EXCHANGE RATES, CARRY TRADE RETURNS AND POLITICAL RISKS

by

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ABSTRACT

KWABENA GYEDU KESSE. Exchange rates, carry trade returns and political risks. (Under the direction of DR. LLOYD BLENMAN)

This dissertation elucidates the channels through which sovereign risk, exchange rates and currency risk premia are related. I show that the channels are different depending on whether a country is classified as emerging or an advanced economy. Generally for emerging market economies, local sovereign risk factors, namely country-specific political risk and macroeconomic risk do play a significant role in the depreciation of the local currency relative to the U.S. dollar. Whilst there is no convincing evidence that local determinants of sovereign risk cause a depreciation of currencies of advanced economies before the 2007 financial crisis, I do find that political risk does matter for advanced economies in the post-crisis era. For both sets of economies, global factors also play an important role in the relationship between sovereign risk and exchange rates. Secondly, double-sorting 34 currencies into different portfolios based on the level of macro risk and political risk, I provide evidence that local determinants of sovereign risk are priced in the FX markets, i.e. they can forecast currency carry trade excess returns in the cross-section. Local political risk in particular seems to have become an important carry trade risk factor in the post-2007 financial crisis era. This is the first research to explain carry trade excess returns with local sovereign risk factors as against sovereign risk as a whole.

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TABLE OF CONTENTS

LIST OF FIGURES vii

LIST OF TABLES x

CHAPTER 1: INTRODUCTION 1

CHAPTER 2: LITERATURE REVIEW 8

- 2.1. Forward Premium Puzzle 8
- 2.2. Exchange Rates and Macroeconomic Fundamentals 12
- 2.3. Currency Excess Returns and Risks 14
- 2.4. Determinants of Sovereign Risk and Sovereign Debt Default 23
- 2.5. Political Risks, Exchange Rates and Currency Returns 28
- 2.6. Political Risks in Finance 31

CHAPTER 3: DATA AND DESCRIPTIVE STATISTICS 33

- 3.1. Data 33
- 3.2. Carry Trade Returns for Individual Currencies 35
- 3.3. Political Risk Data and Other Controls 36
- 3.4. Descriptive Statistics 37

CHAPTER 4: THEORY, EMPIRICAL RESULTS AND ANALYSIS 42

- 4.1. Theory 42
- 4.2. Empirical Methodology and Results 44
  - 4.2.1. Bilateral Exchange Rates and Sovereign Political Risks 44
  - 4.2.2. Carry Trade Excess Returns and Sovereign Risk 55

CHAPTER 5: ROBUSTNESS CHECKS 76

5.1. Panel Data Methods for Predictability 76

5.2. Further Tests and Augmented UIP Regression 77

CHAPTER 6: CONCLUSIONS 85

REFERENCES 87

APPENDIX A: TABLES 99

APPENDIX B: FIGURES 109

APPENDIX C: ICRG RISK RATINGS 143

LIST OF FIGURES

FIGURE 1: Australia spot versus sovereign risk determinants and forward discount 109

FIGURE 2: Canada spot versus sovereign risk determinants and forward discount 110

FIGURE 3: Germany/Euro spot versus sovereign risk determinants and forward discount 111

FIGURE 4: Japan spot versus sovereign risk determinants and forward discount 112

FIGURE 5: Norway spot versus sovereign risk determinants and forward discount 113

FIGURE 6: New Zealand spot versus sovereign risk determinants and forward discount 114

FIGURE 7: Sweden spot versus sovereign risk determinants and forward discount 115

FIGURE 8: Switzerland spot versus sovereign risk determinants and forward discount 116

FIGURE 9: UK spot versus sovereign risk determinants and forward discount 117

FIGURE 10: Singapore spot versus sovereign risk determinants and forward discount 118

FIGURE 11: South Korea spot versus sovereign risk determinants and forward discount 119

FIGURE 12: Argentina spot versus sovereign risk determinants and forward discount 120

