Preface

In the early 1990s I discovered via a numerical example that there was something I did not understand about the concept of uncovered interest parity (UIP). If investors are risk-neutral, UIP in an *ex ante* sense holds when the expected percentage change in the exchange rate over the next time period equals the value for the current period home minus foreign nominal interest differential (ID). For example, if the home interest rate in period t exceeds the foreign rate by 4%, *ex ante* UIP holds when investors expect home money to depreciate by 4% in the future.

However, what happens if the interest rate differential of 4% in period t , $ID(t) = +0.04$, does not decay at all over the next time period, i.e., $ID(t+1) = +0.04$? In order for *ex ante* UIP to hold at the end of period $t+1$, investors must believe that home money is 4% overvalued at that time and that it will depreciate by 4% in the near future. Since home money was thought to be 4% overvalued at the end of period t , it follows that *ex ante* UIP will hold at the end of period $t+1$ only if the exchange rate does not change. The percentage change in the spot rate between t and $t+1$ must be zero when $ID(t)$ was 4%, thereby violating UIP in an *ex post* sense. It made no sense to me that *ex post* UIP could be violated even though *ex ante* UIP was satisfied.

I had no idea about any fallacy in my reasoning or some shortcoming in my understanding of the concept of UIP. As a visiting summer scholar at the IMF in the late 1990s, I mentioned the above example in passing at a seminar on my research for Miller (2002). Furthermore, I was bold enough to suggest that perhaps there was something about UIP that the profession did not understand. At that time the “Forward Bias Puzzle”, or “UIP puzzle”, was a hot topic and scholars were beginning to uncover other puzzling facts about exchange rates.¹ I conjectured that perhaps the key to solving these puzzles was tied up with what I did not understand in the above numerical example.

¹ The UIP puzzle relates to the fact that theoretically any percentage change in the exchange rate should equal the lagged value for the interest rate differential, i.e., the value for “Fama’s β coefficient” should be +1. However, empirical estimates of β are typically less than +1 and are often negative.

I have discovered that traditional thinking about UIP is consistent with the assumption that investors engage in carry-trade (borrowing a low interest rate currency and investing in a high interest rate currency) with a speculative time horizon of only one time period. However, there is evidence that carry-trade often occurs with a speculative time horizon of many periods.² The paper by Gourinchas and Tornell (2004) develops an “intertemporal” UIP framework. This intertemporal perspective is what I (and perhaps the profession) did not understand about UIP. It is used in Chapter 3 to explain what is going on in my numerical example above.

The intertemporal approach represents, I believe, the foundation for building a UIP framework that is consistent with the UIP puzzle and many other puzzling facts about exchange rate economics. This book attempts to develop such a framework, by synthesizing much previous work. When the pieces are put together, many insights arise and they suggest that the profession has made substantial progress toward explaining how exchange rate economics works. The problem has been that no one has come up with a synthesis UIP framework that incorporates the contributions in key papers. The latter include scholarly works that are consistent with the idea that the UIP puzzle could be caused by one or more missing variables in a Fama regression that are appropriately correlated with the interest rate differential, and/or by fx market inefficiency.

Traditionally, most studies have focused on the UIP puzzle and have ignored other perplexing facts about exchange rates. Indeed, some of the proposed solutions to the UIP puzzle appear to be inconsistent with other puzzles. More recent scholarly work addresses the UIP puzzle and other puzzling facts. However, if they do not fit neatly into the synthesis models developed here, they are mentioned but not examined carefully. Also, many recently proposed solutions to puzzles are much more complex than what is presented here. Surely the principle of Occam’s Razor is relevant.

The analysis focuses on “carry-trade” as the means by which fx speculation occurs. Future work should consider other techniques for speculation. The notation is such that the true expected value for any variable, Z , is referred to as simply “the expected value” for Z . In contrast, the subjectively anticipated future value for Z is referred to as “the anticipated value” for Z .

² See, for example, Cavallo (2006) and Burnside et al. (2007).

This book uses only algebra and elementary calculus, and it relegates all extensive derivations to appendices. Many basic concepts in international finance are defined and explained before moving on to more complex ideas. Much effort is made to provide intuitive explanations for all conclusions. Thus, the book is highly readable. Portions of it have been taught to an MA economics class and a senior-level undergraduate class at Miami University of Ohio. In addition to developing synthesis UIP models, this work reviews a number of puzzling facts about exchange rates and the scholarly studies that attempt to explain them. No attempt, however, is made to provide a comprehensive review of the literature.

The synthesis models in Chapters 5 and 6 represent extended versions of co-authored papers, namely Craighead et al. (2010), Davis et al. (2013), and Li and Miller (2014). Consequently, I am indebted to my co-authors: Bill Craighead, George Davis, Jing Li and Ruxandra Prodan. Also, many thanks go to Susan Hurst for her excellent professional librarian help and to Shonda Kennedy for her encouraging me to see this project through. Finally, I wish to thank: Craig Burnside, Sanders Chang, Menzie Chinn, Rich Clarida, Liang Ding, Michael Leahy, Jim Lothian, Philip Marey, Nelson Mark, David Papell and Lucio Sarno for helpful comments on portions of the manuscript. Naturally, I alone am responsible for any remaining shortcomings.