

# TECHNICAL ASSISTANCE REPORT

# **UKRAINE**

Report on the Residential Property Price Index Mission (April 8–12, 2024)

**JUNE 2024** 

**Prepared By** 

Barra Casey

**Authoring Department:** 

**Statistics Department** 

#### **DISCLAIMER**

"The contents of this document constitute technical advice provided by the staff of the International Monetary Fund to the authorities of the Ukraine (the "CD recipient") in response to their request for technical assistance. This document (in whole or in part) or summaries thereof may be disclosed by the IMF to the IMF Executive Director for the Ukraine, to other IMF Executive Directors and members of their staff, as well as to other agencies or instrumentalities of the CD recipient, and upon their request, to World Bank staff, and other technical assistance providers and donors with legitimate interest, unless the CD recipient specifically objects to such disclosure (see Operational Guidance for the Dissemination of Capacity Development Information). Publication or Disclosure of this report (in whole or in part) to parties outside the IMF other than agencies or instrumentalities of the CD recipient, World Bank staff, other technical assistance providers and donors with legitimate interest shall require the explicit consent of the CD recipient and the IMF's Statistics department."

### **Table of Contents**

Acronyms	2
Summary of Mission Outcomes and Priority Recommendations	3
Section I. Detailed Technical Assessment and Recommendations	5
A. Introduction	6
B. Data Sources	6
C. Compilation Methods – Q1 2024 Publication in May 2024	8
D. Compilation Methods – Beyond May 2024	9
E. Dissemination – Beyond May 2024	12
F. Officials Met During the Mission	13

## **Acronyms**

CPPI Commercial Property Price Index

EFF Extended Fund Facility

NBU National Bank of Ukraine

RPPI Residential Property Price Index

SSSU State Statistical Service of Ukraine

TA Technical Assistance

# **Summary of Mission Outcomes and Priority Recommendations**

- 1. A technical assistance (TA) mission was conducted from April 8–12, 2024, to assist the State Statistical Service of Ukraine (SSSU) with a methodological review of their House Price Index (HPI). The mission assessed the existing data and methodology used for the compilation of the HPI and made recommendations for improvements as required, in line with international statistical standards. The mission completed the following tasks: (i) undertake a review of the listings data collected by the SSSU and the data preparation being applied, (ii) assess the stratification and hedonic methods used for the HPI, (iii) review the weights and aggregation procedures used to compile the national index, (iv) provide guidance on the dissemination of the HPI, and (v) provide practical training to staff in the SSSU.
- 2. The authorities are strongly committed to making improvements to the published House Price Index (HPI) for the Ukraine. Reliable property price indices and other indicators of real estate markets are essential for the assessment of developments and risks in property markets and understanding the linkages between property markets and financial soundness, as well as to IMF surveillance. In addition, under the Extended Fund Facility (EFF) for Ukraine, the National Bank of Ukraine (NBU) and Ministry of Justice committed to prepare a detailed proposal to increase the transparency of the real estate market, strengthen systemic risk analysis and mitigation, and bank collateral valuations. One aspect of this proposal will include details and timelines for developing residential and commercial property price indexes.
- 3. While the SSSU first published the HPI in 2016, they were not able to publish the index during 2022 and 2023 due to constraints imposed by the war in Ukraine. The authorities were able to resume publication again in January 2024. Their existing method follows the stratified mean approach; however, they plan to implement hedonic methods for the Q1 2024 publication which will be released on May 20, 2024. As this publication date was pre-announced, the SSSU are committed to meeting this deadline.
- 4. The updated approach will use a new data source i.e., listings data with improved geographical coverage. For new properties, the regional offices of the SSSU collect the data from real estate agents and developers. For existing properties, a website platform (<a href="www.olx.ua">www.olx.ua</a>) supply the data directly to the SSSU. The listings data contains the required property characteristics for the compilation of quality-adjusted price indices using the hedonic approach.
- 5. The hedonic method the SSSU plan to implement is a non-standard form of the characteristics approach. The new method will be an improvement on the previous stratified means approach by applying more refined quality adjustment and improving the accuracy of the compiled indices. However, there are more optimal hedonic methods that can be applied to the data. Due to the upcoming launch date in late May, the mission only made recommendations that could be implemented over a short timeframe.

