

Development of a Hedonic Residential Property Price Index (RPPI) in the Philippines

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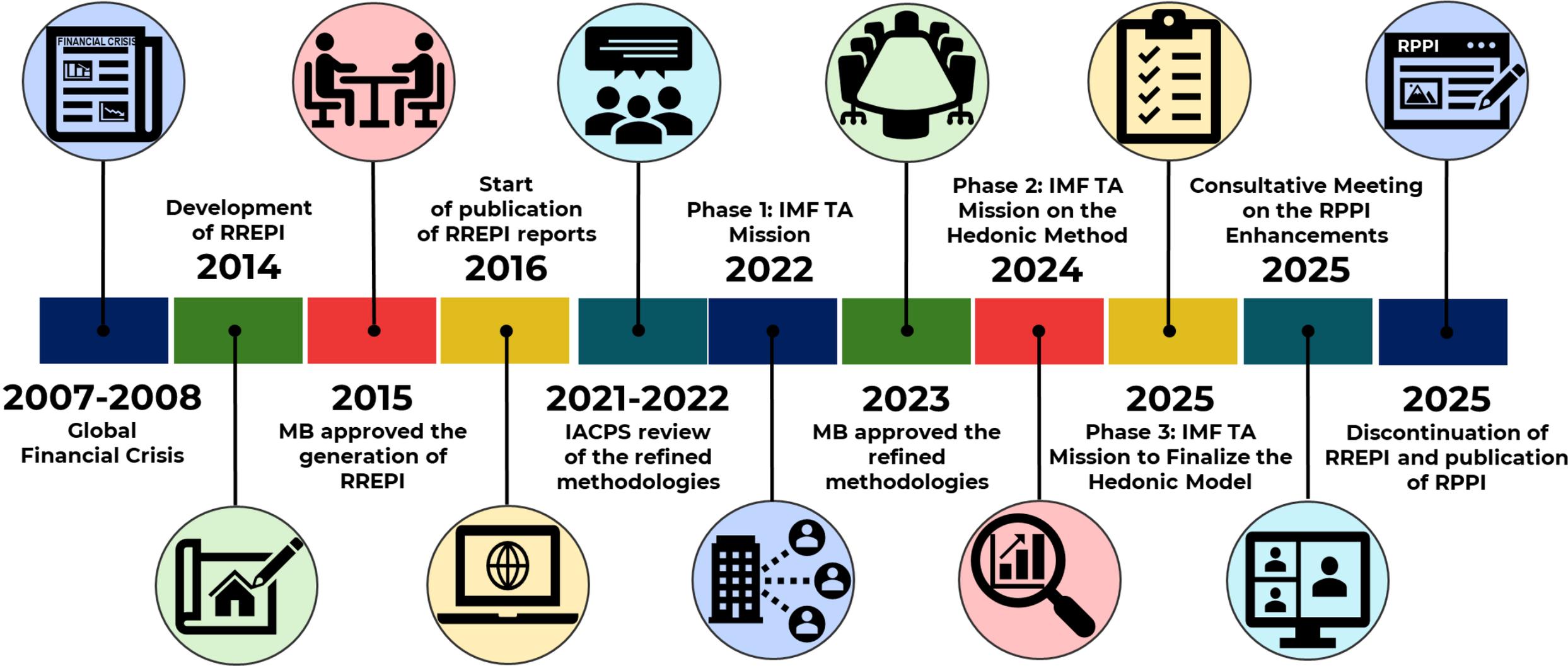


Outline

- I. History of Property Price Measurement in the Philippines**
- II. The Previous Residential Real Estate Price Index (RREPI)**
- III. The New Hedonic Residential Property Price Index (RPPI)**
- IV. Comparison of Methodologies**
- V. Steps Moving Forward**
- VI. Resources on RPPI**

I. History of Property Price Measurement in the Philippines

Timeline of Events



II. The Previous RREPI

Understanding the Previous Methodology

- Data is obtained from **Bank Quarterly Reports on Residential Real Estate Loans (RRELS)**
 - Per BSP Circular No. 892 dated 16 November 2015 and BSP Circular No. 1154 dated 14 September 2022

Reporting Template

- | | |
|--|---|
| a. Month of Loan Granted/Booked; | f. Appraised Value of Housing Unit, Lot and Total Appraised Value of the Property (in PHP); |
| b. Location of Property; | g. Total Floor Area, Lot Area, Number of Floors and Bedrooms, and Effective Age of the House; and |
| c. Type of Property (whether new, pre-owned, or foreclosed); | h. Name of Developer |
| d. Type of Housing Unit and Housing Segment; | |
| e. Acquisition Cost (in PHP); | |
- The RREPI is computed using the simple average of appraised value per square meter of new housing units, weighted by the share of floor area of each type of housing unit to the total floor area of all housing units.

