BUSINESS CYCLE INDICATORS IN PALESTINE: METHODOLOGY AND RESULTS

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Business Cycle Indicators in Palestine: Methodology and Results

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Abstract

This paper aims at developing a monthly Business Cycle Indicator (BCI) in Palestine based on qualitative data obtained from monthly business surveys based on an internationally accepted methodology. In order to calculate and publish the BCI, Palestine Monetary Authority (PMA) signed a memorandum of understanding with the Palestinian Federation of Industries (PFI), in which the PFI will conduct the business survey on behalf of PMA on a monthly basis starting from November 2012. Results show that the overall BCI in Palestine is negative but improving since November 2012, which means that the business sector is not doing well in Palestine but the situation is getting better by time.

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Executive Summary

This paper aims at developing a monthly Business Cycle Indicator (BCI) in Palestine based on qualitative data obtained from monthly business surveys compatible with an internationally accepted methodology.

BCI are a statistic about the business cycle. Business cycle refers to economy-wide fluctuations in production or economic activity over several months or years. Significance of the BCI is not its value, whether positive or negative, but is its evolution over time and how much this evolution is correlated with the evolution of real gross domestic product (GDP).

In order to calculate and publish the BCI, Palestine Monetary Authority (PMA) signed a memorandum of understanding with the Palestinian Federation of Industries (PFI), in which the PFI will conduct the business survey on behalf of PMA on a monthly basis starting from November 2012. Selection of companies in the sample is mostly based on stratified random sampling. Stratification criteria for business surveys are mainly firm size, industry, and the geographical distribution (West Bank and Gaza Strip).

Results show that the overall BCI in Palestine is negative but increasing since November 2012, which means that the business sector is not doing well in Palestine but the situation is getting better by time. The BCI in Palestine was -14.06 in November 2012. As to the geographic distribution the BCI reached -22.54 in WB while it recorded 9.14 in GS, which means that businesses in GS are doing well while they are not in WB. In February 2013, BCI increased to -4.46 in Palestine compared with November 2012. In WB, BCI increased to -13.52 while in GS it decreased to 2.18, which means that the businesses’ performance is still not well in WB but is getting better while in GS the businesses’ performance is still well but is declining compared with November 2012.

Given the objective of calculating the BCI which is to monitor the economic situation and serve as an input to produce a short term forecast for real GDP growth, a BCI should either exhibit a high correlation with real GDP growth or perform as a leading indicator to real GDP. But since there is no historical data available, we need to wait until sufficient observations are available, before the BCI is evaluated with respect to its capacity to predict GDP growth. Such an exercise could entail changes in the methodology on the basis of which the indicator is calculated.
ملخص تنفيذي

تهدف هذه الورقة إلى احتساب مؤشر دورة الأعمال في الأراضي الفلسطينية بشكل شهري بناءً على بيانات نوعية يتم تحصيلها من خلال مسح شهري متوافق مع المواقعات الدولية. مؤشرات الدورة الاقتصادية عبارة عن بيانات إحصائي حول دورة الأعمال في بلد ما. هذا وتوصف دورة الأعمال على أنها التذبذبات التي تطرأ على عملية الإنتاج أو على النشاط الاقتصادي خلال فترة زمنية معينة. والجدير ذكره هنا أن أهمية مؤشر الدورة الاقتصادية لا تكمن في قيمته، سواءً كانت موجبة أو سالبة، بل تكمن في تحركه مع الوقت ومدى توافق حركته مع حركة الناتج المحلي الإجمالي الحقيقي.

