Report on the Shift to the Hedonic Residential Property Price Index (RPPI)

Beginning with the Q1 2025 release, the Bangko Sentral ng Pilipinas adopted the hedonic methodology for generating the RPPI, aligning the index generation process with international best practices.[1] The use of hedonic regression—widely regarded as the gold standard in property price index generation—allows for the observation of how intrinsic characteristics of the residential real estate market independently influence prices.

The methodological refinements of the Residential Real Estate Price Index (RREPI)/RPPI benefitted from the small group discussions among members of the Interagency Committee on Price Statistics (IACPS) held between August 2021 and March 2022.[2] Recommendations from the IMF technical assistance missions in May–June 2022, January 2024, and January 2025 were incorporated into the development of the hedonic methodology. A consultative meeting with representatives from the academe and real estate sector was also held in February 2025. The key issues raised during these engagements—and how the hedonic approach addressed them—are summarized below.

Comparison of Methodologies between the RREPI and the Hedonic RPPI

Item	Previous RREPI Methodology	Hedonic RPPI Methodology
a) Property Price Measure	*Appraised Value (Building)* One of the initial limitations identified is the lack of available information by banks on the acquisition costs of loaned residential properties.[3] As such, bank appraisals were used as proxy. However, based on international best practices, acquisition costs are preferred over bank appraisals when measuring property prices.	*Acquisition Cost (Land and Building)* Both land and building values were used in the computation to reflect the actual acquisition costs of loaned residential properties. Acquisition costs provide a more objective, accurate and comprehensive representation of residential property prices by capturing both land and building values based on actual market transactions.
b) Type of Property	*New* To ensure a more homogenous index, the previous method included only newly acquired properties, as its stratification could not account for price differences across property types.	*New, pre-owned, and foreclosed* By including all property types, a more diverse set of transactions is captured, allowing for a more comprehensive and realistic representation of the housing market.

[1] The BSP renamed the "Residential Real Estate Price Index (RREPI)" to "Residential Property Price Index (RPPI)." This change aligns the index's name more closely with international standards and better reflects its comprehensive coverage of residential property prices. For more details on the hedonic RPPI methodology, please see its corresponding Technical Notes at the BSP website under this link: https://www.bsp.gov.ph/Media_And_Research/RPPI/TechnicalNotes_RPPI.pdf.

[2] The IACPS, established by the Philippine Statistics Authority (PSA), is a collaborative body that coordinates the collection, processing, and dissemination of price statistics in the Philippines, with member organizations including the Bangko Sentral ng Pilipinas (BSP), Department of Agriculture (DA), Department of Energy (DOE), Department of Finance (DOF), Department of Trade and Industry (DTI), National Economic and Development Authority (NEDA), and other relevant government agencies.

[3] Acquisition cost refers to the contract price or the actual selling price agreed upon between purchaser and seller at the time the contract was signed or deposit was made.

Item	Previous RREPI Methodology	Hedonic RPPI Methodology
c) Property Price Computation	*Arithmetic Mean* Very high and low values significantly affect the mean if a simple average was calculated. Nevertheless, it was adopted for the inaugural release of the RREPI because it is simpler in terms of computation and easier to communicate to the public.	*Regression* Hedonic regression allows for the calculation of constant-quality price indices by adjusting for the changing mix of properties in the sample over time. It decomposes property prices into components to analyze the impact of individual factors. As such, it explicitly accounts for differences in characteristics like size, location, and age.
d) Type of Index	*Tornqvist-Type Index* The weights change from period to period to capture the changes in market composition.	*Chain-linked* In hedonic, time dummy coefficients from regression are chain-linked, which allows for periodic updates to reflect changing market conditions while maintaining consistency within each reference period.
e) Stratification	*By Area* 1. National Capital Region (NCR) 2. Areas Outside the NCR (AONCR) *By House Type* 1. Condominium 2. Single-Detached/ Attached 3. Duplex 4. Townhouse The use of simple averages of appraised values of properties in computing price changes, especially in AONCR, may not be sufficient to consider the differences in quality or location. There may be a need for more granular data and assignment of weights for AONCR to account for the influence of location on price changes.	*By Area* 1. NCR 2. AONCR • Balance GMA • Metro Cebu • Metro Mindanao • Other Areas in the Philippines *By House Type* 1. Condominium 2. Houses (Single-Detached/Attached House, Duplex, Townhouse, apartment) The hedonic methodology simplifies house type categories and introduces more detailed geographic stratifications. It effectively addresses the quality-mix problem by incorporating property-specific characteristics, including location dummies such as cities and provinces within strata.