FIGURE 13: Brazil spot versus sovereign risk determinants and forward discount 121

FIGURE 14: Chile spot versus sovereign risk determinants and forward discount 122

FIGURE 15: Colombia spot versus sovereign risk determinants and forward discount 123

FIGURE 16: Croatia spot versus sovereign risk determinants and forward discount 124

FIGURE 17: Czech Republic spot versus sovereign risk determinants and forward discount 125

FIGURE 18: Egypt spot versus sovereign risk determinants and forward discount 126

FIGURE 19: Hungary spot versus sovereign risk determinants and forward discount 127

FIGURE 20: Iceland spot versus sovereign risk determinants and forward discount 128

FIGURE 21: India spot versus sovereign risk determinants and forward discount 129

FIGURE 22: Indonesia spot versus sovereign risk determinants and forward discount 130

FIGURE 23: Israel spot versus sovereign risk determinants and forward discount 131

FIGURE 24: Malaysia spot versus sovereign risk determinants and forward discount 132

FIGURE 25: Mexico spot versus sovereign risk determinants and forward discount 133

FIGURE 26: Morocco spot versus sovereign risk determinants and forward discount 134

FIGURE 27: Philippines spot versus sovereign risk determinants and forward discount 135

FIGURE 28: Poland spot versus sovereign risk determinants and forward discount 136

FIGURE 29: Romania spot versus sovereign risk determinants and forward discount 137

FIGURE 30: Russia spot versus sovereign risk determinants and forward discount 138

FIGURE 31: South Africa spot versus sovereign risk determinants and forward discount 139

FIGURE 32: Taiwan spot versus sovereign risk determinants and forward discount 140

FIGURE 33: Thailand spot versus sovereign risk determinants and forward discount 141

FIGURE 34: Turkey spot versus sovereign risk determinants and forward discount 142

LIST OF TABLES

TABLE 1: Summary statistics of annualized exchange rate changes. The means and standard deviations of currency appreciation (depreciation) are expressed in percentages. Following (Burnside,2014), I combine the Euro and Deutschmark into one series. Euro series begins in January 1999. 39

TABLE 2: This table reports the mean of monthly statistics for country political risk, macro risk (economic and financial risk), forward discounts, excess returns and spot rates. The unit for the spot is U.S$/FCU whereas all other units are in basis points. Following (Burnside,2014), I combine the Euro and Deutschmark into one series. Euro series begins in January 1999. 40

TABLE 3: Correlations matrix of variables for both advanced and emerging economies. 41

TABLE 4: Sovereign risk determinants and currency changes for emerging economies full sample(12/31/1993-11/28/2014): This table reports results from panel regressions of changes in monthly log exchange rates on changes in monthly log sovereign risk determinants for the full sample of emerging economies. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). Time and country dummy variable coefficients are not reported. 47

TABLE 5: Sovereign risk determinants and currency changes for advanced economies full sample(01/31/1984-11/28/2014): This table reports results from panel regressions of changes in monthly log exchange rates on changes in monthly log sovereign risk determinants for the full sample of advanced economies. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). Time and country dummy variable coefficients are not reported. 48

TABLE 6: Emerging economies pre-crisis sub-sample: This table reports results from panel regressions of changes in monthly log exchange rates on changes in monthly log sovereign risk determinants for the **pre-crisis sub-sample (December 1993 - June 2007)** of our emerging economies. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). Time and country dummy variable coefficients are not reported. 50

TABLE 7: Emerging economies post-crisis sub-sample: This table reports results from panel regressions of changes in monthly log exchange rates on changes in monthly log sovereign risk determinants for the **post-crisis sub-sample (July 2007 - November 2014)** of our emerging economies. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). Time and country dummy variable coefficients are not reported. 51

TABLE 8: Advanced economies pre-crisis sub-sample: This table reports results from panel regressions of changes in monthly log exchange rates on changes in monthly log sovereign risk determinants for the **pre-crisis sub-sample (January 1984 - June 2007)** of our developed economies. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). Time and country dummy variable coefficients are not reported. 52

