



Risk and return of short-duration equity investments[☆]



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ARTICLE INFO

Article history:

Received 20 March 2015

Received in revised form 18 January 2016

Accepted 20 January 2016

Available online 20 February 2016

JEL classification:

E43

G11

G12

G15

Keywords:

Dividend derivatives

Short-maturity anomaly

Term structure of equity risk premia

Downside risk

Investment strategy

ABSTRACT

We analyze short-duration equity investments using traded claims on index dividends. We show that investment strategies with constant short maturity outperform a systematic long position in the underlying equity index on a risk-adjusted basis and in absolute terms. Furthermore, we find higher international diversification benefits for this strategy, compared to traditional equity indices. We relate the observed outperformance to market downside exposure, in particular an options-based downside risk factor. We use three alternative models to extract ex-ante risk premia implied in the prices of dividend derivatives and find evidence for substantial time variation in expected returns.

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1. Introduction

Recent evidence indicates that the term structure of equity risk premia is not flat, i.e. expected risk premia depend on the maturity of equity cash flows. Binsbergen et al. (2012) calibrate leading asset pricing models and derive the predictions those models provide for the shape of the term structure of risk premia. It turns out that traditional models such as consumption-based asset pricing models with habit formation, as in Campbell and Cochrane (1999), or long-run risk models, as in Bansal and Yaron (2004), imply risk premia that increase in maturity, while more recent models such as Lettau and Wachter (2007) predict a downward-sloping term structure of risk premia. Variable rare disaster models like Gabaix (2012) imply a flat term structure but predict Sharpe ratios that decrease in maturity.

[☆] We thank Christian Mueller-Glissmann at Goldman Sachs for providing us with the data. We appreciate valuable comments by an anonymous referee, and by David Ardia, Adrian Buss, Zhiyao Chen, Engelbert Dockner, Adlai Fisher, Ralph Koijen, Bart Lambrecht, Christoph Meinerding, Carolin Pflueger, and Neal Stoughton. We thank conference and seminar participants at the Frontiers of Finance Conference 2014 (Warwick), AFFI 2014 (Aix en Provence), VHB 2015 (Vienna), FMA Europe 2015 (Venice), European Finance Association 2015 (Vienna), DGF 2015 (Leipzig) and University of Ljubljana.

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One strategy to test these predictions is to compare the realized performance of short and long-duration equity investments. [Binsbergen et al. \(2012\)](#) use S&P 500 index options and implement an investment strategy that isolates the risk exposure to implied dividends. To formulate the appropriate strategy that exposes investors to short-term dividend claims, they extract dividends from the put-call parity equation. The authors find short-maturity dividend claims to outperform the underlying equity index on a risk-adjusted basis, thus providing support for equity risk premia that decrease in maturity. Using dividend swaps, [Binsbergen et al. \(2013\)](#) construct equity yields similar to bond yields, where equity yields consist of discount rates, dividend expectations for a certain maturity and the corresponding risk premium. They provide further evidence for a downward-sloping term structure of equity risk premia.

Reconciling these empirical findings with traditional asset pricing theory, [Belo et al. \(2015\)](#) combine unlevered EBIT dynamics with a dynamic capital structure to conclude that dividends are riskier than EBIT in the short run. [Ai et al. \(2013\)](#) show that a production-based model with heterogeneous exposure to productivity shocks across capital vintages is able to produce a downward-sloping term structure of equity risk premia. [Marfe \(2013\)](#) arrives at a similar conclusion in the absence of productivity shocks by modeling labor relations. [Ang and Ulrich \(2012\)](#) calibrate a macro-finance model where the risk premium associated with expected inflation decreases with horizon, and find short-horizon equity to be more risky. Furthermore, [Croce et al. \(forthcoming\)](#) show that short-term dividend strips are more risky if agents cannot distinguish between short-term and long-term shocks in long-run risk models. [Schulz \(forthcoming\)](#) attributes the high returns of short-maturity dividend claims purely to tax effects.

