

## **National Financial Conditions Index: Frequently Asked Questions**

### **What are the NFCI and adjusted NFCI?**

The Chicago Fed's National Financial Conditions Index (NFCI) provides a comprehensive weekly update on U.S. financial conditions in money markets, debt and equity markets, and the traditional and "shadow" banking systems. Because U.S. economic and financial conditions tend to be highly correlated, we also present an alternative index, the adjusted NFCI (ANFCI). This index isolates a component of financial conditions uncorrelated with economic conditions to provide an update on how financial conditions compare with current economic conditions.

### **What can I learn from the indexes?**

The NFCI and ANFCI are coincident indexes of financial activity, meaning that they describe contemporary financial conditions. Brave and Butters (2011, 2012b) document that the historical evolution of the NFCI and ANFCI capture well-known periods of financial stress, and develop threshold rules for characterizing the current state of financial conditions consistent with their levels during past financial crises. Furthermore, Brave and Butters (2011) demonstrate that the indexes are useful in forecasting growth in gross domestic product (GDP) and business investment two to four quarters ahead.

### **How do I interpret the indexes?**

The NFCI is a weighted average of 105 indicators of risk, credit, and leverage in the financial system — each expressed relative to its sample average and scaled by its sample standard deviation. As such, a zero value for the NFCI can be thought of as the U.S. financial system operating at historical average levels of risk, credit, and leverage. The ANFCI removes the variation in these indicators attributable to economic activity (as measured by the three-month moving average of the Chicago Fed National Activity Index (CFNAI) and the difference between the unemployment rate and the Congressional Budget Office estimate of the natural rate of unemployment) and inflation (as measured by the 3-month changes in the Personal Consumption Expenditures (PCE) Price Index and the KR-CRB Spot Commodity Price Index). As such, a zero value for the ANFCI corresponds with a financial system operating at historical average levels of risk, credit, and leverage consistent with economic activity and inflation.

Positive values of the NFCI indicate financial conditions that are tighter than on average, while negative values indicate financial conditions that are looser than on average. Similarly, positive values of the ANFCI indicate financial conditions that are tighter on average than would be typically suggested by current economic conditions, while negative values indicate the opposite. The magnitude of how "tight" or how "loose" financial markets are operating is expressed in standard deviations from zero over a sample period extending back to 1971.

## **What do you mean by indicators of risk, credit, and leverage? How do they differ?**

By risk, we mean both the premium placed on risky assets embedded in their returns as well as the volatility of asset prices. By credit, we refer to the willingness to both borrow and lend at prevailing prices. Our measures of leverage provide a reference point for debt relative to equity. Risk measures tend to receive positive weights, while credit and leverage measures tend to receive negative weights, providing the interpretation that “tight” financial conditions are associated with above-average risk and below-average credit and leverage. Brave and Butters (2012b) document that risk measures are coincident indicators of financial stress, while credit measures tend to be lagging indicators of financial stress and leverage measures tend to be leading indicators of financial stress.

## **What are the risk, credit, and leverage subindexes?**

The risk, credit, and leverage subindexes are constructed from subsets of the NFCI indicators listed at [www.chicagofed.org/digital\\_assets/others/research/data/nfci/nfci\\_indicators\\_list.pdf](http://www.chicagofed.org/digital_assets/others/research/data/nfci/nfci_indicators_list.pdf). Each subindex is constructed to have an average value of zero and a standard deviation of one over a sample period extending back to 1971. The risk subindex captures volatility and funding risk in the financial sector; the credit subindex is composed of measures of credit conditions; and the leverage subindex consists of debt and equity measures. A positive value for an individual subindex indicates that the corresponding aspect of financial conditions is tighter than on average, while negative values indicate the opposite. Brave and Butters (2012b) document that periods of severe financial stress have historically been associated with above-average values of all three of the NFCI subindexes.

## **What is the nonfinancial leverage subindex and what can I learn from it?**

Brave and Butters (2012a, b) demonstrate that the nonfinancial leverage subindex best exemplifies how leverage can serve as an early warning signal for financial stress and its potential impact on economic growth. The positive weight assigned to both the household and nonfinancial business leverage measures in this subindex reflects the fact that rising values of each are typically associated with increasingly tighter financial conditions. This feature makes the nonfinancial leverage subindex characteristic of the feedback process often referred to as the “financial accelerator” as discussed in Bernanke, Gertler, and Gilchrist (1999). Increasingly tighter financial conditions are associated with rising risk premiums and declining asset values. The net worth of households and nonfinancial firms is, thus, reduced at the same time that credit tightens. This leads to a period of deleveraging (i.e., debt reduction) across the financial and nonfinancial sectors of the economy and ultimately to lower economic activity.

