
Mizuho Economic Outlook & Analysis

July 19, 2017

Real estate market trends in Japan

*The impact of the increase in office supply
and a re-evaluation of the “market polarization”*

< Summary >

- ◆ Despite signs that Japan’s real estate market is peaking, there is little sense of overheating. Given the underpinnings of the super low interest rates, the real estate market will most likely remain on a plateau for the time being.
- ◆ Regarding the increase in office floor supply, a simple simulation shows that office rent will peak out in mid-2018 and fall by approximately 6 to 7% in the course of three years. However, if Japan’s economic recovery stalls, the adjustment of rent will turn out to be longer and deeper.
- ◆ A decomposition of the nationwide variance in land prices shows that the majority of the variance in recent years stems from the with-in-prefectural effect rather than the between effect. Land prices should be described as “selective” rather than as a simple “polarization”.

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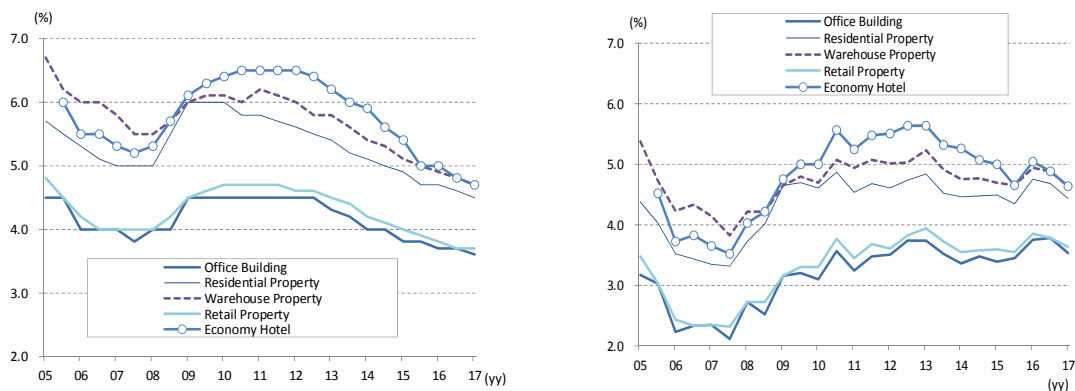
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1. The real estate market trends cautiously on a plateau

In recent years, Japan's real estate market has continued to follow a gradual - albeit cautious - recovery. While there were concerns regarding a market reversal from as early as 2015, concerns of overheating rose further last year, as indicated by the expected yield (cap rate¹) falling below the level at the peak of the "Mini bubble" (the market recovery starting in the early 2000s and ending before the subprime mortgage crisis).

The sense of a market peak is growing stronger than last year, as indicated by the further fall of the cap rate in all property types (**Chart 1 left panel**), and the increasing share of investors who perceive the real estate market as a peak (**Chart 2**). On the other hand, there is no significant change in the yield gap (the difference between the cap rate and the long-term interest rate), remaining well above the levels during the Mini Bubble (**Chart 1 right panel**)². A fall of dividend yield or the rise of the NAV (net asset value) ratio³ observed during the Mini Bubble are also absent with respect to J-RIETs, the major player of the current market recovery (**Charts 3, 4**). In fact, both indicators point to a fading sense of over-valuation in the REIT market.

Chart 1: Cap rate (left) and yield gap (right) by property type



Note: Surveys in April and October every year. "Yield gap" refers to the cap rate minus 10-yr JGB yield. "Office Building" refers to Class A office buildings in the Marunouchi/Otemachi district. "Residential Property" refers to standard studio-type property in Southern Tokyo (Meguro and Setagaya wards). "Warehouse Property" refers to multiple tenants-type property in the Tokyo coastal area. "Retail Property" refers to High-end retail property in the Ginza district. "Economy Hotel" refers to property in Tokyo (around a main station of JR or subway).