IMF | Technical Assistance Report – Ukraine

<sup>&</sup>lt;sup>1</sup> Hedonic methods include all regression-based methods for compiling quality-adjusted price indices. Some methods use the estimated (predicted) prices from the regressions for compiling the price indices while others use time-dummy coefficients to directly estimate the change in prices with respect to time.

- 6. The data collection should be expanded to cover both apartments and houses. The existing coverage is for apartments only; expanding the coverage would ensure that all dwelling types are included in the compilation. In addition, due to the importance of location for property prices, the SSSU should investigate whether they can collect more granular location information. The data collection currently includes information on region and city. The authorities confirmed that there are further location details that could be collected, such as administrative districts or postcodes. This would allow improved quality adjustment and increase the accuracy of the resulting price indices.
- The SSSU should consult both internally and externally to decide on a suitable 7. stratification of the data. The stratification of the data is an important decision and should be considered in consultation with users. The mission tested a new stratification based on six aggregated regions (Central, East, Kyiv, North, South, and West) and two types of properties i.e., new, and existing properties. This resulted in twelve experimental strata.
- 9. Experimental quality-adjusted hedonic indices for the regional strata were compiled during the mission. A more standard application of hedonic quality-adjustment was used to provide more accurate price indices. Due to the lack of time series data, these indices only covered the four quarters of 2023. The indices can be extended when more quarterly data for 2024 becomes available. It is clear from the resulting indices, that residential property prices were generally increasing in Ukraine during 2023. There is significant variation across the regions with prices in the South and East not increasing as quickly or falling. These are the regions most impacted by the ongoing war.
- 10. The current policy at SSSU is that published price indices cannot be revised. If the data sources and compilation methods are developed as proposed in this report, this would allow SSSU to compile the HPI with greater accuracy and more detail. Therefore, it would be preferable to revise the price indices. This would provide users with more accurate retrospective data for analysis purposes. In addition, the structure of the published data for the HPI should be updated. Users would also benefit from access to a longer time-series, e.g., a chained HPI with a single index reference period.

**TABLE 1.** Priority Recommendations

Target Date	Priority Recommendation	Responsible Institution
May 2024	Use the available regional weights and apply a weighted mean rather than an unweighted geometric mean to the regional estimated prices.	SSSU
May 2024	Exclude regions with zero or very low number of observations.	SSSU
May 2024	Increase data collection for one specific region i.e., Kyrovohrad region	SSSU

11. Further details on the priority recommendations and the related actions/milestones can be found in the action plan under Detailed Technical Assessment and Recommendations.

# **Section I. Detailed Technical Assessment and Recommendations**

**TABLE 2.** RPPI Workplan for the Ukraine, 2024–2025

Priori	ty Action/Milestone	Target Completion Date			
Topic: Data sources for the RPPI					
M	Expand the data collection for new properties within regions with low number of observations.	Nov 2024			
М	Request all available data from OLX including the errors and outliers.	Dec 2024			
М	Duplicates should be excluded for existing properties and included for new properties.	Dec 2024			
М	Investigate whether it is possible to collect more detailed information on the location of the properties for sale.	Dec 2024			
М	Extend the data collection to include houses i.e., via the OLX platform and via the regional SSSU offices.	Jun 2025			
Topic:	Compilation methods – Q1 2024 publication in May 2024				
Н	Use the available regional weights and apply a weighted mean rather than an unweighted geometric mean to the regional estimated prices.	May 2024			
Н	Exclude regions with zero or very low number of observations.	May 2024			
Н	Increase data collection for one specific region i.e., Kyrovohrad region	May 2024			
Н	Continue to use weights from the year 2021 for the price indices in 2023 and 2024.	May 2024			
Topic:	Topic: Compilation methods – beyond May 2024				
М	Use a suitable statistical package such as R for the application of hedonic methods.	Dec 2025			
М	Consult both internally and externally to decide on a suitable stratification of the data.	Dec 2024			
М	Consolidate relevant categorical variables into homogenous groups.	Dec 2024			
M	Experiment with other hedonic methods such as the time-dummy hedonic (TDH) method with a rolling window.	Dec 2024			
М	Use a statistical method, such as Cook's Distance, for outlier detection.	Dec 2024			
М	Consider using the OLX data to compute the weights for existing properties.	May 2025			
М	Become familiar with the requirements under relevant EU statistical legislation.	Dec 2024			
Topic:	Topic: Dissemination				
L	Review the revisions policy for the HPI at the conclusion of the war in Ukraine.	To be decided			
L	Update the structure of the published HPI data at the conclusion of the war in Ukraine.	To be decided			
L	Update the methods document and publish on the authorities' website at the conclusion of the war in Ukraine.	To be decided			

