# Constructing a Composite Leading Indicator for Forecasting Non-Oil GDP

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**Abstract**

In this paper, we try to build a composite leading indicator to predict the business cycles of Iran. For this purpose, we consider non-oil GDP as our target variable. In the first part of this research project, Barakchian and Samaee (1399) evaluated the performance of 1590 macroeconomic time series individually in predicting the business cycles of Iran. These 1590 series were generated by 256 macroeconomic variables released by the Central Bank (including their original form of the variables and five transformations of them). Barakchian and Samaee (1399) showed that 25 time series out of all 1590 series perform the best in predicting the cycles when evaluated in terms of the criteria introduced in this literature (i.e. missed points, false alarms, late alarms, etc). In this paper, we compose these 25-time series to build a composite leading indicator which predicts the peaks and troughs of the business cycles well. Since the number of all the combinations generated by the 25 time series is too large to be computationally feasible to evaluate them, we first choose 16 time series out of these 25 series introduced by Barakchian and Samaee (1399) and then we generate all the possible combinations using these 16 series (with equal weights). This approach mounts to 65535 different combinations. Then we evaluate the performance of all these 65535 composite leading indicators in predicting the business cycles in terms of the criteria mentioned above. Our results show that a significant fraction of all these composite leading indicators perform very well: they don't have any missed point, false alarm or late alarm. In the second part of the paper, we also take into account the time lag in releasing the data by the Central Bank. Since the main function of a composite leading indicator is to predict business cycles timely, accessing to data in real time is a major concern. So, we take this concern into account when choosing the 16 variables. In particular, the national accounts data are excluded from the data when building the composite leading indicator because of their long-time lags when released by the Central Bank. Our results show that the following variables have the major role in the combination of the best composite leading indicators: price index of water, electricity and gas, imports' tax, corporate profits' tax, and the number of building permits.

**Keyword:** Composite Leading Indicator, Forecasting, GDP.

**EL Classification:** E32, E33.

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