III. The New Hedonic RPPI

A Refined Property Price Measurement

- Widely regarded as the international gold standard for generating property price indices
- Dialogued and consulted key stakeholders: Interagency Committee on Price Statistics (IACPS), the International Monetary Fund (IMF), academia, real estate sector, government agencies and BSP departments

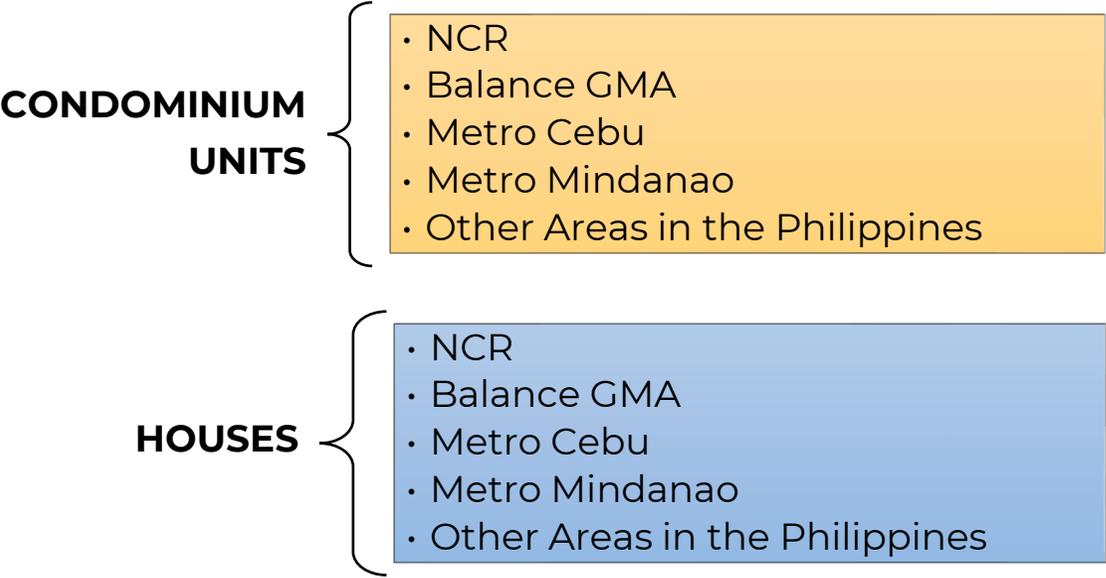


- Enables more accurate price measurement by accounting for differences in property characteristics
- Provides more robust outlier management using Cook's Distance, with which influential data points that disproportionately affect regression results are identified and removed accordingly

III. The New Hedonic RPPI

Generating the Hedonic RPPI

All property loan transactions were grouped by housing unit type and location, resulting in 10 major strata, each analyzed for significant property characteristics.

