VIETNAM

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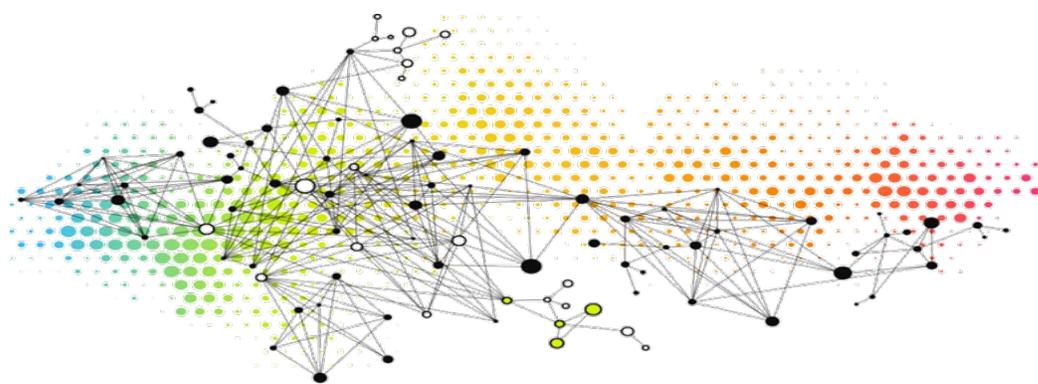## TECHINCAL ASSISTANCE REPORT—REPORT ON RESIDENTIAL PROPERTY PRICE STATISTICS CAPACITY DEVELOPMENT MISSION

This technical assistance report on Vietnam 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 July 2018.

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VIETNAM

REPORT ON RESIDENTIAL PROPERTY PRICE STATISTICS CAPACITY DEVELOPMENT MISSION (JULY 9–13, 2018)

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Glossary

D4D	Data for Decisions Trust Fund
GSO	General Statistics Office of Vietnam
RPPI	Residential Property Price Index
SBV	State Bank of Vietnam
MOC	Ministry of Construction of Vietnam
TA	Technical Assistance

SUMMARY OF MISSION OUTCOMES AND PRIORITY RECOMMENDATIONS

1. **A technical assistance (TA) mission was conducted during July 9–13, 2018 to assist the General Statistics Office of Vietnam (GSO) with the development of a residential property price index (RPPI).** This was the first mission conducted to Vietnam under the auspices of the multi-annual STA Data for Decisions (D4D) trust fund. The main objective of TA provided to Vietnam under the D4D will be to assist the GSO to develop an RPPI. The GSO recently launched two initiatives to collect potential source data for the RPPI since taxation data are unreliable in respect of reported transaction prices, and the State Bank of Vietnam (SBV) does not collect loan level mortgage data.

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 policy makers as an input into the design of macroprudential policies, that is, those policies aiming to reduce systemic risks arising from "excessive" financial procyclicality (such as asset bubbles). RPPIs are also used by policy makers to inform monetary policy and inflation targeting. The use of RPPIs as an input to the national accounts is also an important, although secondary, application.

3. **The GSO should continue the current data collection initiatives, the survey of property developers and the big data project on property listings (advertisements) in the short term, before making an informed selection of the most suitable data source within the next 12 months.** The assessment underpinning the selection of the most suitable data source will require around 9–12 months of data and will also help to inform the selection of the index compilation methodology.

4. **The survey of property developers should be deepened in Hanoi and Ho Chi Minh cities, and broadened to a small number of additional major cities, at least until the selection of the most suitable source data is made.** A three-month pilot of the survey, conducted during late 2017, resulted in around 600 observations between Hanoi and Ho Chi Minh cities each month, but more observations would be needed to facilitate an adequate level or adjustment for the mix of properties transacted in different periods. The GSO should plan for at least around 17 months of data collection, including during the period when the two data sources will be assessed, and one chosen. This would allow for a continuous time series of survey-based data, should the survey-based collection be identified as the preferred approach.