#### A. INTRODUCTION

- 12. A TA mission was conducted from April 8–12, 2024, to assist the authorities in Ukraine to develop hedonic methods for the compilation of the RPPI. This is a continuation of previous technical assistance provided to the authorities during 2018 and 2019. The mission was conducted under the auspices of the Data for Decisions (D4D) Trust Fund. A pre-mission meeting was held on March 20, 2023, attended by officials from the mission team and the SSSU. The objectives for the mission were discussed and agreed.
- 13. Due to the ongoing war in Ukraine, the mission was held at the offices of the Resident Representative of Ukraine in Vienna, Austria. The Resident Representative office under the leadership of Mr. Vahram Stepanyan provided exceptional support with logistics, planning and interpretation services. A team of three staff from the SSSU attended the meetings each day. There was a strong commitment from all participants to make improvements in the methods used to compile the HPI for Ukraine.
- 14. The SSSU published the HPI in January 2024 for the first time after approx. two years interruption due to the war. This publication was for the reference quarter Q4 2023. The SSSU plan is to publish an improved HPI with updated methods for reference quarter Q1 2024 on May 20, 2024. The main changes planned for the Q1 2024 publication include: (i) new data source with extensive geographical coverage i.e., listings data instead of survey data (ii) use of offer prices instead of transaction prices (iii) improved compilation methods for the price indices i.e., quality adjustment carried out using regression-based (hedonic) methods instead of stratified means. The updated approach was approved by the SSSU and announced to users by publishing a methodology document on their website in early 2023.
- **15.** A workplan on the next steps was discussed and agreed during the mission. A key aim of the current mission was to assess the updated approach and make appropriate recommendations that could be implemented in the short timeframe before the publication date in late May. However, the majority of the recommendations from the mission can only be implemented after the updated approach has been published. The workplan is outlined in detail in Table 2.
- 16. Throughout the mission, there was a focus on increasing the capacity and knowledge of the authorities. The mission provided practical training on the application of hedonic methods for compiling the RPPI. The mission will continue to support the authorities as required while the agreed workplan is being implemented.

#### **B. DATA SOURCES**

- 17. It was recommended during a previous mission in 2019 that data for the primary market, that is new residential properties, should be gathered using online sources. This approach was successfully implemented, and the data is being manually collected by SSSU regional offices using a sampling strategy based on regional populations. The data is being collected from the websites of real estate agents and property developers. The SSSU collect about 900 observations on new residential properties every quarter. To ensure the compilation of accurate regional price indices, the data collection should be expanded within regions with low number of observations.
- 18. For the secondary market, that is existing residential properties, it was previously recommended that a survey of notaries be developed. However, due to legislative reasons, it wasn't

possible to implement this survey. There was no legal requirement on the notaries to complete the survey, therefore, the response rate was very low. Instead, the SSSU are using online listings from the OLX website platform (www.olx.ua). The OLX marketplace is a platform for buying and selling goods and services such as electronics, fashion items, furniture, household goods, cars, and bikes. It is also possible to buy and sell residential property. In 2022, the SSSU began collecting listings data using webscraping. However, in Q1 2023, a memorandum of understanding (MOU) was signed with the owners of the platform to receive the data directly. In 2023, the SSSU received about 20,000-25,000 listings each quarter.

