# A better Sahm rule? Introducing the SOS recession indicator

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ABSTRACT

We introduce a new recession indicator based on the Sahm rule methodology. The Scavette-O'Trakoun-Sahm-style (SOS) indicator uses the insured unemployment rate to correctly signal the past seven recessions since 1971. Additionally, our analysis suggests that the SOS improves upon the Sahm rule such that it has fewer (none) false positives and identifies recessions faster on average. Additionally, the SOS rule benefits from being available at a higher frequency (weekly) than the Sahm rule (monthly) and not subject to several sources of sampling bias such as incorrect responses or nonresponse. This suggests that the SOS indicator may be a desirable alternative for users of the Sahm rule: economists, journalists, and policymakers.

## 1. Introduction

Single economic indicators rarely provide both a timely and reliable signal of overall national economic activity. While economic journalists often point to two consecutive quarters of declines in gross domestic product (GDP) as a recession indicator, the National Bureau of Economic Research (NBER) utilizes several other indicators to date the business cycle and determine the official recession start and end dates. Relying on GDP readings or NBER announcements require long waits (usually until after the recession is over), which is why economists have relied on more timely indicators based on surveys of economists (Scavette, 2014), trading data from bond markets (Hornstein, 2022), or the unemployment rate (Sahm, 2019; Hornstein, 2023).

As a recession indicator, the Sahm rule has received notable coverage amongst business media and policymakers since economist Claudia Sahm identified it in Sahm (2019): "the Sahm Recession Indicator signals the start of a recession when the three-month moving average of the national unemployment rate (U3) rises by 0.50 percentage points or more relative to the minimum of the three-month averages from the previous 12 months." However, Ash & Nickelsburg (2024) find that the Sahm rule has a mixed performance record as an early indicator for recessions, and that it tends to only become a useful indicator four months after a recession has started. Additionally, Atkinson (2024) identifies at least four instances when the Sahm rule triggered false alarms since 1950, or when it rose above 0.5 without a subsequent recession. Ash & Nickelsburg (2024) argue that recessions can be better predicted with models containing a multitude of information. In a recent

working paper, Michaillat & Saez (2024) propose a recession indicator combining the unemployment rate and the vacancy rate which perfectly identifies all recessions since 1929. Nevertheless, the simplicity and timeliness of the Sahm rule compared to competing recession indicators contributes to its ongoing popularity amongst policymakers, economic forecasters, and the media. Furthermore, immediate impacts to the labor market are often the focus of concern for the public and policymakers (especially those at the Federal Reserve) in the wake of recessions, which may lend credence to a recession indicator derived from the national unemployment rate.

We propose a new recession indicator that shares the simplicity of the Sahm rule while also offering increased timeliness and accuracy in providing a recession signal. The SOS (Scavette-O'Trakoun-Sahm-style) indicator signals a recession when the 26-week moving average of the insured unemployment rate rises by more than 0.2 percentage points relative to its minimum over the 52 preceding weeks. The SOS recession indicator identifies the past seven U.S. recessions going back to the early 1970s and improves upon the Sahm rule in several respects. Firstly, unlike the Sahm rule which produces multiple false positives, SOS produces no false positives for recessions in the past 50 years. Secondly, our rule has on average identified recessions earlier than the Sahm rule. Third, as the underlying data are based on observed filings for unemployment insurance rather than self-reported employment status, the SOS is not subject to various forms of survey bias such as nonresponse and erroneous responses. Finally, as the underlying data are published by the Department of Labor at a weekly frequency, the SOS is available to the public at a higher frequency.

