Term Structure of Risk in Currency Market: Dynamics, Trading Rule, and Common Risk Factor

Jingyi Ren
November 2018

Abstract
With the tool of a new FX risk index, "FCX", we derive currency risk term structure and measure its shape by level and slope. We consistently find that for currencies paired by US dollars, term structure of currency risk is flat at a low level prior to 2008 crisis, upward-sloping after the crisis, and peaks at a high level with prominently negative slope during the crisis. This work is believed to be new in currency research field. This information is useful to build trading strategies, earning profit by longing currencies with highest level or slope and shorting ones with lowest level or slope. The profit by sorting slope is significantly high and robust to 2008 crisis period, with low correlation to Carry Trade return. This information is also useful to extract global risk factors to help understand currency excess return, a long-lasting puzzle. The global risk factor by level substantially improves cross-sectional explanation power in currency excess returns, compared to Lustig et al. (2011). Furthermore, we show that there is certain high risk corresponding to high level and low slope, and high interest rate currency earns returns co-varying negatively to this risk, implying that it's risky asset and thus require high risk premium, which well explains Carry Trade.

Keywords: Term Structure of Currency Risk, Currency Excess Return, Trading Strategy, Global Risk Factor

1 I thank my committee, Prof. Eric Zivot, Prof. Yu-chin Chen, and Prof. Thomas Gilbert, for supervising my research and for their insightful advice. I thank Prof. Karen Lewis, Prof. Pasquale Della Corte, Prof. Tarun Ramadorai, Prof. Levis Kochin, my colleagues Prof. Ranga Gwati, Dr. Anthony Sanford, Rui Han, and seminar participants for helpful discussions and comments. I thank Prof. Yu-chin Chen, Prof. Shi Chen, Prof. Amit Gandhi, Prof. John Riew, and Prof. Yao Zeng, for their mental supports, and thank Department of Economics at University of Washington and Peking University for their financial supports. All errors are my own.

2 Correspondence: Department of Economics, University of Washington, Seattle, WA 98195, USA. E-mail: renjy@uw.edu