- 19. Data inspection was performed by visualizing key characteristics in the dataset. The SSSU supplied the mission with four quarters of data for 2023. This was very useful as it allowed a full data analysis to be completed using the R statistical package. To provide information on the quality of the listings dataset and to gain insights into the relationship between characteristics, data visualization plots (histograms, scatter plots, etc.) and descriptive statistics (e.g., mean, and median price per region) were produced during the mission. This is an important step to provide information on appropriate variables that should be included in the regression models. The R code drafted during the mission was provided to the authorities to allow them experiment further on their own.
- 20. The listings data received from the OLX platform was already filtered. For example, the SSSU do not receive data on properties less than 30 square meters or with more than three rooms. It would preferable if the authorities received all available data from OLX and applied their own filters to the data. This would allow them to experiment with different thresholds and choose the most appropriate thresholds for the compilation of the RPPI. In addition, rather than set a single threshold, it may be appropriate to set a higher thresholds for regions or types with higher priced (or larger) properties and a lower threshold for regions with lower priced (or smaller) properties. It would also allow the SSSU to analyze the observations excluded from the calculations and assess the overall data quality.
- Duplicates should be excluded for existing properties and included for new properties. The data for 2023 was checked for duplicates and 75 were found for existing properties and 17 for new properties. While it is clear that duplicates should be removed for existing properties, it was decided to keep the duplicates for new apartments. The authorities felt that it is possible that two very similar apartments could be advertised by a developer with the same price. These should be included as two distinct observations.
- 22. The listings data contains the required property characteristics for the compilation of quality-adjusted price indices using the hedonic approach. An important aspect of the hedonic approach is that the price indices are computed holding constant the key price-determining property characteristics. For example, if the floor area of the properties for sale increases over time, this will cause the price indices to increase, even if inflation is flat. Hedonic methods control for floor area and other property characteristics that impact on prices. The listings data collected by the SSSU contain sufficient characteristic information required for the hedonic approach. The data set contains (i) offer prices, (ii) location details i.e., region and city, and (iii) property attributes i.e., year of construction, total area in sqm, kitchen area in sqm, material type, number of rooms, floor number (existing properties only), total floors in the building (existing properties only). The compilation procedures will not use all of these variables due to either incomplete information for some variables e.g., material type and year of construction, or the variable not having a significant impact on price. It should be noted that offers prices can be quoted in Ukrainian hryvnia, US dollars or Euros. However, all offer prices should be converted to local currency using appropriate exchange rates. The RPPI should be compiled using Ukrainian hryvnia.

- **23**. Due to the importance of location for property prices, the SSSU should investigate whether they can collect more granular location information. The data collection currently includes information on region and city. However, Ukraine is a large country with 24 regions. There is significant price variation within each region that the compilation procedures will not be able explain without more detailed information. The authorities confirmed that there are further location details that could be collected, such as administrative districts or postcodes, that would allow the authorities to apply better quality adjustment and increase the accuracy of the resulting price indices.
- 24. While the listings data has good geographical coverage, the data collection currently only covers apartments. The SSSU should extend the data collection to include houses. For existing properties, this would involve requesting the additional information from the OLX platform and potentially amending the MOU. For new properties, the regional offices should investigate whether data is available from real estate agents and developers on houses for sale.

#### Recommended Actions:

- Expand the data collection for new properties within regions with low number of observations.
- Request all available data from OLX including the errors and outliers.
- Duplicates should be excluded for existing properties and included for new properties.
- Investigate whether it is possible to collect more detailed information on the location of the properties
- Extend the data collection to include houses i.e., via the OLX platform and via the regional SSSU offices.

