Marketing Material

Research Report

South Korea Real Estate Market Outlook

April 2018

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Introduction

The real estate market in South Korea has undergone evolution and institutionalization. Structural change and transition including ownership and management of real estate assets has been witnessed, with the aggregate size of institutionally held assets expanding six fold over the last ten years to 2017. It is now fifth largest in the Asia Pacific region for invested stock and transaction volume, and has become one of the most important compositions in the regional real estate portfolio for many international investors. In this paper we touch on how the market has evolved and how it looks now in the regional context, and what are the considerations that investors should be aware of, together with the latest updates of market fundamentals.

1 Executive Summary

- Macro Economy: South Korea's real GDP is forecast to grow by 3.0% in 2018, achieving 3% in two consecutive years, driven by robust exports and the recovery of private consumption. Bank of Korea raised its benchmark rate from 1.25% to 1.5% in November 2017 for the first time in more than six years. Further hikes are highly likely in order to align with the U.S. monetary policy, but only to the extent that does not harm the momentum of the economic recovery. Despite healthy corporate performances, the employment market still remains subdued, as conglomerate companies remain cautious about expanding their workforce due to market risk involving a rise in trade protectionism.

- Capital and Investment Market: Korea keeps its fifth position in Asia Pacific in terms of size of Grade A office stock and invested real estate stock value, of which 20% are owned by REITs and funds. The average unlevered total return has been resilient and has remained in positive territory throughout the last ten years, though it moderated slightly to 7.7% as of 2016. With transaction volumes breaking records in three consecutive years, transaction cap rates in Seoul's CBD have continued to tighten since 2009, while they are expected to rise marginally over the next few years.

- Real Estate Market Fundamentals: Subdued demand held office vacancy rates at elevated levels in the CBD and Yoido, while Gangnam remained relatively tight. Average office gross rent in the Seoul CBD has grown stably in the last few years, though rent-free periods in the CBD recently expanded to four months per year. Top high street retail areas in Korea started to recover from a downturn in the last year. In the residential sector, rental houses have emerged a comparably affordable option for tenants compared to "Jeonse" along with the fast growth of one person households. This comes amid a weakening in the belief in house value perpetual increases. Average vacancy rate of modern logistics assets in Greater Seoul remains low as the rental growth cycle continues, while a record amount of supply is expected to come consecutively in 2018 and 2019. The average hotel occupancy rate in Seoul recovered to 75% in 2016 from 69% in 2015, but is expected to soften again.

- Investment Opportunities: The Korea commercial real estate market is increasingly posing attractive investment opportunities to investors. However, due to strong competition over acquisition activity and the elevated valuation of income yielding assets, an increasing number of investors have started to consider core plus or value-add strategies, on top of traditional core strategies.

- Consideration: Due to a lack of sizable listed REITs or listed developers, market transparency remains a little more unfavorable to international investors than other core markets in the region. It is important for investors to partner with managers with a strong footprint and track record in the local market, in order to have enough convictions when underwriting investments.

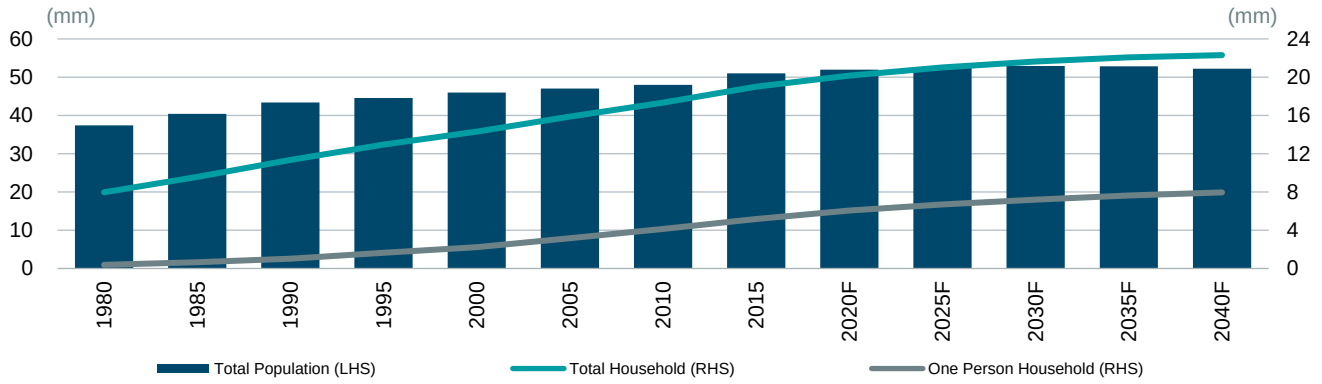
Past performance is not indicative of future results. The comments, opinions and estimates contained herein are for informational purposes only and set forth our views as of this date. The underlying assumptions and these views are subject to change without notice. Forecasts are not a reliable indicator of future returns. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

2 Country Overview

2.1 Demography & Macro Economy

According to the Korea statistics information service, the total population of South Korea was estimated at 51.2 million in 2017, the 29th largest population in the world and comparable to Spain. It stably increased by c 0.9% per annum since 1980, thanks to the fast growth of life expectancy, though offset by a deteriorating birth rate. It is expected to peak at 52.9 million in 2030, then turning to a modest decrease following. The number of households was estimated at 22.3 million in 2017, growing by 2.5% per annum since 1980, surpassing the speed of population growth. Decelerated population growth and accelerated household growth pose both risks and opportunities to commercial real estate investors, urging them to sharpen their long term investment strategy.

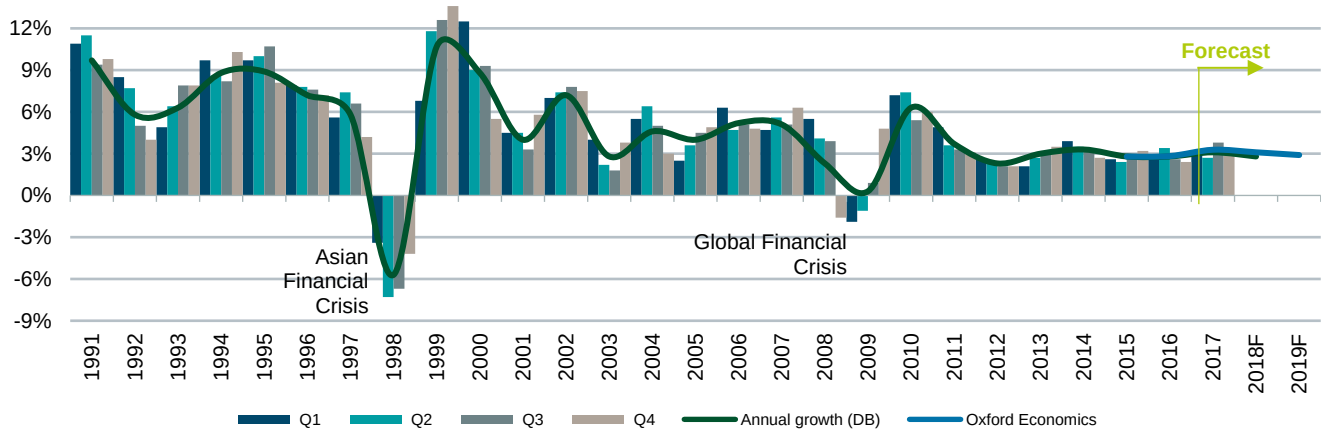
EXHIBIT 1: SOUTH KOREA'S DEMOGRAPHY AND THE NUMBER OF THE HOUSEHOLD



Notes: F = forecast, there is no guarantee forecast growth will materialise.
Sources: Korea Statistical Information Service, Deutsche Asset Management. As of Apr 2018

With more than 40% of export-to-GDP ratio, South Korea is undeniably one of the top trade-driven economies, largely exposed to global trade volatility. Bank of Korea (BoK) forecasts that South Korea's real GDP would grow by 3.0% in 2018, achieving 3% in two consecutive years after two disappointing years between 2015 and 2016. Although the recovery in 2017 was solely driven by a double-digit growth in exports, it is expected that private consumption and capital expenditure would contribute more to economic growth in 2018. It should accelerate more if Chinese tourist arrivals recover to previous levels, which almost halved in 2017 along with escalated political tensions with China. While there remain some risks such as the geopolitical threat by North Korea and the rise of the trade protectionism, South Korea's economy is expected to continue its modest recovery in line with the cyclical recovery of global trade.

EXHIBIT 2: SOUTH KOREA'S GDP GROWTH OUTLOOK

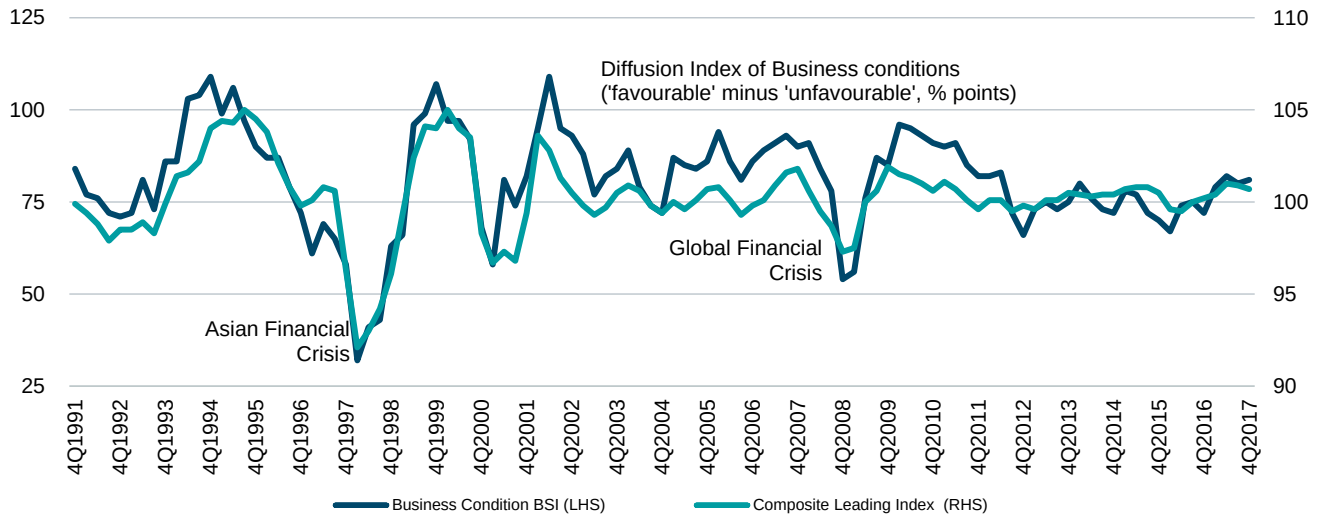


Notes: E = preliminary estimate, F = forecast, there is no guarantee forecast growth will materialise. Please refer to Important Notes (see end of report). Past growth is not a reliable indicator of future growth. Forecasts are not a reliable indicator of future returns. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.
Sources: Deutsche Bank "Asia Economic Monthly," Oxford Economics, DWS. As of Apr 2018.

The latest result of Business Condition in the Business Survey index (BSI) conducted by BoK marked a reading of 81 in December 2017, the highest level in the last five years. Optimism was more obvious in the export industry rather than domestic-oriented companies, while there was no significant difference between manufacturing and service industries.

The Composite Leading index was positive with a reading of 101.6 in the same period above the cornerstone of 100, indicating that the business cycle for the next six months is likely to stay still in the expansion trend. Nevertheless, the rise of protectionism incurred by U.S. trade policy increasingly becomes a realistic threat which may cool down the expansion going forward.

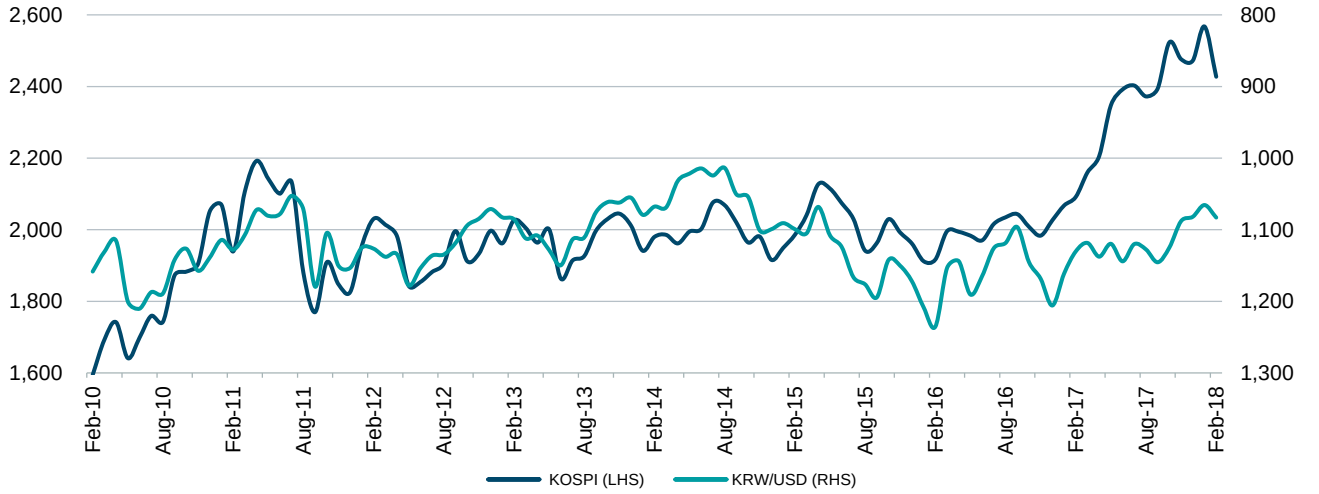
EXHIBIT 3: DIFFUSION INDEX OF BUSINESS CONDITIONS



Notes: Past performance is not a reliable indicator of future performance.
Sources: Bank of Korea, Korea Statistical Information Service, DWS. As of Mar 2018.

