PHILIPPINES

**TECHNICAL ASSISTANCE REPORT—PROPERTY PRICE INDEX MISSION**

January 2023

This Technical Assistance report on the Philippines was prepared by a staff team of the International Monetary Fund. It is based on the information available at the time it was completed on June 2022.

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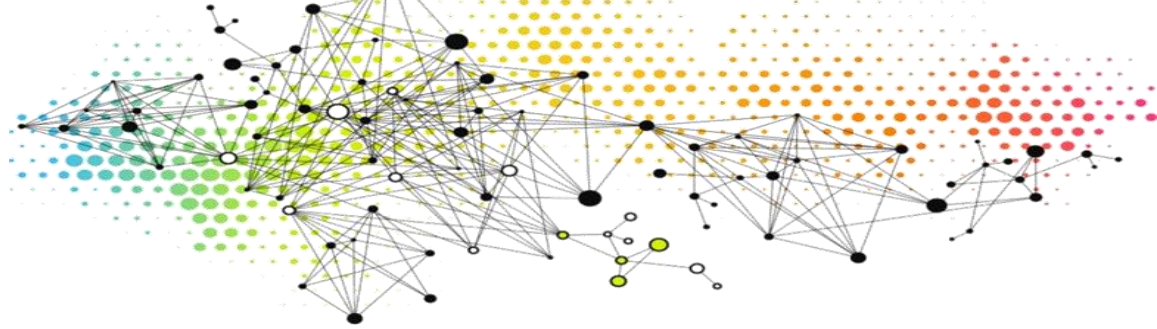
PHILIPPINES

REPORT ON PROPERTY PRICE INDEXES MISSION (MAY 16–JUNE 17, 2022)

Prepared by Barra Casey

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Glossary

D4D   Data for Decisions Fund
TA   Technical Assistance
RREPPI   Residential Real Estate Price Index
CPPI   Commercial Property Price Index
BSP   Bangko Sentral Ng Pilipinas
LRA   Land Registration Authority
NCR   National Capital Region
AONCR   Areas Outside National Capital Region

SUMMARY OF MISSION OUTCOMES AND PRIORITY RECOMMENDATIONS

1.   A technical assistance (TA) mission was conducted remotely between May 16 and June 17, 2022, to assist the Bangko Sentral Ng Pilipinas (BSP) with their property price statistics. This was the first mission conducted to the Philippines under the auspices of the Data for Decisions Fund (D4D). The mission assisted Bangko Sentral Ng Pilipinas (BSP) with the final preparations for the introduction of the updated Residential Real Estate Price Index (RREPI) and the new Commercial Property Price Index (CPPI). In addition, the mission made recommendations for the medium and longer-term development of property price statistics.

2.   Reliable property price indexes and other indicators of real estate markets are critical ingredients for financial stability policy analysis. The indexes are used by policymakers as an input into the design of macroprudential policies, i.e., those policies aiming to reduce systemic risks arising from excessive financial procyclicality (such as asset bubbles). The indexes are also used by policy makers to inform monetary policy and inflation targeting.

3.   The authorities intend to improve the methods used for the RREPI and publish the CPPI (land only) for the first time. The new methodology was evaluated to ensure that it adheres to international compilation standards and best practices. Some further improvements to the methods should be implemented, including amending the level at which the weights are applied in the aggregation process. The BSP decided to delay the launch of the updated RREPI and new CPPI to implement these changes. These changes should be fully tested before moving forward with dissemination.

4.   In the medium term, the BSP should continue to develop the statistical methodology by introducing hedonic regression for quality adjustment within the strata. The information to begin developing hedonic models are available as part of the existing data collection from the commercial banks. To progress in this area, the BSP should increase the capacity of the team through attendance at a training course and/or planning further technical assistance on this topic. In parallel, the team should focus on transferring the processing and aggregation of data to a statistical software package (e.g., R code, Stata) and stray from MS Excel.

5.   The authorities are committed to increasing the coverage of the statistics to include both cash purchases and other forms of non-bank lending. The existing data source used for the property price statistics are quarterly reports from the commercial banks. To negotiate access to new data sources, the BSP plans to convene an Inter-Agency Working Group on Property Price Statistics (IAWGPPS) consisting of members from the BSP, the Philippine Statistical Authority, the Land Registry Authority (LRA) and other government agencies. The mission analyzed available administrative data sources and recommended some initial steps to assess their suitability for use in the production of the RREPI and CPPI. This work will take some time to progress and will involve a significant investment in terms of resources.