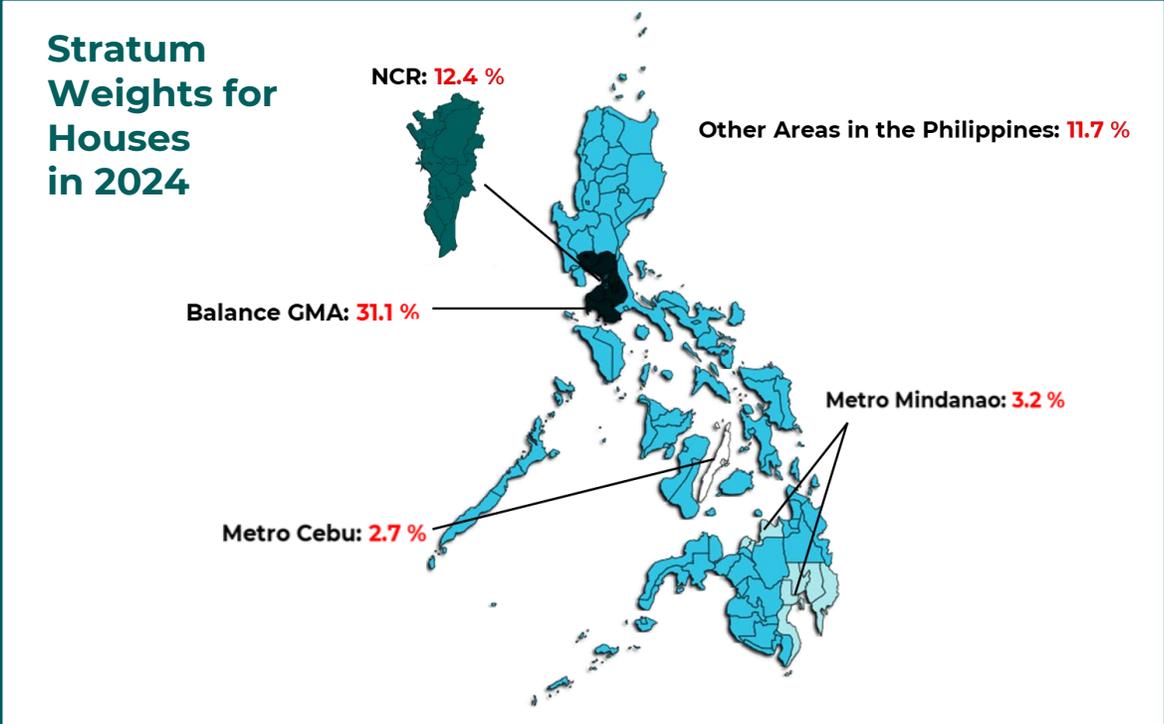
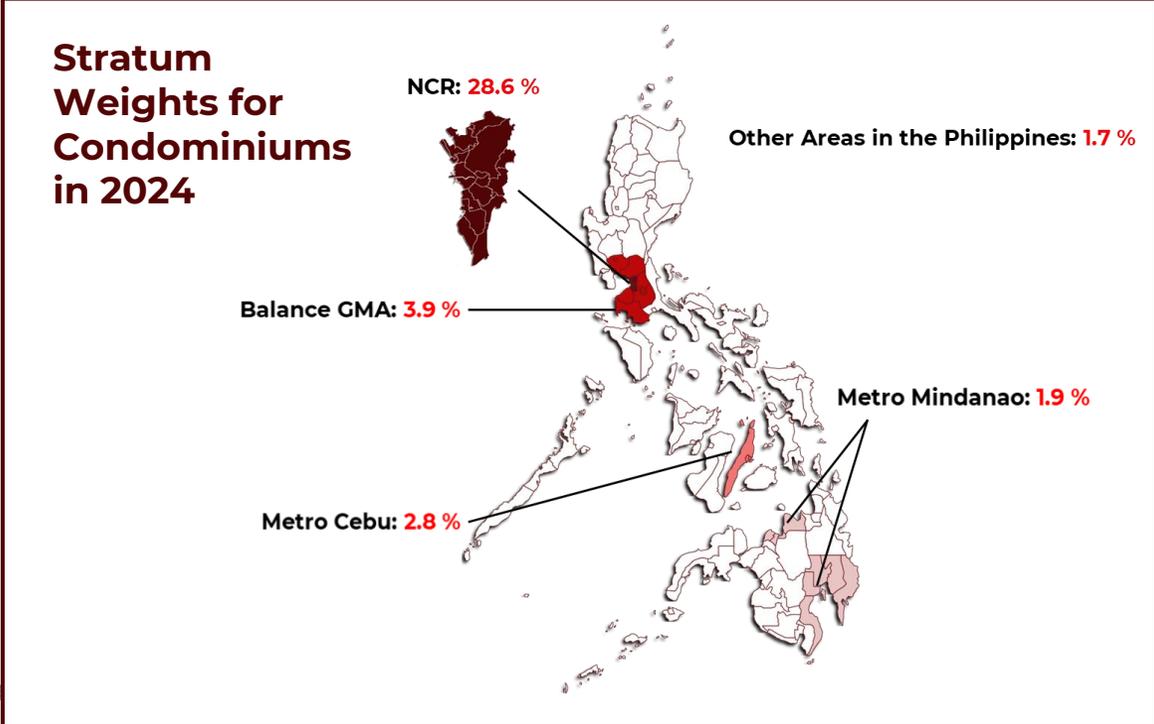