KOSPI stock prices continued its bullish trend with a 23% run-up throughout 2017, while volatility followed after hitting a historical high in January 2018. This stock market rally was mainly boosted by the recovery of its corporate performance, but more profoundly in line with the bullish trend of global stock markets enjoying low interest rates. Korea Won was traded at 1,081 for a U.S. dollar in February 2018, appreciating by 4% on a year on year basis.

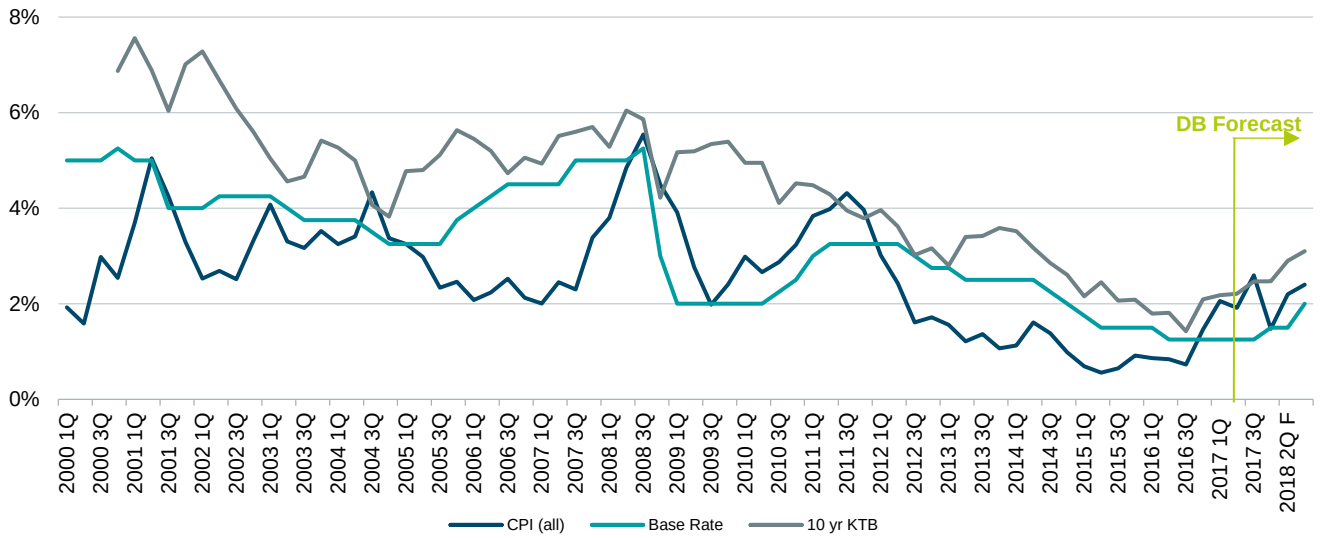
EXHIBIT 4: STOCK (KOSPI) AND FOREX



Notes: Past performance is not a reliable indicator of future performance.
Sources: The Bank of Korea. Bloomberg, Deutsche Bank. As of Apr 2018

In November 2017, the BoK raised its benchmark rate from 1.25% to 1.5% for the first time in more than six years, which was also the first reversal of downward trends of base interest rates in the Asia Pacific region. Another interest hike is expected in 2018 in accordance with the United States, though it is supposed to be managed to not undermine the recovery of domestic household consumption already saddled by a record debt. Ten year Korea Treasury Bond yields soared to 2.7% in February 2018, 0.6% higher than a year ago. CPI increased by 1.4% in February 2018 on a year-on-year basis, under the BoK's inflation goal of 1.8% in 2018.

EXHIBIT 5: FORECAST OF INTEREST RATE AND CPI

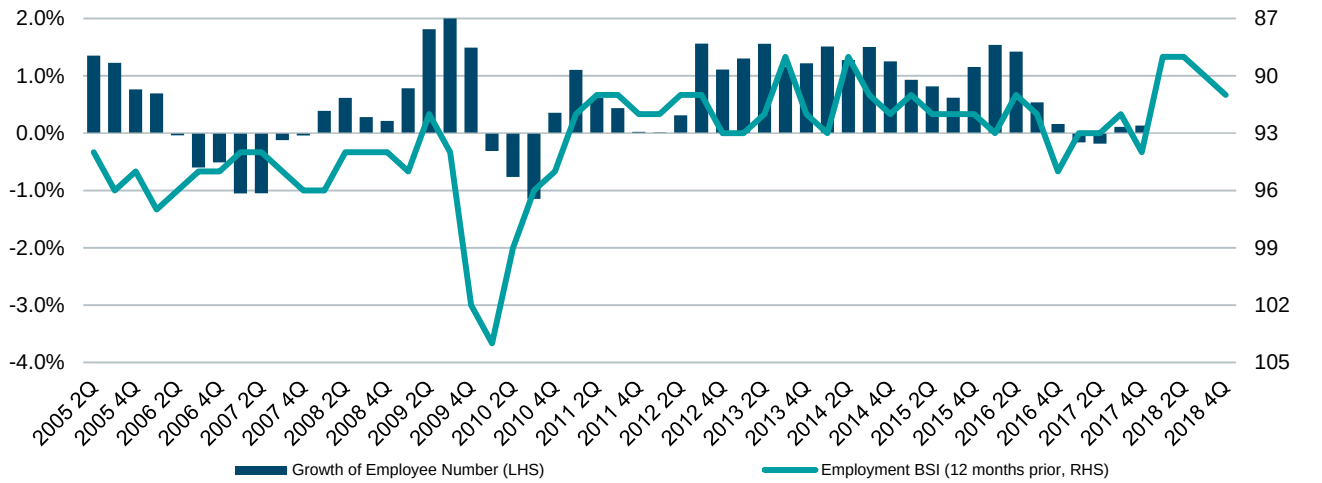


Notes: F = forecast, there is no guarantee rates forecasted will materialise. KTB = Korea Treasury Bond. CPI = Consumer Price Index. Please refer to Important Notes (see end of report) Past performance is not a reliable indicator of future performance.
Sources: The Bank of Korea, Deutsche Bank. As of Apr 2018.

The number of Korean employees working for large companies has barely grown since the fourth quarter of 2016, showing the increasing hesitancy of Korean employers to expand workforces, despite the economic recovery. Especially key manufacturers in the shipbuilding and automobile industries, the country's biggest employers, are still undergoing a harsh restructuring process, hindering employment recovery to previous levels.

Nevertheless, employment BSI remained at tight levels at 91 in the fourth quarter of 2017 below the historical average of 93 in the last ten years, which means there are more business owners who view their workforces as too few than enough. Accordingly, employment activity may be re activated in coming years.

EXHIBIT 6: GROWTH OF EMPLOYEE NUMBER IN LARGE COMPANIES AND EMPLOYMENT BSI 12 MONTHS PRIOR



Notes: Past performance is not a reliable indicator of future performance. Please refer to data from 2018 is forecast.
Sources: Korea Statistics Service, DWS. As of Apr 2018.
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2.2 Market Size and Institutionalization

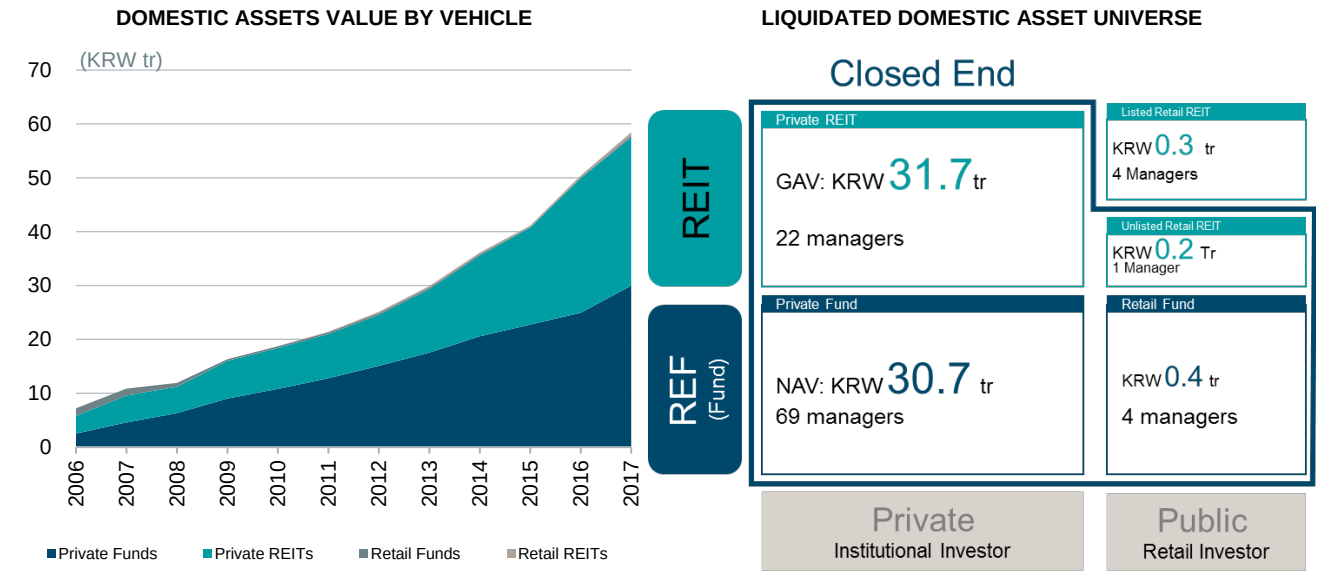
The aggregate size of invested real estate stock values in Korea was $249 billion in 2016, the fifth largest in Asia Pacific following China, Japan, Australia and Hong Kong (see Exhibit 10). The size of grade A office stock in Seoul has been rapidly increasing in the last decade (see Exhibit 18) and is around 6.3 million square meters in total, or the fifth position in Asia after Shanghai, Hong Kong, Tokyo and Beijing as of December 2017. The main office areas are subdivided into the top three sub markets, namely CBD, Gangnam and Yoido, offering circa 76% of grade A buildings in Seoul combined and home to both domestic conglomerates and multinational corporations.

EXHIBIT 7: GRADE A OFFICE STOCK IN APAC MAJOR CITIES (BASED ON GFA)

* Pangyo and Sangam DMC are Included in Others.
Sources: JLL, Colliers, REI Korea, DWS.As of Apr 2018.

Exhibit 8 shows how market institutionalization has progressed in Korea and the aggregate size of real estate assets held by REITs and funds, or the size of institutionally held assets, expanded six fold to KRW 62 trillion in the last ten years till 2017. Many owner occupied assets, previously a common style of office ownership in the country, have been disposed during this period. Around half of the institutionalized assets are now held by private REITs and the other half are by private funds, while assets held by listed REITs and public retail funds account only for KRW 0.9 trillion combined, giving retail investors very limited access to real estate. Since the level of disclosure is limited at private REITs and funds, this seems to contribute to the relatively low market transparency in Korea compared to other established markets (see Exhibit 34).

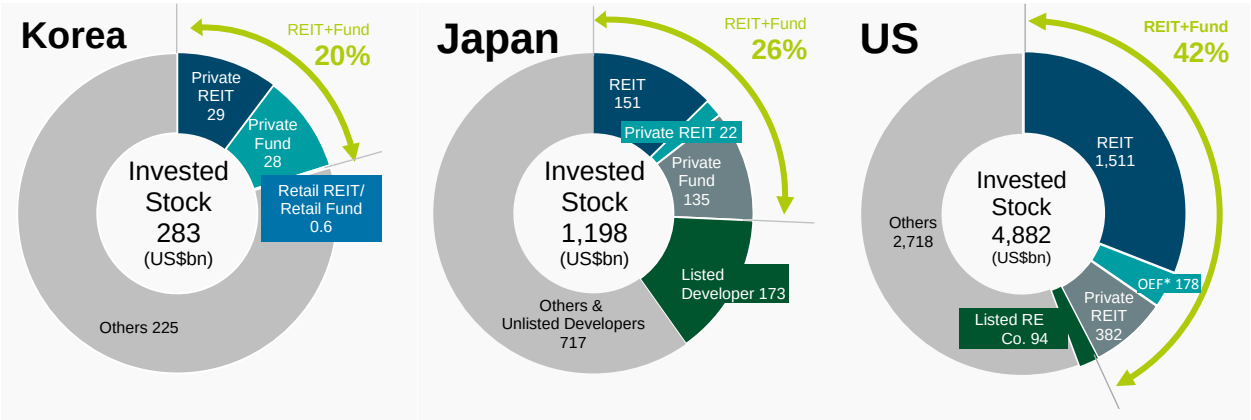
EXHIBIT 8: REF AND REITS ASSET MANAGERS FOR DOMESTIC ASSETS



Notes: Past performance is not a reliable indicator of future performance.
Sources: Korea Financial Investment Association, REITs Information System, DWS. As of Apr 2018.

The real estate market institutionalization is still ongoing in Korea, with the aggregate stock owned by REITs and funds combined representing 20% of the invested stock as of 2016, compared to 42% in the United States or 26% in Japan. The aggregate size of listed REITs or listed developers, major asset holders in the United States and Japan, accounts for only 0.6% in Korea, compared to 33% in the United States and 27% in Japan, respectively, revealing the sizable stock still owned by corporations and non-institutional investors.

