

COVID-19 PANDEMIC EFFECTS ON THE PMI AND THE MANUFACTURING SECTOR

The PRM-PMI is a statistical indicator that measures short-term business conditions in Puerto Rico's manufacturing sector. The PRM-PMI is calculated as the average of 5 sub-indices, which represent different business conditions in manufacturing establishments: new orders, production, employment, deliveries to suppliers and own inventories. The sub-indices are calculated using the diffusion index methodology. The participants include manufacturing establishments with 50 or more employees. Currently, results are presented on a Non-Seasonally Adjusted (NSA) basis. For more information about the index: <https://www.indicadores.pr/d/jgk2-2dpp/data>.

PRM – PMI Recent Events: 2017-2021

A reading of this index above the threshold level of 50 suggests an expansion while a reading below 50 indicates a contraction in an aspect of the economy with respect to the previous month. Following this analysis, the PRM-PMI revealed the largest drop in the last 3 years after the passage of Hurricane Maria. More recent historical events, such as the earthquakes in 2020 and the COVID-19 pandemic, in addition to the accompanying economic and fiscal crisis, showed drops below 50, meaning an economic contraction in relation to the previous month. Interestingly, the PMI has been above the threshold for the last 10 months, showing a monthly improvement in the manufacturing sector. By comparing the reading of September 2021 with the same month of the previous year, the PMI reflects an increase of 3%. Although it can be observed that the speed of the changes registered in the annual monthly rates in the past months has slowed down, this could be a reduction in the speed of the post-lockdown recovery.

PRM – PMI Sub-Indexes

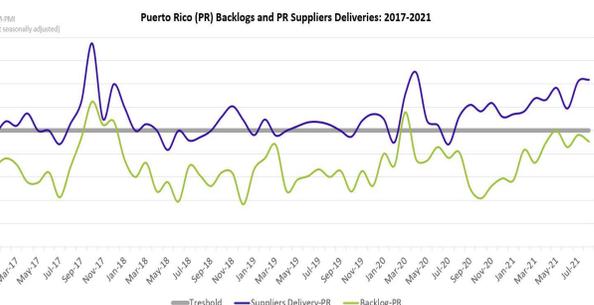
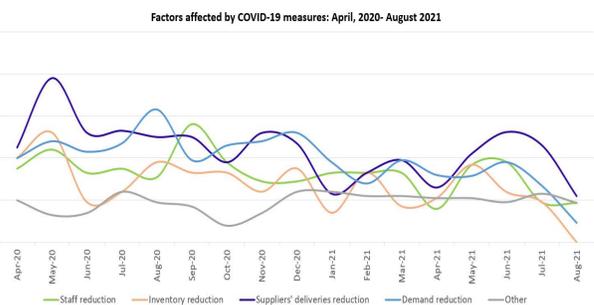
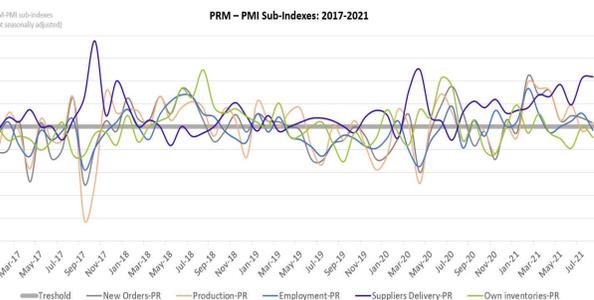
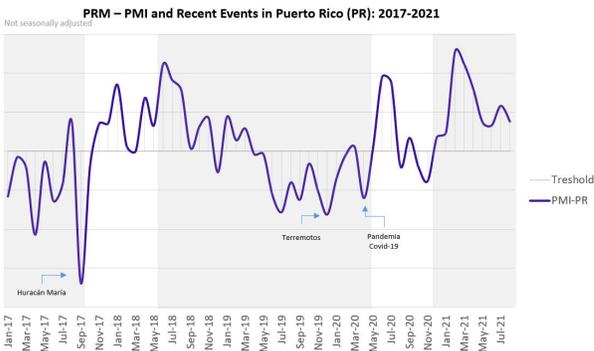
This graph is composed of the sub-indexes used to calculate the PMI: new orders, production levels, employment levels, suppliers deliveries performance in manufacturing establishments, as well as business inventory levels. The survey also includes questions of other business conditions. The PRM-PMI and the sub-indexes are without seasonal adjustment.

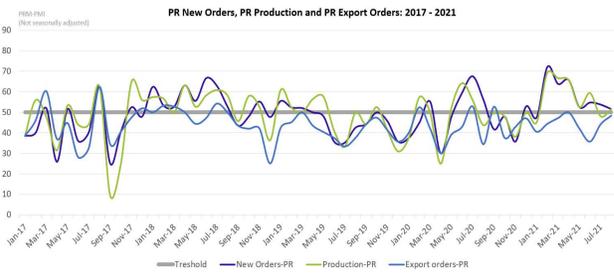
Factor affected by COVID-19 measures.