Stratum	Location dummy variables	
NCR Condominium	<ul style="list-style-type: none"> • City of Manila • City of Mandaluyong • City of Marikina • City of Pasig • Quezon City • City of San Juan • District 3 (cities of Caloocan, Malabon, Navotas, and Valenzuela) 	<ul style="list-style-type: none"> • Las Piñas City • City of Makati • Muntinlupa City • Parañaque City • City of Pasay • Taguig City (combined with Pateros)
NCR Houses	<ul style="list-style-type: none"> • District 1 (City of Manila) • District 2 (cities of Mandaluyong, Marikina, Pasig, Quezon City, and San Juan) 	<ul style="list-style-type: none"> • District 3 • District 4 (cities of Las Pinas, Makati, Muntinlupa, Paranaque, Pasay, Pateros, and Taguig)
Balance GMA Condominium	<ul style="list-style-type: none"> • Batangas • Bulacan • Cavite 	<ul style="list-style-type: none"> • Laguna • Pampanga • Rizal
Balance GMA Houses		
Metro Cebu Condominium	<ul style="list-style-type: none"> • City of Cebu • Other Areas in Metro Cebu 	
Metro Cebu Houses		
Metro Mindanao Condominium	<ul style="list-style-type: none"> • Metro Davao • Metro Cagayan de Oro 	
Metro Mindanao Houses	<ul style="list-style-type: none"> • City of Davao • Other Areas in Metro Mindanao 	
Other Areas in the PH Condominium	<ul style="list-style-type: none"> • Rest of Luzon • Rest of Visayas and Mindanao 	
Other Areas in the PH Houses	<ul style="list-style-type: none"> • Rest of Luzon • Rest of Visayas • Rest of Mindanao 	

III. The New Hedonic RPPI

Transaction Value in 2023 and Weights of Each Stratum in 2024

Stratum	Transaction Value of Stratum, s, in year 2023 (in billion Php)	Weight in the aggregation for year 2024, w_s^{2024} (in percent)
NCR Condominium	48.5	28.6
NCR Houses	21.1	12.4
Balance GMA Condominium	6.6	3.9
Balance GMA Houses	52.9	31.1
Metro Cebu Condominium	4.7	2.8
Metro Cebu Houses	4.6	2.7
Metro Mindanao Condominium	3.3	1.9
Metro Mindanao Houses	5.5	3.2
Other Areas in the PH Condominium	2.9	1.7
Other Areas in the PH Houses	19.9	11.7
Total	170.0	100.0



III. The New Hedonic RPPI

Generating the Hedonic RPPI

The hedonic regression model was run for each stratum:

$$\ln(p_n^t) = \beta_0 + \sum_{t=1}^T \delta^t D_n^t + \sum_{k=1}^K \beta_k X_{nk}^t + \varepsilon_n^t$$

where:

t	Quarter period	δ^t	Coefficient of the time dummy variable
n	Number of transactions in period t	D_n^t	Time dummy variable
K	Number of characteristics	β_k	“shadow price” of characteristic k
$\ln(p_n^t)$	Price logarithm	X_{nk}^t	Quantity of characteristic k in period t
β_0	Intercept	ε_n^t	Error term

Stratum		Regressors					Adjusted R ² (Latest window)
		Total Floor Area	Total Lot Area	Location Dummy	Type of Property	No. of Floors	
1	NCR Condominium	✓		✓	✓		70.32
2	NCR Houses	✓	✓	✓	✓	✓	78.00
3	Balance GMA Condominium	✓		✓	✓		60.92
4	Balance GMA Houses	✓	✓	✓	✓	✓	73.98
5	Metro Cebu Condominium	✓		✓	✓		73.16
6	Metro Cebu Houses	✓	✓	✓			70.82
7	Metro Mindanao Condominium	✓		✓	✓		68.00
8	Metro Mindanao Houses	✓	✓	✓			75.26
9	Other Areas in the PH Condominium	✓		✓	✓		74.10
10	Other Areas in the PH Houses	✓	✓	✓	✓	✓	60.15