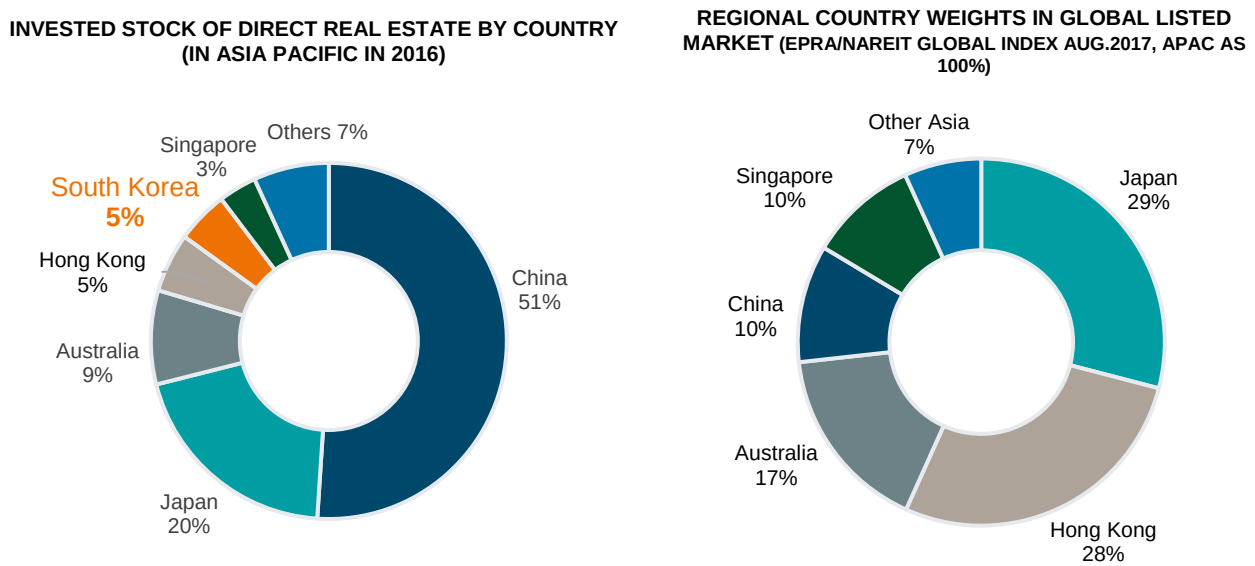
EXHIBIT 9: INVESTED COMMERCIAL REAL ESTATE UNIVERSE IN SOUTH KOREA



Notes: Past performance is not a reliable indicator of future performance.
Sources: DTZ, REIT Watch, J-REIT.com, SMTRI, Korea Financial Investment Association, REITs Information System, Bloomberg, DWS. As of Apr 2018.

Exhibit 10 shows the market share of the total invested stock of direct real estate by country and the country weights in the listed market index, both in Asia Pacific. In terms of the direct real estate, Korea constitutes the fifth largest market with 4.7% market share in the region, following China, Japan, Australia and Hong Kong. Korea is however not included in the list of regional country weights, due to a lack of sizable listed REITs. Among the top six markets in invested stock in Asia Pacific, Korea is the only market that doesn't have a country weight in the listed sector. This contributes to the limited transparency of the market. (See Chapter 5 "Consideration" on page 23.)

EXHIBIT 10: APAC REAL ESTATE COUNTRY WEIGHTS (DIRECT VS LISTED)

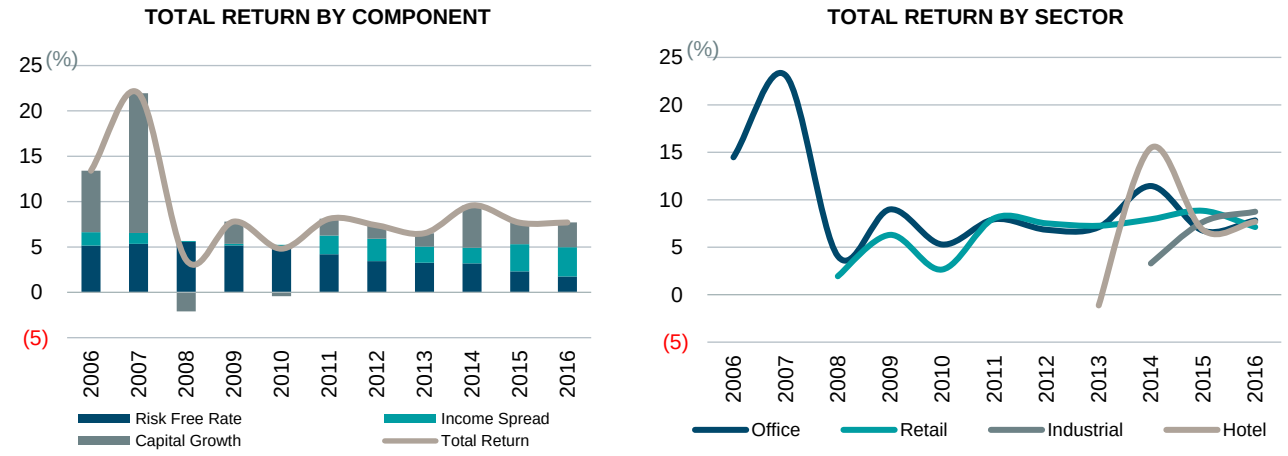


Note: Past performance is not a reliable indicator of future performance.
Sources: DTZ, FTSE/EPRA/NAREIT, DWS. As of Apr 2018.

2.3 Performance & Pricing

There exists an investment performance index in the Korean real estate market and its sectorial coverage improves gradually, but the frequency of the data is only annual due partly to a lack of sizable listed REIT markets[1] , and the usage of performance index is also underutilized. The average unlevered total return of commercial real estate in South Korea has been resilient to remain in positive territory over the last ten years, even when other core markets saw negative returns meddled with the global financial crisis between 2008 and 2009. Most recently, it moderated from 9.6% in 2014 to 7.7% in 2016 (the latest period available), mainly owing to the softening of the capital growth from 4.7% to 2.7%. The most attractive sector in terms of total return kept changing one another in the meanwhile; for example hotel at 15.5% in 2014, retail at 8.8% in 2015 and logistics at 8.7% in 2016, respectively, underlining the fast evolving and diversifying features of the market.

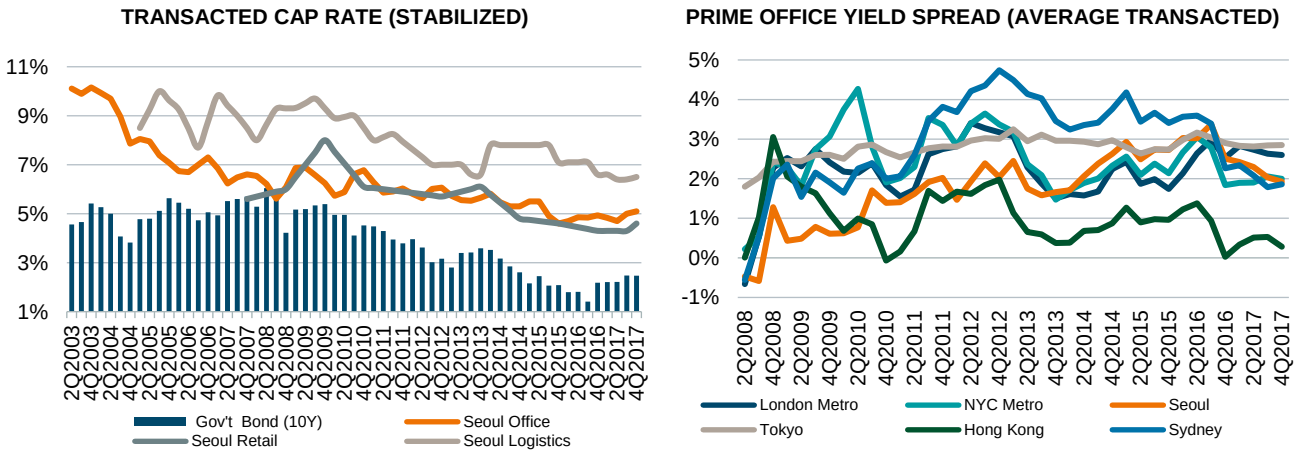
EXHIBIT 11: REAL ESTATE TOTAL RETURNS IN KOREA (UNLEVERED)



Notes: Past performance is not indicative of future results.
Sources: MSCI Real Estate -IPD, DWS. As of Apr 2018.

Transacted cap rates on a stabilized basis continued to be tightened since 2009. Among property sectors, the office cap rate has compressed 140 basis points to 4.7% between 2012 and 2017, while retail and logistics also dropped by 140 basis points and 60 basis points respectively in the same period. However the trend is on the verge of reversal, along with the BoK's base rate hike in the fourth quarter of 2017, and expected to accelerate if the central bank announces more hikes in 2018. The average office yield spreads – the difference between the cap rates and ten year bond yields – compressed to circa 190 basis points in the fourth quarter of 2017 from the recent peak of 340 basis points as of the third quarter of 2016, with the spread now similar to New York and Sydney.

EXHIBIT 12: CAP RATE AND YIELD SPREAD



Notes: Past performance is not a reliable indicator of future performance.
Sources: Mateplus, Cushman & Wakefield, DTZ, Real Capital Analytics, Bloomberg, DWS. As of Apr 2018.

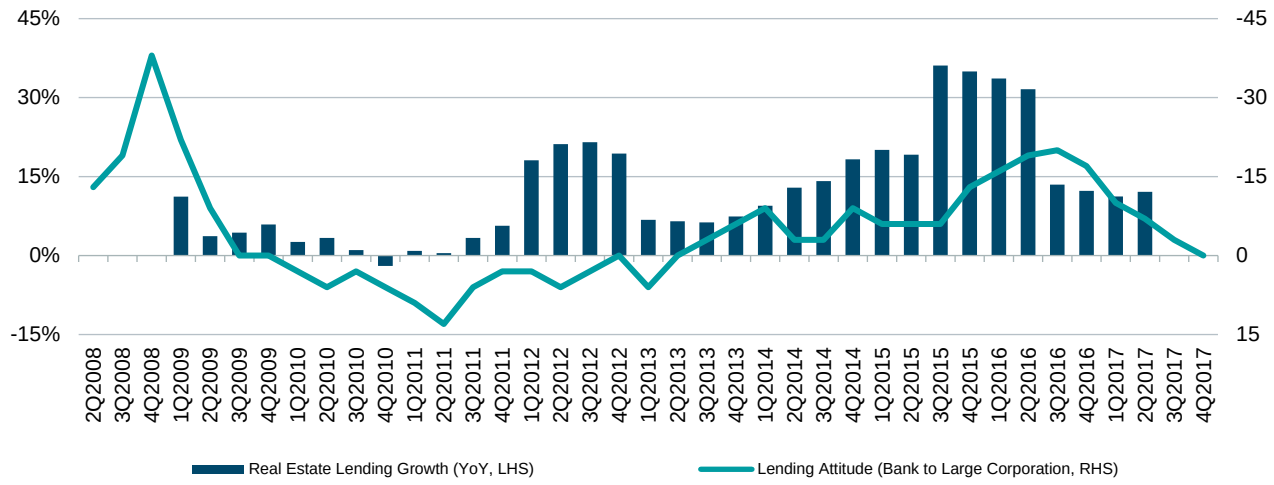
[1] Similar performance indices are reported monthly in Japan and quarterly in Australia, both of which have sizable listed REIT markets.

2.4 Lending & Transactions

Real estate lending by Korean lenders amounted to KRW 201 trillion in 2017, almost trifold in the last five years. The downward trend of interest rates encouraged lenders to loosen credit standards for real estate in order to make up for the weakened profitability, as real estate companies and individual real estate operators enjoyed the unprecedentedly favorable financing conditions such as interest-only loans.

However the trend is about to change as the Korean government has started to urge lenders to tighten credit conditions for new real estate lending in an effort to cool down the real estate market, including not only the souring house price but commercial real estate valuation. The tightened regulation would apply only to new borrowers, while it contributes to slow down real estate lending growth.

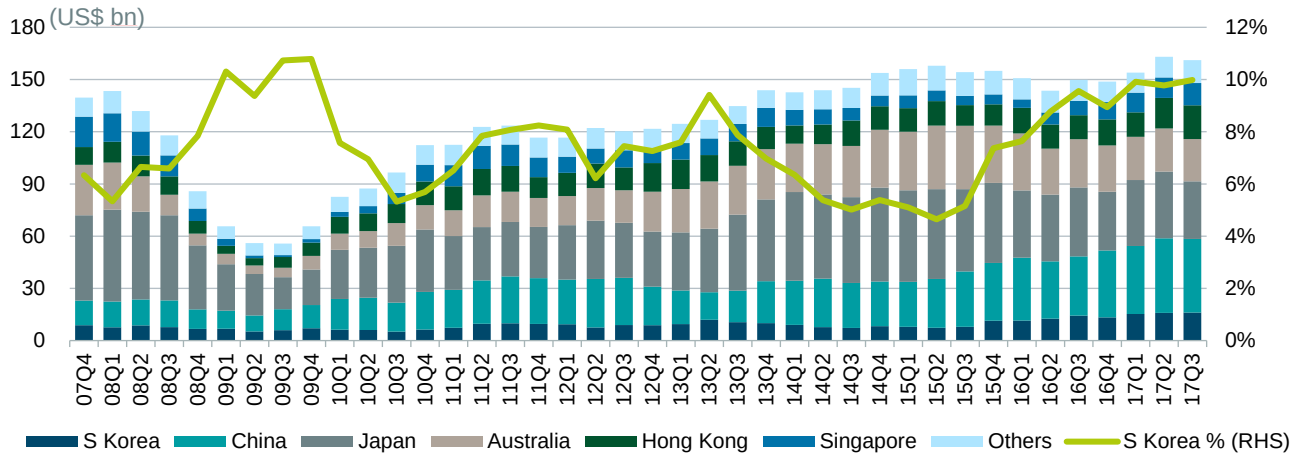
EXHIBIT 13: REAL ESTATE LENDING BY KOREAN LENDERS



Notes: Past performance is not a reliable indicator of future performance
Sources: Bank of Korea, Financial Statistics Information System, DWS. As of Apr 2018

Commercial real estate transaction activity remained robust across the Asia Pacific region in 2017, with 12 month rolling transaction volumes ended in the third quarter of 2017 reaching US$161 billion, just shy of the US$163 billion peak in the second quarter of 2017. It was notwithstanding tighter yields and higher asset prices, increasingly stretched by continued investor appetite. The volume growth was driven by South Korea (+12%), China (+25%), Hong Kong (+41%) and Singapore (+54%), though offset by decreases in Australia (-12%) and Japan (-17%). With a transaction volume of US$16.1 billion in the same period, South Korea ranked fifth largest commercial real estate market in the region, following China, Japan, Australia and Singapore, while its share increased from 5.0% in the third quarter of 2014 to 10.0% in the third quarter of 2017.

