

WHITEPAPER

LOOKING INTO THE FUTURE WITH THE THOMSON REUTERS/ PAYNET SMALL BUSINESS LENDING INDEX (SBLI)

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INTRODUCTION

This paper will briefly describe the methodology behind the Small Business Lending Index (SBLI), a cobranded Thomson Reuters/PayNet product, and examine its ability to signal the future direction of the U.S. Leading Economic Indicators Index (LEI). In brief, the index measures the volume of new loans made to Small Businesses, indexed so that January 2005 equals 100. Small Businesses generally respond to changes in economic conditions more rapidly than do larger businesses, so this statistic tends to be a leading indicator of the economy. As to its forward looking ability, we will demonstrate that starting 4 months out, the SBLI is a very good indicator of the future direction of the LEI.

METHODOLOGY

PayNet, Inc. collects real-time loan information from more than 200 leading U.S. lenders. Its proprietary database, updated weekly, is the largest and richest collection of commercial loans and leases, encompassing more than 17 million current and historic contracts worth over \$740 billion, from the late 1990s to today.

To create the SBLI, PayNet tracks the new borrowing activity by millions of US businesses as reported by the largest lenders in the PayNet database. Lenders that are primarily purchasers and sellers of loan portfolios are excluded from the SBLI calculations. For qualifying lenders, their occasional purchases of loan portfolios are also excluded by capping monthly originations that are materially above

recent, seasonally-adjusted volume levels. Because these loans are small and occur in very great numbers, lenders' originations patterns tend to be relatively smooth, thereby making it possible to identify and exclude portfolio purchases in this manner. While portfolio purchases are a sign of a healthy secondary market for loans, such activity is quite distinct from actual credit granting to Small Businesses, and if not filtered from the data could result in double-counting. Similarly, restructurings of existing loan obligations are also excluded; the objective is to capture new loan originations as a measure of the expansion activity of small businesses.

The list of lenders included is dynamic, and lenders are spliced in and out so that their entry or exit is seamless. When a new lender is added to the PayNet database, its data is not included in the SBLI in the first month of data availability, but rather is included beginning with the second month when the change in new originations from the prior month will be included in the calculation of the SBLI. The SBLI (before seasonal adjustment) is based on the dollar-weighted percentage change in qualifying new originations from the prior month to the current month, for qualifying lenders with available data in both months.

For loans to qualify for inclusion in the calculation, they must be loans made to a Small Business, and to be deemed a Small Business, the business borrower must have total loan outstandings across all qualifying lenders of less than \$1M at both the start and the end of the month in question. Loan outstandings are one of the best measures of business size, as they are



objective, third-party reported, i.e. by the lenders (as opposed to self-reported financial data) and they are not generally as subject to industry-specific peculiarities as metrics such as revenues.

Small Business loan originations are somewhat seasonal, particularly in some industries. So to permit comparisons from any one month to any other month (rather than being limited only to comparisons with the same month in previous years), the SBLI is seasonally adjusted, using historical seasonal originations patterns. It is then presented both on an absolute index basis, normalized so that January 2005 equals 100, and on a change versus the same month one year prior basis.

The statistic is published on a preliminary basis approximately one month after the end of each statistical month; one month later a revised statistic is published, and one month later a final statistic is published. This system allows for cases where a lender may be late in their reporting, or may have temporarily incomplete reporting, and in such cases these data elements are modeled, generally for the preliminary and revised statistics, using the lenders known reporting patterns and the current patterns of similar lenders, so as to minimize the variance with the final statistics.

SBLI Hypothetical Example:

	May 09	Jun 09	Jul 09	Aug 09	Sep 09	Oct 09	Nov 09	Dec 09
Reported 10/31/09	80.0	81.0	82.0	82.8	83.7			
Reported 11/30/09	80.0	81.0	82.0	83.0	84.2	85.3		
Reported 12/31/09	80.0	81.0	82.0	83.0	84.0	84.8	85.7	
Reported 1/31/10	80.0	81.0	82.0	83.0	84.0	85.0	86.2	87.3

= "Final"
 = "Revised"
 = "Preliminary"

ECONOMIC TESTS

In order to investigate if there is either a short, intermediate or long term economic relationship between the SBLI and the LEI, we test for co-integration first. If co-integration exists then more than likely there is an equilibrium relationship between the two indices. By equilibrium it is meant the two indices, though experiencing at times opposite movement, i.e. are not in equilibrium, exhibit a stable relationship over time.

We test co-integration by first seeing if the published indices' values are stationary and approximately normally distributed (see Figure 1 for the time series plot of the 2 indices). The 2 indices are not stationary but are approximately normally distributed. The indices' values are differenced and then tested for stationarity via the augmented Dickey-Fuller test (ADF). Though the differences values are stationary according to the ADF, a visual review of the differenced indices (see Figure 2) reveals a downward drift in both indices that starts in late 2007. The change in direction, especially in the LEI, could be due to a regime change, but testing for this does not show any regime shift occurring.