5. **The GSO should broaden the coverage of the web scraping of property listings to include more property listing websites and more cities.** The use of big data is likely to offer far greater potential in respect of geographic coverage than the survey, and this will be an important consideration in the assessment process. The GSO should also formalize the data preparation process so that the online listings data, once text-mined, are presented in a

standardized format facilitating regression analysis. The authorities should also assess the potential for replacing web scraping with direct reporting of listings data to the GSO by the web portals.

6.   **Once sufficient data are available for analysis, the GSO should first test, separately using both data sources, a property-mix by stratification methodology**, followed by a simple hedonic (rolling window time dummy) methodology. This work will inform the selection of the most suitable data source and compilation methodology.

7.   **The GSO is strongly committed to developing the RPPI for Vietnam and should therefore target the dissemination of a first RPPI release starting in August 2020.** Dissemination might initially be confined to key stakeholders only and on an analytical basis, to allow for further analytical work where necessary.

8.   **To support progress in the above work areas, the mission recommended a detailed one-year action plan with the following priority recommendations.**

Table 1. Priority Recommendations

Target Date	Priority Recommendation	Responsible Institutions
August 2018	*Initiate a deepened survey in Hanoi and Ho Chi Minh cities, and a small number of other key cities, to last around 17 months.*	**GSO Underway**
August 2018	*Broaden the coverage of web scraping to other websites and cities.*	**GSO Underway**
December 2018	*Begin work on applying a property-mix adjustment by stratification method to both data sources.*	**GSO Underway**

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

DETAILED TECHNICAL ASSESSMENT AND RECOMMENDATIONS

9.   The action plan shown below reflects the plans for the further development of the RPPI for Vietnam.

Priority	Action/Milestone	Target Completion Date
Outcome: Improved price statistics for Vietnam		
H	Initiate a deepened survey in Hanoi and Ho Chi Minh cities, and a small number of other key cities, to last at around 17 months.	Underway from August 2018
H	Broaden the coverage of web scraping to other websites and cities.	Underway from August 2018
H	Select data source and methodology.	December 2019
H	Develop staff capacity for regression analysis and associated software.	August 2020
H	First dissemination of RPPI.	From August 2020 index

A.   Introduction

10.   A TA mission was conducted during July 9–13, 2018 to assist the GSO with the development of an RPPI. This was the first mission conducted to Vietnam under the auspices of the multi-annual STA Data for Decisions (D4D) trust fund. The main objectives of TA provided to Vietnam under the D4D will be to assist the GSO to develop an RPPI.

11.   In recent years, the GSO has made significant progress in improving the system of price statistics for Vietnam and is strongly committed to developing an RPPI. Staff were very well prepared for the visit and participated effectively and openly in the discussions.

12.   A reliable RPPI is a critical input to financial stability policy analysis and the design of macroprudential policies. RPPIs are also used by policy makers to inform monetary policy and inflation targeting. The RPPI is therefore a very important indicator in its own right, and its conceptual design should be informed by these uses. The RPPI can also be used in the estimation of the value of the stock of housing in the National Accounts and as an input to the estimation of price change for some real estate activities.

B.   Outline of RPPI Compilation Methods

13.   Source data for the RPPI require both transaction prices and associated property characteristics. Property characteristics are used to control for changes in the mix of properties transactions from period to period, allowing for an estimation of pure price change. Typically,

the most important property characteristics are building type, size, and location (ideally, both macro- and micro-locations are accounted for) with the relative importance of secondary characteristics varying across different markets. Where transaction prices are not available, suffer from under reporting of prices, or cannot be matched to property characteristics, they can be proxied by asking prices.

14.   Hedonic and stratification compilation methodologies are most commonly employed with the choice of methodology largely driven by source data. The extent to which an index methodology can control for the changing mix of transacted properties is largely determined by the comprehensiveness of reported property characteristics and the potential for spatial adjustment at the micro-location level. Additionally, the number of available observations is an important consideration in the methodological design, as a greater number of observations can facilitate a more comprehensive property-mix adjustment.

