



Index of Leading Economic Indicators Helps Economists Look to the Future

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State economists are often asked to predict the weather – that is, they're asked to predict when the state's economic climate could change. Recessions and expansions are tough to predict in a complex economy, but policymakers and businesses still need the best information possible as they develop budgets and plan for needs. One source of information, the state's Economic and Revenue Forecast, is developed by the Office of Economic Analysis (OEA). The forecast relies on a number of statistical tools. One of these tools is a supplemental index of leading economic indicators, which gives analysts an additional resource as they try to develop good predictions. Basically, the index is a handful of variables that tend to decline before a recession, so changes in these variables over time can give analysts a better look at the economic horizon.

Straight From the Source

Oregon's Index of Leading Economic Indicators (OILI) attempts to predict recessions by tracing business and consumer decisions to their source. A business may alter its investment strategy following a change in interest rates, or someone who recently lost a job may file for unemployment insurance if new opportunities seem limited. In reality, these kinds of economic influences and decisions are far too numerous and complex to include in one leading index, so the OILI relies on 10 representative indicators (see nearby box):

Like many indexes built at the state level, the OILI uses a statistical method developed by the Conference Board for the national leading index. In short, the monthly changes in each indicator are adjusted to minimize unusual fluctuations, and the changes are added together to create an overall index value.

Index Signals: Interpreting the Warning

In order to use a leading index, economists need to define a recession signal. The OILI model defines this negative signal as a 2-percent over-the-year decline in the overall index value. Sudden shifts in individual components, however, can cause the OILI to decline when a recession may not be likely. To avoid these false signals, the OILI incorporates a diffusion index – another Conference Board tool – to show how a decline in the index is spread across its individual components. A diffusion reading below 50, for example, says that more than half of the indicators are declining. Combining both standards, the OILI's recession signal is defined as a 2-percent decline in the leading index and a diffusion reading below 50.

This "recession rule," however, doesn't substitute for analyst judgment. In 1995, and 1997, the OILI signaled two recessions that didn't actually occur. While the index declines satisfied the 2 percent rule, several unusual influences were leading the model astray. The 1995 signal corresponded with the start of the index data series, and incorrect signals tend to occur where the model can't compare the current period with prior years. Second, the Asian financial crisis hit Oregon's Pacific trading partners from

1997 to 1998. The overseas shock didn't trigger a full-blown recession, but initial uncertainties were apparently enough to startle Oregon's business community and trigger the OILI. To avoid these sorts of false warnings, analysts using the OILI evaluate each potential signal in light of economic trends in Oregon, the nation, and the international community.

Confirming the Warning

So, how did economists know the 1995 and 1997 signals were false? A recession signal warns that job levels could drop in the coming months, so economists use nonfarm employment data to evaluate the OILI's accuracy. When historical index and employment values are graphed on the same plot, correct signals occurred where the leading index turned down before the employment data followed. Over the time period covered by the OILI – January 1995 through September 2005 – Oregon's economy experienced one recession that, according to OEA, began in early 2001 and ended early in 2002. The OILI signaled this decline 10 months in advance and, while the job loss that continued through mid-2003 wasn't sufficient for OEA to declare a second recession, the OILI gave a two-month advanced warning of the prolonged slump (Graph 1).

More recently, the OILI has declined despite positive changes in unemployment claims and several other indicators. Driven by a drop in the interest rate spread, consumer sentiment, the dollar index, and housing permits, the OILI fell an annualized 2.0 percent over the six months ending in September. The OILI also declined in the prior month, but the diffusion index had not reached the level necessary to confirm a recession signal. OEA analysts will track OILI behavior in the coming months to see if the index rebounds or continues to decline.

Under Construction: Future Improvements for the OILI

Predicting economic trends is difficult largely because the factors that cause trends to shift – politics, weather, and social influences, for example – are themselves inconsistent. This doesn't mean economic changes can't be predicted. But it does mean that forecasting models like the OILI need constant attention to help them balance consistency over time with the flexibility needed to track a changing economy.

The current model design prevents unusual changes in the data from having too much effect on the index, but it doesn't weight the individual components based on their economic significance. Assume, for example, that consumer confidence has a greater effect on economic decisions than the number of new building permits. In this example, the confidence indicator *should* have a larger influence on the OILI, but the model gives each indicator the same significance. Ideally, a new approach would minimize random behavior in the data *and* assign each indicator a weight based on its real economic importance. OEA analysts are investigating such a procedure and may use a new technique if it improves the model's accuracy and strengthens its links to the business cycle.

