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Yield spread and the income distribution

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ABSTRACT

The yield spread is known to be closely related with business cycles identified by the *National Bureau of Economic Research*. It is low near peaks and high near troughs. This paper builds on this known relationship and examines the response of the income distribution in the U.S. due to variation in the yield spread. The purpose is to identify the significance and sign of the impact changes in economic conditions have on the distribution of income over the period 1927–2011. Clark and McCracken's (2001) 1-step ahead encompassing tests from nested linear models are initially estimated to determine the predictive power of the yield spread on the distribution of income. Results strongly reject the null hypothesis that the yield spread has no predictive content for changes in the distribution of income. Specifically, increases in the yield spread are found to correspond with subsequent increases in top income shares.

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1. Introduction

*“Historically, the slope of the yield curve has been such a reliable predictor of economic conditions that economists at the New York and Cleveland Federal Reserve banks use it to calculate the probability of recession”.*¹

The yield spread (slope of the yield curve) has historically been used as a gauge to measure the risk to bond investors of unexpected inflation. However, standard asset pricing suggests that the yield spread is also a good proxy for the “state” of the economy. During periods in which the economy is expected to be performing well, the yield spread will be higher than in time periods in which economic performance is expected to be poor. Fig. 1 displays the yield spread, the difference between 10-year Treasury bonds and 1-month Treasury bills, over much of the last century along with NBER recession dates. The spread contracts before each economic downturn, including the recession beginning in 2007. The rationale behind the identified link, according to the literature,² is explained by the following three hypotheses. The first hypothesis suggests that the link between the yield spread and expected economic conditions is driven by the effects of monetary policy. Assume that the central bank initiates monetary policy expansion by lowering short-term interest rates. Since the decreases in the rates are not

permanent, agents expect the future short-term rates to be higher than the current short term rates. As such, the long term rates will decrease by less than the changes in the short term interest rates leading to an upward-sloping yield curve. Given that expansions of monetary policy are followed with increases in output, we should expect the upward sloping yield curve to be followed with economic expansions. The second hypothesis is that the relationship between the yield spread and economic conditions is influenced by the expectations of financial market participants about future economic growth. As agents start to anticipate an economic expansion, they will expect higher inflation in periods of higher growth. Thus, such expectations are likely to lead to increases in long term interest rates and upward-sloping yield curves. The third hypothesis claims that the current economic decisions of agents contribute to the positive relationship between the yield spread and subsequent economic growth. For example, an increase in expected future income creates profitable investment opportunities today. As such, market participants will take advantage of these investment opportunities through borrowing and issuing bonds. Investments are typically long term, leading the bond issues to also be long term. An increase in the supply of longer term bonds reduces their price and increases their yield. Long-term rates will rise relative to short-term rates, and the yield curve will steepen as economic conditions are expected to improve (Bonser-Neal & Morley, 1997).

Thus, given the macroeconomic and financial informational content of the yield spread, this paper explores the predictive power of the yield spread on the changes in the income distribution. There are several different channels through which variation in the yield spread may be useful in anticipating changes in the income distribution. First, as noted above, the yield spread does imbed

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¹ <http://www.wsj.com/articles/why-a-recession-could-arrive-without-a-yield-curve-warning-1454754607>.

² Fama and French (1989), Estrella and Hardouvelis (1991), Bonser-Neal and Morley (1997), and Ozturk and Pereira (2013).