Item	Previous RREPI Methodology	Hedonic RPPI Methodology
f) Weighting System	• *Weights vary and are updated quarterly* • *Quarter-on-quarter* • *Share of floor area to the total floor area by house type* Weights based on two periods (i.e., current and previous quarters) helps capture recent market activity, but it may also be influenced by transactions with relatively large floor areas, which may not always correspond to broader price changes.	• *Weights are fixed and updated annually* • *Annual weights* • *Share of transaction value to the total transaction value by stratum.* The use of more granular strata enables for highly-detailed weighting that considers both property type and location. Weights are fixed and updated annually to reflect current real estate market conditions, ensuring that shifts in consumer preferences or economic activity are captured more effectively. By weighting the strata based on transaction value, more influence is given to strata that contribute significantly to the overall market value. This ensures that the estimates are more representative of the residential property market.
g) Outlier Detection	*None* Extreme values in appraised values can skew the average either upwards or downwards.	*Cook's Distance* Cook's Distance measures the influence of individual data points on a regression model by assessing how much the predicted values would change if a particular observation were removed. It directly assesses the impact of influential observations, i.e., outliers and high leverage observations, on the regression model, ensuring reliable estimates of property price determinants. Unlike generalized methods, e.g., boxplots, this method focuses on improving regression model performance rather than just considering averages.
h) Treatment of Data Gaps	*None* No index was computed for a specific type of property when there were no transactions reported.	*None* The hedonic method's stratification, combined with the use of 4-quarter rolling window, ensures a sufficient number of transactions each quarter, eliminating the need for imputation.

The RPPI based on the hedonic methodology was applied to the Q1 2025 dataset, and backcasted from Q1 2019 to Q4 2024.

RREPI vs. RPPI Results (Previous vs. Hedonic Methodologies)