### **How often are the indexes produced and are they available to the public?**

The NFCI and its subindexes, along with the ANFCI, are updated at [www.chicagofed.org/nfci](http://www.chicagofed.org/nfci) on a weekly basis at 8:30 a.m. ET on Wednesday, and cover the time period through the previous Friday. When a federal holiday falls on a Wednesday or earlier in the week, the indexes and subindexes will be updated on Thursday.

### **Are the indexes revised?**

The history of the indexes can change from week to week depending on incoming data and data revisions. Because they include a number of monthly and quarterly data series that are regularly revised, revisions will tend to be more pronounced near the beginning of each month. The ANFCI is additionally influenced by revisions to the adjustment series; and as a result, it will tend to show larger revisions. For more information, please see the section titled “Revisions to the NFCI and ANFCI” at <https://chicagofed.org/research/data/nfci/current-data>.

### **How do the indexes differ from other financial conditions indexes?**

The indexes represent a further contribution to the literature on financial conditions indexes stretching back to a 2006 study by Bank of Canada economists (Illing and Liu, 2006) and including similar publicly available indexes constructed by the Federal Reserve Banks of Kansas City (Hakkio and Keeton, 2009) and St. Louis. The NFCI and ANFCI, however, have a unique set of features owing to their different method of index construction:

- Weekly index frequency;
- Quarterly, monthly, and weekly indicators with varied start and end dates;
- Historical coverage of more than 45 years;
- Broad coverage of financial markets (traditional and more recently developed); and
- Indicator weights that reflect systemic and dynamic importance to the financial system.

### **How many weekly, monthly, and quarterly financial indicators are used in each index?**

Both indexes contain 46 weekly, 33 monthly, and 26 quarterly indicators.

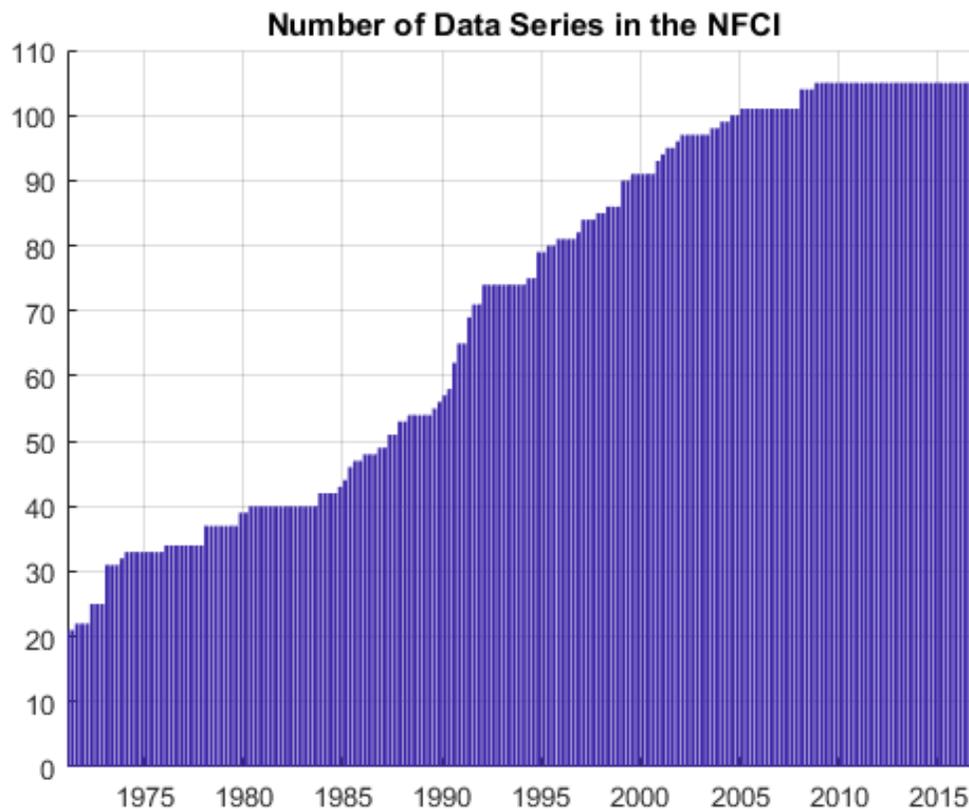
### **What financial markets and firms are covered by the indexes?**

The NFCI and ANFCI include data on interbank loan and securitized debt, commercial paper and repo, corporate and government bond, over-the-counter and exchange-traded derivatives, consumer and business credit, and equity and other asset markets; and they cover the condition of the traditional banking system as well as the network of financial firms (investment banks, hedge funds, etc.) outside this system, often referred to as the shadow banking system.

