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High yield spreads, real economic activity, and the financial accelerator☆

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HIGHLIGHTS

- We study the leading properties of the US high yield spreads from 1996 to 2012.
- Significant leading properties are evidence of a financial accelerator.
- Leading properties are stronger at short forecast horizons.
- Leading properties statistically disappeared in the second half of the 2000s.
- High yield spreads are unreliable as leading indicators.

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ABSTRACT

We study the leading properties of 30 US high yield spreads for economic growth between 1996 and 2012 and show that they disappeared in the second half of the 2000s. Our empirical findings demonstrate the unreliability of high yield spreads as leading indicators and cast doubts on the existence of a strong and functioning financial accelerator in recent years.

1. Introduction

The high yield spread – a financial variable computed as the difference between an interest rate associated with below investment grade (*high yield* or *junk*) corporate bonds and an interest rate on government debt or AAA-rated corporate bonds (*risk-free* rate) – was shown to have significant predictive content for future real economic activity in the United States for many years. Gertler and Lown (1999) and Mody and Taylor (2003, 2004) were the first authors to empirically demonstrate the existence of these leading properties between the mid-1980s and the early 2000s. The theoretical foundations of this empirical relationship draw on the concept of the *financial accelerator* (Bernanke and Gertler, 1995; Bernanke et al., 1999, and references cited therein), according to which the effects of economic shocks on the business cycle are amplified by financial frictions. Statistically significant leading properties are usually viewed as evidence of the presence of a financial accelerator mechanism. However, using a high yield index representative of the broad high yield market, De Pace and Weber (2013) uncover the time-varying nature of the leading properties of the high yield spread. They find that, at least recently, the spread has generally not predicted economic growth and recessions at forecast horizons above one year and that

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its predictive content disappeared during the 2007–2009 global financial crisis and recession.

In this letter we offer new evidence on this issue by extending the set of high yield spreads used to predict US economic growth. We consider several *risk-free* rates and a broad range of high yield indices disaggregated by credit rating. Half of these indices are constructed by imposing a limit on issuer exposure. With samples of monthly and quarterly data between 1996 and 2012, long-horizon regressions, and 30 spreads, we predict the annualized growth rates of real gross domestic product (GDP) and industrial production (IP) for up to 2 years. We show that the leading properties under investigation are more pronounced when the spreads are computed using an interest rate index associated with AAA-rated corporate bonds and, often, when they are derived from high yield indices disaggregated by credit rating. We also find that they are stronger at short forecast horizons. However, a breakpoint analysis reveals that these properties disappeared in the second half of the 2000s. Our results corroborate De Pace and Weber (2013)'s findings on the unreliability of high yield spreads as leading indicators, cast doubts on the existence of a strong and functioning financial accelerator mechanism in recent years, and suggest the importance of looking at high yield indices disaggregated by credit rating if the goal is to better predict economic activity.

2. High yield spreads and US bond markets

According to the theory of the financial accelerator, the expected negative relationship between high yield spreads and economic activity stems from the information contained in firms' balance sheets. High yield spreads are good proxies of the premium for external funds, the discrepancy between the cost of external funds and internal funds for firms trying to engage in profitable investment projects. The premium depends inversely on the solidity of firms' balance sheets, which provide information about the creditworthiness of the firms. Such solidity depends positively on aggregate real economic activity. The premium for external funds and high yield spreads are thus countercyclical with respect to the output. A negative shock to the economy weakens the solidity of firms' balance sheets by depressing asset prices. Firms' creditworthiness falls, their ability to borrow deteriorates, their investment spending shrinks, and the size and scope of their activity diminishes. Further adverse effects on asset prices may lead to a spiral of events eventually causing reductions in aggregate output. Moreover, high yield spreads contain information about the default risk on bonds issued by lower quality firms. Default risk is likely to be negatively related to macroeconomic conditions.