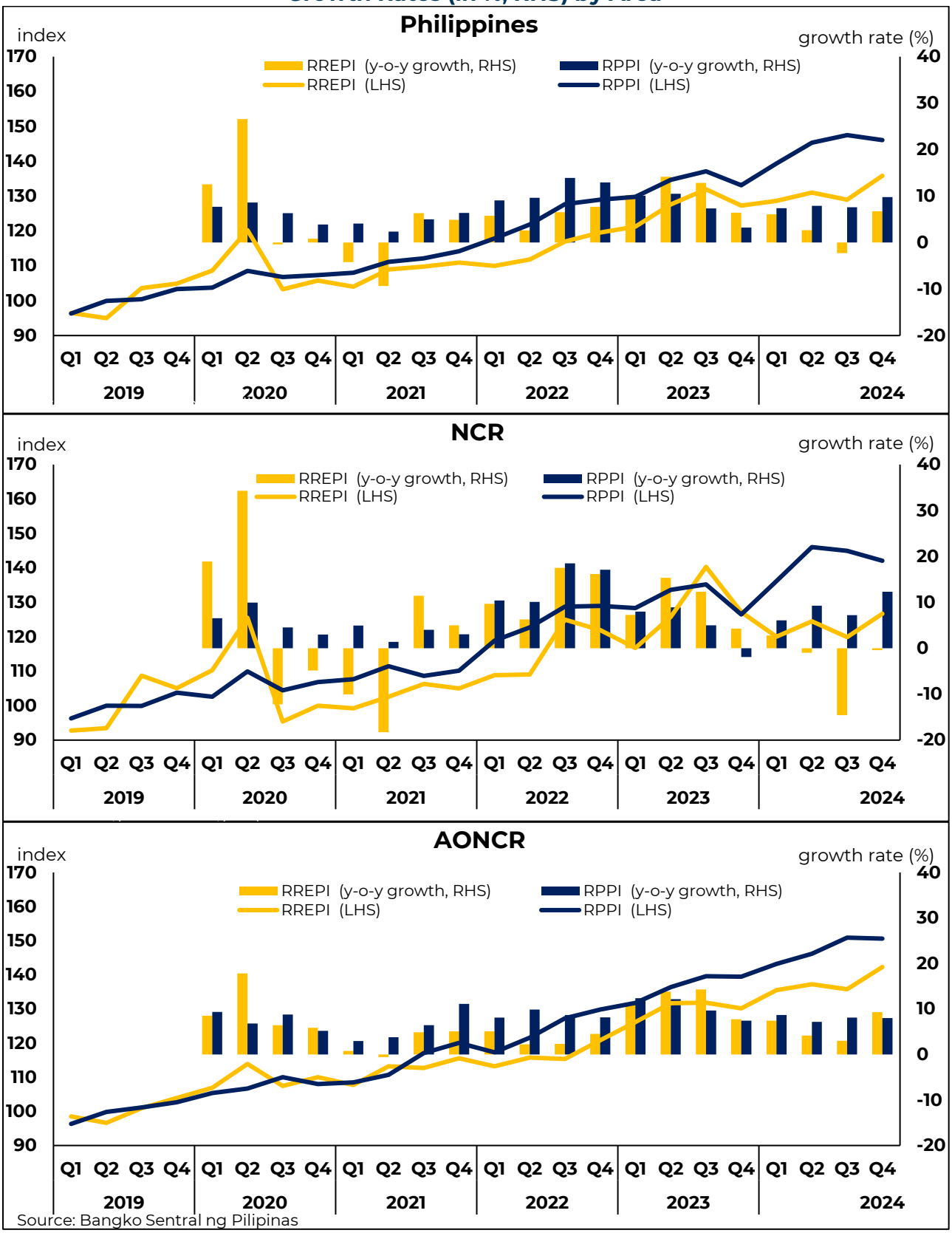
This section compares the price indices (line graph) and the growth rates (bar graph) based on previous (in yellow) and hedonic (in blue) methods. Across areas (i.e., the Philippines, NCR and AONCR), the indices derived from the two methodologies exhibit broadly similar trends over time (Figure 1).[4]

The previous methodology, which relied on simple averages, oversimplified the residential property market by assuming homogeneity within the stratum and failing to address outliers. This led to index values and growth rates that were significantly influenced by the composition of properties, particularly during periods of market stress, such as the uneven mix of low-end and high-end properties during the pandemic. The hedonic methodology is more accurate, capturing true market trends by considering property-specific characteristics like location, size, and type through regression-based modeling. This results in smoother index values and more stable growth rates, even during market disruptions (Figure 1).

[4] Further disaggregation was provided in the hedonic methodology (i.e., Balance GMA, Metro Cebu, Metro Mindanao, and Other Areas in the Philippines). However, only the 3 major areas, i.e., Philippines, NCR, and AONCR, were discussed for comparability with the available indices in the previous methodology.