ويهدف احتساب ونشر هذا المؤشر، وقعت السيدة النائبة للنقد الفلسطينية مذكرة تفاهم مع الاتحاد العام للصناعات الفلسطينية، بحيث يقوم الاتحاد بجمع بيانات تتعلق بالأعمال من خلال مسح شهري للشركات والمؤسسات الصناعية في الأراضي الفلسطينية ابتداءً من شهر تشرين الثاني من العام 2012. هذا وتم اختيار عينة طبقية من منظومة من مجتمع الصناعات الفلسطينية والمسجل في الاتحاد العام للصناعات الفلسطينية بحيث تأخذ بين الاعتبار حجم النشأة الصناعية والتوزيع الجغرافي (ضفة الغربية وقطاع غزة).

أشهرت نتائج احتساب المؤشر التجميعي لدورة الأعمال في الأراضي الفلسطينية أنه بالسالب ولكن قيمته تراجع مع الوقت مما يعني أن أداء الصناعات الفلسطينية غير مشجع لكنه أخذ في التحسن منذ أن بدأت سلطة النقد الفلسطينية احتساب هذا المؤشر في شهر تشرين الثاني 2012. بلغت قيمة مؤشر دورة الأعمال في الأراضي الفلسطينية حوالي 14.06 في شهر تشرين الثاني 2012. وعلى المستوى الجغرافي بلغت قيمة المؤشر في الضفة الغربية في شهر تشرين الثاني 2012 حوالي 22.54 بينما بلغت في قطاع غزة حوالى 9.14 مما يشير إلى أن أداء الأعمال في قطاع غزة مشجع، لكنه غير جيد في الضفة الغربية. وخلال شهر شباط 2013 ارتفعت قيمة المؤشر التجميعي لدورة الأعمال ليصل إلى 4.46 في الأراضي الفلسطينية مقارنةً مع شهر تشرين الثاني 2012. وعلى المستوى الجغرافي ارتفعت قيمة المؤشر لتصل إلى 13.52 في الضفة الغربية بينما انخفضت قيمته إلى 2.18 في قطاع غزة، مما يشير إلى أن أداء الأعمال في الضفة الغربية لا يزال غير مشجع ولكنه حسبت قيمته.

وبالنسبة لقطاع غزة لا زال أداء قطاع الأعمال مشجعاً ولكنه تراجع مقارنةً مع شهر تشرين الثاني من العام 2012.
بناءً على الأهداف التي من أجلها تم احتساب مؤشر دورة الأعمال وهي مراقبة الوضع الاقتصادي

وكمدخل لعمل التنبيقات قصيرة الأمد للنتائج المحلي الإجمالي، يجب أن يكون هناك ترابط بين مؤشر دورة الأعمال مع النتائج المحلي الإجمالي الحقيقي أو أن يكون لديه خصائص المؤشر الفردي. ولكن لعدم توفر سلسلة زمنية كافية لهذا المؤشر فنحن بحاجة للانتظار حتى توفر سلسلة زمنية كافية للمؤشر وحينها يجب تقييم المؤشر بناءً على قدرته على التوقع بنمو النتائج المحلي الإجمالي. ويمكن أن يتطلب ذلك مراجعة للمنهجية حينها أو إجراء بعض التعديلات على المسح الشهري.
## Contents

EXECUTIVE SUMMARY .......................................................................................................................... III

I. INTRODUCTION ..................................................................................................................................... 1

II. METHODOLOGY .................................................................................................................................... 3

III. RESULTS ................................................................................................................................................. 4

IV. CONCLUSION AND FUTURE ISSUES ............................................................................................... 9

REFERENCES ..............................................................................................................................................10
I. Introduction

Business Cycle Indicators (BCI) are a statistic about the business cycle. Business cycle refers to economy-wide fluctuations in production or economic activity over several months or years. These fluctuations occur around a long-term growth trend, and typically involve shifts over time between periods of relatively rapid economic growth (an expansion or boom), and periods of relative stagnation or decline (a contraction or recession) (O'Sullivan and Sheffrin, 2003).

There are two approaches to calculate BCI, the first is the quantitative approach and the second is the qualitative approach.