To support progress in the above work areas, the mission recommended an action plan with the following priority recommendations:

Table 1. Priority Recommendations

Target Date	Priority Recommendation	Responsible Institutions
August 2022	Implement the recommendations to improve the methodology for the updated RREPI and new CPPI (land only), ensuring that the changes are fully tested.	**BSP**
August 2022	Disseminate the new indexes with accompanying technical notes and metadata e.g., highlighting the positive improvements in methods and explaining the reasons and extent of the revisions to the RREPI.	**BSP**
Q4 2022	Assign a dedicated resource to the medium and longer-term research and development work.	**BSP**

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

DETAILED TECHNICAL ASSESSMENT AND RECOMMENDATIONS

Priority	Action/Milestone	Target Completion Date
*Outcome: Improved property price statistics for Philippines*		
H	The authorities should fully exploit the weights information available by applying them at the level of the strata.	August 2022
H	Imputation for a stratum where no transactions are in a quarter.	August 2022
H	Maintain homogeneity to the greatest extent possible when stratifying the data for commercial property.	August 2022
H	Continue to monitor the number of missing values for key variables such as acquisition cost and appraised value.	August 2022
H	Regularly assess outliers to ensure the method is not introducing a bias into the index.	August 2022
H	Ensure that the changes to the methods are fully tested before moving forward with dissemination.	August 2022
H	Disseminate the new indexes with accompanying technical notes and metadata e.g., highlighting improvements in methods and explaining reasons and extent of RREPI revisions.	August 2022
H	Assign a dedicated resource to the medium and longer-term research and development work.	Q4 2022
H	Increase the capacity of the team with hedonic regression methods through attendance at a training course and/or planning further technical assistance.	Q2 2023
H	Transfer the processing and aggregation of the data to a statistical software package e.g., R code, Stata.	Q4 2023
H	Use the Inter-Agency Working Group on Property Price Statistics (IAWGPPS) to develop goals, build relationships and negotiate data access.	2024
H	Initiate a pilot project to test if it is possible to link the LRA data with data provided by a single local government unit.	2024

A. Data Sources

6.   Coverage of the property price indexes should be broadened to include both cash purchases and other forms of non-bank lending. The current data source used for both the RREPI and the CPPI are mortgage information collected by BSP from Universal / Commercial Banks (U/KBs) and Thrift Banks (TBs). The coverage of the indexes could be significantly increased by moving to a new data source. Internal BSP estimates suggest that lending by the commercial banking sector accounts for approximately 48 percent of residential property transactions. Cash purchases or direct lending by property developers account for about 23 percent of transactions while government backed lending for social housing purposes (mainly by the Home Development Mutual Fund) account for the remaining 29 percent.

7. **To identify potential data sources, the mission developed a timeline for the typical property transaction (see Annex 1).** There are several taxes and charges on property transactions collected by various agencies. The seller has 30 days from the date of notarization of the deed of sale to settle capital gains tax and documentary stamp tax with the Bureau of Internal Revenue (BIR). Capital gains tax is calculated at six percent of the total selling price, documentary stamp tax is calculated at 1.5 percent. Once the tax is paid, the transfer of ownership is registered with the Land Registry Authority (LRA), where a payment of one percent of the declared price is required. Lastly, the local transfer charge required to be paid to the Treasurer's Office of the Local Government Unit (LGU) at a rate of between 0.5 percent and 0.75 percent of the declared price. The mission analyzed these administrative data sources. As well as taxes and charges on property transactions, there is a wealth tax on property (real property tax) based on property valuations. This is paid to the appropriate local government unit.

8. **There is an ongoing initiative by the LRA to create an efficient system of land titling and administration.**[1] One of the goals of the project at the LRA is to digitalize the title information, creating a database of property transactions. The BSP are enthusiastic to analyze this data source to assess its suitability for use in the production of property price statistics. While the LRA capture the declared price and the property location (e.g., XY coordinates), there is little information on property characteristics such as floor area, number of bedrooms etc.

9. **Characteristic information on the properties is held by the Treasurer's Office of the Local Government Units (LGU).** The "title number," which uniquely identifies property transactions, is held on the LRA database and is also captured by the local government units. In principle, datasets could be linked to create a comprehensive dataset of property transactions. One difficulty with this is that the data held by the local government units is disaggregated and not combined into a central database. Therefore, there will be challenges accessing the data and there may be significant differences in structure and quality across local government units.

10. **The BSP should initiate a pilot project to test whether it is possible to link the LRA data with data provided by a local government unit.** A small-scale pilot project using data from one local government unit would identify opportunities and challenges associated with this approach. For example, the project would be able to assess: (i) the quality of information in both datasets, (ii) the accuracy of the declared price, (iii) the feasibility of linking the two datasets using the title number, (iv) the potential improvements in data coverage and (v) the impact on timeliness compared to using the existing data source (i.e., check the time difference between the transaction reference date and the date the transaction was registered at the LRA).