IV. Comparison of Methodologies

Main Differences

Item		Previous (Q1 2016 – Q4 2022)	Refined (Q1 2023 – Q2 2025)	Hedonic (Q2 2025 – Present)
Name of index		RREPI	RREPI	RPPI
Property Price Measure		Appraised value (building only)	Acquisition cost (land and building)	Acquisition cost (land and building)
Type of Property		New	New	New, pre-owned, and foreclosed
Index Construction	Property Price Computation	Arithmetic mean	Geometric mean	Regression
	Type of Index	Tornqvist Index	Chain-linked Laspeyres	Chain-linked Laspeyres Note: Time dummy coefficients from regression are chain-linked.

IV. Comparison of Methodologies

Main Differences

Item		Previous (Q1 2016 – Q4 2022)	Refined (Q1 2023 – Q2 2025)	Hedonic (Q2 2025 – Present)
Strata	By Area	NCR	NCR <ul style="list-style-type: none"> • By district 	NCR
		AONCR	AONCR <ul style="list-style-type: none"> • Luzon <ul style="list-style-type: none"> > City > Municipality • Visayas <ul style="list-style-type: none"> > City > Municipality • Mindanao <ul style="list-style-type: none"> > City > Municipality 	AONCR <ul style="list-style-type: none"> • Balance GMA • Metro Cebu • Metro Mindanao • Other Areas in the Philippines
	By House Type	Single-house Condominium Townhouses Duplex unit	Single-house Condominium Townhouses	Condominium Houses <ul style="list-style-type: none"> • Single-houses • Townhouses • Duplex Units • Apartments

IV. Comparison of Methodologies

Main Differences

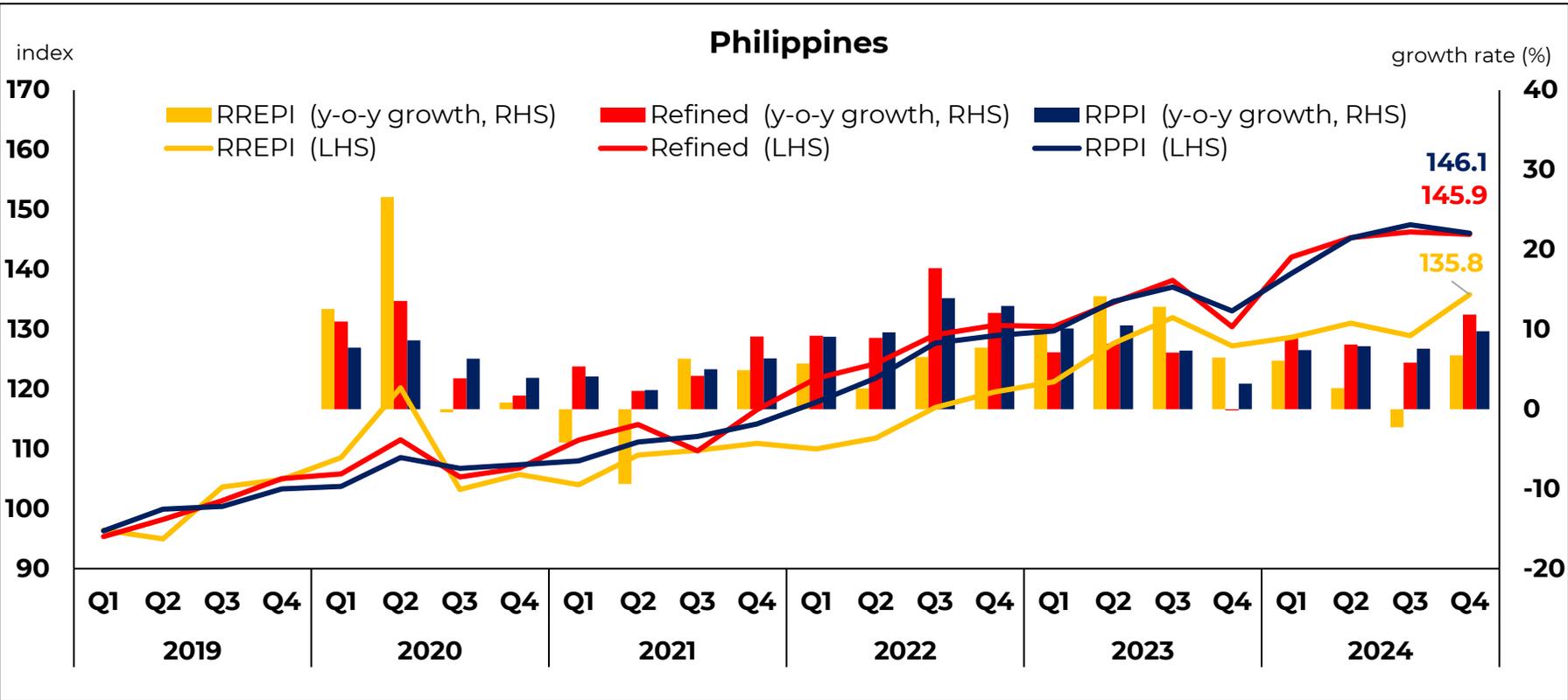
Item	Previous (Q1 2016 – Q4 2022)	Refined (Q1 2016 – Q4 2022)	Hedonic (Q1 2023 – Q2 2025)
Weighting System	Varying weights	Fixed weights	Fixed weights
	Quarter-to-quarter	3-year rolling averages	Relative annual weights
	Share of floor area of each type of housing unit to the total floor area of all types of housing units	Share of total transaction value of each type of housing unit to the total transaction value of all types of housing unit	Share of total transaction value of each stratum to the total transaction value of all strata.
Outlier Detection	none	Generalized boxplots	Cook’s Distance
Treatment of Data Gaps	none	With imputation based on the average of the price relatives of the nearest strata, i.e., strata with transactions within the same level	Not necessary since each strata will have enough data points.