The set of quantitative cyclical indicators are classified into three categories—leading, coincident and lagging—based on the timing of their movements. Coincident indicators are broad series that measure aggregate economic activity; thus, they define the business cycle. Leading indicators are series that tend to shift direction in advance of the business cycle. For this reason, they get the lion’s share of attention. The lagging indicators, in contrast to the leaders, tend to change direction after the coincident series (BCI – Handbook, 2000).

The set of qualitative cyclical indicators include the business survey indicators, consumer confidence indicators, investment surveys, and special ad hoc surveys on specific issues. These surveys aim at knowing the perception of business community and consumers about key economic variables such as production, income, sales, and others.

In order to emphasize the cyclical patterns in the data and de-emphasize the volatility of individual indicators, the best of them are combined into composite indexes. These composite indexes serve as handy summary measures of the behavior of the cyclical indicators and they tend to smooth out some of the volatility of individual series. In particular, composite indexes can reveal common turning point patterns in a set of economic data in a clearer and more convincing manner than the behavior of any individual component.
Such indicators provide essential information that is useful for:

- Providing the business community, policy makers and the society at large with an important piece of information concerning the stance of the business cycle;
- Facilitating economic surveillance and economic research. BCI are found to indicate whether economic growth is accelerating or slowing down. They also permit early identification of turning points in the business cycle;
- Producing short term forecasts of some key reference variables such as growth rates of GDP (one or two quarters ahead), exports, consumption etc.;
- Obtaining information on variables not directly measurable such as expectations, factors hampering production, the rate of capacity utilization, etc.;
- Providing information that allows policy makers and management of individual companies to assess the economic situation at the levels of activity branches and regions;
- Being extremely useful in central banks as essential inputs in monetary policy decisions. Monetary policy decisions influence the targets of monetary policy only in the longer run (the transmission mechanisms of monetary policy can be long and variable). For this reason, central banks tend to decide pro-actively, based on their expectations and of their appraisal of current economic and financial conditions (for example the ‘output gap’ is typically included as an important variable in the theoretical literature on central banks’ reaction functions). Unfortunately, in most countries, most of the statistics especially those related to the national accounts become only available with considerable delay. BCI on the other hand are available much faster and therefore provide nearly real time information on the current stance of the business cycle and are in some cases even leading the cycle. Therefore central banks would typically include these indicators in their information set (especially
individual or composite indicators and the business survey and consumer survey indicators).

PMA explored the possibility of calculating the BCI for Palestine based on the quantitative approach, but since there are no sufficient data available PMA calculates the BCI based on the qualitative approach.

This paper aims at developing a monthly BCI in Palestine based on qualitative data obtained from monthly business surveys, as they are collected in most other countries, based on an internationally accepted methodology.

II. Methodology

Palestine Monetary Authority (PMA) signed a memorandum of understanding with the Palestinian Federation of Industries (PFI), in which the PFI will conduct the business survey on behalf of PMA on a monthly basis and PMA will calculate and publish the index.

Selection of companies in the sample is mostly based on stratified random sampling. Stratification criteria for business surveys are mainly firm size and industry. Industries can for example be defined on the two-digit International Standard Industrial Classification (ISIC).

All firms selected in each stratum are asked a number of qualitative questions. (see annex 1). These questions focus on production, sales, inventories, and near-term expectations about production and employment. Starting from each stratum the percentages of answers to each reply option are calculated (either weighted or non-weighted by firm's importance). The overall results are calculated as weighted averages of the results by strata. The weights reflect the relative significance of each stratum in the population (for example based on value added or turnover or employment statistics). Then balances are calculated as the difference between the percentages of positive and negative answers for each question.
The following steps then involve:

- Elimination of fluctuations other than cyclical variations, using a seasonal adjustment program;
- Aggregation of the seasonally adjusted balances into composite confidence indicators per branch of activity and in an overall composite indicator, using some type of aggregation method;
- Presentation of the results in terms of both gross indicators and smoothed indicators, using a specific statistical smoothing algorithm.