#### C. COMPILATION METHODS - Q1 2024 PUBLICATION IN MAY 2024

- The SSSU first published the HPI in 2016. Eight HPIs were disseminated, across primary and 25. secondary markets for residential apartments, overall and for each room size i.e., one-room, two-room, and three-room apartments. The authorities were not able to publish the HPI during 2022 and 2023 due to constraints imposed by the war in Ukraine. The authorities were able to resume publication again in January 2024. Their existing method follows the stratified mean approach; however, they plan to implement hedonic methods for the Q1 2024 publication which will be released on May 20, 2024. As this publication date was pre-announced, the SSSU are committed to meeting the deadline. In advance of the mission, the SSSU provided the mission with SPSS code and MS Excel spreadsheets to assist with the assessment of this updated method.
- 26. The updated method (hedonic characteristics approach) is being applied in a nonstandard format. The new method will be an improvement on the previous stratified means approach by applying more refined quality adjustment and improving the accuracy of the compiled indices. However, as will be described in later paragraphs, there are more optimal hedonic methods that can be applied to the data. The new method applies a single model, using a four-quarter rolling window, across all the data (no stratification of the data). The dependent variable is the log of price per square meter and the independent variables consist of dummy variables for (i) region, (ii) number of bedrooms, (iii) new or existing apartment and (iv) time i.e., quarter. A new regression is run every quarter. The estimated (predicted) prices from the successive quarterly regressions are used to re-price predefined property types, e.g., new apartment with two rooms in Kyiv, every quarter. The predefined property types, of which there are 150, are held constant over time and the price indices are computed from the updated estimated (predicted) prices. Weights are applied to compute higher-level indices. To assess the accuracy of the model, the mission attempted to replicate the results of the regression. Using 2023 data

and the R statistical package, very similar coefficients on the explanatory variables were calculated. This provided some reassurance that the regressions were being run correctly by the SSSU.

- 27. Due to the upcoming launch date in late May, the mission was only able made recommendations that could be implemented over a short timeframe. The most significant recommendation was to make better use of the available weight information. A geometric mean of the regional estimated (predicted) prices is currently being applied. However, the data is available to apply a weighted mean of the regional prices. This approach would ensure that regions with greater expenditure on residential property would have more impact on the higher-level aggregates. Two further recommendations are (i) to exclude the regions with zero or very low numbers of observations, and (ii) increase data collection for one specific region i.e., Kyrovohrad region.
- The SSSU should continue to use weights from the year 2021 for the price indices in 2023 28. and 2024. The recommended approach for the RPPI is to use annually updated weights. Therefore, expenditure shares from the previous calendar year should be used for current quarterly price indices. However, weight information sourced from the land registry in the Ukraine has undergone some unexplained fluctuations. In 2021, the split between new and existing properties was approximately one third for new properties and two-thirds for existing properties. However, in 2022 and 2023, the split reversed; approximately two-thirds new properties and one-third existing properties. This is not thought to be a real phenomenon and may only reflect how the data was recorded in the register from the start of the war. For this reason, it is felt that the weights from 2021 better represent the split between new and existing properties in 2023 and 2024. The SSSU will monitor the land registry data and investigate further the reasons for the fluctuations in the data. It should be noted that the SSSU use a combination of registry data and internal survey information for their weights.

#### Recommended Actions:

- Use the available regional weights and apply a weighted mean rather than an unweighted geometric mean to the estimated (predicted) prices.
- Exclude regions with zero or very low numbers of observations.
- Increase data collection for one specific region i.e., Kyrovohrad region.
- Continue to use weights from the year 2021 for the price indices in 2023 and 2024.

#### D. COMPILATION METHODS - BEYOND MAY 2024

- 29. A suitable statistical software package should be used for the application of hedonic methods for the RPPI. All existing processes that are currently carried out in MS Excel and SPSS can be transferred to the R statistical package. This includes data cleaning and filtering, outlier detection, index calculation and aggregation to higher-level indices. The authorities agreed with this approach and confirmed their intention to upskill their coding capacity in R. All the R scripts that were written during the mission were provided to the authorities.
- 30. The SSSU should consult both internally and externally to decide on a suitable stratification of the data. The stratification of the data is an important decision and should be considered in consultation with users. The stratification is used both for compilation and dissemination purposes. Once implemented, it is not recommended to change the stratification due to the disruption caused to the compilation procedures and the published information. In addition, to ensure that stable indices can be compiled, each stratum should contain sufficient observations each quarter. There was extensive discussion on an appropriate stratification for the listings data, with various options being assessed.

The mission tested a new stratification based on six aggregated regions (Central, East, Kyiv, North, South, and West) and two types of properties i.e., new, and existing properties. This resulted in twelve strata in total. Figure 1 shows the proportion of observations in each strata and guarter.

