

## **2<sup>nd</sup> IMF Statistical Forum, 18-19 November 2014: Session 3**

**Discussion of the Paper “The Use of Short-Term Indicators and Survey Data For Policy Making: The OECD Experience” by Martine Durand, Chief Statistician and Head of Statistics, OECD.**

**Commentary by Ian Ewing, Deputy Australian Statistician, Australian Bureau of Statistics (ABS).**

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### **Introduction**

In response to the OECD paper, I intend making four points about the use of short-term indicators in general and Composite Leading Indicators in particular. These are

1. The poor historical performance record of economic forecasts,
2. Why they are still needed,
3. Why predicting turning points is important,
4. The challenges facing compilers and what can be done about them.

### **The Poor Performance record of Economic Forecasts**

Economic Forecasts are criticised for being wrong, misleading, late, and for being ignored.

#### **Being Wrong**

Nate Silver, in his 2012 book “The Signal and the Noise” quotes the old anecdote that “..economists have called 9 of the last 6 recessions” (P 183). More seriously, he shows that “since 1968 GDP has fallen outside the prediction interval (of the Survey of US Professional Economists) almost half the time” (p. 182).

A 2008 study of 26 economic turning points by IMF Researchers Loungani and Rodriguez shows that only 18 were predicted by forecasters ahead of time.

#### **Being Misleading**

The economic explanation of the GFC was that it was started by defaults on sub-prime mortgages in the United States, however the Durand paper suggests the first evidence of the economic downturn was reported in German data, some 14 months before the event (Durand, p12). It’s hard to make the connection!

#### **Being Late**

The Australian Treasury compiles a composite co-incident leading indicator to get a “heads up” on GDP. Although it appears to perform quite well in predicting turning points in GDP, it is only

available about one week prior the GDP release. Given most of the partial indicators are available by this point the index is only one of a number of inputs that help shape the Treasury's expectations.

The Durand paper notes that in forecasting the 2009 trough of the so called "Great Recession", actual GDP data was available before the CLI for 4 of the G7 economies (Durand, p. 20).

### **Being Ignored**

Given the mixed performance of leading indicators generally, Durand's observation that users failed to note the OECD CLI message is probably not surprising.

An official from the Bank of Thailand told the ABS at the time of the 1997 Asian Financial Crisis: "We had all the data, it indicated trouble, we showed it to everyone, but everyone was too busy making money to notice". Was their lack of interest distraction or scepticism?

### **Why Are Forecasts Still Needed?**

Given their poor press why do we still need them?

Primarily because economic decisions are all about the future, so given that some forecasts, such as the OECD CLI, have a better track record than others, composite leading indicators, used in conjunction with other data, can provide useful insights into the future trajectory of the economy.

The Australian Reserve Bank, for example, reviews the setting of the official cash rate three times between successive GDP releases. It compiles a composite indicator to provide some insight into the likely direction and strength of growth. The Bank is wary of the potential risk of relying too heavily on a CLI and initially forms its judgement based on analysis of partial indicators. The CLI assists in evaluating that judgement.

The Australian Treasury provides advice to government on fiscal policy, and needs to formulate expectations of future revenue and expenditure growth. To do this it develops forecasts of nominal GDP growth, and of "tax and spending" relevant components such as Gross Operating Surplus, Household Consumption and Compensation of Employees.

### **Why Predicting Turning Points is Important**

One criticism of CLI s is that even when they pick a turning point in the economy, they don't answer the more pressing questions which are about the duration and magnitude of any upturn or downturn. Despite this, identifying turning points is an important element in answering these questions. This is because the techniques used to forecast future economic growth are most likely to fail around turning points, where the recent past is not a reliable indicator of the future. Identifying a turning point is also very helpful to national accountants, as their own methods tend to be weakest at these points in the economic cycle. For this reason there is value in National Statistical offices compiling their own CLI, or at least sharing with their colleagues in the Central Bank and Treasury their expectations about turning points.

## **Challenges and what can be done about them**

Goldman Sachs Chief Economist Jan Hatzius identified three fundamental challenges facing forecasters (see Silver, p 185):

1. It is hard to determine cause and effect from economic statistics alone,
2. The economy is always changing so explanations that apply in one business cycle may not apply to future ones, and
3. Weaknesses in source data.

## **Cause and Effect**

Economic theory is helpful, but not sufficiently predictive to allow rigorous modelling of cause and effect in the manner that improved understanding of the physics of the atmosphere has improved the reliability of weather forecasting. As Hatzius notes “Nobody has a clue. It’s hugely difficult forecasting the business cycle”, (Silver, p 184). Australian Treasury economists have a similar view: “..the process of combining all the series into a picture of the economy is quite difficult and messy” (Monroe and Stephan, p3)

Given the theoretical shortcomings there is a risk of conflating correlation with causation in analysis of the data. This is especially risky in exploiting so called “big data sets” in which there is often little theoretical logic behind data relationships. This is illustrated by the “Google Flu” experience cited by British statistician Tim Harford. Google analysts found a correlation between on-line searches for chemist shops and flu medication and subsequent flu outbreaks, however after appearing to perform reliably over a couple of flu seasons the relationship broke down, predicting a flu outbreak that failed to materialise.