Although the methodology may change over time, in Palestine it will be fixed for some time until sufficiently long time series of the indicator have been obtained. Then analysis will be made as to the performance of the indicator in terms of its correlation with real GDP and its leading, current or lagging properties and signals concerning business cycle turning points. Based on the results of this analysis, the methodology may be adapted.

III. Results

PFI conducted a first survey in November 2012. In total 221 companies responded, which represent about 10% of the population of companies that are members of the PFI.

All companies belong to the manufacturing sector. The 221 companies were selected on the basis of a stratified sampling method. The strata reflect firm size and industry of the manufacturing sector.

PMA received from PFI a spreadsheet containing the following information for each of the 221 respondents:

- Company name;
- Name of owner or manager and job title;
- Economic activity of the company;
• Location and Governorate of the company;
• Address, tel. nr., Fax nr., e-mail, mobile number;
• Union membership;
• Size of company and nr. of employees; and
• Responses to the 7 questions on economic activities.

PMA then processed these responses as follows:

• Based on the information concerning their economic activity and union membership, all companies were classified within one of the manufacturing industries according to the ISIC, revision 4 at the two-digit level;
• From the Palestinian Central Bureau of Statistics (PCBS) Economic Surveys Series of 2011, data were collected on the value added and number of employed persons in each of these industries at the national level and regional level (West Bank (WB) and Gaza Strip (GS)).
• The weights of each of these industries were calculated reflecting the importance of each industry in the total manufacturing sector according to their share in total employment;
• For each question, but excluding the questions 3 and 6 concerning the export order book and the selling price expectations\(^1\), in each industry we collected the number of total responses, number of positive (+) responses, number of negative (−) responses;
• Then the percentage of positive and negative responses were calculated;
• Then for each question in each industry the balance is calculated as the simple difference between the percentage of positive and the percentage of negative responses;
• For each industry the average balances over all selected questions are calculated but question number 4 on the stock of finished products enters

\(^1\) Question 3 is excluded from the calculation of the BCI because most of the surveyed companies have no export activities. Question 6, which is about prices, is also excluded from the calculation of the BCI because we are concerned about the volume of production, sales, and inventories and in the future the BCI will be compared with the real GDP.
with a reversed sign\(^2\). This result represents the BCI in each of the industries;

- A positive index for an industry indicates that their current production and sales are improving and they are expecting to produce more in the near future, while negative index indicates the opposite.
- Finally the industries balances are aggregated into an overall manufacturing BCI at the national and regional levels. The aggregation involves the calculation of a weighted sum of all industries where the weights reflect each industry’s share in total manufacturing employment;
- Then the whole exercise is repeated for WB and GS separately.

Table (1) shows the weights of each industry according to the total number of employees in 2011. The table shows that textile industry has the highest weight among all other industries in Palestine with 19.2 percent, while wood industry has the lowest weight with 2.7 percent.

