Journal of International Money and Finance 47 (2014) 268–285

Contents lists available at ScienceDirect

Journal of International Money and Finance

journal homepage: www.elsevier.com/locate/jimf

Currency excess returns and global downside market risk

Victoria Atanasov [a, 1], Thomas Nitschka [b, *]

[a] VU University Amsterdam and Tinbergen Institute, Finance Department, De Boelelaan 1105, 1081 HV Amsterdam, Netherlands
[b] Swiss National Bank, Monetary Policy Analysis, Boersenstrasse 15, 8022 Zurich, Switzerland

JEL classification:
F31
G15

Keywords:
CAPM
Downside risk
Exchange rate
Forward premium puzzle
Uncovered interest rate parity
Upside risk

A B S T R A C T

We assess cross-sectional differences in 23 bilateral currency excess returns in an empirical model that distinguishes between US-specific and global risks, conditional on US bull (upside) or bear (downside) markets. Using the US dollar as numeraire currency, our results suggest that global downside risk is compensated in conditional and unconditional, bilateral currency excess returns. This finding is mostly driven by the emerging markets' currencies in our sample. We also find that the link between the global downside risk and risks associated with a typical carry trade strategy is much weaker for emerging markets' currencies than for developed markets' currencies.

1. Introduction

The difference between current forward and spot exchange rates, i.e. the forward discount, should be a reliable predictor of future exchange rate movements according to the uncovered interest rate parity condition (UIP). However, a wealth of studies initiated by Tryon (1979), Hansen and Hodrick (1980) and Fama (1984) find that exchange rate changes do not follow forward discounts or,

* Corresponding author. Tel.: +41 44 631 3628; fax: +41 44 631 3175.
E-mail addresses: v.atanasov@vu.nl (V. Atanasov), thomas.nitschka@snb.ch, tnitschka@gmail.com (T. Nitschka).
[1] Tel.: +31 20 59 83099; fax: +31 20 59 86020.

http://dx.doi.org/10.1016/j.jimonfin.2014.06.006
0261-5606/

equivalently, interest rate differentials at short time horizons.[2] This ex post deviation from the UIP, also known as the "forward premium puzzle", can be potentially rationalized by means of a time-varying risk premium that investors demand on foreign currency denominated investments.[3]

Risk premia on foreign currencies that lead to violations of the UIP might reflect crash risk or rare events (e.g. Brunnermeier et al., 2009; Dupuy, 2013; Farhi et al., 2013; Farhi and Garbaix, 2011) or differences in the sensitivity of currencies to systematic risk factors (e.g. Ang and Chen, 2010; Christiansen et al., 2011; Galsband and Nitschka, 2013; Lustig and Verdelhan, 2006, 2007; Lustig et al., 2011; Menkhoff et al., 2012; Rafferty, 2011; Verdelhan, 2010, 2012). However, this latter strand of the literature faces the criticism that general proxies of systematic risk, such as the market return, are virtually uncorrelated with returns on currency investment strategies (Barroso and Santa-Clara, 2013; Burnside et al., 2007, 2011; Burnside, 2011).

Two recent papers challenge this view. Dobrynskaya (2014) and Lettau et al. (2014) argue that the weak link between standard risk factors and currency excess returns can be overcome by considering a CAPM version that distinguishes between exposure to the market risk in times of negative/low market returns (downside risk) and in times of positive/high market returns (upside risk). The basic rationale for the success of these models is investors' loss aversion (Kahneman and Tversky, 1979; Gul, 1991). In such a setting, investors care differently about an asset's comovement with falling markets as opposed to an asset's comovement with rising markets (Ang et al., 2006; Botshekan et al., 2012; Galsband, 2012). Indeed, Dobrynskaya (2014) shows that global downside risk is priced in excess returns on portfolios of foreign currencies and stocks. She sorts the currency portfolios on past periods' interest rate differentials and relates them to a world stock market return in upside and downside risk states. Lettau et al. (2014) take the perspective of a US investor and extend the set of test assets to portfolios of other asset classes such as commodities and bonds. Moreover, they examine more generally the relation of downside risk models to risk factors extracted from principal component analysis.

However, the formation of currency portfolios severely limits the number of test assets to five or six (see e.g. Lustig et al., 2011). Hence, inference from cross-sectional asset pricing tests based on such a low number of test assets might be impaired by relatively few degrees of freedom. In addition, most currency investment strategies, such as the carry trade, typically involve currency pairs (see. e.g. Brunnermeier et al., 2009).

Against this backdrop our study focuses on bilateral currency excess returns calculated from a perspective of a US investor, i.e. we work with US dollar exchange rates and use the US dollar as our numeraire currency. We evaluate the performance of a downside risk model variety specifically adjusted to assess the importance of currency-specific and global risks for bilateral currency excess returns. In addition, the model distinguishes between US specific and global components of the US market return. This approach is motivated by Verdelhan (2012) who shows that both currency-specific risk as well as global risks are compensated in average currency excess returns. In contrast to the model variants proposed by Dobrynskaya (2014) and Lettau et al. (2014) our preferred specification directly addresses this issue. While it is natural to think of a global risk explanation of returns on currency portfolios due to diversification of currency-specific risks in the portfolio formation, it is not clear a priori that a global risk explanation applies to bilateral currency returns too (Backus et al., 2001). Our empirical framework allows us to answer this question and at the same time link this assessment to standard risk factors as opposed to the risk factors constructed from currency portfolio data proposed by Verdelhan (2012).

Moreover, we analyse conditional and unconditional bilateral currency excess returns. Conditional currency returns are the returns from long or short positions in the foreign currency based on the sign of the interest rate differential vis-à-vis the US in the previous period. The advantage of this return

[2] Bansal and Dahlquist (2000) show that this observation does not pertain to high inflation countries. Meredith and Chinn (2005) use long-term government bond yields as proxies for risk-free rates to evaluate the explanatory power of long-term yield differentials for exchange rate changes at long horizons. They find that the UIP holds at time horizons of 5 years or beyond. Lothian and Wu (2005) show that the UIP holds in a long sample period until the 1980s. Huisman et al. (1998) use a panel setup to show that the UIP is violated but with significant, non-negative regression coefficients.

[3] Backus et al. (2010) provide a theoretical model in which monetary policy, central banks in big closed and small open economies following different Taylor Rules, could generate violations of the UIP. Burnside et al. (2011) argue that peso problems account for violations from the UIP.