Source: Made by MHRI based on Japan Real Estate Institute (JREI), *The Japanese Real Estate Investor Survey*

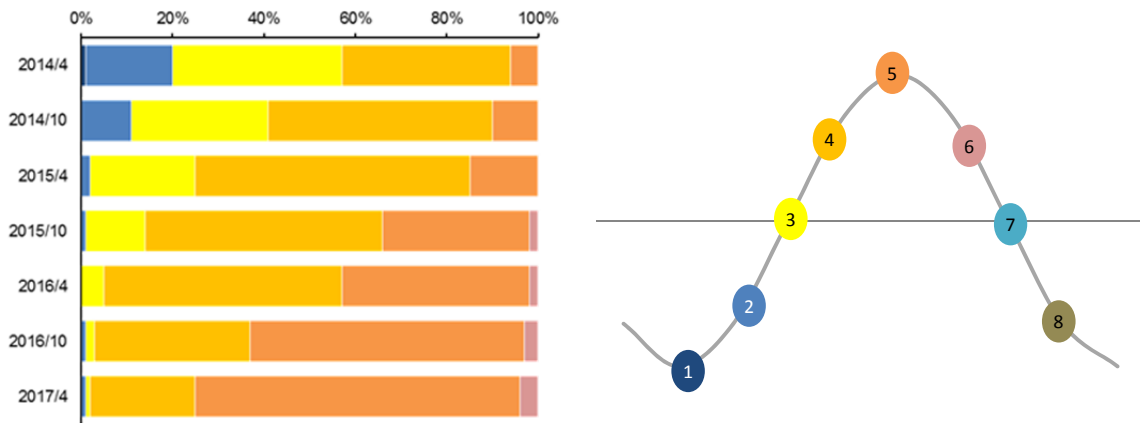
¹ Since the appraised value of real estate is calculated by dividing earnings by the cap rate, a low cap rate is equivalent to a high appraisal of property price.

² The implied risk premium of major areas (calculated from the cap rate) neither is declining.

³ Unit prices divided by net asset per unit, equivalent to the price-to-book ratio in stock prices

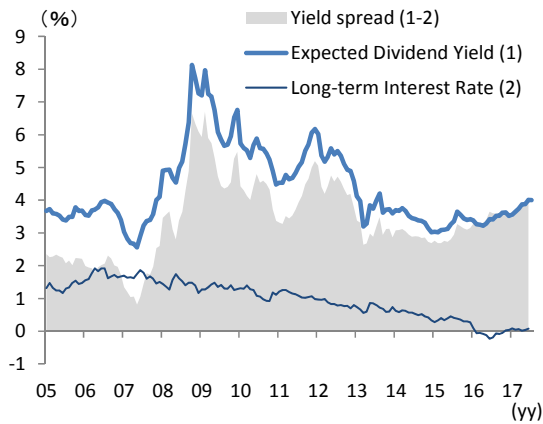
Therefore, despite the growing perception that the real estate market is at its peak, the absence of an acute imbalance makes a market reversal unlikely any time soon. Since an early departure from ultra-low interest rates is not expected, the real estate market in general should remain on a high plateau.

Chart 2: Investors' perception of market conditions (Tokyo, Otemachi)



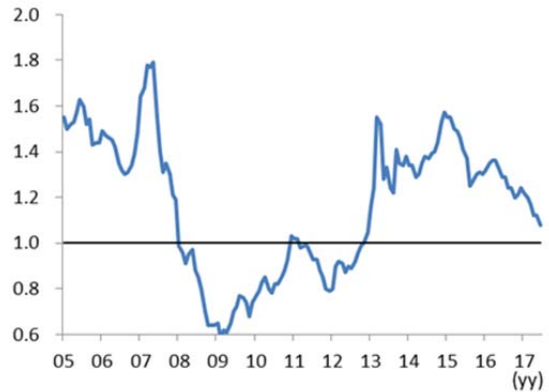
Source: Made by MHRI based on JREI, *The Japanese Real Estate Investor Survey*

Chart 3: J-REIT dividend yield



Note: The latest readings are as of the end of June 2017
 Source: Made by MHRI based on The Association for Real Estate Securitization

Chart 4: J-REIT NAV ratio



Note: The latest readings are as of the end of June 2017
 Source: Made by MHRI based on The Association for Real Estate Securitization

2. A quantitative analysis of the increase in office supply

(1) Concerns regarding supply glut of office floor space

In spite of the healthy market condition, the large-scale supply of office floor space can be a disturbing factor providing reasons for concern. The following provides a brief review of the office real estate market and a quantitative analysis on the impact of office supply in central Tokyo.

The office market has seen a nationwide decline in the vacancy rate. In addition to central Tokyo, rents have also been following a clear upward trend in Sapporo and Fukuoka where the vacancy rates have dipped below the bottom of the Mini Bubble (Charts 5, 6). As for central Tokyo, rent growth (+4% to +5% y-o-y) remains mild in comparison to the Mini Bubble. However, we see some deviation between the rent and “office floor productivity”, which can be considered as a benchmark for sustainable rent growth (Chart 7). Even though the divergence is not as great as during the Mini Bubble years, it suggests an eventual adjustment of office rent.

