



Looking Ahead to Housing in 2020

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This note is written in the spirit of improving housing in the 2020 ICP building on research experiences of the Housing Task Force (HTF) as part of the 2017 benchmark. While many strands of research were pursued by the HFC it was judged that where adoption of new methods for 2017 would involve different real housing volumes as compared to applying the approach of the 2011 ICP, the 2011 methods would be used. The focus of the suggestions below is on the research pursued by the HTF, but not a part of the 2017 ICP, that appeared particularly promising and the research carried out under the guidance of Kaushal Joshi at the Asian Development Bank (ADB19)¹. We broadly divide the discussion into direct and indirect estimates of the real volume of quality adjusted housing. The former takes a raw volume measure of housing, preferably square meter volume or number of rooms and adjusts it for quality differences using indicators of quality like availability of indoor plumbing. Indirect estimates of housing volumes use survey estimates of housing rents of comparable housing to obtain a price level of housing in each country. Nominal housing expenditures at exchange are then divided by the rental price level to obtain estimates of real rental volumes. A final section deals with differences between direct and indirect housing volume comparisons and with an often messy issue of linking of direct and indirect housing quantities within and across regions.

One general comment on housing expenditures. There has been a general improvement in quality between the ICP rounds 2011 and 2017. Most of this improvement has been generated in regional meetings and technical discussions in the countries where expenditure shares of countries may be compared with peers. There has also been an improvement in the quality of housing data for direct quantity comparisons, and perhaps rent surveys though we will not know that until the meta-data have been analyzed. These remarks are the basis for the recommendation that research in preparation for the 2020 ICP primarily focus on 2017 data. Since we already have housing comparisons of 2011 and 2017 as part of the report on 2017, our argument is that further examination of the 2011 data will add little to preparation for 2020. The work reported in (ADB19,p.8) focuses on 2017 and suggests combining the

¹ Approach to Comparisons of Housing Expenditures - 2017 ICP in Asia and the Pacific *A Linked Rental and Volume Approach with Additional Quality Adjustments*, presented at the TAG meeting, October, 2019, Washington. Referred to in the text as (ADB19).

volume indicators in a different way than used in other volume comparisons, namely geometrically weighting number of rooms 0.67 and number of dwelling 0.33. This is an approach not explored by the GO before and might be considered for 2020.

A second general comment is that GO requested countries to provide data on the number of rented and owner occupied dwellings. The majority of countries did not provide that breakdown, so in the end price levels and volumes were only available for all housing for 2017. In correspondence Paulus Konijn has suggested a possible direction for developing volumes and price levels for rentals and owner occupied separately for 2020 that is discussed in section III.A.3

I. Research Issues in Estimating Direct Quality Adjusted Quantities of Housing

I.A.1 Quality adjustments

For countries estimating direct volumes of housing, the 2011 methodology was to take an arithmetic average of the share of dwellings with electricity to the dwelling, and inside running water and inside plumbing.² This 0.0-1.0 quality measure was multiplied by the indicator of volume that in 2011 was the number of dwellings or square meters in the EU and the CIS to obtain the real volume of housing in a country. Within the EU several countries estimated both indirect and direct quantity estimates providing a link between the two groups of countries. However, Africa, Latin America and Western Asia only provided indirect estimates relying on urban rental surveys. A recommendation is that these regions also make direct quantity comparisons to compare with their indirect estimates. The linking of these three regions to Asia and the EUO is discussed in section 3 and in comments on (ADB19) in A.2 below.

I.A.2 Research on Quality Adjustment

I.A.2.a Alternative Quality Indicators

The ADB carried out extensive studies to obtain alternative quality indicators for the water and sewer facilities of dwellings and the type of dwelling. The HTF looked at alternative quality measures for the supply of electricity in terms of reduced hours available as judged by businesses that was promising but had its own limitations. Business uses do not necessarily reflect those of households. Further the surveys are not available for some countries nor will the surveys necessarily be available in the future in the same format so this is unlikely to be an avenue for further research. The ADB19 used a geometric mean in

² In the EU and CIS countries a fourth quality indicator was used, namely central heating and or air-conditioning.

combining quality indicators as has the HTF and the advantages of the GM suggest this should be standard practice in 2020. In GO practice the quality indicator times the volume indicator is the real volume of a country compared to the reference country. That is RHV (Real Housing Volume) = QI (quality indicator) * VI (volume indicator).

In ADB19 a further adjustment is proposed, namely to multiply the RHV by the ratio of the urbanization rate in a country relative to the reference country, Hong Kong in the Asia case. There has been discussion in the TAG in both the 2005 and 2011 as to why the quality indicators do not capture differences in housing quality across countries. However, there was no discussion of why the degree of urbanization should not show up in smaller country shares of amenities in rural areas. Countries report amenities in rural and urban areas and the shares are always less in rural areas. So it is not clear why there should be an additional effect of the urbanization rate on the quality indicator. The HTF has used degree of urbanization as a variable in estimating equations used to obtain indirect volume estimates as an attempt to offset the fact that in most countries rental surveys are highly urban. For 2020 further research to improve the quality indicators when the direct volume approach is applied is recommended.