11. **The BSP plan to increase their stakeholder engagement by convening an Inter-Agency Working Group on Property Price Statistics (IAWGPPS).** The group will consist of members from the BSP, the Philippine Statistical Authority, the Land Registry Authority and other government agencies. This group will be important for developing shared goals, building relationships with other organizations, and negotiating access to data. BSP should consider

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[1] Land Administration and Management Project (LAMP).

involving the National Mapping and Resource Information Authority (NAMRIA) in the working group. NAMRIA would have specific expertise in mapping and may be able to provide further location information on the property transactions.

12.   The BSP are in the early stages of researching new data sources for their property price statistics. The recommended approach devised during the mission are only initial steps. It will take time and resources to realize the goal of moving to new administration data sources.

13.   In the short-term, the BSP could consider collecting information on residential property advertisements from real estate websites. Some examples of websites in the Philippines are Lamudi, Zipmatch, Dot Property, Craigslist and Carousell. The BSP have a data science unit that may be able to progress the project. While this data source would not replace the loan data, the information could be used as an additional data source to inform the research.

Recommended Actions:

- Use the Inter-Agency Working Group on Property Price Statistics (IAWGPPS) to develop shared goals, build relationships and negotiate access to data.
- Initiate a pilot project to test whether it is possible to link the LRA data with data provided by a single local government unit.
- Collecting information on residential property advertisements from real estate websites.

B.   Data Cleaning and Processing

14.   The BSP implemented methods to ensure quality data is received from commercial banks. The banks complete separate electronic reports (MS Excel) for residential and commercial property. The commercial property report covers properties appraised by banks during the reference quarter which are classified as commercial, industrial, and special use. The residential property report covers loans granted to households during the reference quarter to purchase residential property. The banks must submit the reports within 20 days of the end of the reference quarter. There are automatic validation checks on the forms (e.g., missing values, duplicates, extreme values, consistency checks) to provide respondents with immediate feedback. This ensures an efficient data collection process and clean data for processing.

15.   The BSP should continue to monitor the number of missing values for key variables such as acquisition cost and appraised value. The number of missing values has decreased as the validation on the data collection forms has increased. The authorities should continue to follow-up on missing values for key variables, like acquisition cost, and other variables that may become important in the future if hedonic methods are used for quality adjustment e.g., number of bedrooms, age of the structure, lot area.

16.   A method for outlier detection by strata and period will be implemented for the launch of the updated RREPI and new CPPI. This reduces the volatility evident in the existing RREPI, particularly in 2020. The BSP completed detailed research on the methods for outlier detection. They examined the standard, adjusted, and generalized box plot methods. These

methods consider an observation atypical or extreme when it is above the upper whisker or below the lower whisker. The chosen outlier detection method, which was the generalized approach, considers both skewness and tail heaviness of the price data distribution. For residential property, the method excluded 4.8 percent of observations in total over the period from 2016 to 2021, with the number split evenly between the upper and lower ends of the distribution. For commercial property, the method removed 5.4 percent of total observations, with 3.0 percent at the lower end of the distribution and 2.4 percent at the higher end of the distribution. The number of outliers identified varied when implemented by strata and period.

17.   The BSP should regularly assess outliers to ensure that the method does not introduce a bias into the index. Removing outliers is often arbitrary and can lead to biased results if not implemented correctly. The authorities should monitor the impact of removing the outliers to ensure that the price indexes are capturing price trends accurately.

Recommended Actions:
- Monitor number of missing values for key variables like acquisition cost and appraised value.
- Regularly assess outliers to ensure that the method is not introducing a bias into the index.

C. Stratification, Weighting, and Aggregation

18.   The use of acquisition costs for residential property more accurately represents transactions prices. The authorities will use full acquisition costs (i.e., land and structure) to compute the updated RREPI. The existing RREPI uses appraised values (buildings only). Full acquisition costs more closely represent the target price for the RREPI.

19.   Appraised values (land only) will be used to compile the indexes for commercial property. It is preferable to use the combined value for land and structure as the basis for compilation, the data collection form only collects the appraised value for land. In this situation, it was recommended the naming convention for the new CPPI. Alternatives mentioned were the Commercial Land Price Index (CLPI) and the Commercial Property Land Price Index (CPLPI).