Chart 5: Office vacancy rate

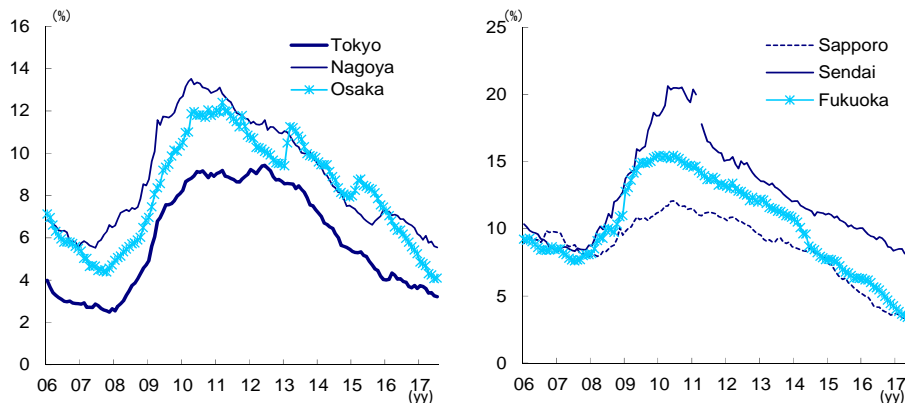
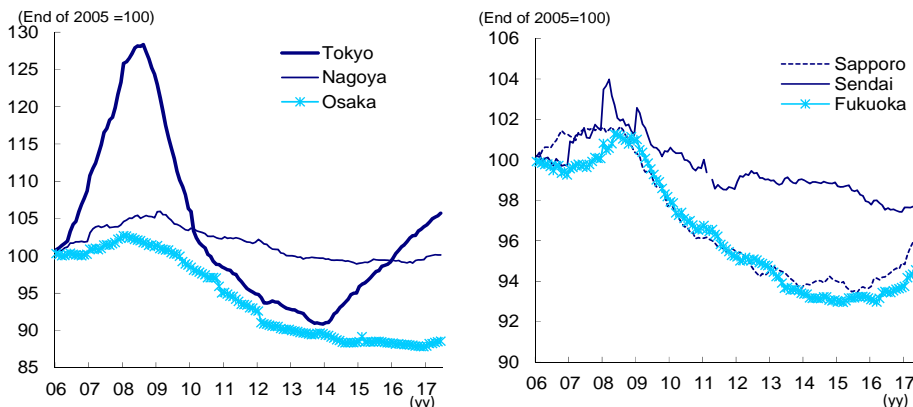


Chart 6: Office asking rent



Note: The latest readings are as of June 2017
 Source: Made by MHRI based on Miki Shoji Co., Ltd.

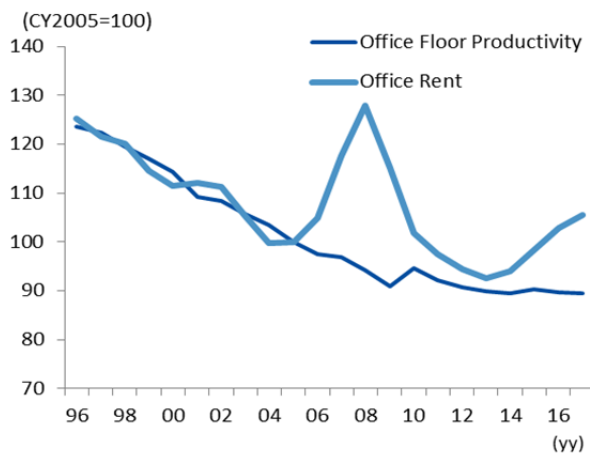
The most likely factor to trigger a downturn of office rent is the increase in supply of office floor space. The scheduled supply of large-scale office buildings (**Chart 8**) reveals that there will be a relatively high level of supply in 2018 and 2020 following a sharp decline in 2017.

Some point out that there is no need for great concern since the rise of supply back in 2003 and 2012 turned out to have limited impact. However, we should keep in mind that conditions were conducive for the rise of office

demand in both 2003 and 2012; 2003 marks the early stage of Japan's economic recovery (Jan 2002 to Feb 2008), and the year 2012 coincides with a shift from a brief recession (Mar to Nov 2012) to a recovery. Considering that Japan's current economic recovery (from Nov 2012) is about to reach the second longest in Japan's post-war history, a downturn may be possible around 2018 to 2019 from a cyclical perspective. In such event, a sharp rise of the vacancy is likely.