IV. Comparison of Methodologies

RREPI and Hedonic RPPI Chart

The resulting RPPI is smoother and more accurately captures the price dynamics of the Philippine residential property market.

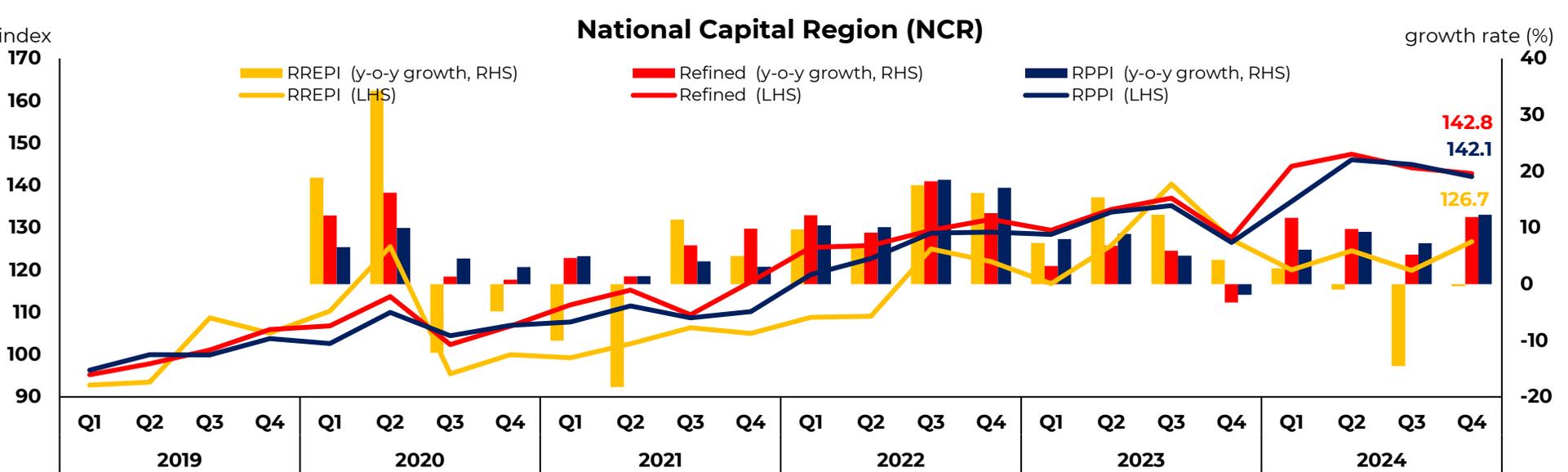
RREPI, Refined, and Hedonic RPPI (LHS) and Year-on-Year (Y-o-Y) Growth Rates (in %, RHS) by Area



