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# Short Term Indicators During Political Crisis: Index of Industrial Production in Palestine as a Case Study

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## Abstract

Producing official statistics during unstable political and security conditions is a challenging task for many countries. During such critical conditions, the importance of detailed reliable figures increases to describe what is happening on ground. Index of Industrial Production IIP plays an important role in reflecting the economic situation in the country through observing the industrial activity as well as GDP growth.

In the case of IIP the only data source is the industrial establishments which become unreachable during political crises like wars. To publish reliable figures that serve the current situation becomes a priority taking into account the indicator quality, accuracy as well as timing.

This paper introduces the Palestinian experience in estimating the IIP during 2014 war on Gaza Strip. The methodology that was followed took several directions. Many sources of information were integrated together to reach an appropriate estimate for the missing data. The weight of a specific activity compared to other activities in the index, general information about the production process in each establishment, exports and imports of the targeted products and inputs, in addition to the nature of the product itself either basic or luxury good, all together were used in the analysis process. Moreover, following news and reports coming from the field of conflict was of great importance in drawing specific conclusions. Testing the differences between the estimated IIP and the revised IIP after raw data was available the results showed high level of accuracy.

**Key words:** Index weights , IIP, basic and luxury goods

## **1. Introduction**

Users demand on official statistics becomes more relevant in political crises especially economic indicators. During the war on Gaza Strip in 2014, many obstacles faced data collection due to lack of security. Economic experts ruled out any production process that could have happened during the war. That assumption could be considered rational in cases rather than Gaza Strip where one million people live under isolation and siege. That raised the question how could those people survive during 50 day-war without producing anything while all borders between Gaza Strip and the rest of the world were closed. The alternative assumption was that some production must have happened.

Estimating the industrial production occurred in that period was a must. From one side, the Palestinian Central Bureau of statistics (PCBS) follows the Special Data Dissemination System (SDDS) where the IIP should be published on monthly basis based on a predetermined calendar adopted by PCBS. And from another side, the estimation process should be accurate as possible because there are many statistical reports are published using the IIP findings and the quarterly GDP is one example. Within this frame work and the necessity of that indicator, good estimation methods should be introduced to maintain high quality of official statistics.

### ***The Index of Industrial Production IIP***

The Index of Industrial Production (IIP) measures the change of the volume of goods or services produced over time. Its main purpose is to provide a measure of the short-term changes in value added over a given reference period. In the case of Palestine, IIP covers both mining and manufacturing activities in addition to the production of water and electricity. IIP helps in measuring value added, gross output by using other indicators like the value of production or the turnover data. The IIP is considered as a volume index which means that the index is not influenced by price fluctuations.

Production Indices are combinations of high frequency, fast availability in addition to its detailed activity breakdown. For these reasons IIP facilitates the use of production indices as a reference series in determining or forecasting turning points in business cycles.

The monthly information needed to compile IIP is the turnover data or the value of production or sales from the main industrial companies in Palestine. Business surveys provide data about production and value added to be used in constructing the weights necessary to compile the IIP. In the monthly questionnaire, information about number of employees, working hours, inputs used in production are gathered in addition to the main information about the value of production and sales.

During a crisis, data collection process becomes difficult. Instead, estimation should take place to maintain consistent time series of an indicator. In the coming sections, this paper will discuss how a statistician can use all available information of metadata, news, historical data, and logical judgments to estimate missing data.

## **2. Discussion**

Estimation process started by studying the main industrial production activities in Gaza Strip. Reviewing the weights of the index it was found that most of production is in manufacturing of food, furniture, wearing apparel, foot wear and leather products, and printing activities in addition to water and electricity supply.

### ***Necessary Products during the crisis***

Firstly, the estimation process started by filtering out the activities that were considered of less importance for humans to survive in such bad circumstances. It is illogical to produce furniture or clothes during war. The emphasis was on necessary goods like bakery, dairy products, beverages, meat processing, grain mills, animal feed, water and electricity supply.

It was assumed that only factories working in these industries produced during the war. So, production values to be estimated are only for these factories.

### ***Following latest news reports during the war***

Watching news reports coming from the field is very important to make logical conclusions that is later altered to figures. Through this process data compilers could know the destroyed factories, and the safe places where life is possible to continue as in regular days. It was assumed that all factories close to the borders with the Israeli side did not work or were destroyed and so there was no production. Also, news reports always included information about the electricity supply for all regions in Gaza. Moreover, news reported the number of working hours for the main electricity generating companies. That point helped in estimating the production of electricity during the war.

Moreover, number of truce days agreed between the fighting sides during the war helped in predicting some production indicators for some industries.

### ***Studying inputs necessary for production***

In previous surveys, a detailed questionnaire was filled out by all companies included in the IIP sample. The questionnaire included information about inputs needed for production, origin of inputs if it is local or imported, number of employees, working hours and marketing if it is for local markets or for sale outside. All these information were aggregated together to filter out the factories that couldn't produce because the lack of inputs. For example, dairy production companies and food processing companies depend on fresh inputs of milk, fruit, vegetables and meat which become rare due to closure of borders in addition to the lack of security.

### ***Other production indicators***

For some companies, some production indicators were known like number of working days, hours, and number of employees . These information in addition to previous values of production in similar situations enabled the derivation of the value of production. Also, the previous information gathered in similar situations was analyzed. All these together helped in the estimation process.

### 3. Results:

Through the analysis mentioned above, production values were predicted for many companies and then aggregated in the production groups of the index. These results were compared with the actual data obtained from the companies after the end of the crisis. The estimated results were compared with the actual data. The results showed slight differences which raised the accuracy of the published index based on the estimated data. In the table below, the results were aggregated by group of production:

Group of production	Estimated Value	Actual value
Dairy products	55,000	60,000
Bakery products	676,670	623,400
Grain and mill products	1,307,692	1,523,000
animal feed	5,260,000	4,964,000
Beverages and soft drinks	247,773	300,200
Furniture and wood production	0	0
Chemicals	0	0
Electricity	43,200,000	45,300,000
Water supply	180,330	200,000

It is clear from the table above that the differences are small which insures that the published index was with good quality that reflects the reality.

### 4. Conclusion

Publishing official statistics during any type of crises is important. But what is most important is to publish good quality indicators that users trust and can use for any analysis. The quality includes the timing of the publish which should be close to the reference period of the indicator. All types of metadata can help in the analysis process when mathematical and time series analysis fail to interpret the reality during crises and exceptional situations.

Statisticians must use all available data sources to make logical conclusions. To facilitate the process, analysis should be done on the lowest level of aggregation. Our analysis was done by

company through gathering all available information from previous surveys. News reports played a vital role in the analysis process.

The analysis discussed above helped in publishing the indicator without any delay. Moreover, index accuracy was very high which means few revisions were needed in the adjusted series. Even when the predicted value is not close to the real value, but following such logical conclusions will help in predicting the trend of the indicator which is very important in giving an idea about what is happening.

The contribution of this papers is twofold. Firstly, it introduces a methodology to estimate the IIP and similar indicators during unstable political conditions. Secondly, the paper focuses on the accuracy of choosing the right methodology to publish statistical figures of high quality when the internationally recommended methodologies become inapplicable in similar situations

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