I.A.2.b Some Evidence on Quality Differences from Builders

Glaeser and Gyourko (2018, pp. 9-10)³ discuss the cost differences between building economy, average, custom, and luxury housing as estimated by RSMMeans, a firm that publishes building cost models for the construction industry each year for different US geographic regions. The costs per square foot of average quality and luxury quality are about 25% and 90% above economy construction. Economy construction in the United States will include electric outlets and some lighting fixtures, doorknobs on doors, handles on drawers, bathroom and kitchen faucets, and will be ready to occupy. In short the level of economy construction is likely to be of a higher quality than a significant share of dwellings in lower income countries. These comments are to suggest that the quality of dwellings could easily vary by 250 percent or more within countries due to differences in construction costs for the same living area, without regard to location.⁴ This point is discussed further below.

³ Glaeser, Edward L. and Joseph Gyourko, "The Economic Implications of Housing Supply," *Journal of Economic Perspectives*, Volume 32, Number 1, Winter, Pages 3–30, 2018.

⁴ This raises another issue in rental equivalence that it would be good to address in 2020 since it affects both rental flows and imputed rental expenditures. However, few countries have adequate data. The issue is that there is much evidence that the quality of owner-occupied homes that roughly meet the detail of rental surveys, is considerably higher than that of rented housing. In particular the user cost of larger more expensive housing is substantially above

II. Research Issues in Estimating Indirect Volumes of Housing, Using Rental Surveys

II.A.1 Limitations of Rental Surveys

The Global Office developed a questionnaire on the geographic coverage and timing of the rental surveys used in their rental submissions. The EU members document their national rental surveys in their methodological publications. Because of the press of other ICP work most countries have yet to respond to this questionnaire, so analysis of this meta-data will only be possible for the 2020 ICP.

II.A.2 Urban Bias of Most Rental Surveys

For most ICP regions rental surveys cover only the capital city or several major cities depending on the size of the country. Rural areas are often not covered because there are very few rental properties to survey because most residents are permanent, with the exception of some professionals, like teachers, health professionals, agricultural extension workers, or government officials. This means that imputation of rents of owner-occupied housing from urban rental surveys are difficult enough in urban areas where rented dwellings are often under 50 percent or less of the total. Imputed rents are particularly problematic in rural areas, where it is typically thought the quality of housing of the same size is lower than in urban areas. The HTF tried to correct for this bias by including the percent of urbanization of a country as a variable in a CPD on the rents of the different ICP housing types. The results were as expected, namely imputed rents were lower in both 2011 and 2017 when the rural share was higher.

When the share of rural housing is included in an estimating equation, the implied rental volume is above that obtained without the adjustment. But either way, the rental estimates were substantially below those obtained using direct volume estimates. This is what one would expect because the ICP rental types take into account more rent determining factors than do the quality indicators used in the direct volume approach. Another research possibility would be to explore alternative approaches such as applying a very simple user cost estimate of the flow of housing services to the rural housing stock.

II.A.3 The Approach of ADB19 to Asian Rental Surveys

The ADB experimented with an adjustment of the rental price level to reflect what was an a priori expectation that the quality of rental housing would be lower in lower income countries. Further, the rental

its rental equivalence (Aten and Heston, *Owner-premium Housing Adjustment in Housing Imputations*, US Bureau of Economic Statistics, 2019, <https://www.bea.gov/system/files/2019-11>)

price levels in some large countries like India, Pakistan and Bangladesh are very low implying per capita real housing volumes above or near Hong Kong and Singapore. The adjustment presented in ADB19 multiplied the estimated rental price level by

(1) $\text{Sqrt}(\text{PCHE}_{\text{HK}}/\text{PCHE}_i)$, where PCHE_i is the per capita real expenditures of Hong Kong as a multiple of country i . When tempered by taking the square root, the resulting factors range up to about 4 for Nepal, meaning that rental price levels would be multiplied by 4 and the indirect quantity would be divided by 4. This factor would be calculated for each country in Asia-Pacific regardless of the coverage of their rental surveys. As noted earlier, costs can easily vary by two or three hundred percent due only to quality of construction for the same size and type of dwelling. However, typically dwellings with high quality construction will be owner occupied and not be sampled in rental surveys.⁵ ADB19 characterizes this adjustment as an improvement and it certainly is in the right direction. However, taking account of the coverage of the rental sample in terms of rural-urban, or size of city is a more direct source of the wide differences in rental price levels that the ADB reports.