20.   More detailed stratification will be used for commercial and residential property. This allows for more homogenous groups for aggregation. The stratification is completed based on property type and region. In the existing RREPI, there are two regional strata (NCR and AONCR). Yet, with the launch of the new indexes, regional strata are formed using island groups (NCR, Balance Luzon, Visayas, Mindanao), and districts (in NCR) or by cities/municipalities (in AONCR). This results in 30 strata for residential property and 40 strata for commercial property.

21.   Maintain homogeneity to the extent possible when stratifying the data for commercial property. There are four types of property used for stratification: Office, Retail, Mixed-Use and Vacant Lot. While it is desirable to maximize the number of observations in each stratum, it is also important to ensure that the properties are as homogenous as possible. For example, it was recommended to exclude gas stations from the stratum for Retail.

22.   The use of annually updated fixed weights (three year rolling average) brings the aggregation methods into line with international standards. The existing RREPI uses varying weights from quarter-to-quarter based on the share of total floor area. The new method will use annually updated fixed weights based on the share of total sales.

23.   Fully exploit the weights information available by applying them at the level of the strata. The proposed aggregation method uses an unweighted arithmetic mean within strata and an unweighted geometric mean to calculate prices for each combination of island group and type of property. The elementary indices are calculated at this level. However, there are valuable weights information available at the level of the strata (by district within the NCR and by city/municipality within island groups in AONCR). Therefore, the BPS should drop the step which applies the unweighted geometric mean and directly calculate the elementary aggregate indexes at the level of the strata. The weights can then be used to aggregate the elementary indexes to higher level indexes. This approach has two main benefits. The accuracy of the resulting indexes is improved as the use of available weights information is maximized. In addition, by compiling the elementary indexes at the level of the strata, this allows for the possibility to disseminate more detailed indexes for users e.g., districts within the NCR.

24.   Apply imputation for a stratum where there are no transactions in a particular quarter. For strata in the NCR, the weighted average price change across the other strata (i.e., districts) can be used for imputation. For example, if there are no transactions for condominiums in the second district, the weighted average price change from the other three districts can be used to estimate the price change in the second district. For strata in AONCR, there are two sub-divisions (i.e., cities and municipalities) for each combination of island group and property type. Therefore, the price change in cities can be used to impute for municipalities and vice versa. If there are no transactions within the entire island group and property type combination, then the price change from the next closest stratum can be used for imputation, based on the judgement of the compiler.

25.   The authorities decided to delay the launch of the updated RREPI and new CPPI to allow time to implement some of the mission recommendations. In particular, the BSP will implement the recommendation to fully exploit the available information for the weights. The changes should be fully tested before moving forward with dissemination.

26.   In the medium term, the authorities should consider using hedonic regression methods for quality adjustment within strata. The existing approach to aggregation uses stratification with arithmetic averages to compute the price indexes. This approach controls for quality-mix adjustment between strata, but not within strata. The recommended approach internationally is to use hedonic methods. The BSP already collects the information required to start developing regression models e.g., number of floors, number of bedrooms, age of the property and lot size. To make progress in this area, the BSP should increase the capacity of the team through attendance at a training course and/or planning further technical assistance specifically on this topic. These skills will be important for the team regardless of whether the data source remains the same or it is decided to move to a new administrative data source.

27.   The processing and aggregation of the data should be transferred to a statistical software package e.g., R code, Stata. The existing compilation is completed in MS Excel. Further improvements in the methodology, such as the use of hedonic methods, could be achieved more efficiently with statistical software. In addition, the processing of the data would be more stable, thereby reducing the risk of processing errors.

Recommended Actions:
- Consider alternative names for the CPPI to clarify that it includes only land values.
- Maintain homogeneity to the greatest extent possible when stratifying the data for commercial property.
- Fully exploit the weights information available by applying them at the level of the strata.
- Apply imputation for a stratum where there are no transactions in a particular quarter.
- Ensure the changes to the methods are fully tested before moving on with dissemination.
- In the medium term, consider using hedonic regression methods for quality adjustment within strata.
- Increase the capacity of the team with hedonic regression methods through attendance at a training course and/or planning further technical assistance.
- Transfer processing and aggregation of data to statistical software package (R code, Stata).

D. Dissemination

28.   The mission discussed all aspects of the dissemination of the updated RREPI and new CPPI. This included the advance notice provided to users, the layout of the statistical commentary, the technical (metadata) document, and the press release.

29.   The authorities should highlight the positive improvements in the compilation methods for RREPI. These include the use of acquisition costs instead of appraisal values, the introduction of a robust method for outlier detection, the application of more detailed stratification, and the use of annually updated fixed weights. When combined, these represent a significant improvement in the quality of the RREPI.