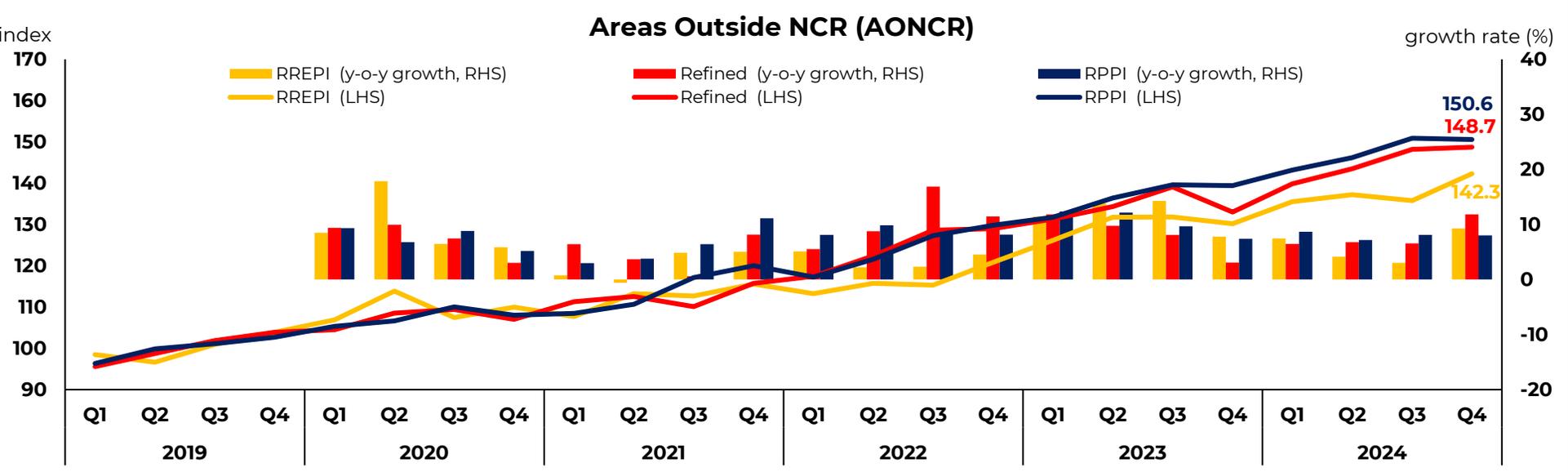
Coefficient of Variation (CV)		
Method	Index	Growth Rate
Previous	10.6	121.9
Refined	13.7	52.5
Hedonic	13.7	37.8

IV. Comparison of Methodologies

By area, the smoother trend is consistently observed both in the NCR and AONCR.



CV		
Method	Index	Growth Rate
Previous	11.2	235.8
Refined	14.0	66.5
Hedonic	13.8	63.4



CV		
Method	Index	Growth Rate
Previous	11.6	67.0
Refined	13.6	46.2
Hedonic	14.1	32.3

Challenges and Actions Taken



Initial data limitations posed challenges, as validation checks in RRELS were only introduced in 2018.

More stringent validation checks have been implemented.



Early RPPI compilation was affected by gaps in administrative data.

The BSP has been working to expand coverage through the forthcoming Real Property Information System (RPIS).

Challenges and Actions Taken



CPPI Action/Milestone	Target Completion
Analyze existing data from banking system	2026
Meet with key stakeholders (e.g., real estate agents)	
Identify new data sources	
Estimate data coverage	2027
Consider publishing basic descriptive statistics	

VI. Resources on RPPI

For a comprehensive list of RPPI resources, please visit:

<https://www.bsp.gov.ph/Pages/MediaAndResearch/PublicationsAndReports/RPPI.aspx>

Alternatively, you may scan the QR code below to access the information:



Thank you!