As they consider structural changes for the OILI, analysts will also evaluate indicators that might need to be modified or replaced. Newspapers, for example, were once widely used resources for information on job openings. But today's Web-based sources like the Oregon Employment Department, *Monster*, and *Jobdango* have in many cases upstaged print media as providers of job listings. As a result, *The Oregonian* Help Wanted Index may be losing some of its ability to measure the job market. Another indicator, the interest rate spread, may also be losing its edge: the rate spread has recently pulled the OILI down in a time of economic expansion. The producers of the U.S. Leading Index have modified their rate spread indicator to obtain what they hope is a more accurate signal, and OEA analysts are considering their options as well.

As the economy continues to change, analysts working on the OILI will also consider new indicators. New measures might include truck travel, air travel, commercial and industrial vacancy rates, temporary work hiring, and cardboard or other packaging production. Like the existing indicators, these and other candidates will be closely examined to make sure they predict downturns effectively and relate to economic decisions in a reasonable way. Overall, the OILI's composition should be consistent enough to make the model credible but flexible enough to keep it accurate.

Look to the Future: A Forecast for the Forecaster

As the fine-tuning process continues, the OILI model may be considered as a potential tool for recession dating. Whenever the U.S. economy has entered recession, Oregon's economy has ultimately followed. Beginning and ending dates for nationwide recessions, however, don't always match dates for the Oregon economy. State-level raw data can provide some information about the current economy, but these data are subject to revision and can therefore prove imprecise when they're used independently to date recessions. Combined, the raw data and the OILI readings could provide a more accurate picture of starting and ending dates for state recessions.

Given a tool like the OILI, economists are better equipped to predict when economic changes could happen. Given this information about Oregon's economic climate, businesses, consumers, and policymakers will be better equipped to succeed when the weather changes.

For more information on Oregon's Index of Leading Economic Indicators, go to www.oregon.gov/DAS/OEA/index.shtml. Select "Leading Economic Indicators" under "current topics."

Oregon's Leading Economic Indicators

1. **Interest Rate Spread:** Before many nationwide recessions, short-term interest rates have equaled or exceeded long-term rates.
2. **Initial Unemployment Claims:** The number of claims tends to rise before and during a recession.
3. **Institute for Supply Management National Index:** A measure of business confidence based on a monthly survey of U.S. manufacturing firms.
4. **Semiconductor Book-to-Bill Ratio:** A decrease in the ratio of product orders to shipments for electronics manufacturers signals worsening conditions.
5. **Dollar Index, Pacific Excluding Japan:** A weaker dollar is a good sign for U.S. manufacturers: countries in the Pacific Basin are important trading partners for Oregon, and a weaker dollar makes U.S. exports look more affordable overseas.
6. **The University of Michigan Consumer Sentiment Index:** A decrease in consumer confidence tends to precede economic decline.
7. **Total Employee Withholding:** Total employee tax withholding received by state authorities tends to decline

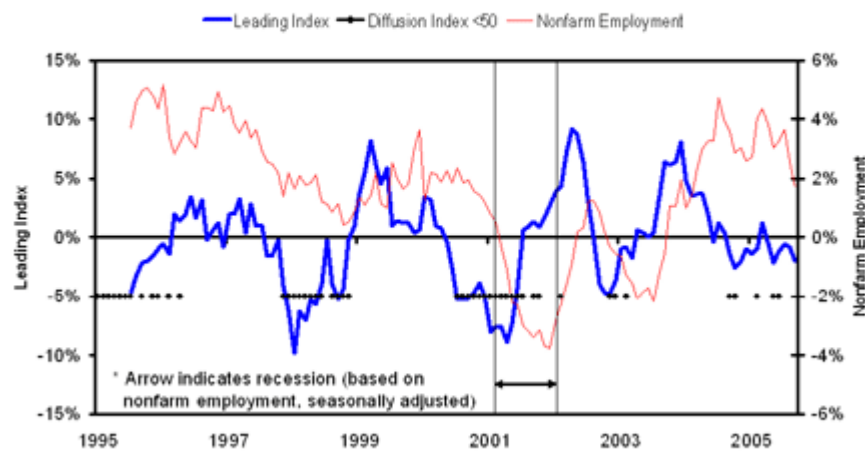
before a slowdown.

8. **Total New Business Incorporations:** The number of new corporations, partnerships, and assumed business names registered in Oregon tends to drop before the economy slows.
9. **Oregonian Help Wanted Ads:** The number of help-wanted ads usually decreases when businesses expect worsening conditions.
10. **Residential Building Permits:** The number of new, privately owned residential buildings usually falls before a downturn.

Graph 1

Oregon Index of Leading Indicators

Six Month Annualized Percent Change, Jan. 1995-Sept. 2005



Source: Oregon Office of Economic Analysis

