Producer Price Indices (2013 to 2016)

National Statistical Office hereby releases the first Producer Price Indices (PPI). These indices are for the quarters of 2013 to 2016. Producer Price Index measures the gross changes in the trading price of products on the domestic and the non-domestic markets, at all stages of processing. The price changes are measured from the perspective of the producer. The producer prices are collected as at 15th February, 15th May, 15th August and 15th November of the year. These dates correspond to the first, second, third and fourth quarters respectively.

The PPI data are widely used by both the business community and government, and enable monitoring of prices at different stages of the industrial process. The Producer Price Indices are grouped according to the International Standard Industrial Classification of All Economic Activities (ISIC) Revision 4.
KEY FINDINGS FOR SEPTEMBER 2016

Table 1 and Table 2 present the findings of producer price indices for manufacturing, electricity and water.

Overall Producer Price Index for manufacturing, electricity and water
The annual percentage change in the total PPI for manufacturing, electricity and water was -12.8% in September 2016 (compared with 6.0% in September 2015 and 12.1% in September 2014). From June 2016 to September 2016 the PPI for food products decreased by 1.3%.

The main contributors to the annual rate of -12.8% were food products (-2.3%), beverages (-26.0%), chemicals and chemical products (-21.6%) and electricity and water (-14.5%). The main contributors to the quarterly decrease of 1.3% were beverages (-13.0%), chemicals and chemical products (-4.5%), food products (-2.2%) and electricity and water (-2.1%).

Manufactured food products
The annual percentage change in the PPI for food products was -2.3% in September 2016 (compared with 8.4% in September 2015 and 10.6% in September 2014). From June 2016 to September 2016 the PPI for food products decreased by 2.2%.

The main contributors to the annual rate of -2.3% were vegetables and animal oils (-36.7%) and sugar (-33.7%). The main contributor to the quarterly decrease of 2.2% was sugar (-15.0% and vegetables and animal oils (-15.7).

Manufacture of beverages
The annual percentage change in the PPI for beverages was -26.0% in September 2016 (compared with 21.7% in September 2015 and 1.2% in September 2014). From June 2016 to September 2016 the PPI for beverages declined by 13.0%.
The main contributors to the annual rate of -26.0% were soft drinks and mineral waters (-34.5%). The main contributor to the quarterly decrease of 13.0% were soft drinks and minerals (-16.6%) and malt liquors (-6.9%).

**Manufacture of chemicals and chemical products**
The annual percentage change in the PPI for chemicals and chemical products was -21.6% in September 2016 (compared with 26.9% in September 2015 and 26.4% in September 2014). From June 2016 to September 2016 the PPI for chemicals and chemical products decreased by 4.5%.

The main contributors to the annual rate of -21.6.0% were fertilizers and nitrogen compounds (-43.3%) and soap and detergents (-3.8%). The main contributor to the quarterly decrease of 4.5% were fertilizers and nitrogen compounds (-19.2%) and other chemical products (-1.6%).

**Manufacture of plastic products, non-metallic mineral products and fabricated metal products**
The annual percentage change in the PPI for plastic products, non-metallic mineral products and fabricated metal products was -1.0% in September 2016 (compared with 10.3% in September 2015 and 6.1% in September 2014). From June 2016 to September 2016 the PPI for plastic products, non-metallic mineral products and fabricated metal products decreased by 0.4%.

The main contributor to the annual rate of -1.0% were structural metal products (-17.1%). The main contributor to the quarterly decrease of 0.4% were structural metal products (-6.1%).

**Electricity and water**
The annual percentage change in the PPI for electricity and water was -14.5% in September 2016 (compared with 13.1% in September 2015 and 33.4% in September 2014). From June 2016 to September 2016 the PPI for electricity and water decreased by 2.1%.

The contributors to the annual rate of -14.5% were electricity (-11.2%) and water (-27.6%). The contributors to the quarterly decrease of 2.1% was water (-11.3%).
### Table 1: Key figures

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<thead>
<tr>
<th>Product</th>
<th>Weight</th>
<th>Index (2012=100)</th>
<th>Percentage change</th>
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<tr>
<td>Manufacture of food products</td>
<td>32.32</td>
<td>148.6</td>
<td>164.3</td>
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<tr>
<td>Manufacture of Beverages</td>
<td>11.86</td>
<td>189.7</td>
<td>192.0</td>
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<tr>
<td>Processing of Tobacco (Stemming and re-drying)</td>
<td>34.42</td>
<td>209.9</td>
<td>234.0</td>
</tr>
<tr>
<td>Manufacture of chemicals and chemical products</td>
<td>9.28</td>
<td>118.7</td>
<td>150.1</td>
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<td>Manufacture of plastic products, non-metallic mineral products and fabricated metal products</td>
<td>6.05</td>
<td>127.7</td>
<td>135.4</td>
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<td>Water and Electricity</td>
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<td>Total Index</td>
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Table 2: Producer Price Indices at Division Level. 2012=100

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<th>Manufacture of food products</th>
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<th>Processing of Tobacco (Stemming and re-drying)</th>
<th>Manufacture of chemicals and chemical products</th>
<th>Manufacture of rubber and plastics products</th>
<th>Manufacture of other non-metallic mineral products</th>
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<td>172.9</td>
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*Source: National Statistical Office of Malawi*
Figure 1 depicts price developments for selected industry divisions from 2013 to 2016.

