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Using financial indicators to predict turning points in the business cycle: The case of the leading economic index for the United States☆

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ABSTRACT

In this paper, we evaluate the usefulness of financial indicators according to their ability to predict recessions (i.e., peaks in the business cycle). We then select a small set of financial indicators to aggregate into a single composite index of financial indicators, which we name the Leading Credit Index (LCI). Our approach differs from others in the literature in that we follow the composite index approach of the Leading Economic Index (LEI) of the United States and focus on a small, carefully selected set of indicators as index components, and, in addition, our selection criteria target business cycle turning points rather than financial stress or instability. We show that this leading credit index, either alone or as a component of the LEI, can be helpful in estimating recession probabilities, which it does better than the individual indicators, including some of the existing components of the LEI, especially real money supply.

1. Introduction

There are complex interactions between financial and economic cycles. The complex and changing relationship between the two major sectors of the economy has not been understood and incorporated into macroeconomic models very well. The measurement of financial activity has lagged as well. The 2008–2009 global recession and recovery highlight the importance of understanding these linkages better. Recent research, such as that of Brave and Butters (2010) and Hatzius, Hooper, Mishkin, Schoenholtz, and Watson (2010), among others, has also explored some of these issues and developed measures of aggregate financial conditions and financial stress or instability. Several new indexes of financial conditions and financial stability have been proposed in the recent literature. Most of these new measures are built upon large datasets. In contrast to most of the recent literature on financial instability, very few studies have attempted to develop measures that focus on the prediction of turning points in the business cycle. One exception is the index of leading economic indicators (LEI) in the United States, which was developed following the indicator approach to the measurement and analysis of business cycles, and contains financial components in addition to real economic variables. This indicator approach relies on a small set of carefully selected components, and primarily targets business cycle turning points.

Our main objective in this paper is to show that a new indicator of financial conditions can help to improve the prediction of turning points in the business cycle. We show that this new indicator is a better indicator of monetary and credit conditions than the real money supply, which has previously been regarded as a leading indicator and

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used as a component of the LEI. We also show that when the new indicator is incorporated into the LEI, it can improve both the LEI's coverage of leading indicators and its cyclical properties, thus helping to predict turning points in the business cycle.

In this paper, we review some of the available financial, monetary, and credit market indicators from the perspective of their relationship with the general business cycle of the US economy, and use the indicator approach for our analysis and selection of financial indicators. Our analysis also yields insights about other components of the LEI; however, in this paper we focus narrowly on the marginal effects of financial indicators on the LEI, and cover the analysis of the remaining components and implications for possible replacements in another paper that takes a more holistic view of the LEI.

In our analysis, we follow the definition and measurement of business cycles in the level of general business activity developed by the National Bureau of Economic Analysis (NBER). This is known as the indicators approach. One of the key elements in this approach is the index of coincident economic indicators (CEI), which provides the reference metric for the determination of turning points in the business cycle.[1] In this business cycle framework, the CEI is also the target variable for the index of leading economic indicators (LEI). Many economists and business analysts use these indexes for assessing where the economy is in the business cycle and where it is headed, and also use them in their forecasting models. We argue that including the new financial indicator as a component of the LEI in place of one of its existing components, namely real money supply (M2), improves its coverage of financial sector activity in light of the structural changes in the US economy since the 1980s. This improved coverage also helps to improve the ability of the LEI to predict turning points in the business cycle.

The indicator approach to business cycle research is one of many ways to study and analyze the business cycle. It was first introduced by Burns and Mitchell (1946) and Mitchell and Burns (1938), and has since figured prominently in the NBER business cycle program. The timings and chronologies of business cycles and the classification of economic indicators as leading, coincident, and lagging indicators have been useful over the years. Currently, The Conference Board publishes indicators for the United States and other countries following this approach. The indicator approach, which focuses on measuring and analyzing the business cycle, can help to improve our understanding of the evolution over time of financial and economic cycles. This approach relies on the identification and prediction of turning points in the business cycle and on the use of diffusion indexes (or composite indexes). In this paper, we demonstrate that this approach yields a reasonable set of financial indicators for tracking the business cycle, which, when combined into a composite index, can serve as a new component of the US LEI.

The LEI has ten components.[2] The composition of the LEI has evolved over time with the US economy and the statistical system. Changes have been made in the composition to reflect these changes, as was documented by McGuckin and Ozyildirim (2004). Each component measures a different aspect of general economic activity, including contractual relationships (i.e. orders, permits, etc.) and expectations or sentiment (i.e., consumer expectations and stock market prices). The leading index has used three financial variables: the real money supply, an index of stock prices, and the interest rate spread. Levanon (2010) and Levanon, Ozyildirim, Schaitkin, and Zabinska (2011) find that the latter two financial variables perform much better as leading indicators than the real money supply. Stock prices have been part of the leading index composition since its inception, and were even part of the original list of leading indicators developed by Mitchell and Burns (1938) (see Klein, 2001). The interest rate spread was introduced into the LEI when The Conference Board revised its composition in 1996. These two indicators still serve well as standalone indicators in relation to expectations in equity and bond markets, with the latter reflecting monetary policy actions. Nevertheless, we argue in this paper that these indicators do not capture fully the complex and changing nature of the interactions or the impact of the financial sectors and real economic activity. Moreover, the use of real money supply as a component can hurt the LEI. Our proposed new financial activity index attempts to remedy this shortfall. We show that a new composition of the leading economic index (LEI) which uses the new composite index of financial indicators performs better than the current composition of the LEI.

As an important indicator of monetary and credit conditions, the real money supply has been a component of the LEI for the US since the 1970s. More specifically, real M2 performed well as a leading indicator until the late 1980s, but its relationship with the business cycle has since weakened and become unstable. Based on these observations, we propose that our new financial indicator could replace the real M2 as a component of the LEI, while at the same time broadening its coverage to be more consistent with structural changes in the US economy.

[1] The CEI is a composite index consisting of nonfarm payroll employment, index of industrial production, manufacturing trade and sales, and personal income less transfer payments. The four coincident indicator components of the CEI are the same ones that are used by the NBER business cycle dating committee in its deliberations for determining when recessions begin and end in the US economy (see nber.org and the *Handbook of Business Cycle Indicators*, The Conference Board, 2001). The business cycle turning points of the CEI correspond very closely to the NBER chronology of the US business cycle. The index is constructed as an equally weighted average of these four monthly indicators' symmetric monthly changes after a volatility adjustment, which is done using inverse standard deviations of the monthly symmetric changes in the components (the inverse standard deviations are further normalized to sum to one). Symmetric monthly changes are essentially growth rates, and are equivalent to taking log differences of the variables. The monthly growth rate of the index obtained in the previous steps is cumulated to obtain levels of the index, and this is then rebased to a fixed base year, so that the average of the index values in the base year equals 100. The Appendix provides a more detailed discussion of the indicators approach and the index methodology.

[2] The LEI components are aggregated into a composite index using the same calculation methodology as for the CEI. See footnote 1. The LEI calculation includes an additional step which equalizes the trend of the index to that of the CEI by equating their monthly average growth rates.

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