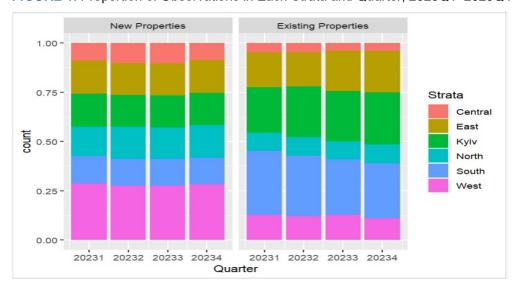


FIGURE 1. Proportion of Observations in Each Strata and Quarter, 2023Q1–2023Q4

31. Some property characteristics should be merged into homogenous groups. In order to include some categorical variables into the hedonic models, the categories should first be consolidated into meaningful groups. In addition, each category should also have enough observations to allow for the estimation of accurate coefficients i.e., shadow prices. One such example was the variable for floor number, which is only available for existing properties. There were some categories that had very few or even a single observation e.g., floor 64. Therefore, it was decided to create four categories as follows: (i) floor 1–5, (ii) floor 6–9, (iii) floor 10–15, and (iv) floor 16+. Table 1 shows the number of observations in each of these categories across the four quarters of 2023.

TABLE 3. Number of Observations for Categories of Floor Number by Quarter, 2023Q1–2023Q4

	Q1 2023	Q2 2023	Q3 2023	Q4 2023
Floor 1-5	14,380	17,302	19,704	19,592
Floor 6-9	5,717	6,975	7,950	7,770
Floor 10-15	2,601	3,456	3,869	3,886
Floor 16+	1,580	2,363	2,264	2,379

A more standard application of the hedonic approach to quality adjustment would provide 32. more accurate price indices. The authorities should experiment with other hedonic methods such as the time-dummy hedonic (TDH) method with a rolling window. The TDH approach was demonstrated by the mission using R. Using this method, the price indices can be calculated directly from the coefficients on the time-dummies which simplifies the calculations. In addition, tailored models can be developed for each stratum which will allow more refined quality adjustment. For example, if the authorities can collect more granular information on the location of properties within Kyiv, a specific model can be developed for the capital city whereby the price differences across districts can be accounted for.

- 33. A statistical method should be used for outlier detection. With the introduction of the hedonic approach, this would allow the authorities to experiment with an advanced method of outlier detection such as Cook's Distance. The regression-based method identifies outliers with greater precision and, therefore, preserves the sample to the extent possible. It should be applied within each stratum, for every rolling window guarter. The mission demonstrated that the approach can be implemented with minimal script in R. The approach identifies highly influential observations by comparing the model results with and without individual observations. This is repeated for every observation and Cook's Distance is calculated. If a single observation has a large influence on the results, then that observation is identified as an outlier. The suggested threshold for outlier determination is four divided by the number of observations used in the regression.
- 34. The authorities should consider using the OLX data to compute the weights for existing properties. The OLX data is considered to be representative of the regional expenditures on residential property. The authorities should carry out a detailed comparison of the weights computed using the existing SSSU survey of transacted apartments and the weights computed using offer prices on the OLX data set. The authorities thought that the OLX data may provide more representative results. An initial comparison of the weights during the mission showed that the OLX data would give a smaller weight to one-room apartments and a larger weight to three-bedroom apartment across many regions. The weights can be used to aggregate the sub-indices (strata level indices) to higher-level indices including the national RPPI for Ukraine.
- 35. Experimental quality-adjusted hedonic indices for the regional strata were compiled during the mission. Figure 1 shows RPPIs for apartments calculated using the hedonic (time-dummy) method over the four quarters of 2023. One index was calculated for each of the proposed strata, with the same model being applied for each of the strata. The dependent variable was the log of price (in local currency), and the independent variables were (i) floor area, (ii) number of rooms and (iii) region. There was no additional location information within Kyiv, so the region variable was excluded from the Kyiv model. The mission did not have time to experiment with different model specifications. However, this work can be continued in future technical assistance. It is clear from the resulting indices, that residential property prices were generally increasing in Ukraine during 2023. There is significant variation across the regions with prices in the South and East not increasing as quickly or even falling. These are the regions most impacted by the ongoing war.
- 36. As the Ukraine is an EU candidate country, it is preparing to become compliant with EU statistical legislation. The relevant legislation for residential property prices is EU regulation 2016/792 on harmonized indices of consumer prices and the house price index and EU regulation 2023/1470 laying down methodological and technical specifications as regards the house price index and the owneroccupied housing price index. If the authorities implement the recommendations in this report, they will largely be compliant with this legislation. Future TA will assist the authorities to become familiar with the requirements under the legislation and assist with the further harmonization of the price indices.