15.   The property-mix adjustment by stratification approach is relatively simple to apply and does not require comprehensive information on property characteristics. It involves grouping similar properties into strata (usually at least according to macro location property type) and following the change in average prices of these strata over time. These changes are then weighted together by relative size of each strata, in value terms. If the size of property is reported, then the average price per square meter can be calculated and tracked, to give an additional degree of adjustment. While a higher number of strata will allow for more homogeneous groupings of properties, a balance needs to be achieved between the granularity of stratification design and ensuring that sufficient observations are available within all strata in each period. Deciding on the number of strata can be informed by examination of the standard error of stratum level average prices. User preferences for subindexes (perhaps by regions and/or property types) might also be considered.

16.   The hedonic method is widely considered to be the preferred methodology for measuring property price change. In this method a number of house characteristics that influence prices are analyzed, such that their impact on price can be estimated and controlled for. This allows for the estimation of an index of pure price change for a consistent set of characteristics, or more simply, a property price index. There are three main hedonic approaches, namely the time-dummy, imputation, and characteristics prices methods. Hedonic methods are usually employed in tandem with stratification of properties. First, a basic level of stratification is introduced to group properties to relatively homogeneous submarkets, and hedonics are then employed within each stratum to provide an enhanced degree of property-mix adjustment. For a hedonic method to be successfully applied, the underlying data must include sufficient numbers of property characteristics and observations.

C.   Potential Data Sources for the RPPI

17.   Administrative data on transactions are the preferred data source for RPPIs, as they typically provide a broad coverage of the market and more observations with little or no

collection costs. Commonly used administrative data sources include filings for taxation of property transfer, registration of property ownership, and information collected by financial institutions at the time of mortgage applications or drawdowns. However, in Vietnam administrative data collected for taxation and registration purposes suffer from inaccurate reporting of prices, and banks are not required to report loan level information to the SBV for residential property mortgages. Consequently, the GSO has launched two initiatives to source data for the RPPI.

18.   **The GSO should continue the current data collection initiatives, the survey of property developers and the big data project on property listings (advertisements) in the short term, before making an informed selection of the most suitable data source within the next 12 months**. The assessment underpinning the selection of the most suitable data source will require around 9-12 months of data and will also help to inform the selection of the index compilation methodology. In the longer term, the GSO, together with other government agencies, should work towards the development of administrative data to increase the transparency of the property market in support of the needs of policy makers and the public.

19.   **The GSO conducted a three-month pilot survey of property developers in late 2017, collecting prices and property characteristics for new transactions of new properties in Hanoi and Ho Chi Minh cities.** The survey collects prices and detailed property characteristics that could, in principal, underpin a hedonic methodology. However, the usefulness of the survey is limited by its small sample size, which will support only a very basic level of property-mix adjustment.

20.   **The GSO will run a second pilot of the survey, covering Hanoi, Ho Chi Minh, Da Nang, Khanh Hoa, Binh Duong, and Dong Nai, for 17 months from August 2018.** Extending the survey for more than 12 months will allow for the collection of a continuous time series of data, should the survey be identified as the appropriate data source. Limiting the survey to six cities will allow the GSO to collect more observations in those locations. An extension of the survey to multiple cities would have made it difficult to deepen coverage within cities. Additionally, the GSO made some enhancements to the questionnaire design immediately after the mission. The authorities should also make provision to repurpose the survey (if longer-term funding is secured), perhaps to a survey of commercial property transactions or future supply of residential property, if it is deemed unsuited for the purposes of RPPI compilation.

21.   **The GSO has recently begun web scraping property listings (asking prices, addresses, and property characteristics) from several prominent property portals and an initial assessment of these data suggests they offer much potential for RPPI compilation.** The GSO is using innovate techniques to mine listings text and demonstrated that the most important property characteristics can be collected and made ready for analysis. For some listings, the asking price is not displayed and these observations should be ignored rather than imputed for.

22.   In parallel to conducting the second pilot of the survey of property developers, the GSO should broaden the coverage of the web scraping project and formalize the data preparation procedures. The GSO should also investigate the potential for voluntary or legally-mandated provision of listings data by the web portals, as well as requesting access to data on transactions conducted though the Property Exchange system.