Spreads of this kind can exhibit predictive power for economic activity if the size of the high yield bond market is nonnegligible and, as Gertler and Lown (1999) point out, if financial conditions in this market are correlated with financial conditions in the other financial markets. Between 1951 and 1991, the proportion of bond finance out of total credit market instruments for nonfinancial US corporate businesses fluctuated in a 45%–55% band. Bond finance started expanding in 1991 and peaked at 72% in 2011. Between 1984 and 2011, the ratio between corporate bonds and total bond finance rose from 75% to 90%.[1]

The US high yield bond market, whose modern beginnings go back to the early 1980s, has experienced strong cyclical growth since 1986 and significant changes in its composition by credit rating. High yield bonds are now a major component of the US fixed income asset class and represent more than 25% of the overall corporate bond market. In their historical survey, Reilly et al. (2009) show a long-term increase in the credit quality of the high yield bond market, caused by a significant shift from B to Ba-rated bonds. They note that the proportion of Caa-rated bonds (likely to be correlated with default rates) experienced a cyclical pattern, reaching a peak in August 2009. Using a sample of monthly returns between 1985 and 2009, they find that the correlations between common stocks and all credit classes of high yield bonds are strong, relatively stable, and higher than the correlations between high yield bonds and either investment grade bonds or Treasury bonds.

3. Data and econometrics

We collect monthly data for a 3-month Treasury interest rate (3M) and a 10-year government bond yield (10Y) from the Federal Reserve Economic Database (FRED) and convert them into quarterly frequency by taking the last monthly observation of each quarter. Moody's Seasoned Aaa Corporate Bond Yield Index (AAA) is an interest rate index associated with AAA-rated corporate bonds. High yield indices come from Bank of America Merrill Lynch: (i) US High Yield Index (H0A0, an index representative of the broad high yield market, which tracks the performance of US dollar denominated below investment grade corporate debt publicly issued in the US domestic market); (ii) BB US High Yield Index (H0A1, includes all securities rated BB1 through BB3, inclusive); (iii) Single-B US High Yield Index (H0A2, includes all securities rated B1 through B3, inclusive); (iv) CCC & Lower US High Yield Index (H0A3, includes all securities rated CCC1 or lower); (v) BB–B US High Yield Index (H0A4, includes all securities rated BB1 through B3, inclusive). We also analyze constrained versions of indices (i)–(v) that cap issuer exposure at 2%: (vi) HUC0; (vii) HUC1; (viii) HUC2; (ix) HUC3; and (x) HUC4. Quarterly real GDP and monthly IP data are taken from FRED. The samples in the main analysis are limited to the 1996M12–2012M12 period because the inception date of all high yield indices, with the exception of H0A0, is December 31, 1996. The inception date of the H0A0 index is August 31, 1986. Thus, when possible, an extended sample period – 1986M09–2012M12 – is used as a robustness check on our conclusions.

A standard reduced form model is estimated by *OLS* to predict real GDP and IP growth, $g_{t,t+k} = \alpha + \beta hyspread_t + \varepsilon_t$. With quarterly data, $g_{t,t+k} = \frac{400}{k} \ln\left(\frac{Y_{t+k}}{Y_t}\right)$ is the annualized growth rate of real GDP between time t and $t+k$, Y_t is real GDP, and the forecast horizon, k, is allowed to vary between 1 and 8. With monthly data, $g_{t,t+k} = \frac{1200}{k} ln\left(\frac{Y_{t+k}}{Y_t}\right)$ is the annualized IP growth rate between time t and $t+k$, Y_t is the IP index, and k can vary between 1 and 24. $hyspread_t$ is one of the 30 spreads in the dataset, calculated as the difference between a high yield index and the 3 -month Treasury bond yield, the 10-year government bond yield, or Moody's AAA index.[2] The coefficient β (expected to be negative) and the R^2 incorporate basic information on the predictive content of the spread.[3] A Quandt–Andrews approach is adopted to estimate

[1] These figures are based on own calculations on quarterly data from the Flow of Funds Accounts of the United States (Board of Governors of the Federal Reserve System).

[2] The null hypothesis of a unit root is rejected for virtually all spreads by means of either Augmented Dickey–Fuller or Phillips–Perron tests (only exogenous regressor in the test equations is a constant intercept term, as it is implausible to observe time trends in risk premia). An interest rate spread with a unit root would eventually become negative and spend an infinite amount of time providing negative compensation for credit and default risks. From a financial perspective, this possibility does not make much sense.

[3] A heteroskedasticity- and autocorrelation-consistent estimator of the asymptotic variance with a Newey–West serial correlation adjustment is used to compute all standard errors.