Figure 1. Price developments for selected industry divisions (2013-2016)
Malawi Producer Price Index

TECHNICAL NOTES

1. Background on price indices
Four of the principal price indices in the system of economic statistics—the PPI, the Consumer Price Index (CPI), and the export and import price indices—are well known and closely watched indicators of macro-economic performance. They are direct indicators of the purchasing power of money in various types of transactions and other flows involving goods and services. As such, they are also used to deflate nominal measures of goods and services produced, consumed, and traded to provide measures of volumes. Consequently, these indices are important tools in the design and conduct of the monetary and fiscal policy of the government, but they are also of great utility in informing economic decisions throughout the private sector. (IMF PPI Manual).

2. Definition of the PPI
The PPI indicates changes in producer prices of locally produced commodities including exports. The PPI is defined as “A measure of the change in the prices of goods either as they leave their place of production or as they enter the production process (OECD).”

3. Uses of the PPI
PPIs are used for a variety of different purposes. There has always been substantial interest in, and demand for, price indices from the general public, private sector as well as government and international agencies. The PPI may be used for purposes of:

- The monthly or quarterly PPI with detailed product and industry data allows short-term price inflation to be monitored through different stages of production.
- A deflator in the compilation of national accounts – PPIs are used as a deflator of nominal values of output or intermediate consumption for the compilation of production volumes and for the deflation of nominal values of capital expenditure and inventory data for use in the preparation of national accounts. Therefore, the concepts underlying the PPI are often conditioned by those underlying the national accounts.
4. Scope
The PPI covers selected manufacturing establishments and utility establishments falling within divisions 10 to 36 of the International Standard Industrial Classification of All Economic Activities Revision 4 (ISIC Rev. 4) whose output is mainly sold on the domestic market.

The following divisions have been included in the compilation of the PPI:

a) Division 10: Manufacture of food products  
b) Division 11: Manufacture of Beverages  
c) Division 12: Processing of Tobacco (Stemming and re-drying)  
d) Division 20: Manufacture of chemicals and chemical products  
e) Division 22: Manufacture of rubber and plastics products  
f) Division 23: Manufacture of other non-metallic mineral products  
g) Division 25: Manufacture of fabricated metal products, except machinery and equipment  
h) Division 35: Electricity, gas, steam and air conditioning supply  
i) Division 36: Water collection, treatment and supply

5. Reference base period
The time reference period for the PPI is 2012. As soon as the December 2012 prices were finalized, average annual prices for each product were calculated as base period prices.

6. Frame
A list of 110 establishments falling within the scope of the PPI was obtained from the Annual Economic Survey. Data on Gross output for each establishment was also available.

7. Selection of establishments (producers)
A sample of 41 establishments was drawn from the list. The selection of the sample of establishments to report product prices each quarter was undertaken at the 4-digit ISIC class level and was based on cut-off sampling principles. The cut-off for each industry varied as a function of the degree of concentration of production.
8. Selection of products to be priced
From each selected establishment, the product(s) selected for pricing are those which are the most important ones in terms of contribution to the turnover of the establishment.

9. Prices collection
Prices collected refer to the prices received by producers for the sale of their products on the local market. The prices exclude all taxes on products, namely excise duty and value added tax.

Producers are contacted in the field on a quarterly basis. The producer prices are collected as at 15th February, 15th May, 15th August and 15th November of the year. These dates correspond to the first, second, third and fourth quarters respectively. Overall, some 179 prices are collected every quarter.

10. Imputations in the PPI
There are three methods that the IMF PPI manual prescribe and give guidelines on.
They are:
  a) Omit the item for which the price is missing so that a matched sample is maintained (like is compared with like) even though the sample is depleted
  b) Carry forward the last observed price (e.g. if the price history of the product indicates that it is stable and changes once a year following contract renegotiation).
  c) Imputation:
     • Impute the missing price by the average price change for the prices that are available in the elementary aggregate.
     • Impute the missing price by the price change for a particular comparable product from a similar establishment.

NSO uses the last two methods of imputation in the calculation of the PPI. The choice of method is determined by the level of aggregation of a particular index and the frequency of price collection for a particular product.
11. **Index Calculation**

The methodology for compiling the PPI meets international recommendations as set out in the ‘Producer Price Index Manual’ published by the International Monetary Fund.

The calculations of price indices are usually conducted in two stages. First, price indices are calculated for the elementary aggregates, and then these elementary price indices are averaged to obtain higher level indices using weights.

For elementary index compilation, the Jevons index is used. The Jevons index is defined as the un-weighted geometric mean of the price ratios (pt/pt-1), which is identical to the ratio of the un-weighted geometric mean prices.

The formula is given as:

\[
I_{jt} = \left( \frac{P_{jt}}{P_{tj}} \right) = \frac{\prod (P_j^t)^{1/n}}{\prod (P_i^0)^{1/n}}
\]

The second stage of calculating the PPI does not involve individual prices or quantities. Instead, a higher-level index is calculated as a Young index in which the elementary price indices are averaged using a set of predetermined weights. The formula can be written as follows:

\[
I_{c} = \prod \left( \frac{P_{ci}}{P_{0i}} \right) * W_{i0} * 100
\]

Where \( I_{c} \) = Index for current period (usually month)

\( P_{ci} \) = Price of product \( i \) for the current period

\( P_{0i} \) = Price for product \( i \) for the base period (2012)

\( W_{i0} \) = Weight associated with product \( i \) at the base period
12. Reliability of the PPI

The statistical accuracy of PPI depends heavily on the quality of information provided by respondents. NSO places great emphasis on the need for reporting effective selling prices, i.e. the amount realized by a producer when selling its products on the market inclusive of all discounts and other price deductions rather than the list or catalogue prices.

In the field, a system of sample checks is already in place for detecting systematic errors in the collection process. The results are analyzed right on field by analyzing the quarterly changes and comparing also the prices those collected at the same quarter of previous year. Outliers are discussed with the producers to ensure that they are genuine.