EXHIBIT 14: ASIA PACIFIC TRANSACTION VOLUME AND SHARE OF SOUTH KOREA (12 MONTHS ROLLING)

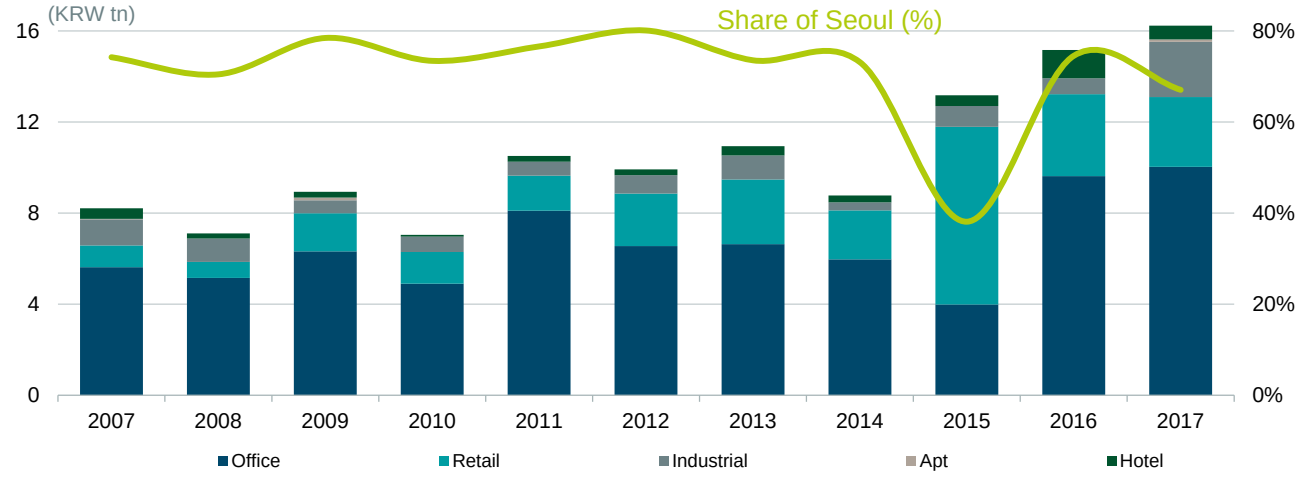


Notes: Past performance is not a reliable indicator of future performance.
Sources: Real Capital Analytics, DWS. As of Apr 2018.

The commercial real estate transaction volumes of South Korea in 2017 is estimated at KRW 16.2 trillion on a preliminary basis, hitting record highs for three consecutive years between 2015 and 2017, backed by the continued strong capital inflow to the market. Office investments accounts for more than 60% of total volume in the last ten years, except in 2015 when a national-wide portfolio of Homeplus, one of the country's top three retailers, was transacted at KRW 7.2 trillion.

Moreover, the share of Seoul, the country's capital city, has represented more than 70% of the total transaction volume, except in 2015 for the same reason. Few transactions are found in the residential sector, as the institutionalized rental house business is not well established in the market.

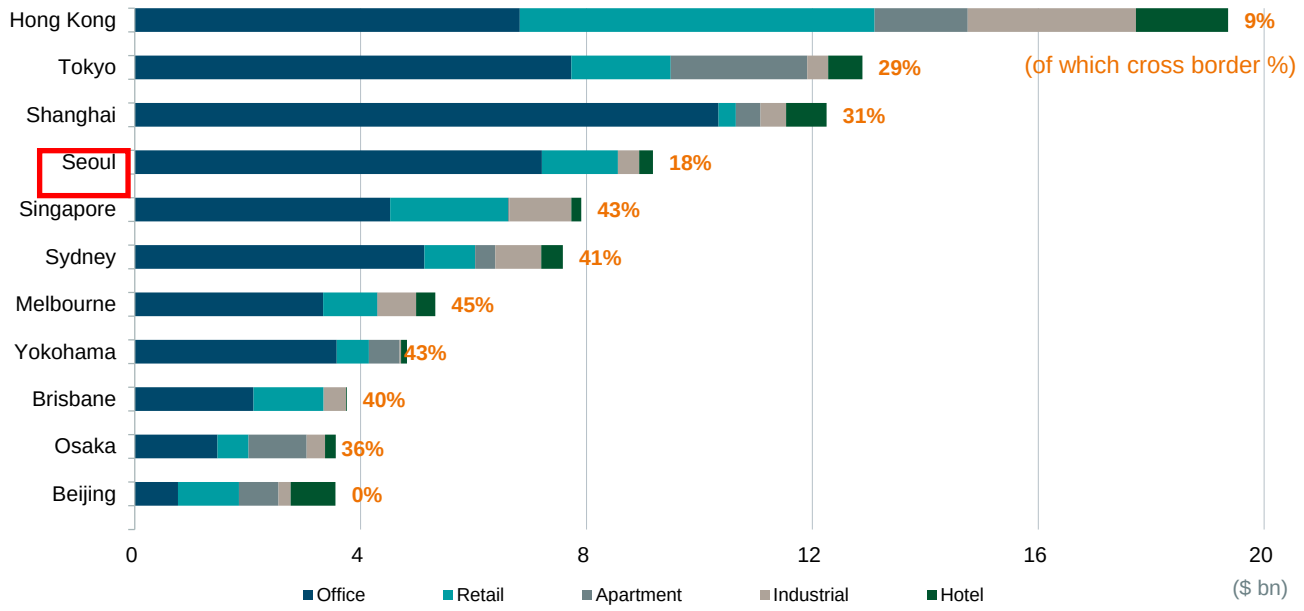
EXHIBIT 15: REAL ESTATE TRANSACTION VOLUME BY SECTOR IN KOREA AND SHARE OF SEOUL



Notes: Past performance is not indicative of future results.
Sources: Real Capital Analytics, DWS. As of Apr 2018.

Seoul's commercial real estate transaction volume for the 12 rolling months ended in December 2017 was US$ 9.2 billion on a preliminary basis, decreasing by circa 15.6% on a year-on-year basis. It ranked fourth amongst Asia Pacific cities, after Hong Kong, Tokyo and Shanghai, but higher than Singapore and Sydney. The acquisition activity of cross-border investors remained active in Seoul with a 18% share in the total volume, though it was over 40% in the other cities such as Shanghai, Melbourne, Yokohama and Brisbane.

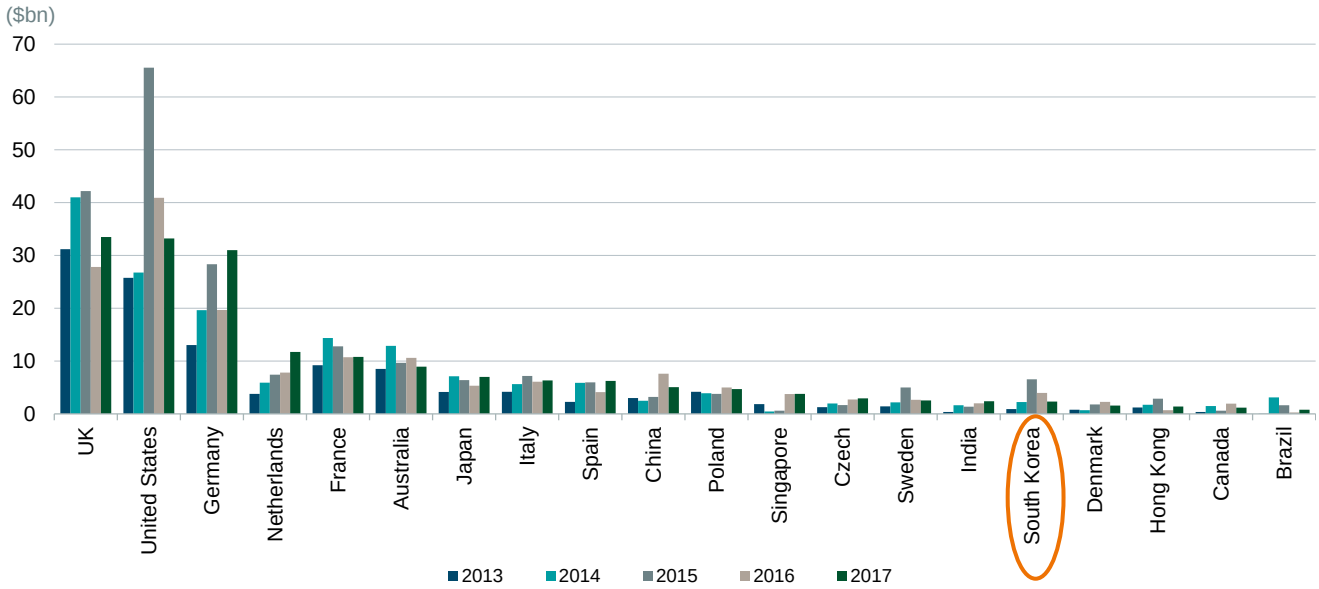
EXHIBIT 16: REAL ESTATE TRANSACTION VOLUME BY CITY (12 MONTHS ROLLING)



Notes: Commercial real estate transactions exclude non-income producing assets, such as development site transactions.
Sources: Real Capital Analytics, DWS. As of Apr 2018.
Past performance is not indicative of future results.

In 2017, the United Kingdom became the largest investment destination for cross-border investors with US$ 33.5 billion inbound transaction volume, followed by the United States, Germany, the Netherlands and France. Being one of the key real estate markets in the Asia Pacific region, South Korea struggled to draw more investments from cross-border investors in 2017. The country ranked 16th globally with US$ 2.3 billion inbound real estate investments, positioning itself behind Czech, Sweden and India, and ranked sixth in the Asia Pacific region.

EXHIBIT 17: CROSS-BORDER REAL ESTATE INVESTMENTS BY DESTINATION



Notes: Commercial real estate transactions exclude non-income producing assets, such as development site transactions Past performance is not indicative of future results.
Sources: Real Capital Analytics, DWS. As of Apr 2018.

Exhibit 18 shows the largest real estate transactions announced since 2017 in the country. The largest deal was the acquisition of former Hana Financial Group HQ Building for the KRW 897 billion by Booyoung housing, followed by Signature Tower purchased by National Pension Service for KRW 726 Billion. K-Twin Tower, purchased by Samsung SRA asset management for KRW 710 billion, marked both the third largest transaction and the highest unit price by circa KRW 28.1 million per pyeong. CBD hosted six office transactions out of top ten, attracting strong interest from both domestic and foreign investors. It is also noteworthy that the acquisition of Alpharium Tower by ARA REITs was the first commercial real estate deal in Pangyo, the country's new hub for IT and BT industries, showing investors' increasing appetite for the non-core space.

EXHIBIT 18: MAJOR TRANSACTIONS SINCE 2017

Type	Asset	Price (KRW bn)	Unit price (KRWm /GFA py*)	Est. Cap rate	Location	Month	Acquired by	Invest. Origin
Office	Hana Financial Group HQ (for redevelopment)	897	-	-	CBD	Dec-17	Booyoung Housing	Korea
	Signature Tower	726	24.0	5.1%	CBD	Jun-17	National Pension Service	Korea
	K-Twin Tower	710	28.1	4.0%	CBD	Feb-18	Samsung SRA	Korea
	Alpharium Tower	478	14.1	5.7%	Pangyo	Jan-17	ARA Alpharium REITs	REIT
	Samsung F&M H.Q Bldg.	438	26.5	3.6%	CBD	Jan-17	Booyoung Housing	Korea
	Susong Square	383	25.1	4.6%	CBD	Jun-17	Morgan Stanley	U.S.
	POBA Gangnam Tower	311	23.1	4.8%	GBD	Oct-17	PAG	Hong Kong

