LNG terminal utilization was only 56% in 2016, and rose to 73% in 2017, indicating the strong demand for LNG in China, hence the rapid LNG market growth.

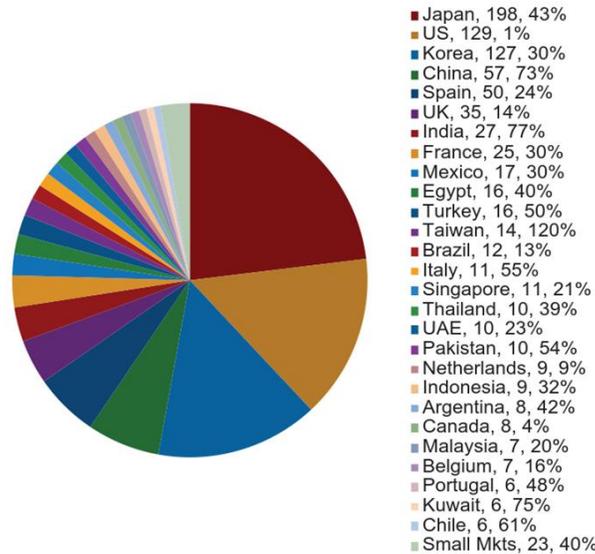


Figure 5 LNG Regasification Capacity by Country and Regasification Utilization in March 2018

China's LNG terminals are primarily located in the eastern coastal areas, highlighted by areas near the Bohai Sea, the East China Sea, and the South China Sea where the scarcity of resources is prevalent, generating strong demand for natural gas. Besides, the long coastlines and favorable port facilities and conditions in these areas are also conducive to development of facilities related to LNG terminals.

With China's enhanced promotion of its coal-to-gas program, and the arrival of the heating season for northern China cities in winter, there emerged a domestic supply shortage of natural gas in winter, especially the supply of LNG. At present, China still needs to import a large amount of LNG. However, the current ratio of LNG receiving stations after LNG arrival at ports is obviously insufficient, exacerbating the LNG supply-demand contradiction. By the end of 2017, China (including Hong Kong, Macao and Taiwan) had 20 LNG receiving stations built, with 8 of them under expansion. The total capacity of China's (excluding Hong Kong, Macao and Taiwan) LNG receiving stations hit 59.6 million t/year, or about 79.5 billion cubic meters/year.

According to the Key Layout Plan of LNG Terminals in Bohai Sea Rim (2022) rolled out by the Ministry of Transport, the natural gas consumption demand in the Bohai Sea Rim grew rapidly, reaching 51.8 billion cubic meters in 2017. Specifically, seaborne imported LNG accounted for 34% of total consumption, an average annual increase of 58% since 2015, making great headway. The ministry planned 16 berths in the five major ports in the Bohai Sea Rim to improve the LNG terminal layout and supply security in the region.

Appendix

Table 1 Cargo Throughput and Growth Rate of World's Major Ports in 3Q.2018

Reign	Port	3Q2018 (Million Ton)	3Q2017 (Million Ton)	YOY Growth (%)	2Q2018 (Million Ton)	QoQ Growth (%)
Asian	Ningbo-Zhoushan	282	256	9.81%	292	-3.41%
	Shanghai	186	192	-2.74%	189	-1.09%
	Singapore	157	156	0.99%	157	0.39%
	Tianjin	130	125	4.29%	126	3.63%
	Qingdao	137	127	8.03%	133	3.58%
	Tangshan	158	147	6.96%	162	-2.43%
	Guangzhou	148	146	1.51%	159	-6.93%
	Dalian	121	119	1.69%	121	-0.43%
	Yingkou	92	91	1.90%	98	-6.30%
	Busan	123	98	24.85%	122	0.70%
	Rizhao	106	89	19.12%	114	-6.55%
	Gwangyang	73	62	18.34%	79	-7.48%
	Qinhuangdao	58	61	-5.32%	62	-6.38%
	Zhanjiang	68	63	8.07%	71	-4.14%
	Yantai	130	70	84.03%	118	9.69%
	Shenzhen	66	66	0.43%	64	3.31%
	Xiamen	58	51	14.13%	56	3.16%
	Ulsan	51	51	0.85%	49	5.06%
	Lianyungang	60	52	13.88%	52	15.81%
	Beibuwan	60	55	9.17%	63	-4.87%
Incheon	39	39	-0.22%	41	-3.62%	
Huanghua	72	73	-1.34%	72	-0.30%	
Fuzhou	47	39	21.70%	46	2.56%	
Pyeongtaek-Karatsu	28	27	2.68%	28	-0.33%	
Quanzhou	34	34	-1.26%	34	0.39%	
Pohang	14	16	-10.65%	15	-7.68%	
Donghae-Mukho	9	9	4.07%	9	1.47%	
Europe	Rotterdam	117	115	1.91%	115	1.91%
	Antwerp	58	60	-3.22%	60	-3.22%
	Riga	9	9	-3.52%	9	-3.49%
	Barcelona	17	17	-0.04%	17	-0.03%
	Tallinn	4	4	-1.86%	4	-1.94%
America	South Louisiana	72	69	3.06%	70	2.44%
	Long Beach	46	43	7.15%	47	-3.30%
	Seattle-Tacoma	8	7	18.39%	8	8.40%
	Virginia	5	5	-0.93%	5	-2.44%
Oceania	Hedland	129	132	-2.22%	138	-6.44%
	Heinport	29	20	46.22%	28	3.55%
	Brisbane	9	8	3.59%	9	-0.52%

