

# Purchasing Managers' Index™ (PMI™)

## A monthly index of business conditions in the manufacturing sector

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### Introduction

The Purchasing Managers' Index™ (PMI™)<sup>1</sup> compiled by the Bureau for Economic Research (BER) and sponsored by Absa, is based on the widely used and highly regarded Purchasing Managers Index (PMI) produced by the Institute for Supply Management (ISM) in the USA. The index is compiled on a monthly basis by the BER and focuses on business conditions in the manufacturing sector. In the USA, and in other countries, the index serves as an important indicator of business conditions.

### PMI in the USA

In the USA, the PMI is a composite index based on five seasonally adjusted diffusion indices, each derived from monthly surveys conducted under purchasing managers in the manufacturing sector. The surveys reflect the change, if any, in the current month compared to the previous month.

The PMI is calculated as the weighted average of the following indices (weights in parentheses): Production (0.20), New Orders (0.20), Employment (0.20), Supplier Deliveries (0.20) and Inventories (0.20).

The survey from which the indices are compiled require the respondents to indicate each month, whether a particular activity (e.g. production) for their company has increased, decreased or remained unchanged. The indices are then calculated by taking the percentage of respondents that reported an increase and adding it to one-half of the percentage that reported no change. This results in an index for which a value of 50 indicates no change in the activity, a value above 50 indicates increased activity and a value below 50 indicates decreased activity.

These indices are called diffusion indices and indicate the degree to which the measured change is dispersed or "diffused" throughout the sample population. When a diffusion index increases within its increasing range (50 to 100 for the PMI indices), increased activity is becoming more dispersed and it

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implies that the activity is increasing at an accelerating rate. Diffusion indices tend to be leading indicators because typically the rate of change of an activity will change direction before the level of the activity changes direction

## History of the South African manufacturing PMI

The idea of a PMI for South Africa originated from informal talks in June 1998 between Mike Poulter, Assistant Dean: Faculty of Commerce at the University of Natal and Murray Pellissier, former Deputy Director of the BER. Subsequent contact with ISM in the USA and CIPS in the UK (the respective national purchasing associations) resulted in their full support for the South African endeavour. In October 1998, the BER and IPSA (the SA purchasing association) agreed to embark on a joint venture to launch a purchasing managers' survey and a PMI for South Africa. Various subsequent research contacts by Marius Bosman (president of IPSA), Mike Poulter and Murray Pellissier with purchasing associations in the USA, the UK and Israel provided information on the relevant research methodologies. In this regard, Zeev Deckel, manager of the PMI in Israel, was particularly helpful.

The official announcement to launch a manufacturing purchasing managers' survey and compile the PMI for South Africa was made at the national IPSA conference in March 1999. The first survey was conducted in September 1999.

## Details of the South African manufacturing PMI

The survey is conducted by way of questionnaires to a panel of purchasing managers in the manufacturing sector. The questionnaire consists of nine questions on the monthly changes in business conditions in the manufacturing sector. The respondents have to indicate qualitative changes only, i.e. whether a particular activity has increased, decreased or remained unchanged.

The questions (see the final section below) focus on: Business activity (production), New sales orders, Employment, Backlog of sales orders, Purchasing inventories, Purchasing commitments, Purchasing supplier deliveries, Purchasing prices and Purchasing conditions. The questionnaires are completed during the second and third week of every month and processed during the final week of the month. The results are made public on the first working day of the following month.

The results of the responses on each question are processed in the form of an index. The index is constructed as the sum of the percentage of respondents that indicated an increase plus one-half of the percentage of respondents that indicated no change. (Note that in the case of supplier deliveries, the percentage that indicated a decrease is used). This provides an index that ranges between 0 and 100, with 0 indicating a decline experienced by all the respondents and 100 indicating an increase experienced by all the respondents. An index value of more than 50 indicates increased activity.

The PMI is then calculated as a weighted average of five of the individual indices. The choice of indices included and the weights used currently for the SA PMI are identical to the original weights of the ISM in the US. The ISM has subsequently changed to equal weights for the main PMI subcomponents.

The SA PMI is calculated as follows:

$$\begin{aligned} \text{SA PMI} = & 0.25 \text{ Business activity} + \\ & 0.30 \text{ New sales orders} + \\ & 0.20 \text{ Employment} + \\ & 0.15 \text{ Supplier deliveries} + \\ & 0.10 \text{ Inventories} \end{aligned}$$

In line with the international norm, the PMI figure is adjusted to account for seasonal variation in the data. To obtain the seasonally adjusted figure, the five individual indices are each seasonally adjusted and summated using the same weighting as described above. Furthermore, given changes in seasonal patterns over time, these seasonal factors are re-calculated once a year (usually around September/October), which then also necessitates the historical revision of the seasonally adjusted series.