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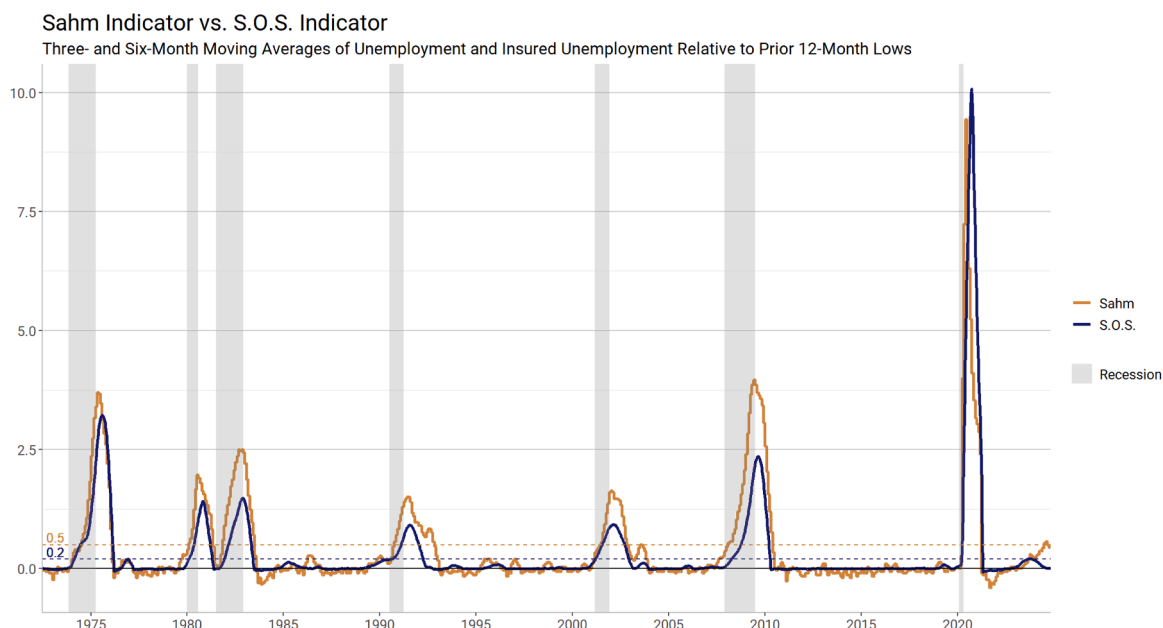
**Fig. 1.** Sahm rule vs. S.O.S. indicator, 1971 through 2024.
Sources: United States Department of Labor, authors' calculations

**Table 1**
Recession dates vs. date thresholds crossed for Sahm rule and SOS indicator.

| Month of Recession | Time When Sahm > 0.5 | Recession Starts... | Time When S.O.S. > 0.2 | Recession Starts... |
|---|---|---|---|---|
| Nov 1973 | Jul 1974 | **8 months ago** | Feb 1974 | **3 months ago** |
| Jan 1980 | Feb 1980 | **1 month ago** | Feb 1980 | **1 month ago** |
| Jul 1981 | Nov 1981 | **4 months ago** | Dec 1981 | **5 months ago** |
| Jul 1990 | Oct 1990 | **3 months ago** | Sep 1990 | **2 months ago** |
| Mar 2001 | Jul 2001 | **4 months ago** | Mar 2001 | **0 months ago** |
| Dec 2007 | Feb 2008 | **2 months ago** | Apr 2008 | **4 months ago** |
| Feb 2020 | Apr 2020 | **2 months ago** | Mar 2020 | **1 month ago** |

Sources: United States Department of Labor, authors' calculations.