Table 2 Container Throughput and Growth Rate of World's Major Ports in 3Q.2018

Reign	Port	3Q2018 (000TEU)	3Q2017 (000TEU)	YOY Growth (%)	2Q2018 (000TEU)	QoQ Growth (%)
Asian	Shanghai	10830	10286	5.29%	10740	0.84%
	Singapore	9279	8624	7.59%	9157	1.33%
	Shenzhen	6902	7088	-2.62%	6120	12.79%
	Ningbo-Zhoushan	6791	6384	6.38%	6881	-1.32%
	Busan	5418	5125	5.71%	5301	2.21%
	Qingdao	4965	4639	7.02%	4836	2.67%
	Hong Kong	4823	5383	-10.40%	5028	-4.08%
	Guangzhou	5485	5202	5.44%	5577	-1.65%
	Tianjin	4280	4036	6.05%	4201	1.89%
	Dalian	2820	2820	-0.02%	2592	8.79%
	Xiamen	2562	2820	-9.17%	2671	-4.10%
	Yingkou	1532	1572	-2.56%	1563	-1.99%
	Lianyungang	1241	1190	4.30%	1160	6.97%
	Kaohsiung	2594	2501	3.74%	2501	3.74%
	Keelung	367	358	2.52%	358	2.52%
	Taichung	438	414	5.84%	414	5.84%
	Dubai	3601	3857	-6.64%	3913	-7.97%
	Gwangyang	614	573	7.20%	551	11.52%
Incheon	767	776	-1.11%	772	-0.57%	
America	Los Angeles	2461	2408	2.20%	2197	12.01%
	Long beach	2069	2114	-2.13%	2058	0.54%
	Seattle-Tacoma	1017	944	7.65%	939	8.24%
	Vancouver	886	856	3.45%	836	5.95%
	Virginia	733	713	2.83%	680	7.77%
	Houston	705	596	18.33%	689	2.37%
	Montreal	434	396	9.85%	430	1.13%
	Halifax	141	145	-2.39%	142	-0.11%
Europe	Santos	1088	948	14.71%	1005	8.21%
	Rotterdam	3703	3537	4.69%	3577	3.51%
	Antwerp	2766	2655	4.18%	2824	-2.06%
Oceania	Barcelona	900	846	6.42%	836	7.71%
	Brisbane	363	344	5.32%	336	7.90%

Table3 Equity Throughput and Growth Rate of Global Major Terminal Operators from 2015.Q3-2018.Q3

(Unit: 1,000TEU)

		CM Port	APMT	DP World	COSCO SHIPPING Ports	ICTSI
3Q15	Equity Throughput	8316	8900	7494	7357	1880
	YoY Growth	3.49%	-8.25%	2.60%	2.67%	1.95%
4Q15	Equity Throughput	8250	8800	7237	7548	2007
	YoY Growth	4.79%	-6.38%	2.70%	6.05%	-1.02%
1Q16	Equity Throughput	7931	8700	7222	7034	2053
	YoY Growth	-0.39%	-4.40%	2.34%	2.09%	3.57%
2Q16	Equity Throughput	8805	9400	7381	7602	2211
	YoY Growth	7.90%	2.60%	0.82%	4.52%	16.04%
3Q16	Equity Throughput	9197	9500	7337	7611	2135
	YoY Growth	10.60%	7.00%	-2.10%	3.44%	13.57%
4Q16	Equity Throughput	9038	9700	7300	7562	2254
	YoY Growth	9.54%	10.23%	-2.59%	0.18%	11.13%
1Q17	Equity Throughput	8793	9400	8658	6635	2272
	YoY Growth	10.87%	8.05%	19.64%	-5.68%	10.66%
2Q17	Equity Throughput	9592	9800	9211	7396	2272
	YoY Growth	8.94%	4.26%	24.79%	-2.71%	2.79%
3Q17	Equity Throughput	9811	10200	9385	7703	2291
	YoY Growth	6.68%	7.37%	27.91%	1.21%	7.30%
4Q17	Equity Throughput	9621	10300	9408	7668	2316
	YoY Growth	6.46%	6.19%	28.88%	1.41%	2.78%
1Q18	Equity Throughput	9560	10162	9226	7761	2373
	YoY Growth	8.72%	8.11%	6.56%	16.97%	4.45%
2Q18	Equity Throughput	10779	10554	9350	8415	2388
	YoY Growth	12.38%	7.69%	1.51%	13.77%	5.10%
3Q18	Equity Throughput	10535	10965	9107	8641	2438
	YoY Growth	7.38%	7.50%	-2.96%	12.18%	6.41%

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