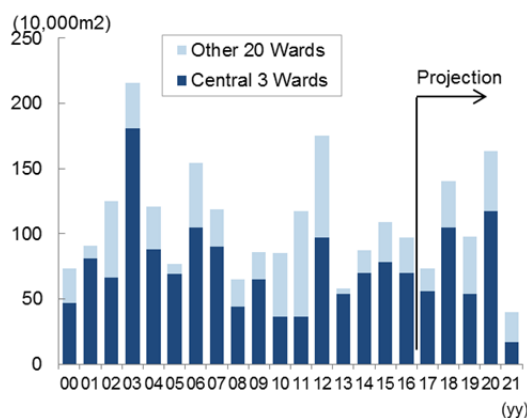
On the other hand, it should be noted that the supply of office floor space does not always progress as scheduled. For example, as of the end of 2014, the scheduled supply for 2017 and 2018 were 1.17 million and 1.01 million square meters respectively.

Chart 7: Office productivity and office rent



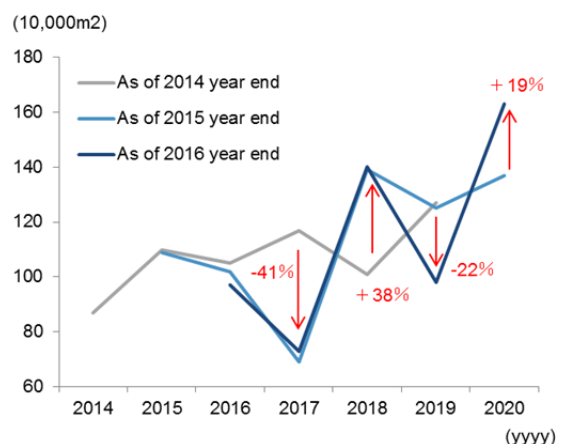
Note: Rent refers to asking rent in the Central 5 wards of Tokyo in Miki Shoji's survey.
Office Floor productivity = Nominal GDP/Office space.
Source: Made by MHRI based on Cabinet Office, Miki Shoji.

Chart 8: Scheduled supply of large-scale office buildings in Tokyo



Note: Large-scale office buildings (office buildings with total floor space of 10,000 sq. meters or larger)
Source: Made by MHRI based on Mori Building Co., Survey of Large-scale Office Building Market in Tokyo's 23 Wards

Chart 9: Supply schedule in recent years



However, as of the end of 2015, supply in 2017 was revised downward to 600 thousand square meters (-41%) while the supply in 2018 was upwardly revised to 1.39 million square meters (+38%, **Chart 9**). The same tendency is also evident in the following year (a 20% downward revision and upward revision). If this pattern continues, the scheduled supply for 2020 as of the end of 2016 may be delayed by 20% to 40%.

Taking the above into consideration, the next section provides a simulation on the vacancy rates and office rents up to 2021 using a simple model of the office market.

(2) Simulation from a office market model

The office market model in this report is comprised of the three following equations: (1) the office market Phillips Curve representing the relationship between rent growth and the vacancy rate, (2) the office demand function assuming a constant share of total payable rent in value added over the long term (meaning that rents shift along with office productivity), and (3) the definition of the vacancy rate (for details, refer to the **Appendix**).

Using this model, I conducted simulations on the vacancy rate and rent in the three following scenarios: (1) the supply of office floor space progresses as scheduled while the economy continues to recover, (2) the supply of office floor space is delayed while the economy continues to recover, and (3) the supply of office floor space progresses while the economy falls into a recession. More specifically, the three scenarios are based upon the following premises.

Scenario	Assumptions on the economy	Scheduled supply of office space
1 Economic recovery	Economic recovery will continue until the end of 2021 (Note 1)	As scheduled (Note 3)
2 Economic recovery + delay in supply	Same as above	30% of of scheduled supply in 2020 will be carried over to 2021
3 Recession	Recession from 2018Q1 to 19Q1 (Note 2). Recovery otherwise	As scheduled

Notes: 1. Based upon the assumption that quarterly GDP (nominal) will continue to grow at a pace of +1.2% p.a. (the average during economic recovery phases from 1995 onward). This is just a simple assumption and differs from MHRI's *Economic Outlook*.