Figure 1

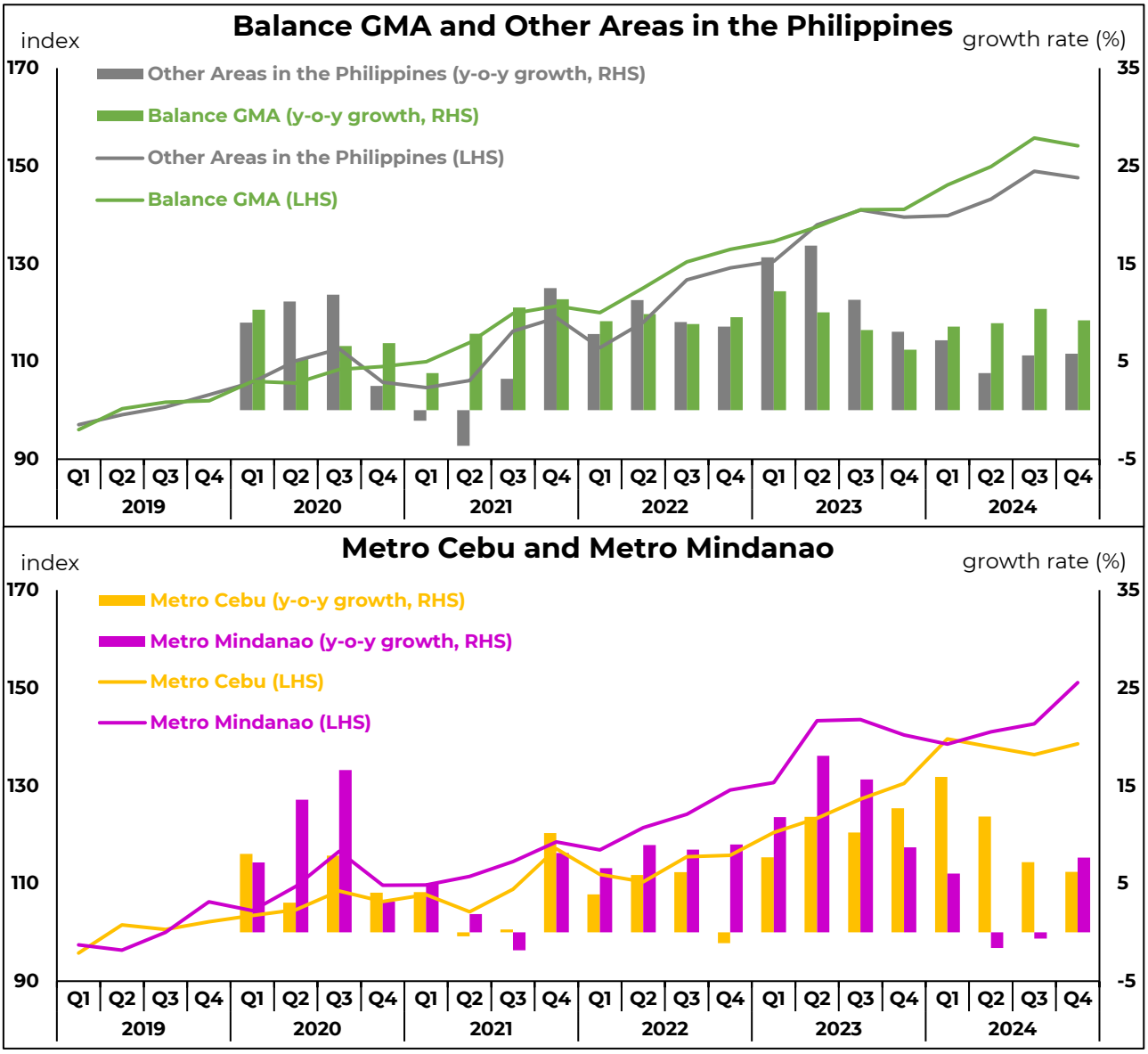
RREPI and Hedonic RPPI (LHS) and Year-on-Year (Y-o-Y) Growth Rates (in %, RHS) by Area



Source: Bangko Sentral ng Pilipinas

The hedonic methodology introduced a more granular stratification of results by geographical groups in AONCR. The index for Balance GMA generally exhibited higher index values compared with the indices of Metro Cebu, Metro Mindanao, and Other Areas in the Philippines (Figure 2). This trend can be attributed to the higher price indices of residential properties in Balance GMA, which benefits from the spillover effects of the NCR's economic activities.[5]

Figure 2
Hedonic RPPI (LHS) and Y-o-Y Growth Rates (in %, RHS) by Geographical Groups under AONCR