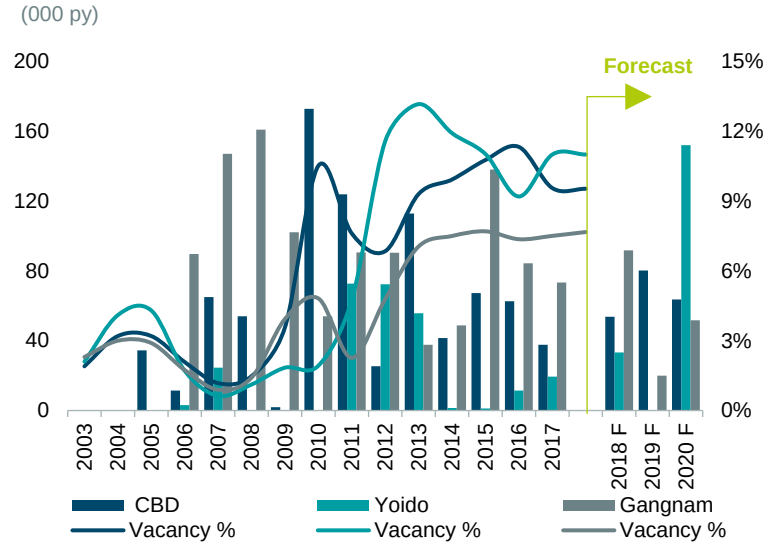
Type	Asset	Price (KRW bn)	Unit price (KRWm /GFA py*)	Est. Cap rate	Location	Month	Acquired by	Invest. Origin
	Center Point West	302	10.6	5.6%	Others	Oct-17	Mastern Asset Management	Korea
	Majestacity Tower 1	253	17.9	5.9%	GBD	Aug-17	Invesco	U.S.
	Hyundai Group Building	245	15.4	6.1%	CBD	Nov-17	Hyundai Elevator	Korea
	L7 Hotels Gangnam Tower	242	23.8	-	GBD	Dec-17	Mastern Asset Mgmnt.	Korea
	Metro Tower	240	19.9	5.8%	CBD	Dec-17	Tong Yang Life Insurance (Anbang Life's affiliate)	China
	Taepyeongro Bldg.	230	19.0	5.2%	CBD	Jan-17	Igis Asset Mgmnt.	Korea
Retail	Starfield Goyang	377	6.9	-	Gyeonggi	Aug-17	National Pension Service	Korea
	Costco Portfolio (3 props)	268	8.3	-	Gyeonggi Etc.	Sep-17	Costco	U.S.
	Homeplus Gangseo (1-7 FL)	211	10.2	4.6%	Seoul	Aug-17	JR AMC	REIT
	Homeplus Hyoja	170	11.9	5.1%	Jeonju	Jun-17	Igis Asset Mgmnt.	Korea
	Majestacity Tower Store Zone (2 Floors of Basement)	136	10.6	5.3%	Gyeonggi	Sep-17	Ryukyung PSG AM	Korea.
Logistics	Yangji Logistic Centre	392	3.6	6.4%	Gyeonggi	May-17	National Pension Service	Korea
	Amore Pacific Yongin	195	9.2	-	Gyeonggi	Apr-17	Hyeondong Investment	Korea
	Homeplus Hub Logistics Anseong	152	7.6	-	Gyeonggi	Nov-17	M&G Real Estate	U.K.
	Cheil Industries Logistic Center (for redevelopment)	128	-	-	Gyeonggi	Dec-17	Kendall Square	Korea
	TJ Logistic Center Incheon	105	6.3	-	Incheon	Jul-17	Morgan Stanley	U.S.
Apartment	Korea Air Apartment (936 units)	92	-	-	Busan	Jul-17	MDM Real Estate Group	Korea
Hotel	Ninetree Premier Hotel Myeongdong 2	135	331/rm	4.6%	CBD	Mar-17	Parnas Hotel	Korea
	Jeju Kensington Marine Hotel	117	529/rm	-	CBD	Feb-18	SK D&D	Korea

py* (=Pyeong) is a Korean unit of area. It is equivalent to 3.3 square metres (35.6 square feet).
Estimated cap rate*: Even though all the cap rates are based on an estimated basis and obtained from sources believed to be reliable, we do not guarantee its accuracy, completeness or fairness, and it should not be relied upon as such.
Notes: Acquisitions by foreign managers are highlighted in grey and by REITs in green. This table is prepared solely for information purposes and not intended to recommend or endorse any specific company's shares or other products.
Source: Mateplus, Real Capital Analytics, DWS. As of Apr 2018.

2.5 Office

Among the main three office submarkets in Seoul shown on Exhibit 7, subdued demand held vacancy rates at the elevated level in CBD and Yoido at 9.6% and 11.2% respectively at the fourth quarter of 2017. The vacancy rate in Gangnam remained at the relatively tight level of 7.5% thanks to active office demand from the IT industry. Office Supply in CBD is expected to remain modest in the next five years, but Yoido and Gangnam are expecting a huge project respectively which might push up vacancy rates, namely Parc One project in Yoido in 2020 and then Hyundai Business Center project in Gangnam in 2022.

EXHIBIT 19: OFFICE VACANCY RATE AND SUPPLY IN SEOUL BY SUB MARKET

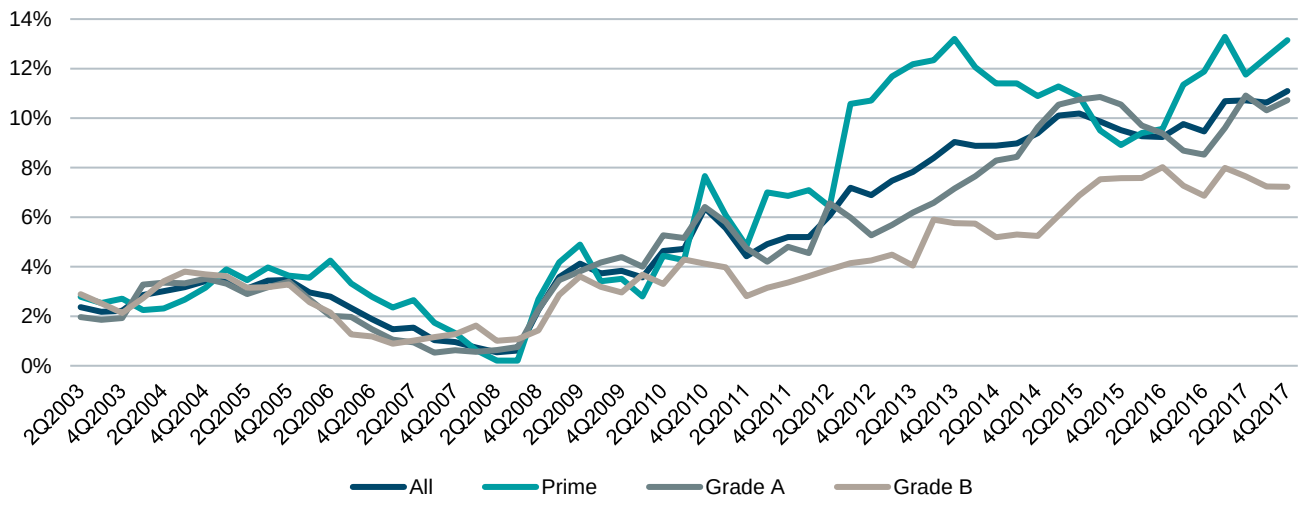


Supply Pipeline in Seoul			
Area	Building	Date	GFA (sqm)
CBD	Hana finance group HQ	Jan-17	53,944
Others	Amore Pacific HQ	Nov-17	188,571
Gangnam	Samsung Life Insurance Office	1Q 2018	76,255
Yoido	KTCU Building	1Q 2018	83,235
CBD	Centropolis	2Q 2018	141,227
Gangnam	Luchen Tower	2Q 2018	45,847
Gangnam	Gangnam N Tower	3Q 2018	51,030
CBD	Summit Tower	2Q 2019	98,361
Others	LSK Plus Yongsan Office	3Q 2019	62,746
CBD	Hanhwa Building (Janggyo)	4Q 2019	85,273
CBD	Gate tower	2Q 2020	84,675
CBD	SG Tower(Namdaemun 5ga)	1Q 2020	125,147
Yoido	Parc 1 Tower 1 & 2	1Q 2020	378,361
Yoido	KB Finance Town	3Q 2020	55,902
Gangnam	Renaissance Hotel PJ	3Q 2020	170,590
Yoido	K-Post Yoido branch bldg..	4Q 2020	67,580
Gangnam	Hyundai Business Center	2022	600,000

py* (=pyeong) is a Korean unit of area. It is equivalent to 3.3 square metres (35.6 square feet).
Notes: GFA = gross floor area. sqm = square metres. Past performance is not indicative of future results. There is no guarantee the supply pipeline will materialize. Forecasts are not a reliable indicator of future returns. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.
Sources: Mateplus, JLL, DWS. As of Apr 2018.

Since 2008, vacancy rates in Seoul office buildings have been in an upward trend regardless of building grades. It is most evident for prime buildings with 13.1% average vacancy rates in the fourth quarter of 2017, the highest level in the last ten years, as recent supplies were heavily concentrated on prime grade. The average vacancy rates were 10.7% for grade A office buildings and 7.2% for grade B office buildings in the same period, slightly higher than 8.5% and 6.9% respectively compared to a year before.

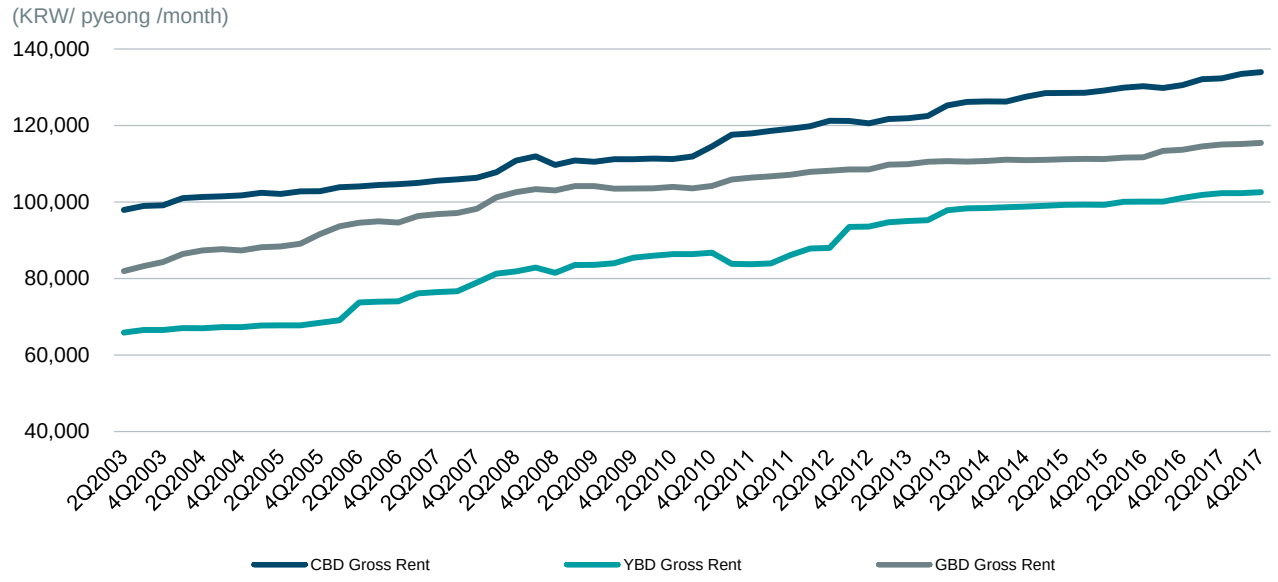
EXHIBIT 20: OFFICE VACANCY RATES BY GRADE IN SEOUL



Notes: Past performance is not indicative of future results.
Sources: Mateplus, DWS. As of Apr 2018.

Despite the elevated vacancy rates, the average asking rents including CAM continuously grew by 1-2% per annum in the last ten years in the Seoul office market. Average monthly face rent in the CBD rose to KRW 134,000 per pyeong in the fourth quarter of 2017, a 2.6% increase on a year-on-year basis, followed by KRW 115,000 in GBD and 103,000 in YBD, a 1.2% and 2.6% increase in the same period.

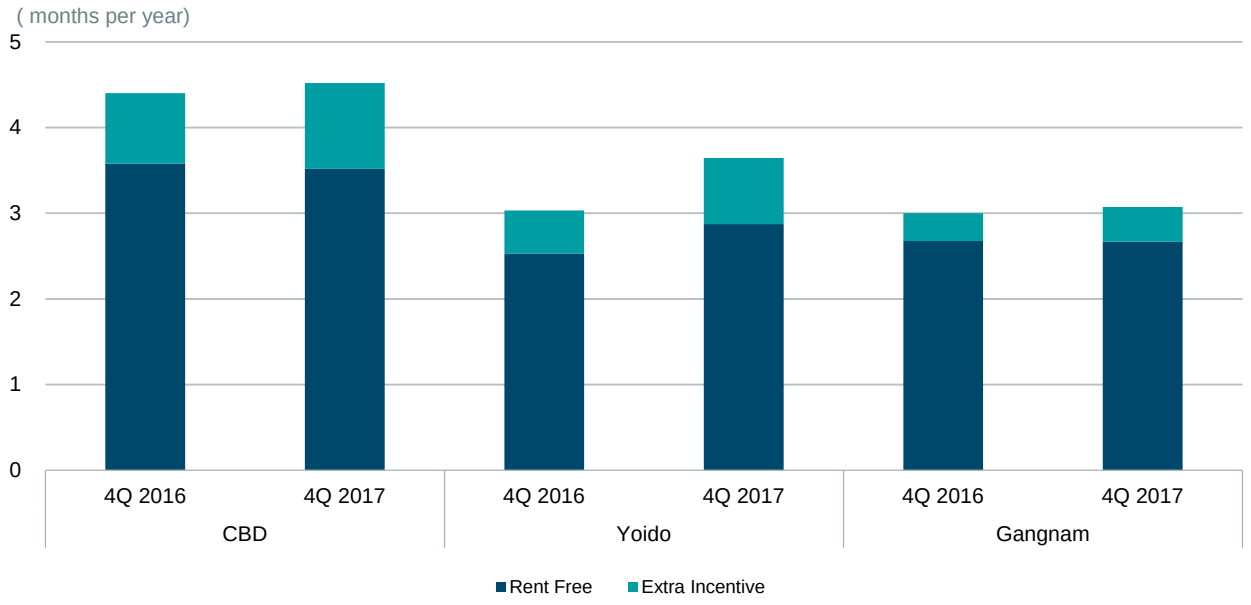
EXHIBIT 21: OFFICE FACE RENT IN SEOUL (INCLUDING CAM)



py* (=pyeong) is a Korean unit of area. It is equivalent to 3.3 square metres (35.6 square feet).
Notes: Past performance is not indicative of future results.
Sources: Mateplus, DWS. As of Apr 2018.

