

JP – Japan

The Ministry of Land, Infrastructure, Transport and Tourism (MLIT) in Japan produces a nationwide residential property price index for new and existing, single-family (detached) houses based on transaction data. The data includes transactions between private bodies and excludes transactions with public bodies. The pure price series is calculated with the hedonic method, which adjusts for variation in quality of individual properties. The index is reported at a monthly frequency and starts in April 2008, indexed to 2010=100. We use the index aggregated into a quarterly frequency by taking the arithmetic mean of the corresponding months. The house price series is not seasonally-adjusted by the source. We seasonally-adjust the data using the BSTS model. We began using this data in the 2018 first quarter release.

To extend the data back to 1975, we splice the MLIT house price index with growth rates of the nationwide, residential urban land price index dating back to 1955 published by the Japan Real Estate Institute (JREI). Prior to the 2018 first quarter release, we relied exclusively upon the JREI data to construct our index for Japan. It is based on appraisals of residential urban land, where the market value is determined as if the land was vacant. The index is based on the average price change of three appraisals made according to urban area rankings (superior, average and inferior). Residential land located in a “medium” neighborhood from each rank is appraised. Thus, mix-adjusted techniques are used in the construction of this index. Prices are reported per-square-meter in an attempt to control for changes in price that are associated with varying plot size. The index is published at a semi-annual frequency, updated at the end of March and the end of September. The index is calculated by multiplying the index of the preceding period by the average percentage change during the subsequent half a year. We interpolate the semi-annual series using the quadratic-match average method to obtain a consistent quarterly series for Japanese house prices.

Prior to the 2018 first quarter release, since the primary data for the JREI is released semi-annually, at least two quarters would have elapsed before there was sufficient information to include all countries in the database. To avoid this lag and make the public release of the data timelier, we nowcasted the semi-annual series for Japan one period ahead using the BSTS model.³⁵ The quarterly estimates obtained using interpolated nowcasts were subsequently replaced as the official semi-annual JREI data became publicly available. We re-base the spliced index to 2005=100 and deflate this house price series using the Personal Consumption Expenditure (PCE) deflator obtained from the OECD Economic Outlook database.

We complete the Japanese data by including a personal disposable income (PDI) series, reported in *per capita* terms. Household disposable income and working-age population were obtained from the OECD Economic Outlook database. The source of the PDI series and the working age population data have changed. This affects the PDI *per capita* series for the 2012 first quarter update and all subsequent updates. The PDI series is obtained from the Japanese Cabinet Office. It is reported at a quarterly frequency beginning in 2001, but it is only updated annually. The series is largely influenced by seasonal factors, so we use the BSTS model in state-space form to identify and systematically extract the seasonal and excessively volatile components of the data. The same BSTS model is used to estimate quarterly values in between the annual updates, which

³⁵ Prior to the third quarter of 2012 release, nowcasting was computed with an AR(3) model.

are subsequently replaced after actual data becomes available. The series is extended by the PDI series obtained from the OECD Outlook 91 database. Working age population data are now obtained from the OECD Main Economic Indicators database. The series is reported at a monthly frequency beginning in January of 1970, which we average to a quarterly frequency. We use the PCE deflator to report the PDI series in real terms. Both nominal and real PDI measures are re-based to 2005=100.

Information Resources:

Japan Real Estate Institute Data

<http://www.reinet.or.jp/en/index.html>

Ministry of Land, Infrastructure, Transport and Tourism Data

<http://www.mlit.go.jp/toukeijouhou/chojou/stat-e.htm>

<http://www.mlit.go.jp/common/001194770.pdf>

<http://tochi.mlit.go.jp/english/index.html>

Japan Cabinet Office Data

http://www.esri.cao.go.jp/en/sna/data/kakuhou/files/2010/24annual_report_e.html

Acknowledgements: Chikako Baba from the IMF and Yodo Masato from the Japanese Ministry of Land, Infrastructure, Transport and Tourism.