## 2. Data

We use data from the U.S. Bureau of Labor Statistics (BLS) on the unemployment rate and the insured unemployment rate. The unemployment rate, also known as the U-3 measure of labor underutilization, measures the number of unemployed persons as a percentage of the labor force and is computed monthly by the BLS based on Current Population Survey (CPS) data. The insured unemployment rate, also known as the percent of covered employment, measures continued claims divided by covered employment and is computed weekly by the U.S. Employment and Training Administration. Continued claims, or insured unemployment, indicate the number of insured unemployed workers filing for unemployment insurance benefits. Covered
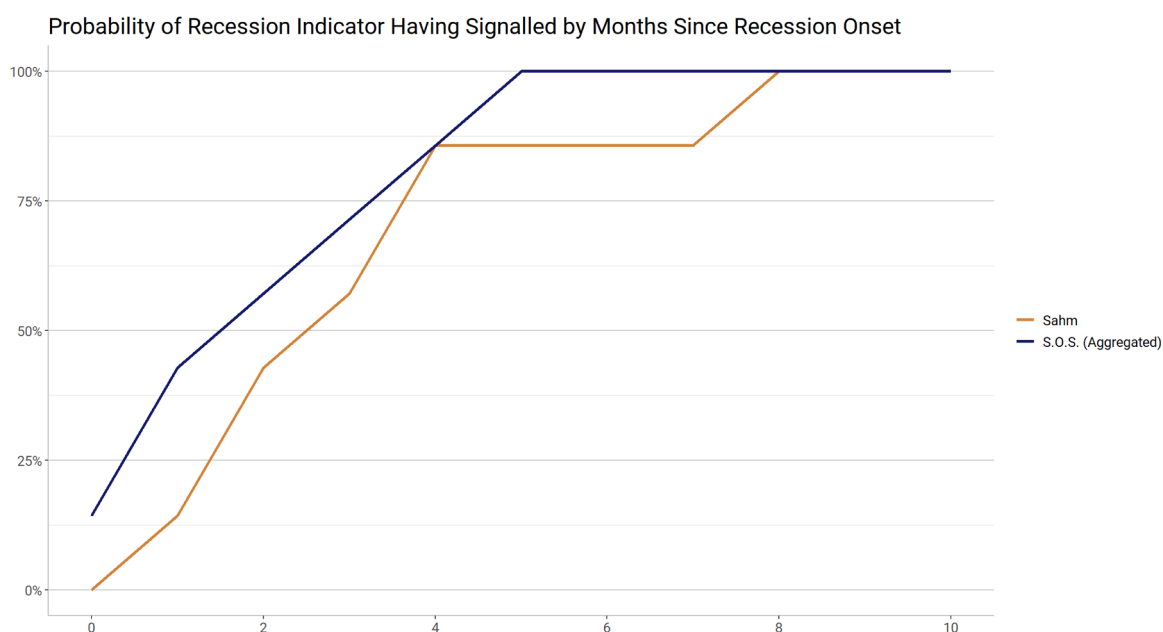


**Fig. 2.** Probability of recession signal by months since NBER official start date.
Sources: United States Department of Labor, authors' calculations

employment indicates the total number of U.S. employees covered by state unemployment insurance programs.

Using the insured unemployment rate may offer advantages over the unemployment rate as a recession indicator. Unlike the unemployment rate which is based on a survey of approximately sixty-thousand households, unemployment insurance claims are based on administrative data which are aggregated across state agencies. Therefore, claims data are not subject to the noisiness associated with the sampling variability inherent in measuring the unemployment rate (Council of Economic Advisers, 2024). Because the SOS indicator is based on observed claims filings for unemployment insurance, it is not reliant on the accuracy of respondents' answers, which can introduce biases in the measurement of CPS-derived variables. For example, during the COVID-19 pandemic, the BLS noted that the unemployment rate was affected by a misclassification due to laid-off workers reporting they were employed but absent from their jobs (Bureau of Labor Statistics, 2020). Furthermore, according to the BLS, survey response rates have been declining since 2013, which if continued could induce nonresponse bias into CPS-based data such as the unemployment rate (Bureau of Labor Statistics, 2023). At a more granular level, such nonresponse bias could disproportionately and systematically affect certain segments of the CPS sample: Bernhart & Wunnava (2023) have shown that the inclusion of citizenship questions in the CPS resulted in a higher rate of non-response in states with higher rates of non-citizen and Hispanic populations. Additionally, given that unemployment insurance claims are released weekly, they are one of the timeliest indicators of U.S. labor market activity.

## 3. Methodology

We examine the U.S. unemployment rate and insured unemployment rates from 1971[1] through 2024, which covers the seven most recent recessions. First, we analyze the true positive and false positive rates for the Sahm rule versus our SOS recession indicator over the past fifty years. Secondly, we analyze how soon each of the indicators triggered recessions in relation to the NBER start dates.

