Estimation of owner occupied dwelling service

LIU Nan
Department of National Accounts, NBS

Estimation of owner occupied dwelling service is important and difficult in national accounts estimation. As rapid development of Real Estate, estimation of owner occupied dwelling service has been also improved a lot in China. This paper will introduce estimation method of owner occupied dwelling service, and think about exist problems as while.

I. Current price estimation of owner occupied dwelling service

Before 2004, NBS only calculated owner occupied dwelling service as virtual depreciation. The calculating formula is:

Owner occupied dwelling service = Virtual depreciation of urban owner occupied dwelling + Virtual depreciation of rural owner occupied dwelling

As,

Virtual depreciation of urban owner occupied dwelling = total value of urban owner occupied dwelling ×2%

Virtual depreciation of rural owner occupied dwelling = total value of rural owner occupied dwelling ×4%

This estimation method has a serious disadvantage—the cost and operating surplus of renting service are not concluded in owner occupied dwelling service. So owner occupied dwelling service has been underestimated for many years.

After 2004, NBS obtained more basic data of owner occupied dwelling from the first economic census. Based on these data and some practical factors, NBS did more research cooperating with Statistics Canada, and improved estimation method. The most distinct improvement is the expanded estimation content. Not only virtual depreciation but also maintenance cost and management cost are concluded in owner occupied dwelling service. Now we calculate urban owner occupied dwelling service and rural owner occupier individually with following formula:

Urban owner occupied dwelling service = maintenance cost + management cost + virtual depreciation

As

Maintenance cost = [(maintenance material cost per capital of urban

residents + maintenance service cost per capital of urban residents) ×urban population] × the percentage of private housing

Management cost = (Property management cost per capital of urban residents × urban population) × the percentage of private housing

Virtual depreciation = [(housing area per capital of urban residents×urban population×construction cost per unit area) ×the percentage of private housing] ×depreciation rate (2%)

Rural owner occupied dwelling service = maintenance cost + virtual depreciation

As,

Maintenance cost = maintenance material cost per capital of rural residents ×rural population

Virtual depreciation = [(housing area per capital of rural residents×rural population×construction cost per unit area)] ×depreciation rate (3%)

The proportion between owner occupied dwelling service and GDP under new estimation method has been increased obviously. The following two tables show the proportion between owner occupied dwelling service and GDP under methods before and after 2004 individually. As it shows, the proportion has been increased from 2% to 5%.

Table 1: The proportion between owner occupied dwelling service and expenditure-oriented GDP (method before 2004)

Unit: one hundred million

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
GDP	18320	21280	25864	34501	46691	58511	68330	74894	79003	82673	89113
owner occupied dwelling service	205.5	320.6	374.2	540	634	755.2	978.8	1196	1213.9	1640.3	1944.6
GDP%	1.1	1.5	1.5	1.6	1.4	1.3	1.4	1.6	1.5	2.0	2.2

Table 2: The proportion between owner occupied dwelling service and expenditure-oriented GDP (method after 2004)

Unit: one hundred million

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
GDP	20055.5	22925	27041.3	35772.5	48229.3	60535.3	70491	77447.9	81455.3	85325.9	91615.3

owner occupied dwelling service	1941.5	1965.2	1551.9	1811.8	2172.6	2780.0	3139.4	3749.7	3665.9	4293.0	4447.4
GDP%	9.7	8.6	5.7	5.1	4.5	4.6	4.5	4.8	4.5	5.3	4.9

II. Constant price estimation of owner occupied dwelling service

Generally, there are three methods for constant price value added estimation: basic year calculation, price index deflation, and volume indicator extrapolation. NBS adopts price index deflation method to obtain constant price value added of owner occupied dwelling service. The deflator is renting price indices of houses.

III. Some problems in owner occupied dwelling service estimation

Although estimation of owner occupied dwelling service has been improved a lot, there are still some problems which cannot be neglected.

1．Problems in current price estimation

In most countries, owner occupied dwelling service is estimated with market rental charge. However, in China, NBS cannot obtain the data of average market rental charge because of unestablished survey system. On the other hand, rural dwelling comprises very high portion in total dwelling service. But in the meantime, there is seldom renting activity in China’s countryside. Even though in the urban area, the renting activity only prevalent exists in some large cities. So it is not reasonable to estimate entire owner occupied dwelling service with average rental charge of only some big cities.

2. Problems in price indices

With the present estimation method, the deflator is renting price indices of houses. It seems very suitable for constant price estimation of owner occupied dwelling service. But in fact, in China renting activity is not very prevalent, especially in countryside and small and medium city. So actually, renting price indices is short on representative as the deflator of owner occupied dwelling service.

VI. Orientation of estimation improving

As mentioned above, there are still some visible problems in owner occupied dwelling service estimation. In the future, NBS will improve estimation method from next few aspects.

1. Improving current price estimation method

Although the estimation result by present method covers almost all the owner occupied dwelling service, interest cost for housing loan and property tax are not included. So if NBS want to calculated owner occupied dwelling service with average market rental charge, we must improve sample survey system to get information of housing area for rent, average market rental charge, and the proportion of non-market part of owner occupied dwelling.

2. Volume indicator extrapolation

As mentioned above, at present it is impossible to estimate owner occupied dwelling service with rental charge in China. Therefore, we may estimate constant price owner occupied dwelling service by volume indicator extrapolation to avoid impact factors from price index.

The calculation formula is:

Constant price growth rate of urban owner occupied dwelling service = growth rate of urban owner occupied dwelling area

Constant price growth rate of rural owner occupied dwelling service = growth rate of rural owner occupied dwelling area

The constant price growth rate of owner occupied dwelling service can be obtain from weighted mean of constant price growth rate of urban owner occupied dwelling service and rural owner occupied dwelling service. With the constant price growth rate of owner occupied dwelling service, we can calculate owner occupied dwelling service at constant price directly.

The following table compares the constant price growth rate of owner occupied dwelling service calculated with two different methods-- price index deflation and volume indicator extrapolation. It is easy to find that the constant price growth rate calculated by volume indicator extrapolation method is more conformable to the actual conditions.

Table 3: the constant price growth rate of owner occupied dwelling service calculated with two different methods

	2002	2003	2004	2005	2006
price index deflation %	7.45	4.49	13.61	10.60	8.94
volume indicator extrapolation %	7.83	5.27	6.26	7.86	4.48