III. Research Issues in Combining Direct and Indirect Estimates of Rental Volumes

III.A.1 The EUO Approach

The EU has always had member or associate countries where rental markets were very thin and often regulated so that use of indirect rental volumes has not been feasible. The situation in CIS countries is similar. This raises the issue of how to link those countries using only direct volumes with the remaining countries using rental surveys to indirectly estimate their rental volumes. The EU approach has been to link through some countries like Austria who have agreed to make direct quantity comparisons in addition to its indirect estimates of rental volumes. A variation of this approach was carried out in 2011 to link Africa, Latin America, and Western Asia with the EUO and Asia-Pacific. Weighting of Africa, Latin America, and Western Asia is still being evaluated for 2017. Hopefully this issue will go away in 2020 when the rental specifications are harmonized across the 5 major regions.

III.A.2 The ADB19 Approach

ADB19 marries a number of techniques in producing results for all the Asia-Pacific countries. First, some sensible ranges are chosen for both the direct and indirect approaches based on the implied ratios of

the volume of housing relative to consumption without housing. Based on these ranges 12 of the 22 countries were eliminated from estimates based upon rental surveys and 2 were eliminated from the direct volume estimates. Estimates for the missing observations were obtained by using a linking factor based upon the relationships of direct and indirect estimates for three countries, Singapore, Bhutan and Mongolia, where it was judged the two volumes were close to each other. The geometric mean of the filled out set of direct and indirect estimates was then used as the final price level estimate for each country, a clear improvement in plausibility over either approach individually, and the reference volume approach used in 2005 and 2011 benchmarks.

The ADB will not apply their proposals in 2017 because of the novelty of the innovations in ADB19 and lack of confidence that the results will be robust when tested on other data. Because of the number changes in the proposed ADB methods for which plausible alternative procedures might have been chosen, there are clearly a number of research areas opened up by the ADB research. In particular the ADB19 links the direct and indirect estimates in a different way than the EUO where just one method is used for each country. The ADB examined the approach of combining both methods, with modifications for seeming outliers, for each country. In the EUO there is more confidence in the rental housing expenditures because they are built up from rental equivalence using national surveys in those countries using the indirect approach. There is less confidence in housing expenditures in the other ICP regions, which in turn can introduce possible errors in the price levels in the direct volume approach and in implied volumes in the direct rental approach. For this reason the ADP19 idea of combining both direct and indirect approaches for each country deserves further research.

III.A.3 Separate Estimates for Rental Units and Owner-Occupied Housing

The approach suggested by Konijn would look at owner occupied housing (OOH) and rentals as distinct research areas, where for each real volumes of housing would be estimated. This represents an alternative way of thinking about combining the direct and indirect methods of estimating the real volume of housing. An important dimension of what Konijn suggested is that it would offer a way to estimate separate housing volumes for rented and OOH, something that was not achieved in 2017. Further this research would deal with the problem that countries generally do not collect rents in rural areas, mainly because few dwellings are rented. Different estimation methods might be used for the two basic headings within each country. For example user cost or the direct volume method could be used for OOH in rural areas, rental

surveys for urban rental markets, and perhaps some combination for OOH in urban areas. In any event this would seem like a promising area for research in 2020.

IV Conclusions

Drawing on the above discussion and other work of the GO and HTF the note concludes with some suggestions for improving the treatment of housing in ICP 2020.

(1) Harmonize the 2020 housing types with the EU specifications so that there is some overlap of specifications between the two lists. Konijn is not optimistic about this approach because the EU uses national weights for each specification, whereas there is only implicit weighting in the other regions to the extent some countries will not have rents for some specifications. Clearly an area for further work including learning more from countries about the rental surveys they have been providing to the GO.

(2) Continue to gather country information on sample coverage in terms of the population from whom the sample rentals were taken. And following on (1) above, ask countries for any information they have on stock of rental and total housing stock for the ICP specifications.

(3) Based on coverage information in (2) seek ways to incorporate that information to modify the urban rental CPD information so it can be extended to all urban housing in urban areas and perhaps to the whole country.

(4) An alternative to (3) is to treat the stock of rural housing separately applying a rough version of user cost to impute the rental volume. The urban and rural volumes could then be simply summed to obtain a national total for each country. This suggestion is complementary to the idea of separately estimating rental and owner occupied housing volumes.

(5) Following the initiatives of the ABD, research ways to improve the quality of housing measures used in the direct volume approach, or perhaps modifying country quality measures in a downward direction as was suggested in ADB19. The reason for suggesting this is the large gap between rental volumes using the indirect method (lower) and the direct method (much higher).

(6) Explore further the proposal in ABD19 of combining the physical quantity measures like number of rooms and number of dwellings (p.8, CQI_2) when applying the direct volume approach.

(7) In regions other than the EUO, look into the efficacy of combining the indirect and direct housing quantity estimates for each country as in ADB19, rather than choosing one or the other. This approach is consistent with the idea of treating rental and OOH as separate basic headings for which independent estimates are made.

These suggestions mostly complement each other but there remain many areas for further discussion. And of course additional comments, criticisms and suggestions are welcomed by the GO when 2017 is off their desks.