On the contrary, the average concession period granted to tenants in CBD expanded to 4.4 months per year in the fourth quarter of 2017, as some buildings offered aggressive concessions of more than six months to attract new tenants. Landlords are expected to continue to provide generous incentives to secure tenants in long-term contracts until the market turns around.

EXHIBIT 22: TYPICAL OFFICE RENT FREE PERIOD BY SUB MARKET IN SEOUL

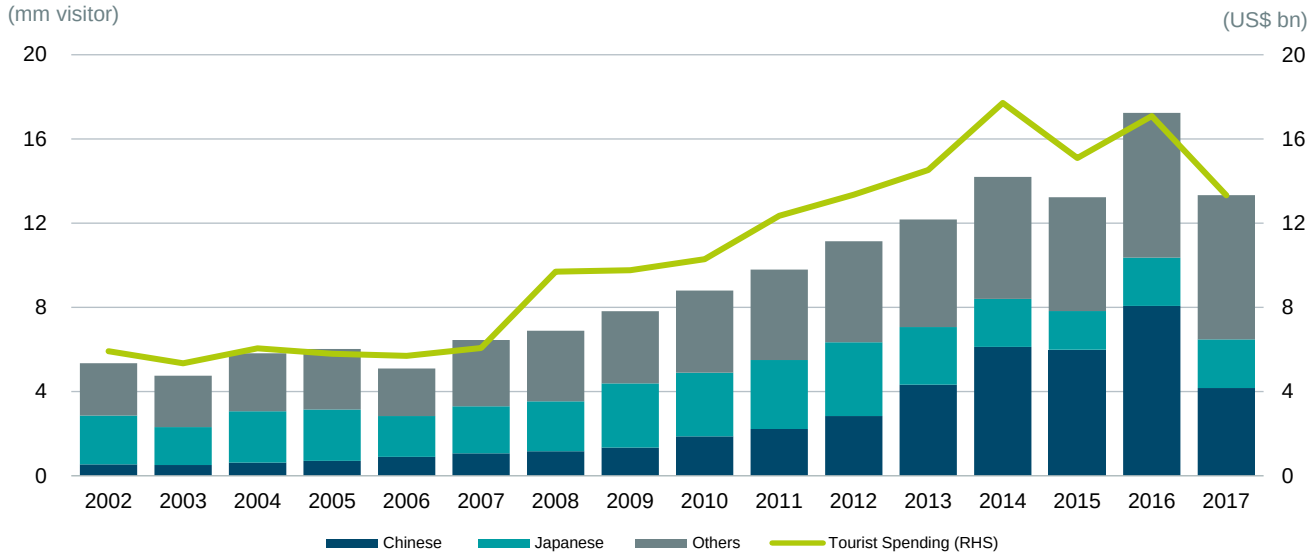


*Pyeong is a Korean unit of area. It is equivalent to 3.3 square metres (35.6 square feet).
Notes: Past performance is not indicative of future results.
Forecasts are not a reliable indicator of future returns. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.
Sources: Mateplus, DWS. As of Apr 2018.

2.6 Retail

2017 was a tough year for the Korea tourism industry, due to a significant drop of Chinese visitor arrivals along with escalated political tension between South Korea and China. The number of total overseas visitor arrivals to Korea was estimated at 13.3 million in 2017, 23% lower than a year before. Subsequently, tourist spending decreased to US$ 13.3 billion, a 22% drop in the same period. Koreans are expecting Chinese visitors to increase again following a much relieved political relationship between the two countries, as well as with others as a positive outcome from the winter Olympic Games held near Seoul in 2018.

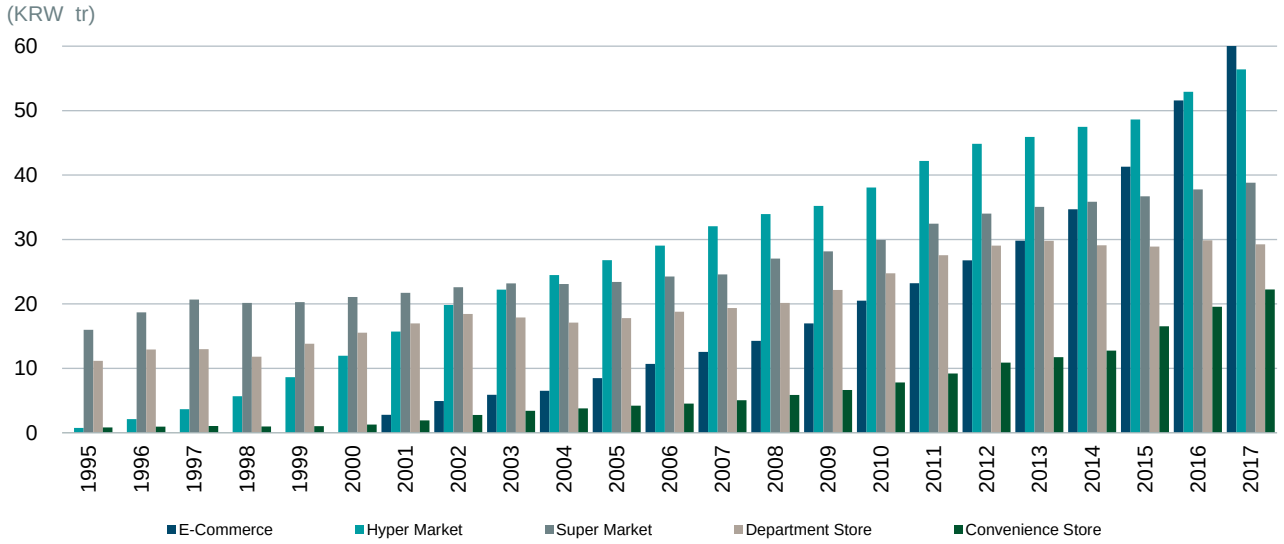
EXHIBIT 23: GROWTH OF OVERSEAS VISITOR ARRIVALS TO KOREA AND TOURIST SPENDING



Notes: Past performance is not indicative of future results.
Sources: Korea Tourism Organization, DWS. As of Apr 2018.
Forecasts are not a reliable indicator of future returns. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

Underpinned by the faster-than-expected economic recovery, total retail sales in Korea grew by 4.4% in 2017 on a year-on-year basis. Sales growth was stronger for consumer staple retailers such as convenience stores (14%) and hyper markets (7%), while it marginally declined at department stores (-2%) with no new store openings in 2017. E-commerce continued to post double-digit growth (20%) to surpass all other retail types to become top retail category for the first time.

EXHIBIT 24: RETAIL SALES GROWTH BY STORE CATEGORY (YEAR ON YEAR)

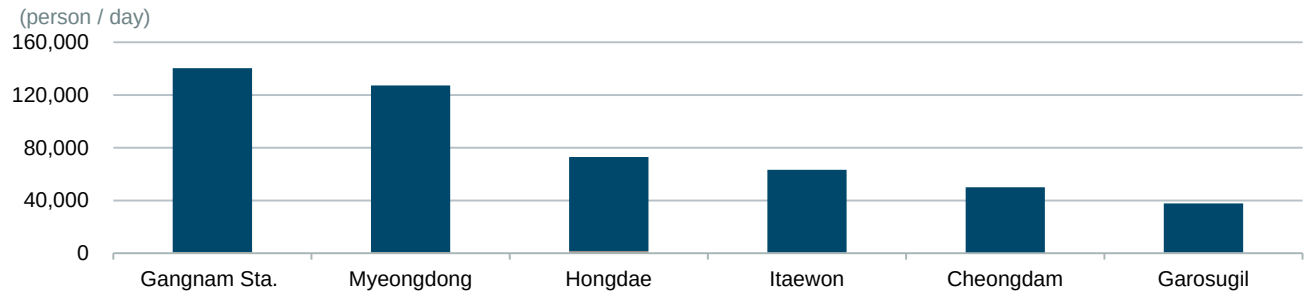


Notes: Past performance is not indicative of future results.
Source: Korea National Statistics Office, DWS, As of Apr 2018.

In terms of daily foot traffic, Myeongdong and Gangnam represent the top two high street retail areas north and south of Seoul respectively, followed by Hongdae, Itaewon, Choengdam and Garosugil. Myeongdong area is regarded as the most prestigious retail area with the highest land price and the highest retail rents, surrounded by flagship department stores, hotels and the prime office district. It is also famous as a "must-go" sightseeing spot to overseas tourists.

On the other hand, Gangnam area is highly dependent on local shoppers, due to its key function as a transport hub connecting all parts of Seoul and beyond, as well as its superior accessibility to the dense office building in GBD area where Samsung group consolidated its affiliate companies.* Its well-established retail corridor is playing the role of the trend setter especially in the F&B and fashion industry, making it the center of flagship stores launched by global retail brands.

EXHIBIT 25: DAILY FOOT TRAFFIC IN MAJOR RETAIL AREAS (OCT 2016 – SEP 2017)

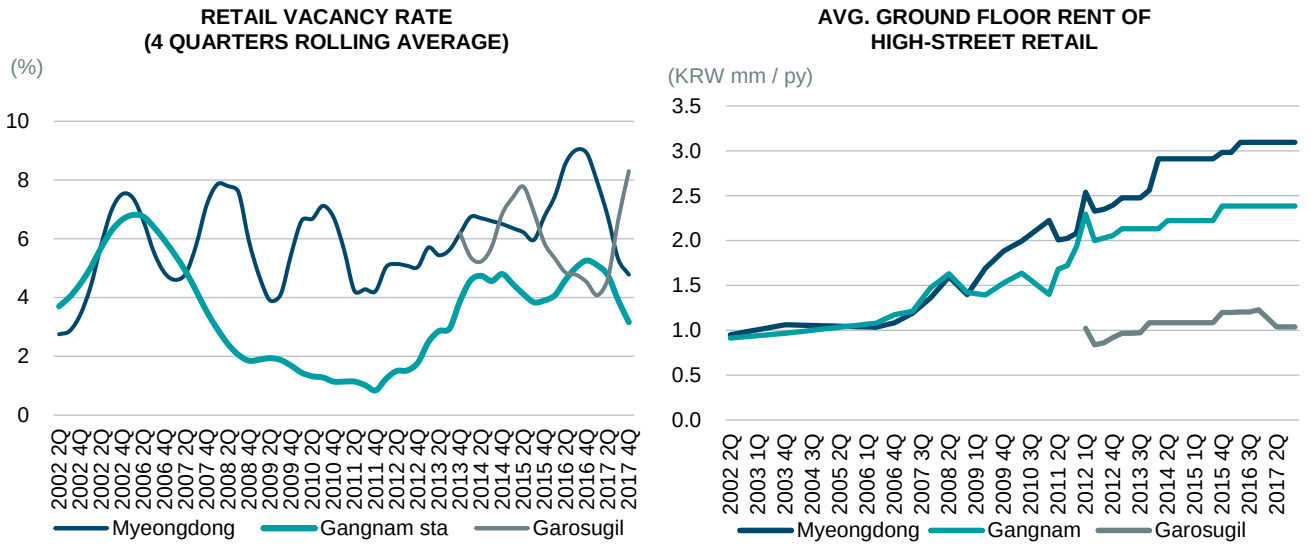


Notes: Past performance is not indicative of future results. This information is intended for informational purposes only and does not constitute investment advice, a recommendation, an offer or solicitation.
Sources: Small Enterprise and Market Service, DWS. As of Dec 2017.

Average high-street retail vacancy rates were 4.8% and 3.2% in Myeongdong and Gangnam in the fourth quarter of 2017, 4.1% and 2.1% drops respectively compared to a year before. The two top high street retail areas in Korea suffered from a shrink in the economy and a drop in overseas tourists between 2016 and mid-2017, while both have started to recover following an improvement in economic conditions at the end of 2017. On the contrary, the vacancy rate in Garosugil rose from 4.1% to 8.3% in the same period, mainly due to its high dependency on overseas tourist consumption.

Meanwhile, the average rent of retail ground floor remains almost stable in Myeongdong at KRW 3.1 million per pyeong and Gangnam at KRW 2.4 million over the last two to three years, while it decreased to KRW 1.0 million in Garosugil in the fourth quarter of 2017, a drop of circa 15% in a year. Most retail properties in these areas are not institutionalized and are still owned by high net worth individuals who don't tend to be incentivized to sensitively respond to the market cycle, so high street rents in Korea show little volatility.

EXHIBIT 26: VACANCY RATE AND AVERAGE RENT OF GROUND FLOOR BY RETAIL AREA



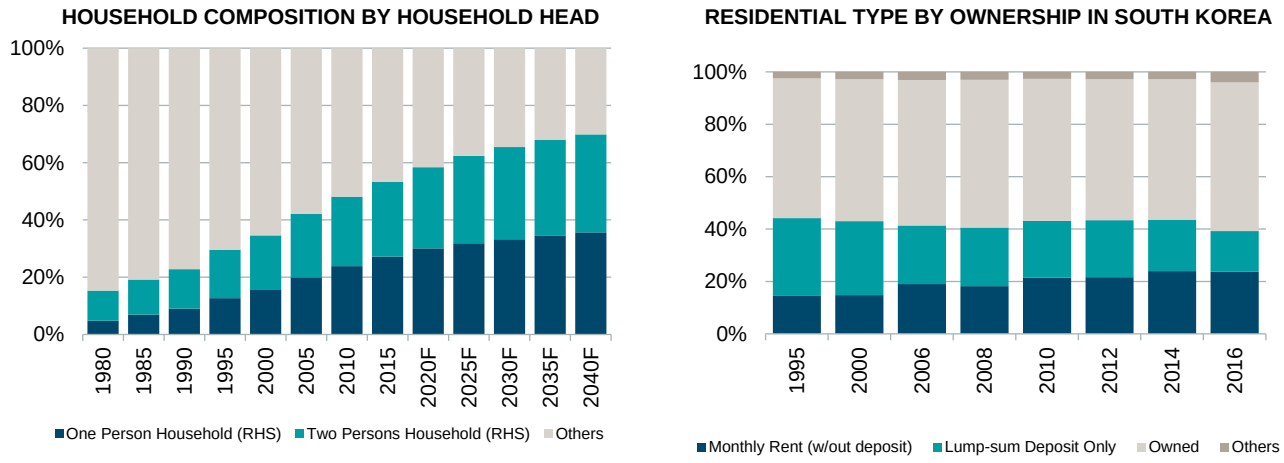
*py (=Pyeong) is a Korean unit of area. It is equivalent to 3.3 square metres (35.6 square feet).
Notes: Past performance is not indicative of future results.
Sources: Korea Appraisal Board, Cushman&Wakefield, DWS. As of Apr 2018.