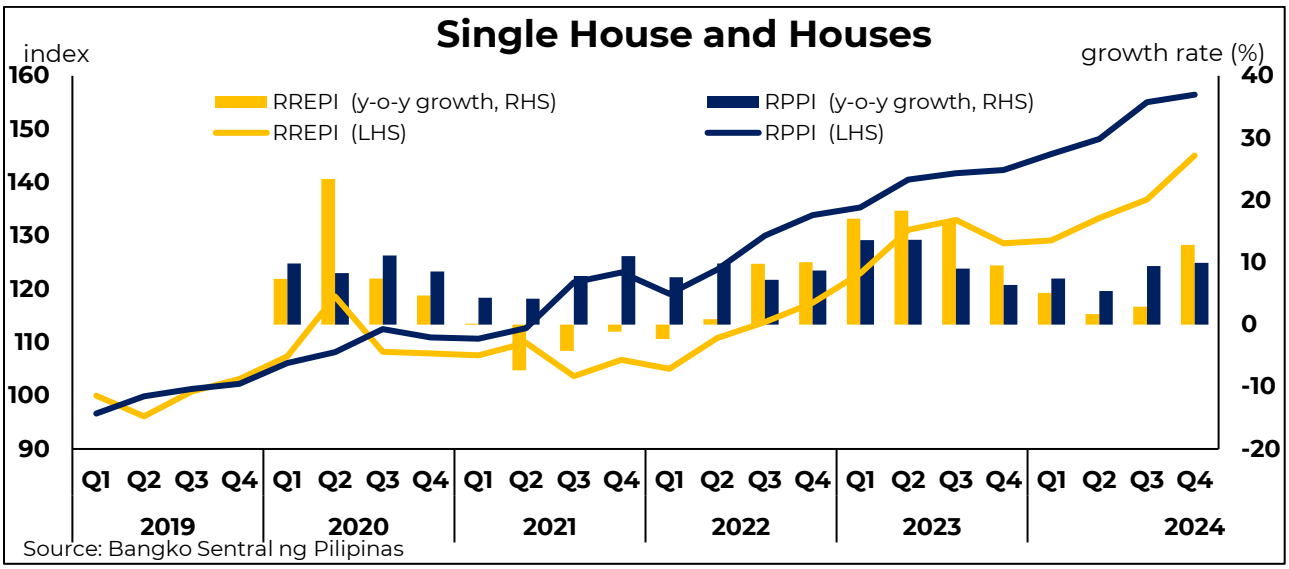


[5] Balance GMA encompasses NCR's adjacent provinces of Cavite, Laguna, Batangas, Rizal, Bulacan, and Pampanga.

By type of housing unit, both the indices and growth rates based on the hedonic method moved largely in the same way as those based on the previous method.[6] The upward trend of the nationwide index across all methods followed the general appreciation of property value through time. Although, when disaggregated by type of housing unit, the previous index diverged from the hedonic index partly due to the differences in the weighting system, wherein the former was driven by the total floor area while the latter was based on the total value of transactions.

For single-detached/attached house (previous method) and houses (hedonic method), both indices moved similarly but started to diverge in Q3 2020.[7] The previous methodology's simplistic approach resulted in less stable index values and growth rates. The index using the previous methodology began declining in Q3 2020 and posted negative growth rates from Q2 2021-Q1 2022. In contrast, the hedonic methodology proves to be more robust, offering smoother trends and more stable growth rates across various economic conditions. By accounting for property-specific characteristics, it effectively minimizes distortions caused by short-term disruptions or other localized shocks (Figure 3).

Figure 3
RREPI for Single House and Hedonic RPPI for Houses (LHS) and Y-o-Y Growth Rates (in %, RHS)



Source: Bangko Sentral ng Pilipinas

Note: For the hedonic method, Houses is used, which is composed of single-attached/detached houses, duplexes, townhouses, and apartments.

For **condominium units**, both the previous and hedonic methodologies show an upward trajectory in condominium prices over time. The previous index exhibited significant fluctuations during the following periods due to the reasons outlined below:

