



Performance persistence of government bond factor premia



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ARTICLE INFO

Article history:

Received 14 December 2016

Accepted 30 December 2016

Available online 4 January 2017

JEL codes:

G12

G14

G15

Keywords:

Momentum

Performance persistence

Government bonds

International investments

Return predictability

Factor investing

Sovereign bonds

Value

Credit risk

Volatility

ABSTRACT

This study investigates the momentum effect in factor premia in international government bond markets. The investigations are based on a range of fixed-income factor strategies related to volatility, credit risk, value, and momentum that are tested in a sample of data from 25 countries for the years 1992–2016. We demonstrate a strong and robust long-run performance persistence in the returns on factor portfolios of government bonds. Furthermore, our results support the view that the momentum in factor premia is driven by cross-sectional differences in expected returns on various factors rather than by behavioral overreaction.

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1. Introduction

The momentum effect is a tendency of securities with good (poor) past performance to continue to overperform (underperform) in the future. It is one of the most pervasive and robust return patterns ever discovered. The momentum effect has been documented across many stock markets (Chui et al., 2010) and asset classes (Asnes et al., 2013). It has been present for more than two centuries, having been demonstrated in the Victorian age (Chabot et al., 2008) and in U.S. equities since 1800 (Geczy and Samonov, 2015).

Interestingly, several studies have documented that the momentum effect also works at the meta-level, i.e., in the returns on strategies, anomalies, or factors. In other words, it is possible to apply momentum strategies to rotate among investment styles in equities (e.g., Chen and De Bondt, 2004; Teo and Woo, 2004; Tibbs et al., 2008; Clare et al., 2010) and other asset classes (Chao et al., 2012; Kim, 2012). Avramov et al. (2016) followed by Zaremba and Szyszka (2016) successfully applied the concept of momentum to stock market anomalies.

Despite this growing evidence for the existence of factor momentum, i.e., the momentum at the meta level, there is no single, commonly accepted explanation of this phenomenon. Basically, the hypothesized explanations can be split into two categories that we will call behavioral and risk-based. Presenting the behavioral explanation,

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Barberis and Shleifer (2003) and Teo and Woo (2004) have argued that investors allocate funds into investment styles based on their relative historical performance and that this performance-chasing results in fund flows that affect prices and create an autocorrelation in style returns. Peng and Xiong (2006) have supported this view, arguing that due to limited attention, investors tend to focus more on sector-level than on firm-specific information. These explanations are consistent with the behavioral overreaction hypothesis of DeBondt and Thaler (1985), formalized by DeLong et al. (1990). Recently, Zaremba and Szyszka (2016) have added empirical evidence in support of this view, demonstrating that the momentum in equity anomalies displays significant exposure to a standard security-level momentum factor. In this paper, we will refer to this group of hypotheses as behavioral explanations.

The other strain of reasoning argues that the momentum effect may stem from cross-sectional variation in expected returns on particular factor premia or styles. This hypothesis dates back to Conrad and Kaul (1998), and was advocated by Avramov et al. (2016), who suggested that the momentum in anomalies captures the time-varying expected returns influenced by investors' learning and changes in liquidity. In other words, in this approach the momentum effect simply captures the long-run expected returns on anomalies that stem from underlying market inefficiencies or risk factors. Providing indirect support for this view, Kim (2012) found that style momentum is not consistent with the overreaction hypothesis. In this paper, we will refer to this group of hypotheses as risk-based explanations.

The major aim of this paper is to examine factor momentum in an entirely new asset class: global government bonds. We investigate and explore the nature of performance persistence in international government bond returns. To this end, following Zaremba and Schabek (2016) we replicate 23 bond selection strategies within a sample of 25 countries for the years 1992–2016. Subsequently, using cross-sectional and time-series tests, we verify the presence of performance persistence in the strategy returns (also called factor portfolios).

In addition, we are also interested in the sources of the factor momentum in government bond markets. The behavioral and risk-based explanations yield some interesting testable hypotheses. If the behavioral overreaction explanation holds true, then the factor momentum portfolios should be at least partly explained by the combination of bond-level momentum and reversal phenomena discussed by Balvers and Wu (2006). Thus, we form an ad-hoc multifactor model covering the two factors advocated by Asness et al. (2013): momentum and long-run reversal, and we apply it to explain the bond factors' performance persistence.

On the other hand, if the risk-based explanation is correct, then the bond momentum should be at least partly explained by the crucial risk factors driving the cross-sectional variation in bond returns. Therefore, we also form an alternative two-factor model accounting for volatility (duration) and sovereign (credit) risks. Again, we use it to explain the returns on portfolios pursuing the factor momentum strategies.

The principal findings of this study can be summarized as follows. We document a strong and robust performance persistence in international government bond factor premia: the best (worst) performing factors continue to overperform (underperform). The effect is robust to many considerations, including alternative portfolio formation techniques, sub-sample and sub-section analysis, and various formation periods. The effect is particularly strong for the long-term formation periods ranging from five to ten years.

Furthermore, our results are consistent with risk-based explanations of the factor momentum. Not only is the performance persistence effect strongest for the very long formation periods, it is also entirely explained by our risk-based model. On the other hand, the behavioral model accounting for the bond-level momentum and reversal, and is unable to even partially explain the elevated returns on portfolios of factors from sorts on past performance.

This paper contributes in two ways. First, the momentum effect in factor premia in government bond markets has not previously been documented. Earlier studies investigated the momentum effect in raw bond returns (e.g., Luu and Yu, 2012; Asness et al., 2013; Duyvesteyn and Martens, 2014; Hambusch et al., 2015); however, none of these focused on momentum in factors. Ours is the first research to do so. Second, we provide fresh evidence in support of the explanation advocated by Avramov et al. (2016), among others, that factor momentum is driven by cross-sectional differences in expected returns, and in contradiction to the behavioral explanation of Barberis and Shleifer (2003) and Teo and Woo (2004).

The rest of the article is structured as follows. Section 2 outlines the data and methods used; Section 3 includes a discussion of the results; and Section 4 concludes the paper.

2. Data and methods

In this section, we first describe our data sample. Next, we discuss the design of the factor portfolios and describe the cross-sectional and time-series tests used in this study. Finally, we review our robustness checks.

2.1. Data sources and sample preparation

This research is based on Bloomberg/EFFAS Total Return Bond Indices for 25 countries for the period of January 1992 to June 2016. The sample encompasses all the countries and the entire period covered by Bloomberg/EFFAS. The indices are determined separately for five different maturity buckets: 1–3 years, 3–5 years, 5–7 years, 7–10 years, and more than 10 years, resulting in a total of 125 international government bond buckets that we investigate. The sample is not only broader than those used in the earlier studies of return patterns in international government bonds (e.g., Asness et al., 2013; Frazzini and Pedersen, 2014; Beekhuizen et al., 2016), it also includes a unique default event: Greece.

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