TABLE 9: Advanced economies post-crisis sub-sample: This table reports results from panel regressions of changes in monthly log exchange rates on changes in monthly log sovereign risk determinants for the **post-crisis sub-sample (July 2007 - November 2014)** of our developed economies. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). Time and country dummy variable coefficients are not reported. 53

TABLE 10: Advanced country-level regressions: The dependent variable is the log change in spot exchange rate and all exchange rates use the USD as the base currency. The table shows estimates of t-stats (in square brackets) based on HAC standard errors following Newey and West (1987) and Andrews (1991). 55

TABLE 11: Emerging country-level regressions: The dependent variable is the log change in spot exchange rate and all exchange rates use the USD as the base currency. The table shows estimates of t-stats (in square brackets) based on HAC standard errors following Newey and West (1987) and Andrews (1991). 56

TABLE 12: Summary statistics for portfolios of the full all-country sample (1/31/1997 - 11/28/2014). Means are annualized by multiplying monthly means by 12 whereas standard deviations are annualized by multiplying monthly standard deviations by $\sqrt{12}$. T-statistics for the monthly means are reported in parenthesis and there are 215 observations. Annualized risk premiums (ann. risk pre.) are also reported. 62

TABLE 13: Summary statistics for portfolios of the pre-crisis all-country sub-sample (1/31/1997 - 6/29/2007). There are 126 observations. 63

TABLE 14: Summary statistics for portfolios of the post-crisis all-country sub-sample (7/31/2007 - 11/28/2014). There are 89 observations. 64

TABLE 15: Summary statistics for portfolios of the full emerging markets sub-sample (1/30/1998 - 11/28/2014). There are 203 observations. 65

TABLE 16: Summary statistics for portfolios of the emerging markets pre-crisis sub-sample (1/30/1998 - 06/29/2007). There are 114 observations. 66

TABLE 17: Summary statistics for portfolios of the emerging markets post-crisis sub-sample (7/31/2007 - 11/28/2014). There are 89 observations. 67

TABLE 18: Tables 18-23 report results of the regression $r_t^{portfolio} = \alpha + \beta_1 hpmlp_t + \beta_2 hemle_t + \beta_3 r_t^{market} + \mu_t$ for various sub-samples. Table 18 reports results for the full all-country sample. 70

TABLE 19: Portfolio regressions for the all-country pre-crisis sub-sample. 71

TABLE 20: Portfolio regressions for the all-country post-crisis sub-sample. 72

TABLE 21: Portfolio regressions for the emerging markets full sample. 73

TABLE 22: Portfolio regressions for the emerging markets pre-crisis sub-sample. 74

TABLE 23: Portfolio regressions for the emerging markets post-crisis sub-sample. 75

TABLE 24: Emerging markets full sample (12/31/1993 - 11/28/2014) : This table reports panel regression results for the specification $\Delta s_{i,t+1} = \alpha + \beta_1 \Delta PoliticalRisk_{i,t+1} + \beta_2 \Delta MacroRisk_{i,t+1} + \beta_3 \Delta Global_{t+1} + \beta_4 fd_{i,t} + \mu_t$. The forward discount, $fd_{t,t+1}$ is equivalent to the differential between the foreign and US interest rate at time t. The VIX index is used as a proxy for global risk. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). 79

TABLE 25: Emerging markets pre-crisis sub-sample (12/31/1993 - 06/29/2007): This table reports panel regression results for the specification $\Delta s_{i,t+1} = \alpha + \beta_1 \Delta PoliticalRisk_{i,t+1} + \beta_2 \Delta MacroRisk_{i,t+1} + \beta_3 \Delta Global_{t+1} + \beta_4 fd_{i,t} + \mu_t$. The forward discount, $fd_{t,t+1}$ is equivalent to the differential between the foreign and US interest rate at time t. The VIX index is used as a proxy for global risk. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). 80