In the additional questions section of the survey, a question about the factors affected in the manufacturing sector related to the health measures taken by the government given the COVID 19 pandemic was included. The graph presents the results of the following main factors: reduction of staff, reduction of inventory, reduction of supplier deliveries and reduction in demand, in addition to other factors. This question was asked from April 2020 to August 2021. Among other factors are mainly the area of human resources such as absenteeism, staff turnover, shift changes, recruitment and remote work.

PR Backlogs and PR Suppliers Deliveries

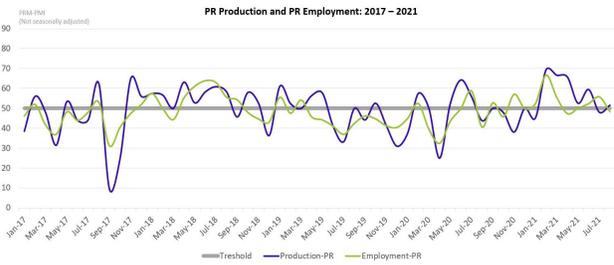
This graph shows that if the suppliers deliveries are slower there are more orders that are not being completed. In that case, the index for both should be above 50. This implies a positive relationship; a supplier delivery delay increases the order backlog. This could be analyzed in relation to costs: the supplier delivery delay may decrease inventory, thus affecting production and surplus inventory.





PR New Orders, PR Production and Export Orders

When there are more new orders, production and export orders are expected to tend to increase. However, the graph shows that while new orders and production do act in a positive relation, export orders are rarely above the threshold. After the onset of the pandemic, new orders and production were at their highest, while export orders continued below 50.



PR Production and PR Employment

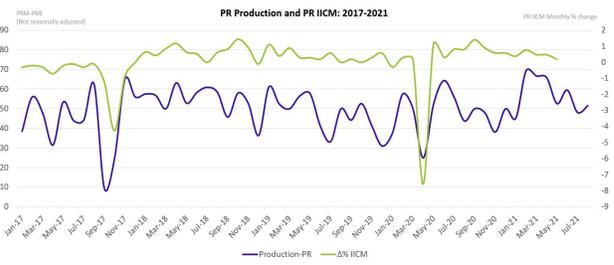
The production index shows a positive relation with the level of employment in a manufacturing company. When there is more output, there is a higher level of employment, both being above 50, and vice versa. During the pandemic, this relation may have been affected by work conditions, COVID economic relief initiatives and a decrease in production. Both indexes are not seasonally adjusted.

Macroeconomic Indicators



PR CPI and PR Prices Paid

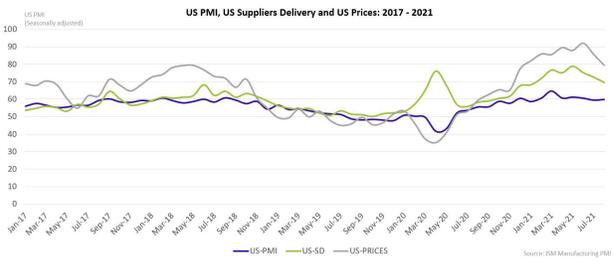
It is expected that when the prices for raw materials increase, there is an accompanying increase in the price of the final product. Hence, when the prices paid index is above 50, the Consumer Price Index (CPI) tends to rise. According to the graph, after hurricane Maria the prices for raw materials were higher, but this was not represented in the CPI, as did occur during the COVID-19 pandemic.



PR Production and PR MCI

The PRM – PMI works as a leading indicator for the Manufacturing Coincident Indicators Index (MCI). It is understood that when the PMI shows an expansion, the MCI has a sustained growth in the following months. The production diffusion index (not seasonally adjusted) shows a positive relation with the MCI and it can be observed that they follow a similar behavior.

United States Manufacturing PMI (IMS PMI)



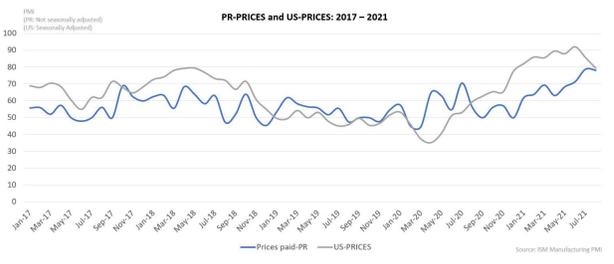
US PMI, US Suppliers Delivery and US Prices Paid

It is shown how the Suppliers Deliveries and Prices Paid index constantly exhibit similar behavior. When Suppliers Deliveries time are slower (high index), prices seem to rise as well. However, at the beginning of the pandemic delivery times were slower and prices were lower demonstrating the effects of the measures taken by the government. In the following months, prices paid for raw materials were getting higher, while the diffusion index for delivery times never went below 50.



US Suppliers Deliveries and PR Suppliers Deliveries

The US Suppliers Deliveries diffusion index compared to the corresponding Puerto Rico index highlight the effect of hurricane Maria in late 2017 in delivery times, since the effect is not visible in the US. Additionally, both delivery times were affected simultaneously during the COVID-19 pandemic exhibiting slower times.



US Prices Paid and PR Prices Paid

Both US and PR Prices Paid indexes demonstrate a drop below 50 at the start of the pandemic with an observable positive relation with US prices at other periods. Recently, both indexes have been above the threshold for the past 7 months, with US prices being higher than PR prices.