23.   The GSO will conduct a census of population in 2019 and should ensure that a small area indicator of living standards is calculated as this could facilitate adjustment by micro location in the compilation of the RPPI. One option would be to use data collected from questions on household living conditions (such as source of drinking water, housing materials, and household amenities) to derive a quality of neighborhood indicator. An indicator of relative affluence of neighborhoods derived from the census of population is used to good effect in the RPPI compiled by the Central Statistics Office of Ireland.[12]

24.   The GSO should also request access to property registration data, which can be used (along with average price levels) to compile index weights. These weights will be required to aggregate strata level indexes to the national RPPI and can be compiled as the product of the volume of transactions (from the registration data) and average price (as estimated by the strata indexes themselves).

Recommended actions:

- *Continue the current data collection initiatives in the short term, before making an informed selection of the most suitable data source within the next 12 months.*

- *Broaden the coverage of the web scraping project and formalize the data preparation procedures.*

- *Investigate the potential for voluntary or legally-mandated provision of listings data by the web portals.*

- *Request access to data on transactions conducted though the Property Exchange system and property registrations data.*

- *Calculate small area indicators of living standards from the forthcoming census of population.*

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[1] https://www.pobal.ie/app/uploads/2018/06/The-2016-Pobal-HP-Deprivation-Index-Introduction-07.pdf.

[2] http://www.ottawagroup.org/Ottawa/ottawagroup.nsf/4a256353001af3ed4b2562bb00121564/1ab31c25da944ff5ca25822c00757f87/$FILE/Ireland%E2%80%99s%20new%20residential%20property%20price%20index%20-%20Gregg%20Patrick-Paper.pdf.

D. Next Steps

25.   As previously noted, given the limited time series available for both sets of data collected by the GSO, both collection efforts should continue to allow for a full assessment of their suitability after around 12 months. At that stage, a decision can be made in respect of the most suitable data source. The target methodology can also be selected, since the choice of methodology will be largely data driven. The GSO could then target the dissemination of an RPPI, once two years of data are available.

26.   With reference to 12 months of data, separately using both survey and listings data, the GSO can develop prototype indexes to inform the selection of both source data and index methodology. First, the GSO can develop indexes following a basic property-mix adjustment by stratification method. This work can begin immediately, with the aim of identifying a stratification design that achieves a balance between property homogeneity and sufficient observations in each stratum. Then, a simple hedonic methodology (the rolling window time dummy) can be tested. The prototype indexes can serve as baseline models to guide further analytical work as a longer timeseries of data becomes available.

27.   To support this analytical work the GSO should further develop staff capacity for regression analysis and associated computing skills. The GSO should consider using a single software to work on both datasets, to facilitate replication of analysis. The mission provided some introductory hands-on training on compiling and analyzing descriptive statistics, developing basic data edits for categorical and continuous variables, understanding the impact of outliers, and developing baseline models. Staff should further develop their knowledge of these subjects.

Recommended actions:

- *Develop baseline models using basic property-mix adjustment by stratification and hedonic methods to inform the selection of both source data and index methodology.*

- *Further develop staff capacity for regression analysis and associated computing skills.*

- *Target the dissemination of a RPPI once two years of data are available.*

E. Producer Price Index for Real Estate Activities

28.   The GSO can improve the producer price index for real estate activities on a fee or contract basis (*International Standard Industrial Classification of All Economic Activities Rev.4* Group 682) by following the price development of derived commissions. These derived commissions can be calculated by applying commission rates to a measure of the price development of a proxy for the underlying real estate activity (such as the consumer price index, rent index). Since product level turnover is not available for this division, the GSO can select a representative product (or a few products) than can approximate price developments. The

development of building projects for sale is not included in Division 68 but under Division 41 Construction of buildings.

Recommended action:

- *Follow the price development of derived commissions for the producer price index for Group 682.*

F. Officials Met During the Mission

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