<table>
<thead>
<tr>
<th>Industry</th>
<th>ISIC2</th>
<th>PALESTINE No. of Employees</th>
<th>PALESTINE Weight (%)</th>
<th>WB No. of Employees</th>
<th>WB Weight (%)</th>
<th>GS No. of Employees</th>
<th>GS Weight (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>10, 11, 12</td>
<td>12072</td>
<td>18.6</td>
<td>8186</td>
<td>15.3</td>
<td>3886</td>
<td>34.2</td>
</tr>
<tr>
<td>Textile</td>
<td>13, 14</td>
<td>12474</td>
<td>19.2</td>
<td>11781</td>
<td>22.0</td>
<td>693</td>
<td>6.1</td>
</tr>
<tr>
<td>Leather</td>
<td>15</td>
<td>1985</td>
<td>3.1</td>
<td>1943</td>
<td>3.6</td>
<td>42</td>
<td>0.4</td>
</tr>
<tr>
<td>Wood</td>
<td>16</td>
<td>1799</td>
<td>2.7</td>
<td>1533</td>
<td>2.9</td>
<td>226</td>
<td>2.0</td>
</tr>
<tr>
<td>Paper</td>
<td>17, 18</td>
<td>2069</td>
<td>3.2</td>
<td>1779</td>
<td>3.3</td>
<td>290</td>
<td>2.6</td>
</tr>
<tr>
<td>Chemical and Pharmaceutical</td>
<td>20, 21</td>
<td>2028</td>
<td>3.2</td>
<td>1785</td>
<td>3.4</td>
<td>243</td>
<td>2.1</td>
</tr>
<tr>
<td>Plastic</td>
<td>22</td>
<td>2008</td>
<td>3.1</td>
<td>1561</td>
<td>2.9</td>
<td>447</td>
<td>3.9</td>
</tr>
<tr>
<td>Non-Metallic Mineral products</td>
<td>23</td>
<td>11821</td>
<td>18.2</td>
<td>10263</td>
<td>19.2</td>
<td>1565</td>
<td>13.8</td>
</tr>
<tr>
<td>Engineering and Precious metals</td>
<td>24 – 28</td>
<td>9745</td>
<td>15.0</td>
<td>7060</td>
<td>13.2</td>
<td>2678</td>
<td>23.6</td>
</tr>
<tr>
<td>Furniture</td>
<td>31</td>
<td>8890</td>
<td>13.7</td>
<td>7609</td>
<td>14.2</td>
<td>1281</td>
<td>11.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>64851</strong></td>
<td><strong>100.0</strong></td>
<td><strong>53500</strong></td>
<td><strong>100.0</strong></td>
<td><strong>11351</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

\(^2\) When stock of finished products increases this means that the industries sold less in the last period, which will also force them to produce less in the near future, and thus depressing their economic activity and affects negatively the overall economy.
Regionally, textile industry has the highest weight in the WB with 22.0 percent, while food industry has the highest weight in GS with 34.2 percent. On the other hand, wood and plastic industries have the lowest weight in WB with 2.9 percent, while leather industry has the lowest weight in GS with 0.4 percent.

Table (2) shows the BCI and the contribution of each industry in the indicator in Palestine, WB, and GS for the months November 2012 – February 2013.

The table shows that the composite or the overall BCI in Palestine is negative but increasing since November 2012, which means that the business sector is not doing well but the situation is getting better by time. The BCI in Palestine was -14.06 in November 2012 but reached -4.46 in February 2013.

If we look at the latest results of the BCI, we find that food, wood, paper, engineering and precious metals, and furniture industries contributed to the negative stance of the overall BCI in Palestine, while textiles, leather, chemical and
pharmaceutical, plastic, and non-metallic mineral products contributed to the positive stance of the overall BCI.

Looking at the region, we find that the business performance in the WB is not as that in GS. Looking at the latest results, the overall BCI in WB reached -13.93, while in GS it stood at 2.23. This means that WB is contributing negatively in the overall BCI, while GS is contributing positively in the overall BCI.

The following figure shows the evolution of the overall BCI in Palestine, WB, and GS. The figure shows that the BCI in WB increased until January 2013 before it decreased in February 2013. In GS, the BCI declined in December 2013 before it starts to increase afterwards.

