LU – Luxembourg

The data for Luxembourg was added to the database in the 2012Q1 release. House price data comes from *l'Observatoire de l'Habitat*, which produces a nationwide house price index for new and existing single-family dwellings. Prices are determined through newspaper and select internet advertisements. The mix-adjustment method is used to construct the index. Dwellings are grouped by number of bedrooms and weighted by market representation. The index is quarterly and starts in the first quarter of 2005.

To extend the index to the first quarter of 1975, we use the annual index produced by the Central Bank of Luxembourg. This series has nationwide coverage and includes data on all types (single-family houses, apartment and apartment buildings) of new and existing dwellings. Prices are derived from transactions recorded by *l'Administration de l'Enregistrement et des Domaines* (AED). We interpolate this annual series to a quarterly frequency using the quadratic-match average method and extend the current series with the resulting quarterly growth rates.

Neither house price series is seasonally-adjusted by the source. We seasonally-adjust the spliced series using a BSTS model then re-base it to 2005=100. We deflate this house price series using the Personal Consumption Expenditure (PCE) deflator. To construct the PCE deflator, we use quarterly data obtained from Eurostat, which starts in 1995. To extend this Eurostat series we use the annual PCE deflator from the OECD Economic Outlook database, which spans from 1960 to the present. We interpolate this series to a quarterly frequency using the quadratic-match average method. We then use the resulting quarterly growth rates to extend the PCE deflator from Eurostat back to the first quarter of 1975.

The time coverage of Luxembourg's Personal Disposable Income (PDI) data is limited. PDI is reported for Luxembourg by Eurostat, from 2006 to 2009. Therefore, we rely on a combination of data from Luxembourg and Belgium to infer a PDI series for Luxembourg since 1975:

First step: Compute Net National Disposable Income for Luxembourg since 1975[36]. Luxembourg's national measure of disposable income is used to compute a PDI estimate. National disposable income data is published by Eurostat starting in 1995. To extend the series back to 1975, we start with Gross National Income (GNI) for Luxembourg, which is an annual series obtained from OECD national accounts beginning in 1970. By definition, national disposable income equals national income plus net factor income from abroad. Lacking data on net factor income from abroad for Luxembourg, we proxy national disposable income using Belgium data. We compute the ratio of gross national disposable income to GNI for Belgium. Both Belgium series are obtained from OECD national accounts, reported at an annual frequency and beginning in 1970. Then, GNI for Luxembourg is multiplied by the Belgium ratio to compute an adjusted measure of gross national disposable income. We subtract consumption of fixed capital (which is an annual series obtained from the OECD national accounts beginning in 1970) to convert the gross measure to a net measure.

Second step: Compute the ratio of Personal Disposable Income (PDI) to Net National Disposable Income (NDI).

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[36] Net National Disposable Income equals National Income plus Net Current Transfers from the rest of the world.

International House Price Database
www.dallasfed.org/institute/houseprice/index.cfm
Where house prices live.

The PDI data from Eurostat only covers the 2006-2009 period, so the PDI/Net National Disposable Income ratio can only be computed between 2006 and 2009. To extend the PDI/NDI ratio for Luxembourg we compute the same ratio for Belgium. Household disposable income data is obtained from Statistics Belgium and the OECD Outlook 86 database and NDI data is obtained from the current OECD national accounts database for Belgium. Both series are annual and begin in 1970. We use the Belgium PDI/NDI ratio to extend the ratio for Luxembourg both forwards and backwards.

Third step: Multiply the PDI/NDI ratio with the Net National Disposable Income.
This extended PDI/NDI ratio for Luxembourg is finally multiplied by the extended National Disposable Income series described in step one in order to compute a proxy for the PDI series of Luxembourg.

Since the PDI series we construct here is based on annual data, at least four quarters would elapse if we waited for the official data publication. To avoid this lag and make the public release of the data timelier, we use a structural time series model to add one extra yearly observation that can be jointly interpolated. The quarterly estimates obtained using interpolated nowcasts will be subsequently replaced as the official annual data become publicly available. We interpolate our estimate of the PDI of Luxembourg to a quarterly frequency using quadratic-match average. Since Belgium data is used to construct the Luxembourg PDI series when data is not available, we also apply a 4 quarter centered moving average to smooth some of the kinks that may appear in the data. The PDI series that we report for Luxembourg should be viewed as merely indicative at this stage, and will be replaced as soon as an official (publicly available) PDI series is found.

To compute the PDI *per capita* series we divide the PDI by the working-age population. For 2007 onwards the working-age population data is obtained from the most recent OECD Main Economic Indicators database. We use the quarterly growth rates of the discontinued OECD Outlook 90 database to extend the series to 1975. The PDI *per capita* series is rebased to 2005=100.

Information Resources:

l'Observatoire de l'Habitat Data (in French)
http://observatoire.ceps.lu/index.cfm?pageKw=serie3

Banque Centrale du Luxembourg – Methodology (in French)
http://www.bcl.lu/fr/publications/bulletins_bcl/Bulletin_BCL_2011_3/Bulletin_BCL_2011_3.pdf

Prices from around the world, all under one roof.