Do time-varying risk premiums explain labor market performance? ☆

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ABSTRACT

Within the standard search and matching model, time-to-build implies that high aggregate risk premiums should forecast low employment growth in the short run but high employment growth in the long run. If there is also time-to-plan, high risk premiums should forecast low net hiring rates in the short run but high net hiring rates in the long run. Our evidence indicates two-quarter time-to-build in the aggregate payroll data, no time-to-plan in the aggregate hiring data, but two-quarter time-to-plan in the job creation data for manufacturing firms. High payroll growth and high net job creation rate in manufacturing also forecast low stock market excess returns at business cycle frequencies.

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1. Introduction

Modern asset pricing research has shown that aggregate stock market returns in excess of the short-term interest rate are predictable, meaning that expected aggregate risk premiums are time-varying.[1] This body of evidence suggests that a large fraction of the variation in the cost of capital in standard labor market models is driven by time-varying risk premiums, as opposed to the interest rate. However, probably because of the long-standing divide between labor economics and finance (especially asset pricing), prior work that draws the linkage between time-varying risk premiums and labor market performance seems scarce. Our reading of the labor economics literature suggests that it has largely ignored the impact of time-varying risk premiums on the labor markets.

[1] For example, Campbell and Shiller (1988), Fama and French (1988), and Hodrick (1992) show that the dividend yield forecasts market excess returns. Fama and Schwert (1977) and Fama (1981) show that the relative Treasury bill rate, defined as the Treasury bill rate

(footnote continued)

minus its past four-quarter moving average, predicts market excess returns. Keim and Stambaugh (1986) and Fama and French (1989) find that the term premium and the default premium predict returns. Cochrane (1991) shows that the aggregate investment-to-capital ratio and Lettau and Ludvigson (2001) show that the log consumption-to-wealth ratio forecast market excess returns.

In this article, we use the standard search and matching framework (e.g., Pissarides, 1985, 2000; Mortensen and Pissarides, 1994) to study the impact of time-varying risk premiums on the labor market. When risk premiums are time-varying, different labor market frictions give rise to different sets of temporal relations between the expected return, labor hiring, and employment growth.

Time-to-build means that hiring in the current period leads to more productive workers in the next period. Consider a discount rate drop at the beginning of the current period. The stock price rises immediately, meaning that the marginal benefit of hiring and therefore hiring also increase. With time-to-build, the employment stock increases only at the beginning of the next period. As such, the current-period employment growth is positive, and regressing it on the discount rate yields a negative slope. However, the discount rate drop also means that the realized return declines on average in the current period. The resulting lower stock price at the beginning of the next period means a lower marginal benefit of hiring and therefore lower hiring in the next period. Time-to-build implies that the next-period employment growth is negative, and that regressing it on the current-period discount rate yields a positive slope. In short, the discount rate should forecast employment growth with a negative slope in the short run but a positive slope in the long run. However, forecasting the next-period hiring rate with the current-period discount rate should yield only a positive slope without sign flipping at longer horizons. A similar logic shows that the effect of two-period time-to-build is to prolong the horizon over which the slope switches sign by one more period.

Time-to-plan means that time lags exist between the decision to hire and the actual hiring expenditure. Consider again a discount rate drop but with one-period time-to-plan (along with one-period time-to-build). The discount rate drop at the beginning of t generates a higher stock price at t. With the planning lag, hiring rises only in period $t+1$ but remains constant in t. With one-period time-to-build, employment rises at the beginning of $t+2$ but remains unchanged in $t+1$. The discount rate drop also means that the stock return drops on average over period t. The resulting lower stock price at the beginning of $t+1$, together with time-to-plan, means a drop in hiring over period $t+2$ and a fall in employment at the beginning of $t+3$. Pulling the dynamics together, we observe that the discount rate should forecast employment growth (up to $t+2$) and the hiring rate (up to $t+1$) with a negative slope in the short run, but a positive slope in the long run.

We report three empirical findings. First, measuring employment growth as the growth rate of seasonally adjusted total nonfarm payrolls from US Bureau of Labor Statistics (BLS), we find that high values of the log consumption-to-wealth ratio (CAY) of Lettau and Ludvigson (2001) predict low payroll growth at short horizons within two quarters, but high payroll growth at longer horizons. Pulling all the information contained in standard risk premium proxies including the dividend yield, CAY, the relative Treasury bill rate, the term spread, and the default premium, we correlate the one-quarter-ahead fitted risk premiums with cumulative payroll growth over various horizons. We find that the correlations are insignificantly negative within two quarters, insignificantly positive at the fourth quarter, but significantly positive from the eight-quarter horizon and onward. The evidence so far suggests that either two-period time-to-build or the combined effect of one-period time-to-build and one-period time-to-plan is at work in the aggregate employment data.

Second, we measure the hiring rate as the difference between gross hiring rate and separation rate from the Current Population Survey, conducted by the US Census Bureau for the BLS, and the BLS's Jobs Openings and Labor Turnover Survey (JOLTS). We find that high values of CAY predict high net hiring rates at various horizons. The correlations between the one-quarter-ahead fitted risk premiums with the I-quarter-ahead net hiring rates are all positive, ranging from 0.16 to 0.35, and are mostly significant. The evidence suggests that there is no time-to-plan in the aggregate hiring data and that the temporal relations between the discount rate and payroll growth must be driven by two-period time-to-build.

The evidence is more supportive of time-to-plan in manufacturing firms. When forecasting the net job creation rate in manufacturing from Davis, Faberman, and Haltiwanger (2006), the relative bill rate has a significantly positive slope in the one-quarter horizon, a weakly positive slope in the two-quarter horizon, but significantly negative slopes at the four- and eight-quarter horizons. The correlations between the one-quarter-ahead fitted risk premiums and the I-quarter-ahead net job creation rates in manufacturing are significantly negative in the one-quarter horizon, effectively zero in the two-quarter horizon, and significantly positive in the four- and eight-quarter horizons. The evidence suggests that time-to-plan for hiring lasts for about two quarters in manufacturing.

Third, lagged payroll growth predicts market excess returns, especially at business cycle frequencies. In univariate regressions, the adjusted R^2 peaks at 5% in the four-quarter horizon. Across various horizons, the slopes are universally negative and mostly significant. Judged on Newey and West (1987) t-statistics and adjusted R^2s in univariate regressions, the predictive power of payroll growth dominates that of standard risk premium proxies such as the default spread and the relative Treasury bill rate. Whereas the dividend yield and the term spread maximize their predictive power at long horizons, the predictive power of payroll growth peaks at short business cycle frequencies around four quarters. We also find similar evidence using the net job creation rate in manufacturing, but stock market predictability with the net hiring rate for the overall economy is weak.

Our work shows that time-varying risk premiums are quantitatively important in forecasting employment growth. However, leading models in labor economics ignore risk premiums. In particular, the constant discount rate assumption is embedded in the partial equilibrium Mortensen and Pissarides search and matching framework. As such, risk premiums are constant and cannot forecast future employment growth. Merz (1995), Andolfatto