**Figure 1: the BCI in Palestine, WB and GS for the period November 2012 – February 2013**

![BCI Graph]

When we look at the past and projected performance of the industries in Palestine (Table 3) we find that the their performance was weak during the past three months but they were optimistic about the near term future. If we look at the industries’ production and sales during the past three months we find the index is negative in both regions (WB and GS). But when we look at their expectations about future production and employment we find the index is positive and increasing by time.
### Table 3: Industries’ past and expected performance of the Industries

<table>
<thead>
<tr>
<th></th>
<th>PALESTINE</th>
<th></th>
<th>WB</th>
<th></th>
<th>GS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>-23.18</td>
<td>-18.14</td>
<td>-11.21</td>
<td>-12.55</td>
<td>-32.82</td>
<td>-32.38</td>
</tr>
<tr>
<td>Sales</td>
<td>-35.27</td>
<td>-48.73</td>
<td>-33.81</td>
<td>-28.71</td>
<td>-42.36</td>
<td>-52.94</td>
</tr>
<tr>
<td>Expected</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>-12.11</td>
<td>15.79</td>
<td>8.98</td>
<td>16.57</td>
<td>21.06</td>
<td>13.49</td>
</tr>
<tr>
<td>Expected</td>
<td>-20.86</td>
<td>-6.16</td>
<td>-2.76</td>
<td>4.80</td>
<td>-12.34</td>
<td>-2.57</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**IV. Conclusion and Future Issues**

The BCI based on the survey results are essentially used to monitor the economic situation and as an input to produce a short term forecast for real GDP growth. Given these objectives, a BCI is expected to respond to a number of quality criteria. The following are normally mentioned in the literature:

- The BCI should either exhibit a high correlation with real GDP growth or have the properties of a leading indicator;
- The fluctuations in the BCI over time should be driven by cyclical factors and not by irregular, seasonal or trend components.

The first quality criterion cannot be checked yet, since no historical data are available. But in the future, when sufficient observations are available, the current BCI should be evaluated with respect to its capacity to predict GDP growth. Such an exercise could induce changes in the methodology on the basis of which the indicator is calculated.

The second quality criterion requires that the gross BCI indicator is now being calculated should be complemented by a smoothed version, reflecting the underlying business cycle fluctuations. With some months into the future, PMA staff should select a smoothing method and publish both the gross and smoothed curves. Furthermore when enough observations are available, the balances on each of the questions in each industry should be seasonally adjusted before being aggregated into a composite BCI.
The current indicator focuses on the manufacturing sector. Although this sector has not the largest share in total real value added in the economy, it is generally found that in most countries the BCI based on surveys in the manufacturing sector exhibits the highest correlation with overall GDP. But in the future it may be considered useful to extend coverage by setting up surveys that allow us to construct BCI for the building and business-services sectors.

Also in the future and following practice in other countries, the monthly questionnaire may be supplemented with a quarterly one containing questions related to firms’ competitiveness developments on domestic and foreign markets. Another example of a quarterly question related to capacity utilization which would normally be a good indicator for the output gap.

As to the publication of the BCI, it would be useful to publish at about the same date in each month. Such a publication can be accompanied by a short press release describing the main movements of the index and their interpretation. Normally the local press would be interested to publish the indicator in the media, including the daily newspapers.

It is also essential to keep contacts with the business community and to explain to them the importance of this indicator with reference to similar indicators published in other countries. This should promote a positive attitude of firms to the survey and the quality of their responses.

References


Annex 1

Industry survey questionnaire (monthly questions)

Q1  How has your production developed over the past 3 months? It has...
    + increased
    = remained unchanged
    - decreased

Q2  Do you consider your current overall order books to be...?
    + more than sufficient (above normal)
    = sufficient (normal for the season)
    - not sufficient (below normal)

Q3  Do you consider your current export order books to be...?
    + more than sufficient (above normal)
    = sufficient (normal for the season)
    - not sufficient (below normal)

Q4  Do you consider your current stock of finished products to be...?
    + too large (above normal)
    = adequate (normal for the season)
    - too small (below normal)

Q5  How do you expect your production to develop over the next 3 months? It will...
    + increase
    = remain unchanged
    - decrease
Q6  How do you expect your selling prices to change over the next 3 months?

They will...

+ increase
= remain unchanged
- decrease

Q7  How do you expect your firm’s total employment to change over the next 3 months? It will...

+ increase
= remain unchanged
- decrease