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Exploring the benefits of international government bond portfolio diversification strategies

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ABSTRACT

We use the Bayesian approach of Wang (1998) to examine the diversification benefits of investing in international government bonds. We find that no short-selling constraints substantially reduce but do not eliminate the diversification benefits when only investing in G7 government bonds with different maturities. There are significant diversification benefits when using the G7 bonds, an inflation-linked bond index, and emerging market bonds even in the presence of no short-selling constraints. The superior performance is driven by the emerging markets bonds. We also find that the diversification benefits vary across different economic states.

KEYWORDS:

International diversification | international government bonds | Bayesian analysis

JEL CLASSIFICATIONS:

G11 G12

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

1 Studies of international diversification are dependent on the currency chosen. Hentschel Kang and Long (2002) use the numeraire portfolio approach of Long (1990) to evaluate the diversification benefits of investing in zero-coupon bonds in the U.S., U.K., and Germany, which is invariant to the currency chosen.

2 We also consider performance measures based on Value at Risk (VAR) and Conditional VAR measures developed by Alexander and Baptista (2003).

3 We also examine the impact of a combined upper bound constraint on the emerging market bonds.

4 A partial list of studies that evaluate the benefits of international diversification using the mean–variance approach include Bekaert and Urias (1996), Li et al (2003), Ehling and Ramos (2006), Eiling, Gerard, Hillion and de Roon (2012), Hodrick and Zhang (2014), Briere et al (2016), and Liu (2016) among others.

5 The CER performance measure is commonly used to evaluate the performance of mean–variance trading strategies such as Kan and Zhou (2007), DeMiguel, Garlappi and Uppal (2009), Tu and Zhou (2011), and Kan, Wang and Zhou (2017). In contrast to the Sharpe (1966) performance measure, the CER performance depends upon the level of risk aversion.

6 Recent applications of the Bayesian approach include Hodrick and Zhang (2014) and Liu (2016).

7 We can view the normality assumption as a working approximation to monthly excess returns. In addition, optimal portfolios of mean–variance utility functions are often close to other utility functions over short horizons (Kroll, Levy and Markowitz (1984), Grauer and Hakansson (1993), and Best and Grauer (2011)).

8 An alternative approach could be the regime switching method of Ang and Bekaert (2004).

9 An alternative approach is followed by Briere et al (2016) who identify months of rising interest rates, but this approach can only be identified ex post.

10 We thank the reviewer and the Editor for encouraging us to examine this issue.

11 See Alexander (2009) for a review of modern risk management.

12 We do not consider the impact of using portfolio constraints based on VAR or CVAR in the mean–variance optimization, as in Alexander and Baptista (2004) and Alexander, Baptista and Yan (2007) among others, but is an interesting extension for future research.

13 Currency hedging tends to have a positive impact on the performance of international bond portfolios such as Eun and Resnick (1994), Glen and Jorion (1993), Hansson et al (2009), and Liu (2016).

14 Basak et al (2002) find that the standard error of their mean–variance inefficiency measure increases when no short selling constraints are imposed. Basak et al point out that this occurs because the linear approximation of a nonlinear function is less reliable when there are no short selling constraints.

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