Market/firm	Number of indicators
Business credit	8
Shadow banking system	9
Interbank loan and securitized debt markets	10
Corporate and government bond markets	10
Equity and other asset markets	10
Banking system	14
Commercial paper and repo markets	14
Consumer credit	15
Derivatives markets	15

### What time period is covered by the indexes?

The indexes cover the period from the first week of 1971 through the Friday of the week prior to each weekly update. The figure below shows the pattern of data availability for the period 1971–2017. It is not until 1987 that more than a half of the indicators are available, primarily because of the shorter time series of many of the weekly indicators. The indexes maintain a smooth time series because of the way they are constructed. It is still the case, however, that coverage of the financial system is greater in the latter half of the sample.



## How are the indicators weights estimated?

The methodology used to estimate the weight given to each indicator is described in detail in the appendix to Brave and Butters (2012b) with an update as detailed in Brave and Kelley (2017). It combines elements of the work on dynamic factor models by Stock and Watson (2002); Hatzius et al. (2010); Doz, Giannone, and Reichlin (2012); and Aruoba, Diebold, and Scotti (2009). The NFCI and ANFCI each represent a common element, or factor, taken from price, quantity, and survey evidence on broad financial conditions. This factor gives added weight to indicators that are highly contemporaneously correlated with each other (“systemically important”) and are best able to explain its evolutionary patterns (“dynamically important”).

## How can I tell which indicators are important?

The absolute value of an indicator’s weight is a reflection of its ability to explain historical fluctuations in the broader financial system. The weights for each of the 105 indicators are listed at [www.chicagofed.org/digital\\_assets/others/research/data/nfci/nfci\\_indicators\\_list.pdf](http://www.chicagofed.org/digital_assets/others/research/data/nfci/nfci_indicators_list.pdf). The following are the top ten indicators by absolute value of their weights in both indexes.

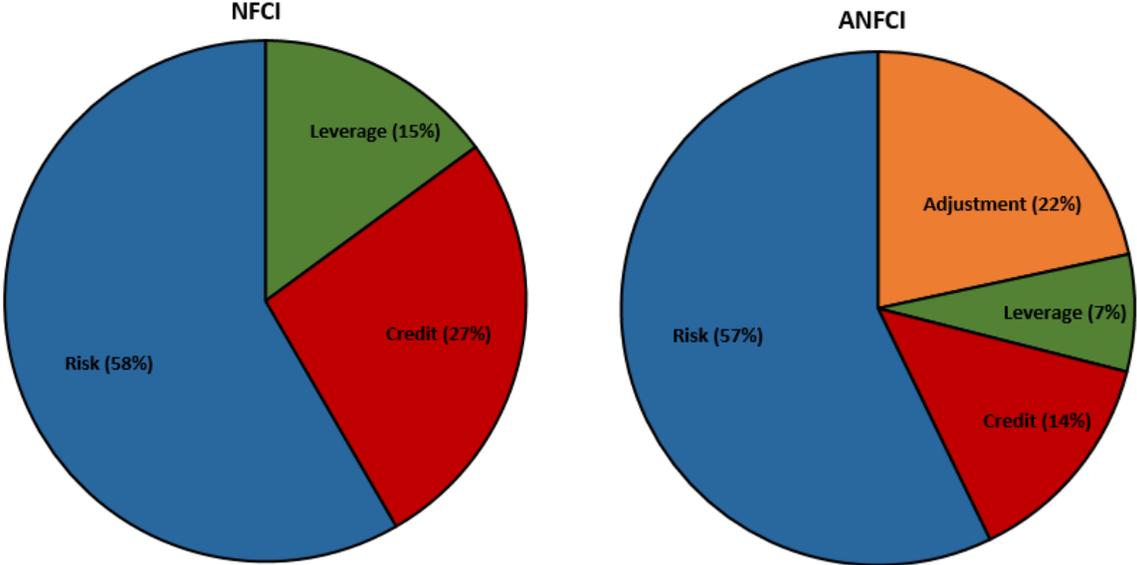
<b>NFCI</b>	<b>NFCI weight</b>
BofAML 3-5 yr AAA CMBS OAS spread	3.47
ICE BofAML ABS/5-yr Treasury yield spread	3.39
BofAML High Yield/Moody's Baa corporate bond yield spread	3.22
30-yr Jumbo/Conforming fixed rate mortgage spread	3.17
FRB Senior Loan Officer Survey: Tightening Standards on Small C&I Loans	3.16
CBOE Market Volatility Index VIX	3.1
FRB Senior Loan Officer Survey: Tightening Standards on RRE Loans	3.08
FRB Senior Loan Officer Survey: Tightening Standards on Large C&I Loans	2.94
FRB Senior Loan Officer Survey: Tightening Standards on CRE Loans	2.92
BofAML Home Equity ABS/MBS yield spread	2.91