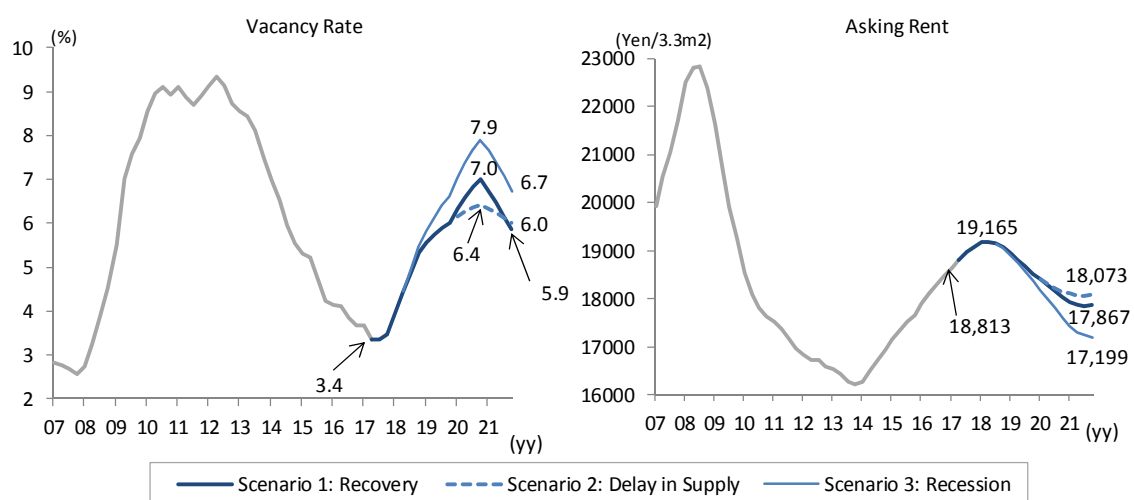
2. Based upon the assumption of quarterly GDP (nominal) of -1.6% p.a. (the average of recessions during the period from 1995, excluding the recession following the collapse of Lehman Brothers). The duration of recession is also the average from 1995 onward.

3. Given the difference in coverage between the scheduled supply in **Chart 8** (large-scale office buildings in the 23 wards of Tokyo) and the data used in the model (major buildings in the 5 wards, surveyed by Miki Shoji Co., Ltd.), I pair the three major wards (Chiyoda, Chuo and Minato) in the two surveys, and the 20 remaining wards in the Mori Building survey with the two wards (Shinjuku and Shibuya) in the Miki Shoji survey. I then use the average ratio of new supply between the two surveys within each area group to estimate future supply in the five wards.

The results of the simulation reveal that the vacancy rate, which is currently at the lower half of the 3%-level, will reach 7.0% in Scenario 1, the mid-6%-level in Scenario 2, approximately 8% in Scenario 3 at the end of 2020, and take a downturn afterwards (**Chart 10**). In all of these scenarios, rents are forecast to fall after peaking in mid-2018. Even though the difference between Scenarios 1 and 2 is limited since the sensitivity of rents to the vacancy rate is not so high, rents would fall around 6% to 7% from the peak and bottom out in the second half of 2021. The length and depth of the fall would be considered benign in comparison to the post-Mini Bubble years, in which rents cumulatively fell 30% during the 5-year period. In contrast, if the economy were to fall into a recession (Scenario 3), the decline from the peak will reach more than 10% as of the end of 2021 and will fail to bottom out.

Although the foregoing is a simple simulation (therefore, not an outlook), it does show that as long as Japan's economic recovery persists, office rents will continue to rise for the time being and that the deterioration in market conditions due to the supply glut will be limited. At the same time, the simulation also showed that office rent will experience a deeper and longer adjustment in the event of a recession.

Chart 10: Simulation of the office market (Tokyo central business district)



Note: The above is a simple simulation based upon the scenario above and is not a forecast. Refer to the **Appendix** for details on the model.

