Towards the relevant interpretation of the dynamics of short-term economic statistics

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1. Introduction

Most countries publish major economic statistics such as GDP and/or industrial production index monthly or quarterly. These statistics are surveyed so frequently as to get timely information on the change in economic situations. But for this purpose, another process is necessary. That is, Trend plus Cycle(TC) series of the original data must be estimated and "Short-Term (month or quarter)-Apart Percentage Change" (STAPC) of the TC series should be used for relevant analysis. It is because the original data may include both the seasonal and irregular components and the use of the "Year-Apart % Change" (YAPC) of the original series may lead to misleading results. Nevertheless, most countries produce only original data for short-term economic statistics. The purpose of this paper is to demonstrate several limitations of the analysis of economic activities using YAPC and, by doing so, to facilitate the release of the TC estimates by the statistical agencies of those countries.

2. Limitations of YAPC-based analysis

The YAPC series is typically used when only the original data are available because the seasonal and irregular components are adjusted in the process of calculating the YAPC. However, these components are not completely eliminated when the seasonal patterns or trading days are changed over time and when the data is fitted to an additive model. Moreover, the practice of the use of the YAPC has the following critical problems.

2.1 YAPC defers movement of data series by about 2 quarters

The movements of the YAPC tend to be lagged by about two quarters compared to those of the STAPC. It is because the reference point that represents the changes for one year is placed to the end of the year as opposed to the mid of the year. <Figure 1> depicts the hypothetical index(left panel) and its two versions of the % changes, YAPC and STAPC(right panel). It is evident that an about two-quarter difference in time exists between the two change series.

<Figure 1> Lagging Effect of YAPC
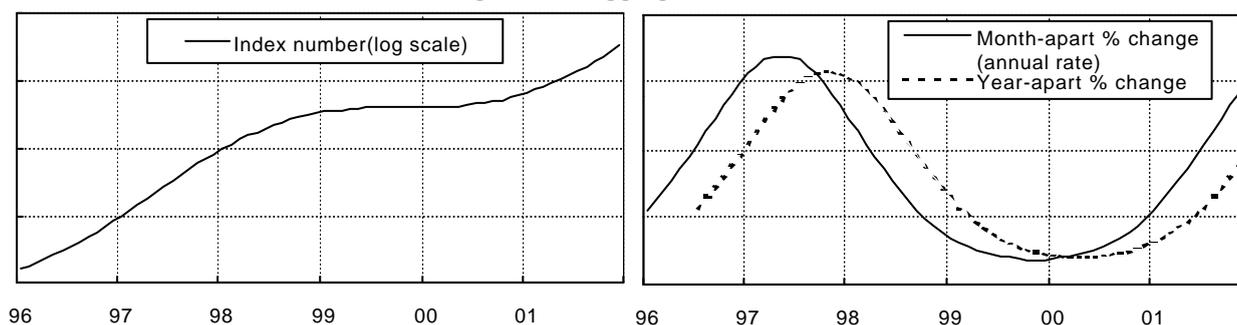
2.2 Its movements depend on the performance of the previous year

The YAPC is subject to the time path of the data series, or the events, of the previous year. <Figure 2> compares two time paths of the artificial indexes. Both indexes follow the same growth path during the year 2000, but the paths each series took are different during the previous year(left panel). It is apparent that the YAPCs are (misleadingly) different during the year 2000 depending upon the history of the series during the previous year, but the month-apart % changes are the same for both indexes during the year 2000(right panel).

<Figure 2> Different movements of YAPC series depending on the previous history
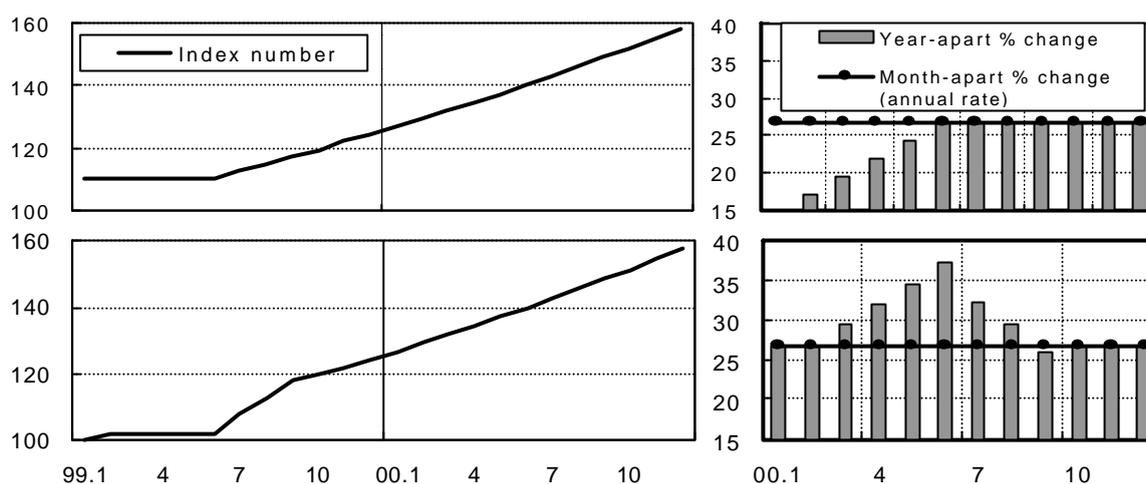
2.3 It represents the changes for the last whole year

The YAPC represents the movement between the present time and the same time a year ago. As stated above, the major economic statistics are surveyed so frequently as to get short-term information such as month-to-month, or quarter-to-quarter changes. Therefore, by using the YAPC, the recent information about the changes are averaged out and thus the purpose of collecting higher frequency data are lost.

3. Necessity for Official TC Estimates

As mentioned above, the YAPC has several limitations, particularly when it is used in the analysis of the business cycle. To the contrary, however, the STAPC of the TC series reflects the timely movement of the series. Since it does not depend on the events of the previous year, the STAPC series correctly represents the changes for the current month or quarter. The procedure of estimating the TC components, however, is much complex and requires the substantial amount of information about the characteristics of target data series and the history of economic policies and events. It's the very reason why the TC components should be estimated and released by the national statistical agencies that are presumed to have relatively abundant resources.

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