<b>ANFCI</b>	<b>ANFCI weight</b>
3-mo. Overnight Indexed Swap (OIS)/Treasury yield spread	4.29
2-yr Interest Rate Swap/Treasury yield spread	3.6
1-mo. Asset-backed/Financial commercial paper spread	3.6
ICE BofAML ABS/5-yr Treasury yield spread	3.42
Markit High Yield (HY) 5-yr Senior CDS Index7	3.24
ICE BofAML Financial/Corporate Credit bond spread	3.11
30-yr Jumbo/Conforming fixed rate mortgage spread	2.85
3-mo./1-wk AA Financial commercial paper spread	2.78
3-mo. TED spread (LIBOR-Treasury)	2.76
CBOE Market Volatility Index VIX	2.61

Another way to examine this question is to calculate the percentage of the absolute contributions to the indexes that the data series explain by each of the three types of indicators. Risk indicators account for slightly more than half of the contributions to the NFCI and ANFCI. Credit indicators account for roughly a quarter of the variation in the NFCI, but only about half of that in the ANFCI. The leverage indicators contribute slightly less than the credit indicators for both the NFCI and ANFCI. In the ANFCI, the adjustments for economic activity and inflation account for roughly a fifth of the contributions to the index.

### Percentage of Absolute Contributions



## References

- Aruoba, S. B., F. X. Diebold, and C. Scotti**, 2009, “Real-time measurement of business conditions,” *Journal of Business and Economic Statistics*, Vol. 27, No. 4, pp. 417–427.
- B. S. Bernanke, M. Gertler, and S. Gilchrist**, 1999, “The financial accelerator in a quantitative business cycle framework,” in *Handbook of Macroeconomics*, J. B. Taylor and M. Woodford (eds.), Vol. 1C, Amsterdam: Elsevier / North-Holland, chapter 21.
- Brave, S. and R.A. Butters**, 2012a, “Detecting early signs of financial instability,” *Chicago Fed Letter*, Federal Reserve Bank of Chicago, No. 305, December.
- \_\_\_\_\_, 2012b, “Diagnosing the financial system: Financial conditions and financial stress,” *International Journal of Central Banking*, Vol. 8, No. 2, June, pp. 191–239.
- \_\_\_\_\_, 2011, “Monitoring financial stability: A financial conditions index approach,” *Economic Perspectives*, Federal Reserve Bank of Chicago, Vol. 35, First Quarter, pp. 22–43.
- Brave, S. and D. Kelley**, 2017, “Introducing the Chicago Fed’s new adjusted National Financial Conditions Index,” *Chicago Fed Letter*, Federal Reserve Bank of Chicago, No. 386, September.
- Doz, C., D. Giannone, and L. Reichlin**, 2012, “A quasi maximum likelihood approach for large, approximate dynamic factor models,” *Review of Economics and Statistics*, Vol. 94, No. 4, November, pp. 1014–1024.
- Hakkio, C. S., and W. R. Keeton**, 2009, “Financial stress: What is it, how can it be measured, and why does it matter?,” *Economic Review*, Federal Reserve Bank of Kansas City, Second Quarter, pp. 5–50.
- Hatzius, J., P. Hooper, F. Mishkin, K. L. Schoenholtz, and M. W. Watston**, 2010, “Financial condition indexes: A fresh look after the financial crisis,” University of Chicago Booth School of Business, Initiative on Global Markets, report, April 13, available at <http://research.chicagobooth.edu/igm/events/docs/2010usmpfreport.pdf>.
- Illing, M., and Y. Liu**, 2006, “Measuring financial stress in a developed country: An application to Canada,” *Journal of Financial Stability*, Vol. 2, No. 3, October, pp. 243–265.
- Stock, J. H., and M. W. Watson**, 2002, “Forecasting using principal components from a large number of predictors,” *Journal of the American Statistical Association*, Vol. 97, No. 460, December, pp. 1167–1179.