Figure 1: Monthly Index Values for LEI and SBLI

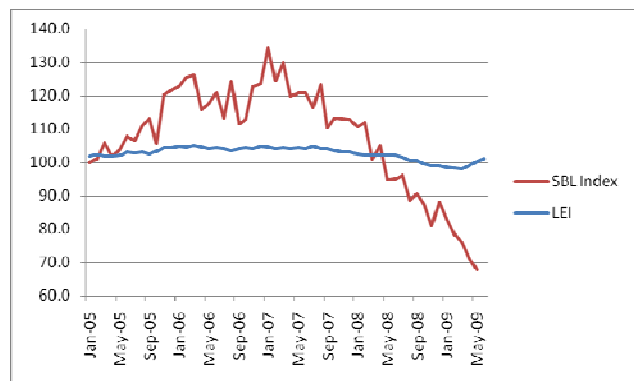
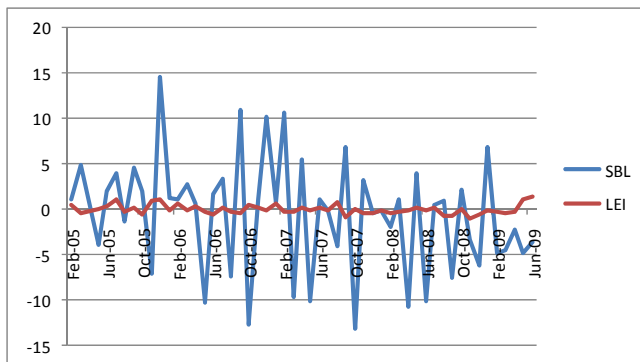


Figure 2: Differenced Values of SBLI & LEI



As the indices' values have now been differenced and shown to be stationary, the Engle-Granger co-integration test can be used. The results of the Engle-Granger test indicate that co-integration exists between the 2 differenced indices so tests of the residuals are now conducted to confirm the result of the Engle-Granger test.

Using the ADF test again, this time on the residuals noted above, we see that no unit root is present in the residuals, confirming the Engle-Granger co-integration result.

The Jarque-Bara test for normality is performed on the residuals as well to see if LEI and SBLI have a short-run equilibrium relationship in addition to the already detected long-run relationship. Jarque-Bara results show that the residuals are approximately normal so SBLI and LEI are indeed related in both the short-run and the long-run. This is a very important result because any short term lead/lag relationship we may find between the 2 indices will rest on good economic grounds.

Finally, a further test of the unit root residuals results due to McKennan is done. All the various results in the McKennan suite confirm the ADF results so we can state with a fair amount of confidence (greater than 97%) that SBLI and LEI are co-integrated.

In the next set of tests, we will see if there is a lead or a lag relationship between the 2 indices. In particular, we would like to know if the SBLI leads the LEI.

Testing the data first by using un-weighted past differenced values of the SBLI in order to predict next month's change in LEI gives a very mixed result – for example sometimes the prior month's value can predict this month's LEI value and sometimes it does not. We now use Almon distributed lags – a fitting of a polynomial to a number of lagged differenced values simultaneously - and find that 1 month ago, 2 months ago, 3 months ago and 4 months ago SBLI differenced values can predict this month's change in LEI. So 4 months of past SBLI changes do give a significant insight into what this month's LEI change will be. Can we use these weighted past values of SBLI on a standalone basis in order to predict the current month's change in LEI? This will be the next set of tests we will do.

The results of our tests show that last month's change in SBLI gives the strongest signal in terms of predicting what this month's change in LEI will be. What is meant by this is that the SBLI at lag 1 multiplied by a constant value as determined by the Almon method gives a very good estimate of what the change in LEI will be this month.

As the lags increase, the predictive power of each of the remaining lags declines but never below a level of 60% accuracy.

So, as would be expected given the short-run equilibrium established by the Jarque-Bara test, a weighted combination of all 4 SBLI lagged values generates the best prediction of this month's change in LEI. However, using individual lag values of past changes in SBLI we can predict the change in this month's LEI at least in terms of direction by using lags 2,3 and 4 individually and we can predict the direction and magnitude of the change in the current month's LEI by just using lag 1. The fact that we can do

these predictions with a fair amount of confidence is because we demonstrated that co-integration exists between the 2 indices. This co-integration confirms the commonly held belief that what happens with small business lending is a good leading indicator of the health of the U.S. economy as a whole.

We have established in this section that the 2 indices – SBLI and LEI – are in equilibrium in both the short-term and long-term. We have also established that prior values of SBLI can be used to forecast the LEI, whether one wishes to use a single variable such as the current month's change in SBLI to predict next month's change in LEI or 4 months ago, 3 months ago, 2 months ago and 1 month's change in SBLI values to do the same thing. And the presence of short-term equilibrium between the indices means the Almon lag structure makes economic sense. This presence of co-integration also conforms to the common practice of seeing what is happening with small business lending as a traditional indicator of the health of the U.S. economy.

CONCLUSION

The behavior of small businesses provides valuable information about the economy as the resumption of lending to these businesses is more often than not a sign of economic recovery after a slowdown. The continued lending to firms of this size after the recovery has begun is also a good sign of ongoing economic health.

As for the firms themselves, as decisions to invest in the business and expand can potentially be made by the primary business owner in a single day, without complex analyses and plans or without obtaining budget approval from one or more layers up the chain of command, small businesses are usually the quickest to react to changes in the economic environment. Similarly, at the start of a recession, small businesses usually become

delinquent on loans before their larger counterparts simply because smaller firms generally lack the economic reserves of larger businesses which serve as a buffer and hence mitigate the impact of the economic slowdown.

So small business loan originations are a good indicator of where the economy is today and, as this paper shows, changes in prior months' SBLI values can predict this month's change in the LEI. Our battery of tests clearly demonstrate the value of looking at SBLI as a forward indicator of the LEI whether one is using individual past values or a combination of same.

FOR MORE INFORMATION

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