## **A changing Economy**

In the early 1990s the Australian Bureau of Statistics compiled and published a Composite Leading Indicator for the Australian Economy. ABS ceased producing it in 2003, because its performance as a predictor had deteriorated irreparably. The indicator had been developed based on an analysis of historical statistical time series covering the 1970s and 80s. The Australian economy went through significant changes after 1993, to which the forecasting methodology failed to adapt. These changes included

1. A long period of sustained growth, not apparent in the 1970s or 80s, which changed the shape of the business cycle (longer time between peaks, and less variation between peaks and troughs),
2. Growing significance of services and a relative decline in manufacturing,
3. China emerges as Australia’s major trading partner,
4. The methodology failed to account for the impact of fluctuations in Agricultural outputs.

In the US, changes in the structure of the labour market meant that after 2000, upturns failed to deliver the predicted growth in jobs (Silver, p 189).

## **Weaknesses in Data Sources**

Economic data is noisy. GDP is subject to revision. A recent analysis of Australian data shows that quarterly GDP estimates published since 2005 have, on average, been subject to revisions of plus or minus 0.3%. In some quarters the revision has been as much as plus or minus 0.7%. Australia is not unique. Annual estimates US GDP have been revised, on average by 1.7% and by as much as 4.3%. (Silver, p.194).

In many instances, Composite leading indicators are compiled from data of mixed frequency, typically monthly and quarterly. As most leading indicators are produced on a monthly cycle this requires modelling a monthly estimate from the quarterly series. This is a source of potential noise as there is little, if any new information in the modelled monthly data.

An example of this is the modelling of monthly retail sales volumes in the Australian Treasury composite index, which involved deflating the monthly nominal sales by a projected quarterly price index. Analysis shows the model frequently failed to deal with significant intra-quarter price changes. (Munro and Stephan, p.9)

Business sentiment surveys are often used as inputs to composite indicators, but are themselves composite indicators. An example in Australia is a business conditions index compiled by a commercial bank that weights together trading, profitability and employment data. It would be difficult to interpret what a change in this data might mean, and these sort of measures are almost by design a source of potential noise.

### **Towards Best Practise**

As the Durand paper shows the OECD CLI has performed quite well in predicting turning points in GDP, over a number of years (Durand, p.8) both at a country and global scale, so what are they doing right? The Australian Treasury composite coincident index has also performed well (Monroe and Stephan p 11) so likewise, what can we learn? What also can we learn from indexes that have failed to live up to expectation?

1. Indexes add value where they are presented, and used in the context of other related data. A strength of the OECD index is that it is produced as part of a comprehensive set of comparable national economic indicators within the OECD "Main Economic Indicators" data base.
2. The components used in compiling a composite index are more easily interpreted where they are aligned with the component variable for which they are proxies. If the intent is to forecast GDP or other macro-economic series then the SNA framework provides a logical organising structure for the index.
3. A systematic approach should be adopted to the testing and selection of indicators (e.g. components should be
  - a. timely,
  - b. forward looking (i.e. relate to the "early stage of a process: building approvals, for example, represent an early stage of a construction project),
  - c. have a demonstrated predictive history,
  - d. frequent (e.g. avoid the need to model monthly from quarterly data).
4. Avoid un-necessary complexity. The index structure and performance, including its past history of success and failure should be transparent.

5. Different index components are appropriate for different types of economy. A “Performance of Manufacturing” index (PMI) is more important for Germany, and an Agricultural Production component more important for New Zealand.
6. Different weighting patterns are appropriate at different parts of the business cycle, with some components being better signals of a down-turn and others of an upturn.
7. Periodic revisions are essential in keeping pace with a changing economy, for example as China emerges as a more important global economy it would make sense to give more weight to indicators of Chinese economic performance and relatively less weight to similar measures for other economies.
8. Consistently explore and exploit the potential of new data sources (e.g. satellite sourced data on soil moisture as a predictor of agricultural yields).
9. Exploit the potential of alternative methodologies (e.g. different seasonal and trend filters, use of Principal Component Analysis for determining and adjusting weightings).
10. Maintain a systematic program to support continuous improvement in the quality (i.e. reduce the “noise”) of underlying data sources such as GDP.

## Conclusion

Forecasting the future trajectory of economic performance is often an important element in economic decision making, as economic decisions are about shaping future outcomes. It is not easy to do this well, and the track record of success is “mixed”. The Durand paper shows that we can do better, and has provided a starting point for the planned development of “Best Practise” guidelines for the development and maintenance of composite indicators, that should also draw on our wider experience of what works and what doesn’t.

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