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Comments Alan Heston

Diewert brings to this chapter on the valuation of services flowing from durable assets a strong background rooted in academic conferences, the development of Organization for Economic Cooperation and Development (OECD) manuals, and hands-on experience with country methods. More recently, Diewert has been involved in contributing to manuals on national and international consumer price indexes and with advising governments on the subject of chapter 12 in this volume: the treatment of time-to-time indexes of owner-occupied housing (OOH). The chapter is long and rich in detail, providing a significant conceptual discussion and a panoramic view of how price statisticians have dealt in practice with measuring rental service flows for what is now the largest component of consumer expenditures in middle-, high-, and many low-income countries. Diewert has long advocated the user cost approach in most estimates of service flows from durables, and not surprisingly, compared to the net acquisitions and rental equivalence approaches, he devotes more space to user cost in his conceptual discussion of OOH.

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Treatment of Land

The reader is rewarded in Diewert's conceptual discussion of user cost with a very interesting section on unique durable goods, such as housing. In this section, Diewert makes an important point that is generally ignored: namely that an OOH index should include both land and structure, and separate accounts for the two should be kept in building up user cost. The reason for this is clear when one is considering the value measure—namely that of structures—that requires depreciation when estimating user cost.

In reviewing the acquisitions cost approach, an early method that remains in use in several countries, Diewert makes clear a number of its limitations, including the fact that it does not allow for land values. Turning to rental equivalence, one common approach is to use rental surveys to impute the flow of rents to OOH by type, size, location, and other stratifications. This is practiced in a number of OECD countries, and it implicitly reflects the rental value of residential land. An alternative approach that is used in many countries without rental surveys is to impute rental equivalence on the basis of the cost or replacement value of structures. Typically, the opportunity cost of the value of the land is ignored in this approach. In fact, many governments that impose a real property tax keep separate current values for both land and structure, so the task of keeping separate accounts may not be that difficult to implement.

In addition to the treatment of structures versus land, Diewert notes that the effect of age of structure on depreciation is closely tied to the amount of maintenance expenditures on the structure. Structures that are not maintained drop out of the housing stock as they age, whereas structures that are maintained often take on increased value after a certain age, both because of their vintage value and the land value. In the work reported in Heston and Nakamura (2009), it is found that in hedonic regressions on observed rents, if age and age squared are used as variables, then they respectively have negative and positive coefficients for Washington, DC, where the vintage effects sets in at about eighty years of age. This result, then, is quite consistent with the story abandonment versus maintenance that Diewert notes.

User Cost and Rental Equivalence

User costs require an estimate of the flow of shelter services from the housing stock in current prices, which in turn requires a constant-quality corrected index of housing costs, service-life estimates, and a real interest rate that takes into account expected depreciation. Not surprisingly, few countries can provide good estimates of these variables. Unfortunately, empirical studies do not even find that current housing prices bear a relationship with current rents that is consistent with reasonable estimates of interest rates, expected appreciation, and service lives. Further, there are

large differences in the rent-house price ratio across space in the same country and over time for the same location. Existing empirical findings simply do not support the application of user cost to estimate rent indexes or the opposite.¹ However, the message is certainly not to abandon user cost, but rather to devote more research to finding out more about the relationship between market rents and user costs.

The last part of Diewert's chapter takes on this task, concluding with a proposal in applications to take neither user cost nor market rents exclusively as the price of housing. The remaining discussion will consider: first, the weight of OOH in the Bureau of Labor Statistics (BLS) Consumer Price Index (CPI); second, the differences between user costs of landlords versus homeowners and the implication for CPIs in general; third, the observed divergences of rents and user cost; and finally, Diewert's proposal on how to deal with rent and user cost differences.

The Expenditure Weight of Owner-Occupied Housing

The share of OOH shelter expenditures was 13.4 percent of the CPI weight based on the 2002 BLS Consumer Expenditure Survey (CES), larger than motor vehicles at 8.9 percent or food at 7.9 percent. While the BLS in the United States has experimented with alternative ways to derive this estimate, it presently relies on the response to the following question in the CES:

If someone were to rent your home today, how much do you think it would rent for monthly, unfurnished and without utilities?

Taking this response, the location, some characteristics of the dwelling, and the sampling frame of the CES, it is possible to estimate an OOH weight to apply to the temporal index of rents from the CPI survey.

Some research based on a special survey described in Heston and Nakamura (2009) had an estimate of rent by owners with characteristics that were part of the sample that also included renters. So, it was possible in several, quite different geographical areas of the United States to hold constant floor area, bathrooms, and other measurable characteristics and to see if owners typically would impute their rent the same as the market. In the four survey areas considered, it was found that owners estimated their market rent as 14 percent, 19 percent, 9 percent, and 21 percent higher than in a comparable rented dwelling.

It is likely that owners value characteristics of their houses higher than the market does, but it is also plausible that it may be due to asymmetry of information available to rental agents and potential renters versus the owner. The argument would be that the homeowner possesses much more knowledge of the unmeasured quality features of his or her dwelling than

1. See the paper of Garner and Verbrugge (2009) and earlier work of Verbrugge cited there.

do others. In any event, if this result is totally due to unmeasured quality differences, it would mean that the weight of OOH is moving in the right direction. However, to the extent it is hubris on the part of owners, then it operates to overstate the share of OOH in consumer expenditures.