2.7 Residential

The composition of household heads in South Korea has dramatically changed over the last 20 years in line with diversification of family forms, emergence of modern life styles and a rapidly ageing society. The total share of households comprising two persons and below was 53% in 2015, more than double over the last 25 years. This is expected to be more dominant at 65% by 2030. *

This uprising demand from smaller households has recently brought structural change to the residential market, posing more opportunities for institutionalized rental house businesses. The government also provides rental house owners with tax benefits, FAR bonuses and affordable financing in an effort to cool down condominium prices. Although owner-occupation is still a dominant form of home ownership style, monthly rent is gradually gaining popularity among tenants accordingly. In 2010, the market share of monthly rental houses surpassed "Jeonse", the traditional Korean rental house system (see page 19) for the first time in its history and has been increasing its share successively.

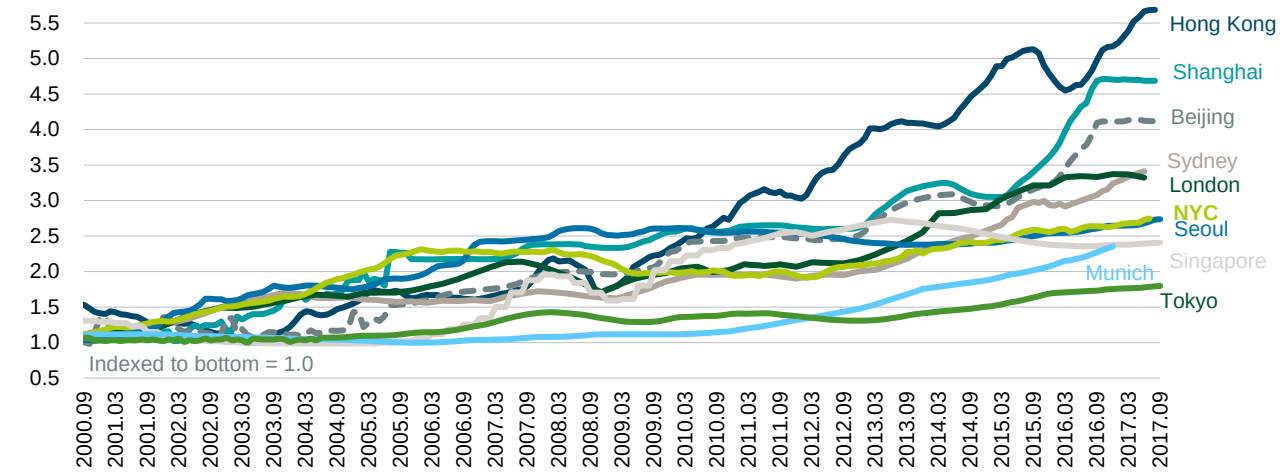
EXHIBIT 27: HOUSEHOLD COMPOSITION AND RESIDENTIAL TYPE IN SOUTH KOREA



F= Forecast
Notes: Past performance is not indicative of future results. * Forecasts are not a reliable indicator of future returns. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Forecasts are not a reliable indicator of future returns. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.
Sources: Korea Statistics Information Service, Ministry of Strategy and Finance, DWS. As of Apr 2018.

Comparing home price indices in major global cities since 2000, the average condominium price in Hong Kong marked the top, escalating almost 5.7 times compared to January 2000, followed by Shanghai, Beijing, Sydney and London. The average condominium price in Seoul increased 2.7 times in the meanwhile, a bit lower than 2.8 times in New York, while surpassing Singapore, Munich and Tokyo.

EXHIBIT 28: HOME PRICE INDICES IN GLOBAL CITIES (RECOVERY FROM THE RECENT TROUGH)

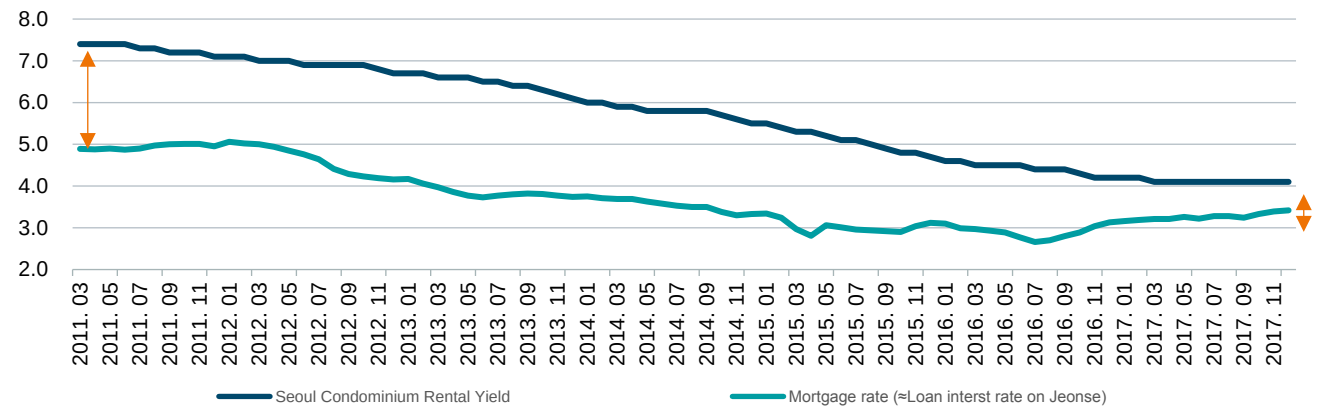


Notes: Past performance is not indicative of future results.
Sources: Australian Bureau of Statistics, National Bureau of Statistics of China, Case-Shiller, Nationwide, Rating and Valuation, URA, IPD-Recruit, KB Kookmin Bank, DWS. As of Apr 2018.

Without the existence of institutional rental house businesses in last 70 years, Korean house owners created and developed their own way to run individual rental house businesses, namely “Jeonse,” or “deposit only”. These unique Korean leasing contracts required tenants to place the lump sum of returnable deposits amounting to 50~90% of the house value instead of paying monthly rents. It was regarded beneficial for both landlords who wanted to leverage it to maximize their capital return with a strong belief in house value increase, and tenants who wished to keep their lump sum of capital intact by not paying monthly rent during the Jeonse period. In the Korean residential market dominated by Jeonse, monthly rent remained a second option for non-creditworthy tenants who could not place the upfront deposit, while landlords took advantage of the power balance to keep rental yields at a higher level.

However, as belief in house value perpetual increase weakened along with the maturity of the Korean economy, an increasing number of landlords started to switch from Jeonse to monthly rents in an effort to secure stable monthly income. It resulted in significant rental yield compression with the gap between the rental yield and the Jeonse loan interest rate narrowing from 252 basis points in March 2011 to 68 basis points in December 2017. In other words, those rental houses have emerged a comparably affordable option for tenants for the first time in Korea. The market is expected to witness the emergence of institutional rental houses in the country, fuelled by government initiatives to cool down the for-sale house market.

EXHIBIT 29: SEOUL APARTMENT RENTAL YIELD VS. HOUSE MORTGAGE RATE

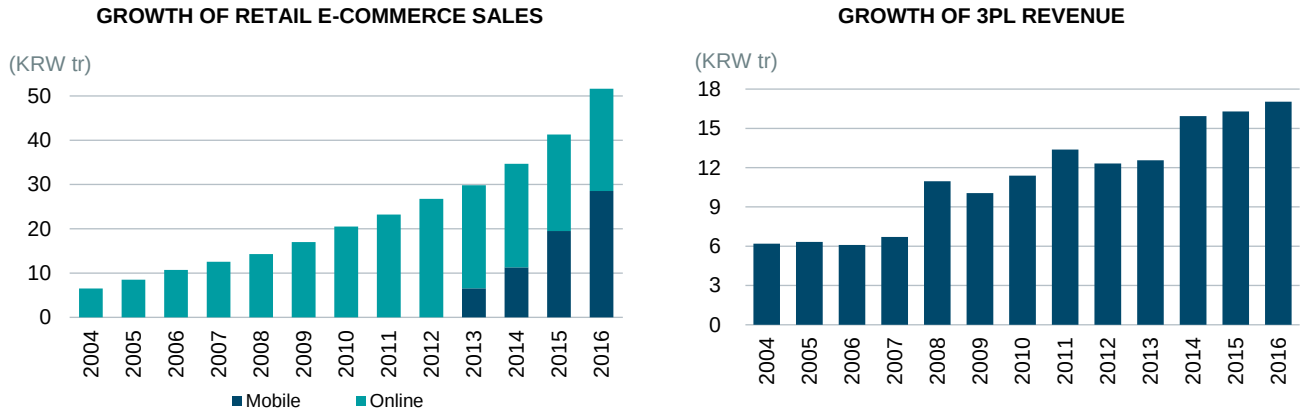


Notes: Past performance is not indicative of future results.
Sources: KB Kookmin Bank, Ministry of Land, Infrastructure and Transportation, DWS. As of Apr 2018.

2.8 Industrial

As one of the key drivers for logistics space demand, retail e-commerce sales are rapidly growing by circa 16% per annum over the last ten years, overwhelming traditional retail types in terms of growth speed. Moreover the government has provided incentives such as tax benefits, infrastructure development around logistics areas, and the introduction of quota requirements for the purpose of fostering the 3PL industry, and accordingly, the revenue of 3PL industry has grown to KRW 17.0 trillion in 2016, almost trifold in the last ten years.

EXHIBIT 30: LOGISTICS LEASING AND SUPPLY IN KOREA

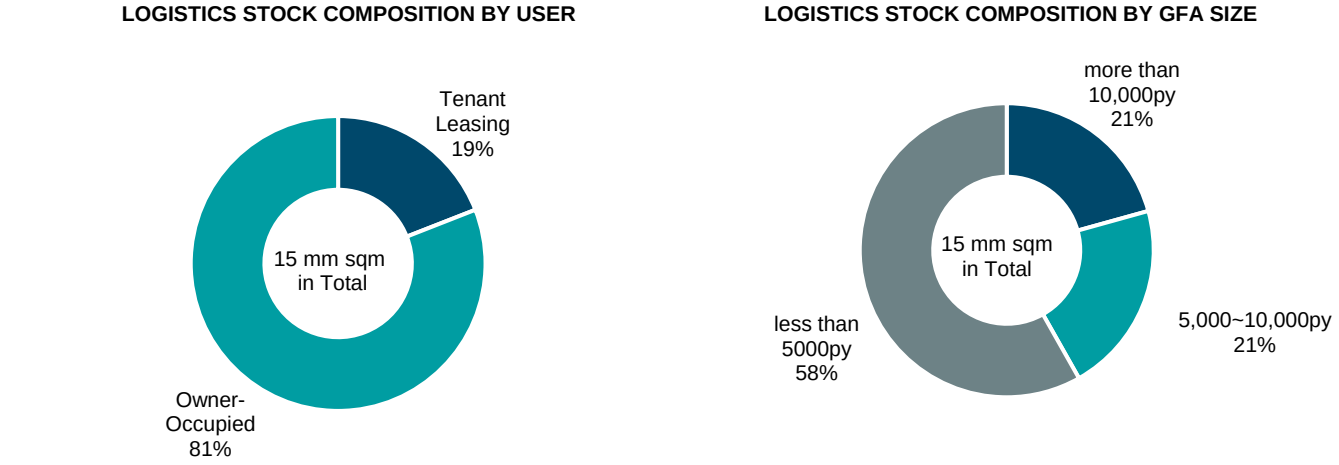


Notes: Past performance is not indicative of future results.
Sources: DTZ, DWS. As of Apr 2018.

Suburban areas of Greater Seoul are the hub for the country's logistics assets with superior accessibility to major international airports, trade ports and Seoul CBD. Among five logistics sub areas radially outward from Seoul, the southern-east sub area is the largest with circa 40% of the total logistics stock, followed by southern area and northern-west area. The sum-up of these three areas account for more than 80% of the total stock.

Even though the logistics market has rapidly expanded over the last decade, good quality modern logistics assets are still limited. Currently only 19% of total stock is open to tenant leasing, while only 21% of the total stock has the GFA of more than 10,000 pyeong with modern specification, which are posing more opportunities for further institutionalization and modernization.