Eq. (1) constructs the Sahm indicator, $S_t$, as the difference between the three month-moving average of the unemployment rate, $U_t$, and its minimum over the preceding 12 months where t indicates the current month. The Sahm rule triggers a recession when this series is 0.5 or higher.

$$S_t = \frac{1}{3}\sum_{s=0}^{2} U_{t-s} - min_{s \in \{1,\dots,12\}} \frac{1}{3}\sum_{r=0}^{2} U_{t-s-r} \tag{1}$$

Eq. (2) computes our SOS indicator, $SOS_w$, (Scavette-O'Trakoun-Sahm style) as the difference between the 26-week moving average of the insured unemployment rate, $IU_w$, and its minimum over the preceding 52 weeks where w indicates the current week. The SOS indicator triggers a recession when the series is strictly higher than 0.2.

$$SOS_w = \frac{1}{26}\sum_{s=0}^{25} IU_{w-s} - min_{s \in \{1,\dots,52\}} \frac{1}{26}\sum_{r=0}^{25} IU_{w-s-r} \tag{2}$$

We conduct three empirical tests using the Sahm and SOS indicators. Firstly, we calculate the percentage of true positives, or how often each of the series correctly signaled an NBER-defined recession. Secondly, we compute the percentage of false positives, or how often each of the series incorrectly signaled a recession during non-recession months. Lastly, for the true positives, we measure when each of the series respectively signaled each recession in relation to its official NBER start date.

## 4. Results

Fig. 1 plots the Sahm and SOS series from 1971 through 2024, along with their respective thresholds of 0.5 and 0.2. NBER recession months are indicated by grey-shaded vertical bars. Both series correctly indicated seven out of seven recessions during our period of analysis in 1973, 1980, 1981, 1990, 2001, 2008, and 2020. However, Sahm indicated two false positives in 2003 and 2024, when the series reached or exceeded its threshold outside of a recessionary period. Furthermore, Atkinson (2024) identifies three more false positives for the Sahm rule using real-time data in 1959, 1967, and 1976. On the other hand, SOS did not produce any false positives in our sample period from 1971 through 2024, despite coming close to the threshold in 2023.

Table 1 indicates the month each of the seven recessions in our sample began according to the NBER along with the months when the Sahm and SOS series crossed their respective thresholds to signal the recession. On average, Sahm signaled a recession 3.4 months after the official start month while SOS was 2.3 months behind. There are only two instances when Sahm indicated a recession before SOS. The first was during the 1981 recession when Sahm reached its threshold one month before SOS. The second was during the 2008 recession when Sahm reached its threshold two months before SOS.

While the average difference in recession timing across the seven recessions is only 1 month between the two series, there are two instances when SOS signaled a recession several months before Sahm. The first was in 1973 when SOS signaled a recession 5 months before Sahm. The second was in 2001 when SOS signaled a recession the same month as its official start date (March 2001), but Sahm was not triggered until four months later in July 2001.

Fig. 2 shows the probability of a recession having been signaled by the Sahm rule and SOS indicator respectively by months since the NBER start date. Overall, it takes roughly 8 months after an official recession has started for Sahm to signal a recession with 100 percent probability. However, SOS signals a recession with 100 percent probability five months after its official start date.

## 5. Conclusion

This study explores a novel recession indicator based on the methodology of the Sahm rule (Sahm, 2019). The SOS indicator signals a recession when the 26-week (six-month) moving average of the insured unemployment rate is more than 0.2 percentage points above its minimum over the preceding 52 weeks. We argue that the SOS rule offers the same benefits as the Sahm rule such as simplicity and accuracy in signaling the past seven recessions. However, the SOS indicator offers improvements over the Sahm rule such that it produces no false positives over the sample period, and it tends to signal recessions sooner after their official NBER-determined start dates. Lastly, the SOS indicator is available on a weekly basis and it relies on administrative data. Thus, it will be more timely and less sensitive to sampling bias than the Sahm rule, as well as competing alternatives such as the Michaillat & Saez (2024) rule which also leverage monthly survey-based data. These improvements could make the SOS indicator a better trigger for activating automatic stabilizers (e.g. stimulus payments) than the Sahm rule, which was the latter's intended purpose when introduced in Sahm (2019). The SOS indicator offers a simple and timely framework for economists, journalists, and policymakers to track deteriorations in the U.S. labor market in the wake of business cycle downturns.

## Declaration of competing interest

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[1] The insured unemployment rate series is available from January 1971.

## Acknowledgments

## Data availability

Data will be made available on request.

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