User Costs of Landlords versus Owners

Diewert provides a thorough discussion of issues involved in treating financial costs of landlords versus owners. Typically, homeowners insurance is a financial cost that is usually a separate category of consumer expenditures, as is insurance for movable property of renters. Property taxes appear to affect rented housing and OOH similarly, while transactions costs involved in the purchase of a home for a landlord and a homeowner are less clear. And country practice with respect to the line to be drawn between routine maintenance and renovations that should be capitalized has yet to be harmonized.

Diewert considers other differences that may exist between the user cost of landlords versus owners, where the direction of divergence is clearer. These include damage costs, vacancy and default on rent costs, billing costs, and tax advantages of homeownership, at least in the United States. Usually, adjustments are made to surveyed rents for another landlord cost—namely, any included extras, such as appliances and utilities. All of these factors operate to make surveyed rents higher than the user cost of OOH. So, simple application of market rents, stratified by size, location, or other features, to estimate the share of OOH would appear to produce too large a share. Note that this can result in an effect similar in direction to that when owners are asked to estimate the rent their dwelling would get on the market.

Observed Differences Between User Cost, Rent Proposal, and Rent-Price Ratios

Diewert considers a number of ways to measure user costs. He notes that the key ingredient of user cost is the real interest rate—namely, the interest cost, less expected appreciation on the dwelling and land. As Diewert points out, use of ex post appreciation often produces highly volatile results and sometimes even negative user costs. This is hardly the practical measure anyone would want to use, except perhaps to disparage the user cost approach. However, even use of a less volatile ex ante appreciation rate appears in application to produce more fluctuations than market rents. Garner and Verbrugge (2009) construct ex ante appreciation rates and estimate market rents for median structures for five U.S. cities over the period 1982 to 2002. This permits a comparison of user costs and rents with some common and idiosyncratic behaviors across cities.

The striking results are that annual user costs move from nearly zero to

over \$30,000 a year for median structures in Los Angeles and New York City over the period, while in Chicago, they varied within the \$5,000 to \$10,000 range and were usually below predicted rents. Garner and Verbrugge (2009) also examine price-to-rent ratios across the cities, and these are about nine on average in Houston, compared to thirteen in Los Angeles and New York City and twelve in Chicago and Philadelphia. The pattern over the 1982 to 2002 period displays wide fluctuations and is not very similar from year to year across the cities.

Heston and Nakamura (2009) pick up on another aspect of the price-to-rent ratios—namely that they appear to systematically rise with the price of a house within cities. Diewert has a nice life cycle explanation of this finding—namely that there is market segmentation. Young families are actively in the rental market until their increased income allows them to move to larger and more expensive accommodation. Typically, there is relatively little supply and relatively even less demand for more expensive accommodation, so price-to-rent ratios are higher. This story is also consistent with the fact that land values enter into the total price of housing; renters of larger housing are unlikely to want to pay the user cost of the land associated with such housing, hence a rising price-to-rent ratio. Whatever the explanation, if there is such market segmentation, then it is important to understand how this might affect time-to-time indexes as typically constructed by both price and national income statisticians.

Diewert's Proposal

Diewert concludes, “We suggest that the best pricing concept for the services of OOH is the opportunity cost approach, which is equal to the maximum of the market rental and the ex ante user cost for any particular property” (see chapter 12 of this volume).

Market rents certainly are a more stable series and are not subject to the substantial plummets of user cost that characterize national experience in the United States or the experience of Los Angeles and New York City, as shown in the previously cited results. However, Diewert's conclusion is unlikely to be adapted soon by national statistical offices if they simply look at the five city results of Garner and Verbrugge. This is because in those years when user costs exceed market rents, their substitution for rents would lead to a more than doubling of the rent index in some cities, with equivalent drops when user costs went below rent.

However, Diewert's proposal is clearly more attractive if one argues that the appropriate internal user cost to an owner is not the annual fluctuation in user cost but some average of several years to cover the substantial transactions costs associated with property exchanges. As Diewert notes, often user cost may exceed market rents by a fairly stable factor for a number of years, which has been the case in Chicago. Thus, I would end up endorsing

very strongly Diewert when he says there is a “need for statistical agencies to produce *both* user costs and equivalent rent price series for their CPI users. This *opportunity cost approach to pricing the services of durable assets* could also be used in production and productivity accounts, and this treatment would eliminate the problem of negative user costs, because market rents would always be nonnegative” (see chapter 12 of this volume).

Once statistical offices develop more measures of user costs for housing, it is likely to lead to satisfactory ways of implementing Diewert’s proposal. So, not only has Diewert provided us with a definitive discussion of the theoretical and practical issues surrounding the treatment durables and owner-occupied housing, but he has also provided us with an important insight into further improving practice. Rather than go for any of the existing methods, he recommends opportunity cost to homeowners as the unifying concept, which in turn leads to a new treatment of OOH that, with some fine-tuning, seems practical to implement—not a small achievement.

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