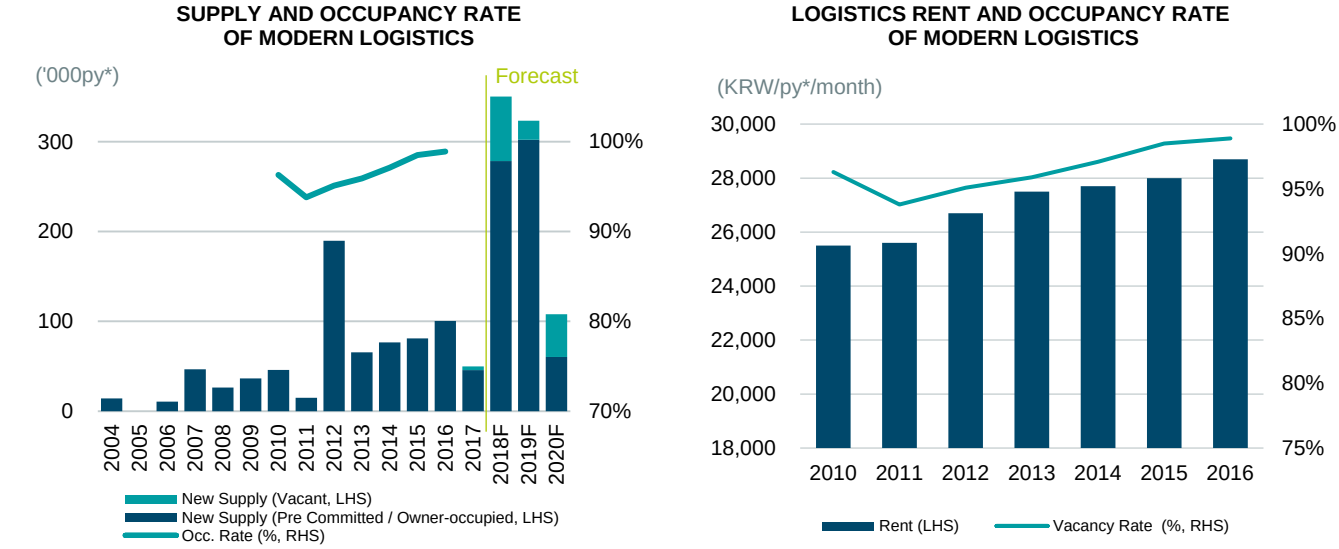
EXHIBIT 31: COMPOSITION OF INDUSTRIAL STOCK IN GREATER SEOUL



Notes: Past performance is not indicative of future results.
Sources: DTZ, DWS. As of Dec 2017.

The average vacancy rate of modern logistics assets in Greater Seoul was estimated to be 1.1%, maintaining a tight level below 5% over the last five years. Furthermore, the average rental growth for modern logistics assets remained robust by circa 2.2% in the same period, proving strong demand from e-commerce and 3PL industries is overwhelming supply. However, the vacancy rates are forecast to go up in coming years, as a record large amount of supply is expected to complete consecutively in 2018 and 2019.

EXHIBIT 32: LOGISTICS LEASING AND SUPPLY IN GREATER SEOUL



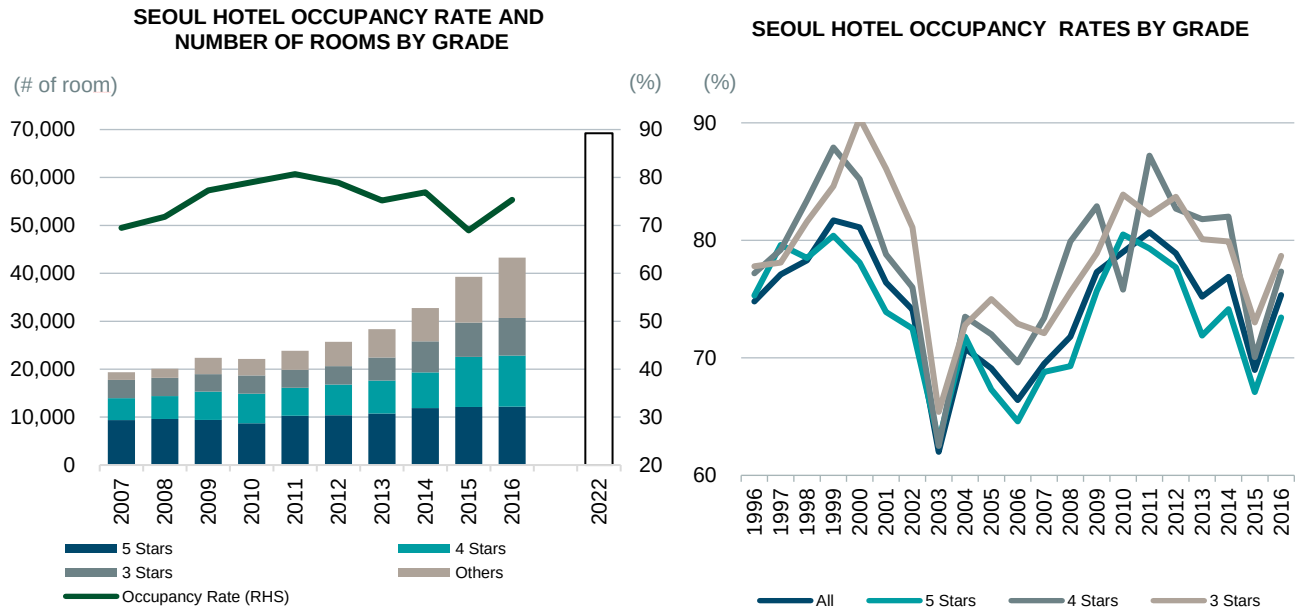
*py(=Pyeong) is a Korean unit of area. It is equivalent to 3.3 square metres (35.6 square feet).
Notes: Past performance is not indicative of future results. Sources: DTZ, DWS. As of Dec 2017.
Forecasts are not a reliable indicator of future returns. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

2.9 Hotel

In the last few years, the hotel industry in Seoul was exposed to instability brought about by huge supplies of hotel rooms and a fluctuation in tourist demand. The number of hotel rooms in Seoul increased to 43,271 in 2016, 68% larger than 25,710 in 2012. It is expected to jump to near 70,000 by 2022, encouraged by the FAR incentives of Seoul city government who aims to enhance the city's hospitality capacity. However, demand from overseas visitors fluctuated due to successive events, for example, the outbreak of MERS in 2015 and China's informal travel ban toward Korea in 2017.

Consequently, the average hotel occupancy rate in Seoul dropped to 69% in 2015 from its previous peak of 81% in 2011. Even though it recovered to 75% in 2016, it was expected to soften again in 2017 as the number of Chinese visitors dropped to almost half from the previous year.

EXHIBIT 33: HOTEL OPERATION IN SEOUL



Notes: Past growth is not a reliable indicator of future growth.
Sources: Korea Hotel Association, DWS. As of Dec 2017.
Forecasts are not a reliable indicator of future returns. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

3 Investment Opportunities

The fast evolving features of the Korean commercial real estate market is increasingly posing attractive investment opportunities to investors. However, both harsh competition over acquisition activity and the elevated valuation of real estate make it increasingly challenging for investors seeking core-type opportunities to achieve their target returns.[2] In turn, we are witnessing an increasing number of investors starting to consider higher yielding core plus or value-add strategies, on top of traditional core strategies, in the Korea real estate market. Following are the examples of sectorial strategies which value-add investors can consider in the market.

For office and retail sectors, elevated vacancy and expanding incentives in the office sector indicate opportunities in asset repositioning, re-leasing strategy and usage conversion.

- Lease-up & Re-tenanting:
  - To acquire well-positioned offices with significant vacancies at discount to market and execute active asset management to lease up the property. To acquire and replace poorly managed tenants in office and retail properties with CAPEX deployment and leasing strategy to unlock maximum value by leveraging local team's leasing expertise and network.

- Asset Repositioning:
  - To target aged but well-aligned, physically qualified (i.e. location, floor size, ceiling height, parking facility etc.) office properties with extensive refurbishment/renovation potential to drive rent growth. To acquire office/retail properties with GFA expansion potential to drive additional income and lower basis of building cost. Relatively lower building construction costs to land value helps bring down the unit cost basis of the property with additional GFA; allowing competitive market positioning after added building GFA.

- Usage Conversion:
  - To unlock property's maximum potential with minor CAPEX work to convert building usage with ground-up retail conversion to drive property NOI. Shift NOI composition with added retail mix to help reposition office space. Ground-up retail conversion usually achieves higher rent with stronger market fundamentals relative to office.

For the industrial sector, structural shift in logistics and limited quality space provide development or forward purchase opportunities.

- Development & Forward Funding/Commitment:
  - It is important to lever local team's proprietary sourcing networks to acquire prime location sites for 'build-to-suit' development with major lease pre-commitment. Alternatively it is also good to acquire discount to market properties by forward commitment with selective lease-up risk. Preferred equity or mezzanine investments in forward funding arrangements can unlock investment arbitrage by providing liquidity with interesting 'loan-to-own' proposition.

For the residential sector, demographic shifts and government initiatives underpin emergence of institutionalized rental houses in South Korea.

- Development & Forward Commitment:
  - Korean government provides rental house businesses with tax benefits, FAR bonuses and affordable financing to cool down condominium prices and gradually shift demand towards rental houses. Entering into joint ventures/partnership with strong local operating partners for forward commitments provides a viable route to access good residential assets with the potential for enhanced returns.

[2] Please refer to "Asia Pacific Real Estate Strategic Outlook February 2018" report for house-view forecast of DWS.

4 Consideration

Despite the size of the market stock, gradual market evolution and institutionalization, there are some considerations that need investors' attention. Exhibit 34 is an extract of the "Global Real Estate Market Transparency Index" provided by JLL in 2016, and Korea is categorized as a Semi Transparent market, the same group as China, India and Russia, or one notch below its Asian peers of Singapore, Hong Kong and Japan. It is a comprehensive analysis of five sub components, namely investment performance indices, market fundamental data set, listed vehicles, regulatory and legal frameworks and transaction processes where Korea was unfavorably rated for the listed vehicles and investment performance indices component. [3]

Every year, transparency tends to improve in the Korean market, especially in the more established office sector, while the lack of a sizable listed market poses risks to investors, especially cross border. For instance, private funds do not officially disclose transacted cap rates at acquisition nor report appraisal cap rates at each financial year, so investors have difficulty reconciling the accuracy of numbers provided in research reports. This applies to vacancy rates, rental growth, tenant incentives, net operating incomes, total returns and so on, on top of cap rate data series. It is therefore important for investors to partner with managers with a strong footprint and track record in the local market, in order to have enough conviction when underwriting investments.

EXHIBIT 34: GLOBAL REAL ESTATE MARKET TRANSPARENCY INDEX 2016

Transparency Index	Countries (109 in Total)
Highly Transparent	United Kingdom, Australia, Canada, United States, France, Netherlands, Germany etc. (10 countries)
Transparent	Singapore, Hong Kong, Japan, Italy, Spain, Taiwan, Malaysia etc. (20 countries and areas)
Semi-Transparent	China, India, Thailand, South Korea, Mexico, Brazil, Russia etc. (37 countries)
Low Transparent	Vietnam, Iran, Nigeria, Pakistan etc. (21 countries)
Opaque	Panama, Iraq, Myanmar etc. (21 countries)

Notes: Past growth is not a reliable indicator of future growth.
Sources: JLL, DWS. As of Apr 2018.

[3] This is in line with Exhibit 8 on page 7 and Exhibit 9 on Page 8 in Chapter 2.2, "Market Size and Institutionalization", and also Chapter 2,3, "Performance & Pricing" on Page 9 this research report.

5 Important Information

On March 23, 2018, Deutsche Asset Management rebranded to DWS. The brand DWS represents DWS Group GmbH & Co. KGaA and any of its subsidiaries, such as DWS Distributors, Inc., which offers investment products, or Deutsche Investment Management Americas Inc. and RREEF America L.L.C., which offer advisory services.

The brand DWS represents DWS Group GmbH & Co. KGaA and any of its subsidiaries such as DWS Distributors, Inc. which offers investment products or Deutsche Investment Management Americas Inc. and RREEF America L.L.C. which offer advisory services; in Germany: RREEF Investment GmbH, RREEF Management GmbH, and RREEF Spezial Invest GmbH; in Australia: Deutsche Investments Australia Limited (ABN 52 074 599 401) an Australian financial services incense holder; in Japan: Deutsche Securities Inc. (For DSI, financial advisory (not investment advisory) and distribution services only); in Hong Kong: Deutsche Bank Aktiengesellschaft, Hong Kong Branch (for direct real estate business), and Deutsche Asset Management (Hong Kong) Limited (for real estate securities business); in Singapore: Deutsche Asset Management (Asia) Limited (Company Reg. No. 198701485N); in the United Kingdom: Deutsche Alternative Asset Management (UK) Limited, Deutsche Alternative Asset Management (Global) Limited and Deutsche Asset Management (UK) Limited; and in Denmark, Finland, Norway and Sweden: Deutsche Alternative Asset Management (UK) Limited and Deutsche Alternative Asset Management (Global) Limited; in addition to other regional entities in the Deutsche Bank Group.

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The value of investments can fall as well as rise and you might not get back the amount originally invested at any point in time.

Investment in real estate may be or become nonperforming after acquisition for a wide variety of reasons. Nonperforming real estate investment may require substantial workout negotiations and/ or restructuring. Environmental liabilities may pose a risk such that the owner or operator of real property may become liable for the costs of removal or remediation of certain hazardous substances released on, about, under, or in its property. Additionally, to the extent real estate investments are made in foreign countries, such countries may prove to be politically or economically unstable. Finally, exposure to fluctuations in currency exchange rates may affect the value of a real estate investment.

Investments in Real Estate are subject to various risks, including but not limited to the following:

- Adverse changes in economic conditions including changes in the financial conditions of tenants, buyer and sellers, changes in the availability of debt financing, changes in interest rates, real estate tax rates and other operating expenses;
- Adverse changes in law and regulation including environmental laws and regulations, zoning laws and other governmental rules and fiscal policies;
- Environmental claims arising in respect of real estate acquired with undisclosed or unknown environmental problems or as to which inadequate reserves have been established;
- Changes in the relative popularity of property types and locations;
- Risks and operating problems arising out of the presence of certain construction materials; and
- Currency / exchange rate risks where the investments are denominated in a currency other than the investor's home currency.

An investment in real estate involves a high degree of risk, including possible loss of principal amount invested, and is suitable only for sophisticated investors who can bear such losses. The value of shares/ units and their derived income may fall or rise.

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