30.   Clear communication is required for users in relation to the revisions to the RREPI. It is proposed to revise the full historical series for the RREPI, beginning in Q1 2016. Users will need to transition from using the existing series and will want to understand the reasons for any significant differences between the existing series and the updated RREPI. BSP should publish graphs with both the existing and updated indexes, highlighting (to the extent possible) why the updated RREPI deviates from the existing index. This graphical analysis could be included in the technical (metadata) document or published as a separate document. The archived publications should also be updated to alert users to the fact that the RREPI has been revised.

31.   The BPS should include some additional sections in the technical (metadata) document. The authorities should specifically note the date that the RREPI was revised and the date the CPPI was launched for the first time. Robust methods have been introduced for data cleaning, missing values, outlier detection etc. It would provide users with additional assurance

about the quality of information by including additional detail on this topic in the technical document. It would also be helpful to include some information on the calculation of key dissemination indicators such as percent price change and the quarterly and annual contributions.

32.   The formula for the calculation of the annual contributions needs to be modified due to the move to annual updating of weights. The contributions to percent price change help explain the sub-indexes that contribute most to inflation. When expenditure weights are annually updated, price indexes spanning more than a year are chain-linked and the formula to compute annual contributions to inflation should be modified. The mission presented the new formula and suggested allowing sufficient time to update the calculations.

Recommended Actions:
- The authorities should highlight the improvements in the compilation methods for RREPI.
- Clear communication is required for users in relation to the revisions to the RREPI
- Include some additional sections in the technical (metadata) document e.g., methods for ensuring high quality data, details on the calculation of key dissemination indicators.
- The formula for the calculation of the annual contributions should be modified due to the move to annual updating of weights

E.   Resources

33.   The BPS should assign a dedicated resource to the medium and longer-term research and development work. The work plan includes significant research and development in relation to hedonic regression methods for quality adjustment, the transition to a statistical software package, building relationships with external organizations and the development of new data sources. A dedicated resource would be required to make progress in these areas and maintain momentum over time. This should be separate from the resources assigned to the quarterly production of the RREPI and CPPI.

Recommended Action:
- Assign a dedicated resource to the medium and long-term research and development work.

F.   Officials Met During the Mission

Name	Institution
Ms. Haydee R. Paulino	BSP
Ms. Willa Boots J. Tolo	BSP
Mr. Jeremy L. De Jesus	BSP
Mr. Gian Paolo T. De La Torre	BSP
Mr. Richer King R. Supnet	BSP
Ms. Gloria A. Cubinar	BSP

Annex I. Timeline of a Typical Property Transaction in the Philippines

No.	Activity	Price	Data source/s	Timeline
1	Property is placed in the market.	Asking price	• Real estate brokers associations (e.g., Real Estate Brokers Association of the Philippines, Inc. (REBAP), Philippine Association of Real Estate Boards (PAREB)). • Websites (e.g., Lamudi, Zipmatch, Dot Property, Craigslist, Carousell). • Newspaper classified ads. • Word-of-mouth.	4 weeks to 2 years.
2	Price is agreed between buyer and seller.	Transaction price	Contract to sell (public and notarized) – notary public.	1 week (conditional approval).
3a.	Mortgage is approved.	Valuation price	• Banks • Non-banks (Home Development Mutual Fund (HDMF), National Housing Authority (NHA), National Home Mortgage Finance Corporation (NHMFC), Social Housing Finance Corporation (SHFC))	5 days-3 weeks after document requirements submission.
	Letter of guarantee issued.	Valuation price		Within days
3b.	In-house financing is approved.	Transaction price	Developers	12 weeks
4	Contract is signed (property paid).	Declared price/ Transaction price.	• Notarized deed of absolute sale • Unnotarized deed of absolute sale (between buyers and sellers)	
5	Capital gains tax and documentary stamp tax are paid (6 and 1.5 percent).	Declared price/ Fair market value/ Zonal value, which is higher.	Bureau of Internal Revenue (BIR)	Tax liability must be paid within 30 days of the sale[2]
6	Transfer of ownership registered (Fee: 1 percent of price).	Declared price	Land Registration Authority (LRA)	4 weeks
7	Mortgage is registered (the property title is annotated with encumbrance).	Declared price	Land Registration Authority (LRA)	1-4 weeks
8	Local transfer tax is paid (0.5-0.75 percent of price).	Declared price	Treasurer's Office of the Local Government Unit (LGU).	1 day to 1 week
9	Tax declaration form (assessment of real property tax) is filed.	Zonal price	Assessor's Office / Treasurer's Office of the Local Government Unit (LGU).	4 weeks

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[2] https://www.bir.gov.ph/index.php/tax-information/capital-gains-tax.html.