[Brennan \(1998\)](#) first introduced the idea of creating distinct traded instruments that expose investors to dividend cash flows of a single year. He shows that this can increase efficiency in asset markets as different maturities of equity cash flows serve different investor clienteles. Shortly after the publication of this paper, the market for dividend derivatives emerged. [Manley and Mueller-Glissmann \(2008\)](#) present the evolution of this market and elaborate in great detail on the mechanics of dividend derivatives. The first traded instruments were dividend swap contracts in the OTC markets, later followed by options and exchange-traded dividend futures – which are currently available on the Eurostoxx 50, FTSE 100, and Nikkei 225 indices, but not yet on a major US index as the S&P 500. [Mixon and Onur \(2014\)](#) shed light on trading activity in listed dividend futures as well as OTC dividend swaps, and illustrate the typical institutional positioning. The market for dividends provides investment characteristics that are related to traditional equity investment vehicles but has additional features that make it an asset class in its own right. Most importantly, the final payoff of dividend derivatives depends only on the difference between the price at initiation and the amount of dividends accrued throughout the maturity year. This is in contrast to standard equity investments, where for any finite investment horizon there is not only uncertainty about cash flows but investors are also exposed to valuation risk at the time of divestment.

In this paper we analyze a simple investment strategy based on dividend swaps. We construct portfolios that expose investors to a dividend cash flow of constant duration by combining dividend swaps of two consecutive maturities. The strategy is implemented for four different markets, namely the Euro Stoxx 50, FTSE 100, S&P 500 and the Nikkei 225, from 2006 to 2015. The dividend strategy significantly outperforms the underlying equity indices on a single-factor risk-adjusted basis and on an absolute basis. The risk-adjusted outperformance largely disappears if options-based risk factors are taken into account. [Boguth et al. \(2013\)](#) attribute previously found empirical results on the term structure of equity risk premia to potential measurement error and leverage effects that arise when isolating the implied dividend stream from traded index derivatives. We avoid this potential measurement error by using dividend derivatives and obtain findings consistent with [Binsbergen et al. \(2012, 2013\)](#). In addition, the findings of this paper are similar to those derived by [Duffee \(2010\)](#) for the treasury bond market and by [Derwall et al. \(2009\)](#) for the corporate bond market. Our risk-based explanation relates to downside risk, an approach that has recently been applied comprehensively across asset classes by [Lettau et al. \(2014\)](#) and is also consistent with the use of option-based risk factors in the context of hedge fund returns by [Agarwal and Naik \(2004\)](#). Evidence by [Baker et al. \(forthcoming\)](#) for individual firms and [Garrett and Priestley \(2000\)](#) for the aggregate market strongly points to the existence of downside risk in dividend markets. Since small declines in permanent earnings tend not to be reflected in dividend reductions, a potential for waves of substantial dividend cuts builds up during periods of poor economic conditions.

Our first contribution is to provide further evidence for asset pricing models that assign higher risk premia to short-maturity cash flows. We find nonlinear, options-based risk factors to be especially important in capturing risk exposures of our strategies. A second contribution of our paper is on the benefits of international diversification. A distinct feature of the dividend strategy is cross-country correlations that are significantly lower than for the traditional underlying equity indices. In this context, we extend the analysis on conditional correlations presented in [Erb et al. \(1994\)](#), and find the improved diversification to be present over different phases of the business cycle. Diversification benefits result in an equally weighted global constant maturity dividend strategy that features high realized Sharpe ratios. Third, we contribute by relating ex-ante risk premia to ex-post realized returns. We use three variants in order to model implied ex-ante risk premia: (i) We build on the insights from [Lintner \(1956\)](#) on dividend smoothing by corporations, based on past dividends and current earnings. These findings are well established in the literature, including recent papers such as [Skinner \(2008\)](#), [Lambrecht and Myers \(2012\)](#), and [Baker et al. \(forthcoming\)](#). We estimate market-specific coefficients of a Lintner-type model to derive structural estimates for dividend growth expectations based on consensus analysts' forecasts for dividends and earnings. (ii) We make direct use of analyst forecasts of dividends. (iii) We use carry to approximate ex-ante risk-premia, expanding the evidence by [Kojien et al. \(2015\)](#) who find carry measures to predict subsequent returns over several asset classes. In combination with market prices for dividend swaps we compute for each of these variants the implied risk premia appropriate for the short-duration equity strategy and

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