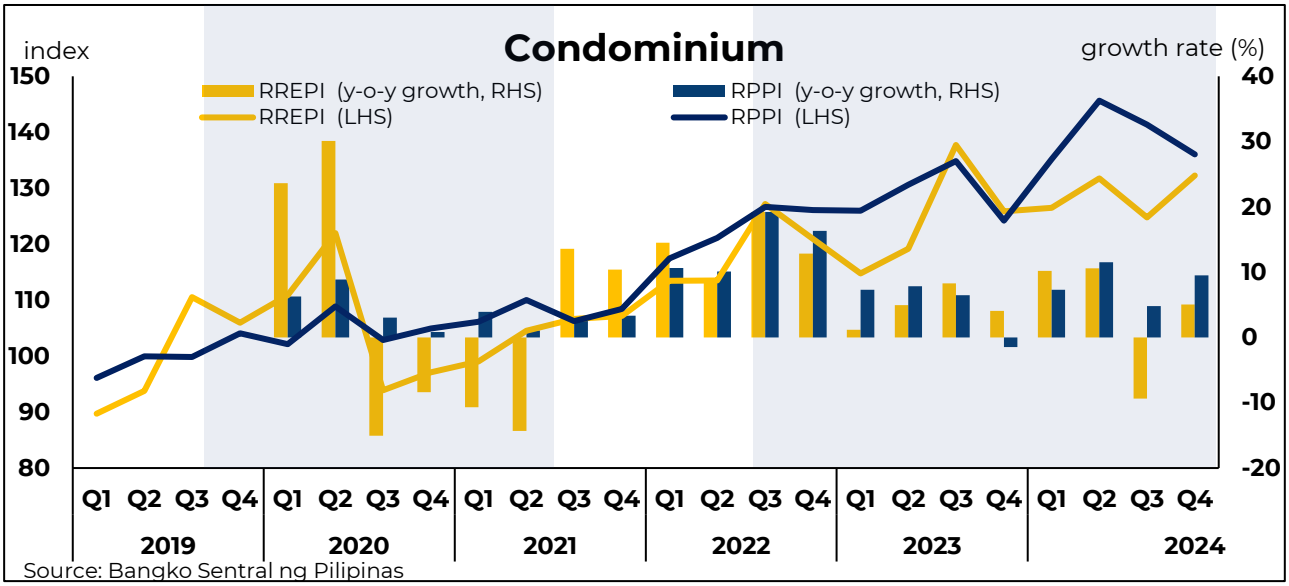
[6] Duplex and townhouse were previously included as house types for which indices were generated under the previous RREPI methodology. However, the more granular geographical stratification introduced in the hedonic methodology resulted in certain strata with insufficient observations for duplex and townhouse properties, making it impractical to generate reliable indices.
[7] For the hedonic method, single-attached/detached houses, duplexes, townhouses, and apartments were grouped together to form the houses category.

1. **Q3 2019 – Q2 2021**: The increase in the proportion of high-value units to the total number of condominiums, specifically properties with appraised value of Php100,000 per sqm, and the decline in loan transactions for low-value and mid-value units, resulted in a spike in the index particularly during the early part of the pandemic in Q2 2020. Moreover, the index contracted from Q3 2020-Q2 2021.

2. **Q3 2022–Q4 2024**: The shift in demand to high-end condominium units may be attributed to demand from Philippine Offshore Gaming Operators (POGOs), easy access to credit, and a low-interest rate environment, resulting in higher index values beginning Q3 2022.[8] Conversely, the sharp decline observed in Q3 2024 may be driven by the ban on POGOs.[9]

These notable fluctuations highlight the previous method's limitations in capturing nuanced market trends, particularly during periods of economic disruption (e.g., the pandemic) and policy changes (e.g., the POGO ban). The hedonic index showed a generally steady and consistent upward trend throughout the period. The adoption of value-weighted system and integration of quality adjustments through a regression-based approach in the hedonic method effectively minimized the volatility caused by localized shocks (Figure 4).

Figure 4
RREPI and Hedonic RPPI (LHS) and Y-o-Y Growth Rates (in %, RHS) for Condominium Unit



Source: Bangko Sentral ng Pilipinas

[8] In 2016, Philippine Offshore Gambling Operators (POGOs) began receiving their official licenses from the Philippine Amusement and Gaming Corporation (PAGCOR). Since then, the residential real estate sector has benefitted from the rapid expansion of the POGO industry as prices of residential properties near central business districts, especially rental spaces such as condominium units, rose rapidly with the increased demand from foreign workers of POGOs.

[9] In July 2023, PAGCOR canceled all POGO licenses and required re-registration under the Internet Gaming Licensee (IGL) classification. This move preceded President Ferdinand Marcos Jr.'s July 2024 order banning all POGOs due to their involvement in criminal activities.