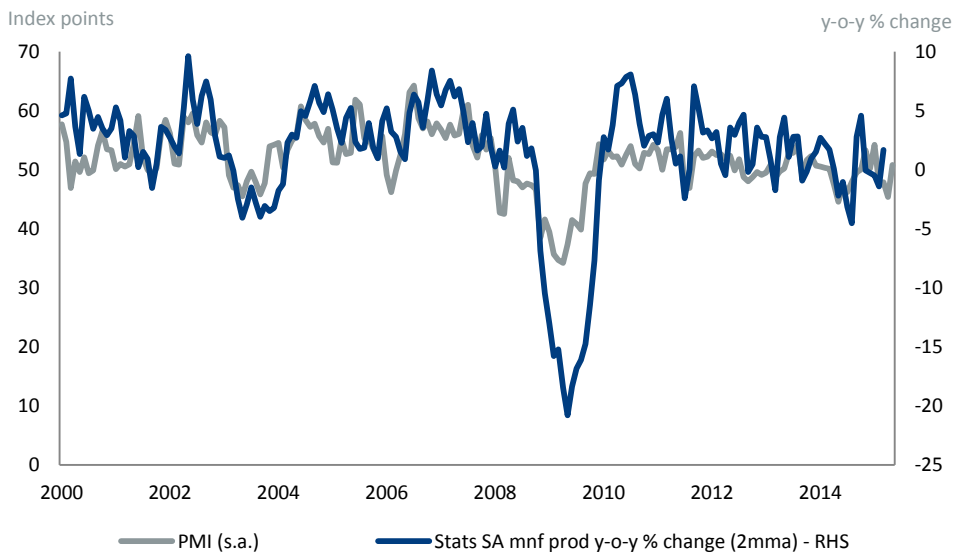
The survey has been run on a monthly basis since September 1999 and the statistics on the individual indices and the SA PMI are presented in the results reports. The indices are also presented graphically in the reports.

Research in the US and elsewhere has shown that the manufacturing sector has specific qualities that make it especially relevant as a leading or cyclical indicator for the broader economy. In simple terms, the manufacturing sector is exposed to both the primary (agriculture and mining), as well as the tertiary (retail and wholesale) industries. A purchasing manager in the manufacturing sector is in an exalted position to provide an early warning signal on, for example, changes in demand and supply conditions.

A typical example would be in the case of a processed food manufacturer. Strong consumer spending may increase the demand for processed (manufactured) food. However, the availability of the basic inputs to the food manufacturers would depend on the size of agricultural food crops. The role of inventories in manufacturing is also crucial in providing information on the state of the economic cycle. Inventories are less of a factor – and indeed absent – in many services sectors.

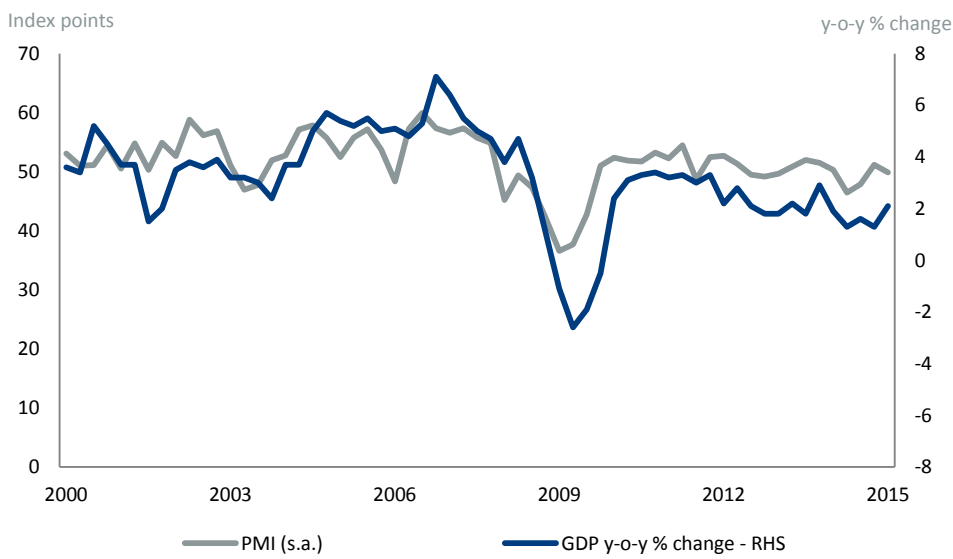
In order to confirm the cyclical and leading indicator properties of the SA PMI, the following graphical analysis of the SA PMI with the available official data series are provided below. The graphs reveal both a good correspondence with the recent South African business cycle behaviour and an apparent tendency to lead the business cycle measures.

Figure 1: PMI and manufacturing production



Source: BER, Stats SA

Figure 2: PMI and GDP growth



Source: BER, Stats SA

## Definitions to use with the PMI survey questionnaire

### **Business activity**

The level/volume of general business output may be measured by production volumes, units of work accomplished, person-hours working, sales volumes or similar non-monetary measures. The reason for non-monetary indicators for this and several other questions is to prevent inflation from affecting the data over a period of time.

### **New sales orders**

The level/volume of new sales orders or other forms of requests for products, service or business activity received during the month whether or not fulfilled during the month. Again, use non-monetary measures. It may be convenient to use the same unit of measure for this question and for question 1.

### **Backlog of sales orders**

The level/volume of sales orders or other forms of requests for business activity output that have been received but not yet fulfilled (regardless of when they were received). Also needs to be a non-monetary measure and should be the same unit of measure used for question 2.

### **Employment**

Level (units/number) of overall employment in your organisation including temporary and contract personnel.

### **Purchasing inventories**

The level/volume of overall purchased stock of materials and goods used in your normal business or activities. Indicate the direction of change, if any, in overall purchased inventory quantities (not finished goods unless purchased) and whether these quantities are above, equal to, or below the desired inventory levels.

### **Purchasing commitments**

A usually irrevocable undertaking or responsibility in the obtaining of materials, goods and services in return for a consideration. Purchasing orders placed against lead time.

### **Purchasing supplier deliveries**

Overall delivery performance versus that of the previous month of suppliers of materials, goods and services purchased for the running of your business. If items and services are more readily obtainable this month than last month, then delivery performance is faster than a month ago. This item is not intended to measure actual versus expected delivery performance.



## **Purchasing prices**

Rate of change, refers to the percentage change in the approximate overall weighted average prices paid for materials, goods and services purchased for conducting your business.

## **Expected business conditions**

The expected general business conditions in six months' time compared to current conditions.

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