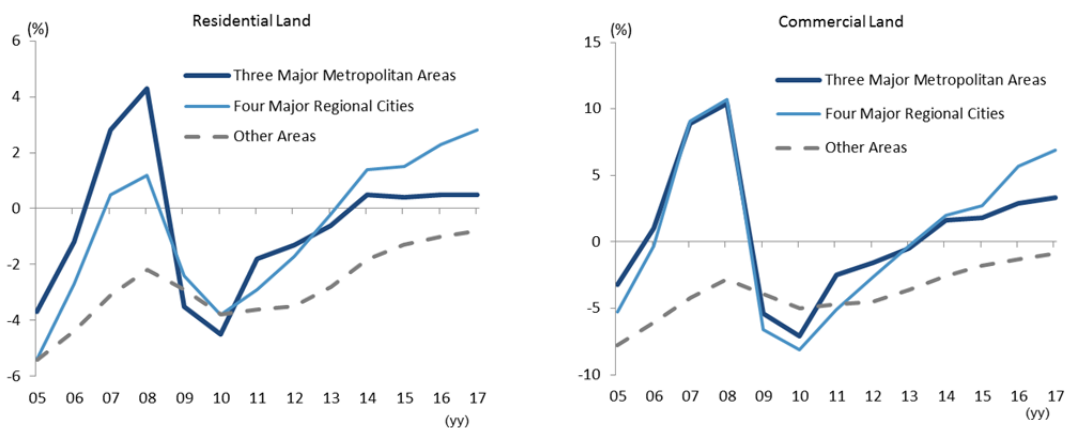
Source: Made by MHRl based on Miki Shoji Co., Ltd., Cabinet Office, and others

3. The real estate market is turning “selective” rather than “polarizing”

Even though the real estate market should continue to pick up for the foreseeable future, conditions will vary depending upon regions and type. In this respect, an oft-cited phenomenon is the “polarizing” between metropolitan and rural areas. Indeed, the official land price as of January 2017 indicates an ongoing rise in the three major metropolitan areas and regional hub cities (Sapporo, Sendai, Hiroshima, Fukuoka) in contrast to a persistent fall in other regional areas (**Chart 11**).

However, a closer look reveals that a sweeping generalization of regions into “metropolises” and “rural areas” is somewhat misleading. **Charts 12** and **13** shows the average, highest and lowest rate of land price growth by prefecture in 2017 and 2007 (the Mini Bubble), in descending order of the average. Looking at residential land, we note that in 2007 prefectures in large metropolitan areas (in bold red) ranked high in terms of averages, while the percentage change in the majority of other prefectures was at most 0% (in blue). While many locations in major metropolitan areas enjoyed an increase in land prices, most places in rural areas failed to see any land appreciation. This situation may readily be expressed as a polarization between metropolitan and rural areas. In contrast, 2017 reveals a very different picture. Prefectures not in major metropolitan areas climbed up the rankings, and there were only two prefectures (Shimane and Kochi) in which the highest growth rate stood at 0%. Additionally, the steepest fall of land prices in Chiba and Kanagawa, both of which belong to the Tokyo metropolitan area, surpassed that of rural prefectures. In other words, even in major metropolitan areas, land prices are falling sharply in inconvenient locations. On the other hand, land prices are following a clear uptrend even in rural areas where there is an inflow of population. These patterns also apply to commercial land.

Chart 11: Trends in official land price



Note: “Four Major Regional Cities” refer to Sapporo, Sendai, Hiroshima and Fukuoka

Source: Made by MHRI based on Ministry of Land, Infrastructure, Transport and Tourism, *Official Announcement of Land Price*

Chart 12: Changes in land price by prefecture (residential)