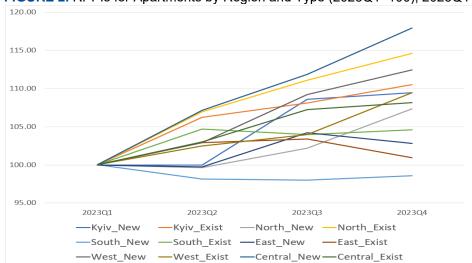


FIGURE 2. RPPIs for Apartments by Region and Type (2023Q1=100), 2023Q1-2023Q4

#### Recommended Actions:

- Use a suitable statistical package such as R for the application of hedonic methods.
- Consult both internally and externally to decide on a suitable stratification of the data.
- Consolidate relevant categorical variables into homogenous groups.
- Experiment with other hedonic methods such as the time-dummy hedonic (TDH) method with a rolling window.
- Use a statistical method, such as Cook's Distance, for outlier detection.
- Consider using the OLX data to compute the weights for existing properties.
- Become familiar with the requirements under relevant EU statistical legislation.

#### E. DISSEMINATION - BEYOND MAY 2024

- 37. The current policy at SSSU is that published price indices cannot be revised. If the data sources and compilation methods are developed as proposed in this report, this would allow to SSSU to compile the HPI with greater accuracy and more detail. Therefore, it would be preferable to update the existing prices indices with the new price indices. This would provide users with more accurate retrospective data for analysis purposes. While it is common in other countries not to revise the CPI, this policy would not normally apply to other price indices, such as the PPI, RPPI etc. It should be noted that revisions to the HPI should be accompanied by explanatory documents outlining the changes to the data sources and methods and the reasons why the new indices are of higher quality. The authorities will examine the revisions policy for the HPI at the conclusion of the war in Ukraine.
- 38. The structure of the published data for the HPI should be updated. Currently, rates of price change are disseminated according to four different measures: where the previous quarter is 100, where the final quarter of the previous year is 100, comparing the current quarter to the previous quarter, and comparing the year to date to the previous year. However, users would benefit from access to a longer time-series, e.g., a chained HPI with a single index reference period (not different reference periods). It is recommended to publish the following: (i) a long time-series for the overall HPI and sub-indices referenced to a specific year (e.g., 2023 = 100), (ii) quarterly growth rates, (iii) annual (year-on-year) growth rates, and (iv) annual average growth rates. The mission demonstrated the dissemination

approach of other countries. Similar to the previous bullet point, the authorities will examine the structure of the published data at the conclusion of the war in Ukraine.

39. The methods document should be updated and published on the authorities' website.

The SSSU have already published a methods document for the updated approach that they will use for the Q1 2024 publication to be released in May 2024. This document should be updated after the compilation methods have been further improved post-May 2024. Methods documents are an important step for ensuring transparency and providing detailed information for users on the procedures for data compilation. For example, the document should include information on the data source, coverage of the index, data quality and cleaning, outlier detection, stratification, weighting information, and methods for index compilation and aggregation.

#### Recommended Actions:

- Review the revisions policy for the HPI at the conclusion of the war in Ukraine.
- Update the structure of the published HPI data at the conclusion of the war in Ukraine.
- Update the methods document and publish on the authorities' website at the conclusion of the war in Ukraine.

#### F. OFFICIALS MET DURING THE MISSION

Name	Position	Organization
Nataliia Lysenko	Head of Division for Housing and Construction Price Statistics, Department for Price Statistics	SSSU
Victoriia Isaiuk	Senior Specialist of the Division for Construction and Housing Price Statistics, Department for Price Statistics	SSSU
Alla Levchenko	Head of the Division for International Comparison, Department for Price Statistics	SSSU