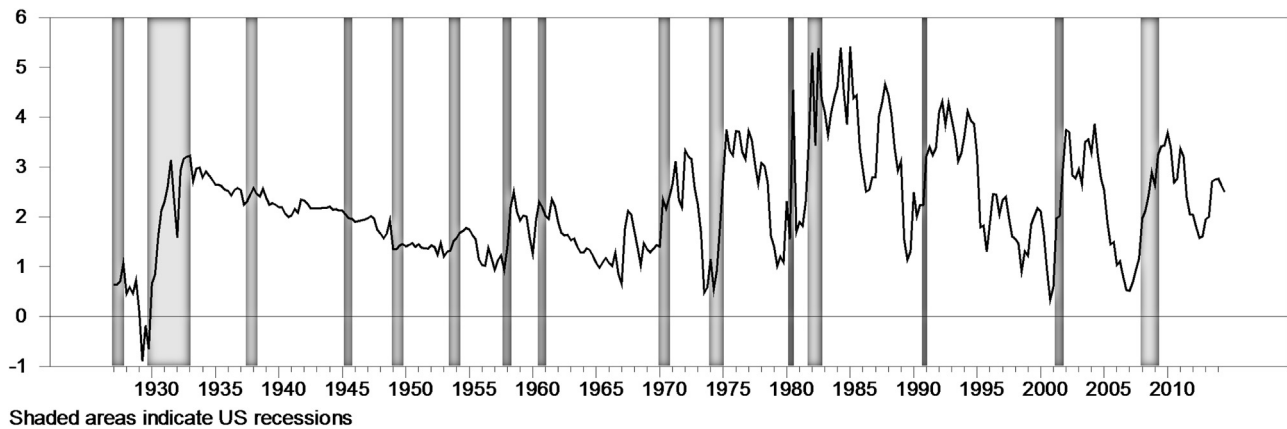


Fig. 1. Variation of yield spread overtime.

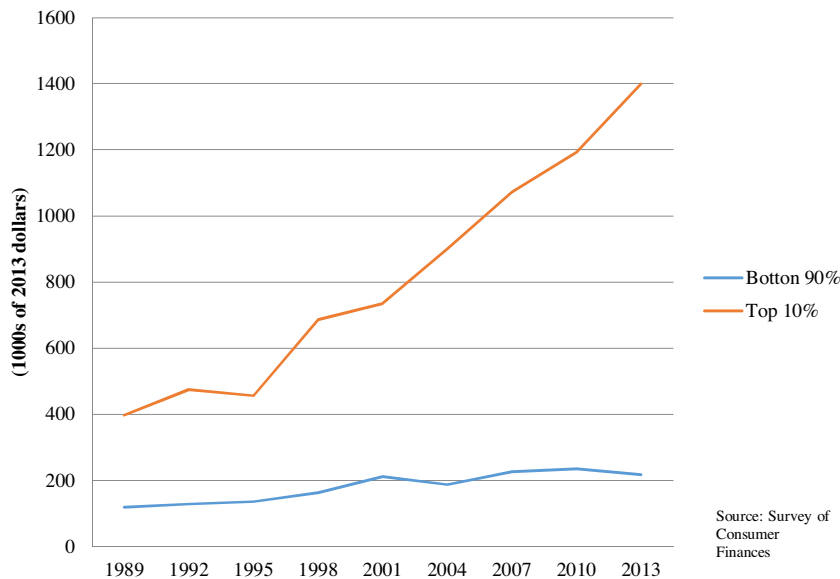


Fig. 2. Median value of financial assets.

expectations regarding inflation. Given the importance of inflation and inflation expectations for equity markets and financial market participants, changes in the yield spread may have predictive power on changes in the income distribution through projecting the returns from financial products.³ Fig. 2 clearly shows that the real value of the financial assets held by the top 10% of households have tripled over the last 20 years, whereas, for the bottom 90%, the value of the assets barely increased.

Thus, changes in financial markets returns caused by changes in economic conditions (captured by the variation in the yield spread) could have an income distributional effect. Secondly, given that increases in the yield spread reflect market expectations for positive real economic activity, it is likely that not all households have the resources to take advantage of profitable investment opportunities today. Thus, variations in anticipated business conditions, approximated by the yield spread, would lead to changes in the income distribution.

Previous literature regarding the income distribution and economic conditions is vast. However, it has primarily concentrated around the contemporaneous relationship between income

inequality and ex-post economic growth, by mainly addressing the question of how the income distribution effects overall economic growth. Persson and Tabellini (1991) show that, for a one standard deviation (0.07) increase in the income share of the top 20%, the average annual growth rate in GDP decreases by approximately half a percentage point. Similarly, Mo (2000) concludes that income inequality has a negative effect on the GDP growth rate. Forbes (2000) challenges the belief that income inequality has a negative effect on economic growth. However, it is suggested that this might be because the paper focuses on the short and medium term (10 years) within individual countries. The positive relationship may diminish or even reverse if a longer period could have been used (Forbes, 2000). Barro (2000) concludes that the effect of income inequality on economic growth is different contingent on the state of economic development. Income inequality in poor countries hinders economic growth, but income inequality in rich countries encourages economic growth. Particularly, Barro (2000) shows that increases in income inequality impedes economic growth for the countries that have GDP per capita below \$2070, and supports economic growth for the countries with GDP per capita over \$2070. Partridge (2005) finds that inequality and growth are positively related, specifically the middle class measured by the middle-quintile income share (Q3) is positively related

³ The use of the yield spread as a variable in predicting asset returns has been used extensively beginning with Fama and French (1989).

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