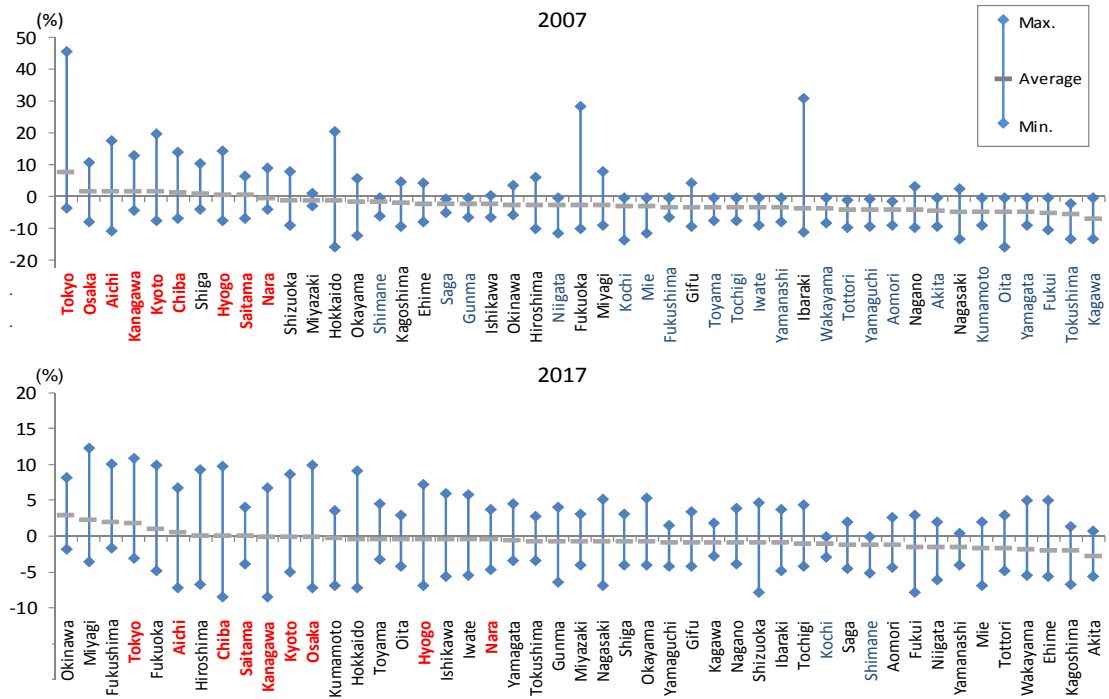
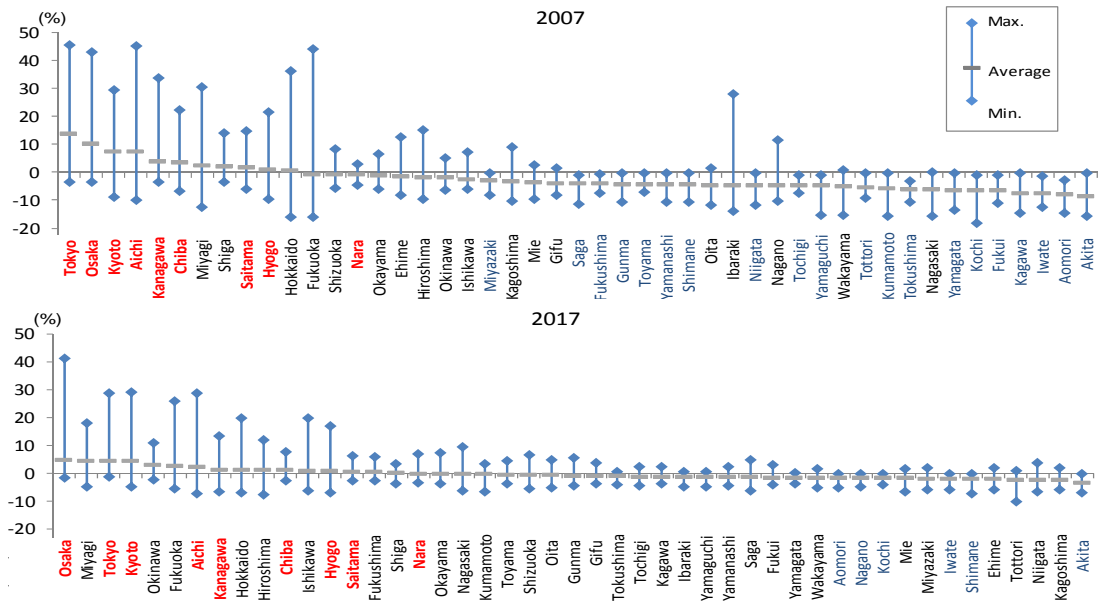


Chart 13: Changes in land price by prefecture (commercial)



