



Special Series on Statistical Issues in Response to COVID-19

This is one of a series of notes produced by the Statistics Department to help members address the COVID-19 emergency. This note, drafted by the IMF, has been developed in conjunction with the price statistics experts from the Inter secretariat Working Group on Price Statistics (Eurostat, International Labour Office, International Monetary Fund, Organization for Economic Cooperation and Development, United Nations Statistical Commission for Europe, and the World Bank). The views expressed in this note are those of IMF staff and do not necessarily represent the views of the IMF, its Executive Board, or IMF management.

Producer Price Index

The outbreak of COVID-19 (Coronavirus) and measures implemented to limit its spread could impact the routine compilation and dissemination of producer price indexes (PPI). Issues and challenges include increased numbers of missing prices in sampled establishments, the temporary closure of establishments, and restrictions on movement. In a growing number of cases, staff in national statistical organizations (NSOs) are working remotely and plans should be developed to support PPI continuity.

I. DATA COLLECTION

In most cases, PPI data are collected via email, phone, or internet portals. PPI data collection activities will be less impacted than the collection of prices for the CPI; however, national statistical organizations (NSOs) should communicate with respondents to ensure continued cooperation and reporting of prices.

A few NSOs use staff to collect prices for the PPI, especially in the case of agriculture. In-person collection of prices would be impacted, and staff should adopt alternative methods to collect prices via phone or email. Best practice suggests that initiations should be conducted in person. The recruitment and initiation of new establishments should be done by phone until in-person interviews can resume safely. PPI programs should adapt to the ever-changing situation and ensure the continued dissemination of a reliable index, while ensuring that any in-person collection activities do not contravene emergency rules and/or recommendations issued by authorities and do not place staff at risk.

When facing increased numbers of missing prices, it is important to remind that all temporarily missing prices should be imputed using one of the methods described in *Producer Price Index Manual: Theory and Concepts*. **As noted in the Manual, carrying forward, or repeating the last available price, should be avoided as it introduces a downward bias into the index.** The imputation techniques described in the Manual do not introduce bias into the index. Imputations are self-correcting. When a price can be collected, the index returns to the correct level. This is important so that the PPI continues to provide a reliable estimate of price change. A key use of PPI data is to deflate output data for the compilation of volume measures used by the national accounts to estimate economic growth. Reliable measures of economic growth are particularly important during these periods of economic uncertainty.

As noted in the Manual, imputations can be made using industry or product indexes. It is important to be consistent when deciding which indexes to use as the basis for the imputation of missing prices. If an entire index is missing, it is recommended to use the next level up in aggregation as the basis for making the imputation. For example, if all prices for oranges are missing, the index for the growing of citrus fruits can be used as the basis for making the imputation. If all citrus fruits are missing, the index for growing of perennial crops is used as the basis for making the imputation, and so on.

Many countries have a limit on the number of periods a variety can be considered temporarily missing before asking a data collector to select a replacement variety. For example, a number of NSOs allow a variety to be missing for three consecutive periods. In the third period, a replacement variety is identified, and price collection begins for that new variety. It may be necessary to consider relaxing these rules given the current circumstances.

For more information on the different imputation methods, please see Chapter 9 of *Producer Price Index Manual: Theory and Practice*, which discusses the treatment of temporarily missing prices in detail (<https://www.imf.org/external/pubs/ft/ppi/2010/manual/ppi.pdf>). Imputation of missing prices should be standard practice and routine each month. In the context of the current circumstances, care must be taken that the index compiles correctly in the event of widespread missing prices.

Below are suggestions to deal with the current challenges for collecting prices:

- **Collecting prices from establishments that remain open** – Many NSOs collect PPI prices via phone, email, electronic data transfers, or internet portals. These methods should continue to be used. Very few NSOs collect prices in person for the PPI; however, in some countries it is common to collect agricultural prices in person. In lieu of in-person collection, staff can collect prices by phone until it is safe to resume in-person price collection.
- **Temporarily closed outlets** – Some establishments will close temporarily. The prices collected in the closed establishments should be treated as temporarily missing and imputed. Because these establishments are closing temporarily, they should not be replaced. These establishments are expected to re-open when deemed safe to do so.
- **Services** – While a number of service providers will continue to operate, such as telecommunication service providers, others will temporarily cease operation or significantly curtail their operations. Providers of accommodation and passenger transportation services are either temporarily closing or currently providing limited services. For example, many national airlines have either stopped all passenger transportation services or provide passenger services on a very limited number of routes at this time. In many areas, hotels are also temporarily closing. Some NSOs collect an average price, or unit value, for defined services based on the entire month. For these service providers, they may still be able to report price data for those periods during the month not affected by service limitations or closures. While normally the prices used should refer to the entire period, the available data could still be used to compile the index. For those countries that use point in time pricing, where prices refer to a specific day during the month or quarter, it may be possible to request a price for an earlier day during the period when services were provided. While these options would not normally be standard practice, given the circumstances, this would facilitate PPI continuity.

For any prices normally collected in person, it is important to work closely with respondents to identify the preferred method for reporting and the timing, especially if collecting via phone. NSO's should make greater effort to communicate with respondents to stress the importance of the continued dissemination of a reliable index.

Metadata on the number of missing and imputed prices is considered a best practice. These data are especially important given the current circumstances as they will enhance transparency and build user confidence. It would also be important to identify the number of closed versus open outlets. These metadata should be made available to users on demand and posted on the NSO website.

When disseminating the index, it is important to flag those indexes with significant imputations. The release should also include the metadata on the total number of collected versus missing and imputed prices. It would be useful if the NSO would identify the number of collected versus imputed prices for each major group. Also, the release should include details on the number of outlets available for pricing versus those temporarily closed. The metadata should describe what methods have been implemented to collect all available prices.

II. ISSUES TO CONSIDER – PREPARING TO WORK REMOTELY

A number of NSOs have begun to work remotely as part of broader efforts to limit the spread of COVID-19. Individual country circumstances will dictate remote work arrangements in practice. NSOs should develop plans to support working remotely to ensure continued dissemination of the PPI. Country-specific circumstances with regard to staff and budgetary resources will drive decisions regarding plans to work remotely.

Some issues to consider include:

- Laptops – staff will require access to laptops to allow them to work from home
- Software – laptops should be equipped with any necessary software to support PPI compilation
- Data security – protocols developed to ensure PPI data remain secure and confidentiality (prices and respondents) not at risk.
- Designation of key staff (limited) needed to access headquarters to process and release the index.
- Some countries compile the PPI using Excel or similar spreadsheets. Protocols should be developed to ensure final worksheets are shared with more than one staff to limit any problems resulting from equipment failure or illness if only one staff has access.
- Data release – develop protocols for the remote approval and dissemination of data releases.
- Establish channels for communication – organize a WhatsApp group for PPI staff to communicate.

Some NSOs do not have the capacity to connect to IT systems remotely from home, which would affect the compilation of the PPI. In these cases, Excel or similar spreadsheets can be used as a temporary solution. Staff can develop worksheets that will compile the PPI from home. Once staff return to the office, the data can be entered into the IT system and normal compilation procedures would continue.

In those cases where index compilation is not possible, it will be important to continue collecting all available prices as described above. These prices can be used to compile the index once staff return to the office and have access to the IT systems. This will ensure index continuity and minimize any disruptions to the PPI dissemination schedule.

If you wish to discuss these issues in greater detail, you can contact one or all of the following:

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