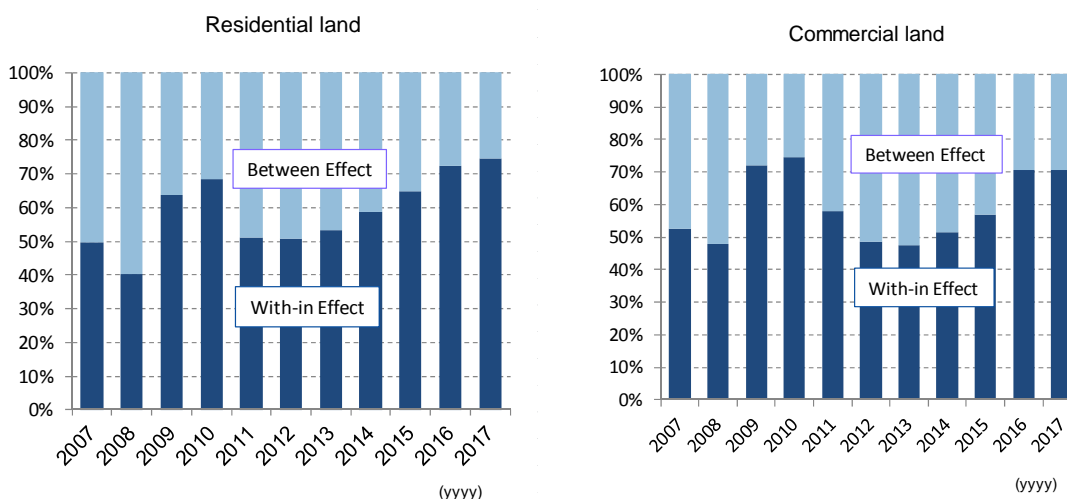
Note: The prefectures shown in **bold red** lettering are nine prefectures where more than half of the locations surveyed are included in the three major metropolitan areas. The prefectures shown in blue lettering are prefectures where the highest rate of change of land prices was 0% or less.

Source: Made by MHRI based on Ministry of Land, Infrastructure, Transport and Tourism, *Official Announcement of Land Price*

These trends become more evident when decomposing the variance of nationwide land prices into within-prefectural and between-prefectural effects (**Chart14**)⁴. While the between effect was the major factor during the Mini Bubble, the share of the within effect has grown in the ensuing years, climbing above 70% in the latest 2017 survey. Therefore, the polarization of land prices is not just a simple stratification between major metropolises and rural areas, but is occurring within major metropolitan and within rural areas.

As the overall population of Japan continues to decline, the within polarization of the real estate market should become a stronger trend. Land prices are expected to follow a more diverse course depending on the location-specific characteristics.

Chart 14: Decomposition of the variance in land price growth



Note: Refer to footnote 4.

Source: Made by MHRl based on Ministry of Land, Infrastructure, Transport and Tourism, *Official Announcement of Land Price*

⁴ Denoting x_{ij} as the change in land price of location i in prefecture j , \bar{x} as the nationwide average rate of change and \bar{x}_j as the average of prefecture j ($i = 1, 2, \dots, N_j; j = 1, 2, \dots, 47$), the variance of changes in land price can be written as

$$\begin{aligned} \text{Var}(x) &= \frac{1}{N} \sum_j \sum_i (x_{ij} - \bar{x})^2 = \frac{1}{N} \sum_j \sum_i ((x_{ij} - \bar{x}_j) - (\bar{x} - \bar{x}_j))^2 \\ &= \frac{1}{N} \sum_j \sum_i (x_{ij} - \bar{x}_j)^2 + \frac{1}{N} \sum_j \sum_i (\bar{x}_j - \bar{x})^2 \end{aligned}$$

where $N = \sum_j N_j$ represents the total number of locations and the covariance term has been abbreviated since it equals zero. The first term is the within effect and the second term is the between effect.

Appendix: The office market model

The equations in the office market model is as follows (t values in parentheses).

$$(1) \quad \pi_t = 0.74 + 1.65\pi_{t-1} - 0.77\pi_{t-2} - 0.77V_{t-1} + 0.63V_{t-2}$$

(1.68) (21.47) (-10.14) (-2.73) (2.28)

Sample period: 2000Q1 – 2017Q2 Adjusted R² = 0.981

$$(2) \quad \Delta \log(S_t^d) = 0.36 + 0.37\Delta \log(S_{t-1}^d) - 0.029(\log(Rent_{t-1}S_{t-1}^d) - \log(PY_{t-1}))$$

(4.39) (3.58) (-4.37)

Sample period: 2000Q1 – 2017Q2 Adjusted R² = 0.505

$$(3) \quad V_t = (1 - S_t^d/S_t^s) \times 100$$

where

$\pi_t \equiv (Rent_t/Rent_{t-4} - 1) \times 100$: Growth rate of rent,

V_t : Vacancy rate, S_t^d : Office floor demand,

PY_t : Nominal GDP, S_t^s : Office floor supply

Equation (1) is the office market analogue of the Phillips Curve, representing the relationship between the growth rate of rent and the vacancy rate. Equation (2) is the error-correction type demand function for office floor space. The last equation is an identity of the vacancy rate.