TABLE 26: Emerging markets post-crisis sub-sample (7/31/2007-11/28/2014) : This table reports panel regression results for the specification $\Delta s_{i,t+1} = \alpha + \beta_1 \Delta PoliticalRisk_{i,t+1} + \beta_2 \Delta MacroRisk_{i,t+1} + \beta_3 \Delta Global_{t+1} + \beta_4 fd_{i,t} + \mu_t$. The forward discount, $fd_{t,t+1}$ is equivalent to the differential between the foreign and US interest rate at time t. The VIX index is used as a proxy for global risk. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). 81

TABLE 27: Advanced economies full sample (12/31/1993-11/28/2014): This table reports panel regression results for the specification $\Delta s_{i,t+1} = \alpha + \beta_1 \Delta PoliticalRisk_{i,t+1} + \beta_2 \Delta MacroRisk_{i,t+1} + \beta_3 \Delta Global_{t+1} + \beta_4 fd_{i,t} + \mu_t$. The forward discount, $fd_{t,t+1}$ is equivalent to the differential between the foreign and US interest rate at time t. The VIX index is used as a proxy for global risk. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). 82

TABLE 28: Advanced economies pre-crisis sub-sample (12/31/1993 - 06/29/2007) : This table reports panel regression results for the specification $\Delta s_{i,t+1} = \alpha + \beta_1 \Delta PoliticalRisk_{i,t+1} + \beta_2 \Delta MacroRisk_{i,t+1} + \beta_3 \Delta Global_{t+1} + \beta_4 fd_{i,t} + \mu_t$. The forward discount, $fd_{t,t+1}$ is equivalent to the differential between the foreign and US interest rate at time t. The VIX index is used as a proxy for global risk. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). 83

TABLE 29: Advanced economies post-crisis sub-sample (7/31/2007-11/28/2014) : This table reports panel regression results for the specification $\Delta s_{i,t+1} = \alpha + \beta_1 \Delta PoliticalRisk_{i,t+1} + \beta_2 \Delta MacroRisk_{i,t+1} + \beta_3 \Delta Global_{t+1} + \beta_4 fd_{i,t} + \mu_t$. The forward discount, $fd_{t,t+1}$ is equivalent to the differential between the foreign and US interest rate at time t. The VIX index is used as a proxy for global risk. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). 84

TABLE 30: Tables 30-39 report panel regression results of FX excess returns on the lagged values of sovereign risk factors at various forecast horizons. Results for pooled regressions (P), fixed effects (FE), time effects (TE) and both fixed and time effects (CTFE) are reported. T-statistics based on the HAC standard errors following Newey and West (1987) are reported in brackets. Table 26 reports results for the all-country sample at the 1 month horizon (k=1). 99

TABLE 31: Time-series versus cross-sectional predictability at k=3 for the all-country sample. 100

TABLE 32: Time-series versus cross-sectional predictability at k=6 for the all-country sample. 101

TABLE 33: Time-series versus cross-sectional predictability at k=9 for the all-country sample. 102

TABLE 34: Time-series versus cross-sectional predictability at k=12 for the all-country sample. 103

TABLE 35: Time series versus cross-sectional predictability at k=1 for the emerging markets sub-sample. 104

TABLE 36: Time series versus cross-sectional predictability at k=3 for the emerging markets sub-sample. 105

TABLE 37: Time series versus cross-sectional predictability at k=6 for the emerging markets sub-sample. 106

TABLE 38: Time series versus cross-sectional predictability at k=9 for the emerging markets sub-sample 107

TABLE 39: Time series versus cross-sectional predictability at k=12 for the emerging markets sub-sample 108

CHAPTER 1: INTRODUCTION

The existence of excess returns in the foreign exchange market is one of the most robust puzzles in international finance. It violates the uncovered interest parity (UIP) and the notion that the forward rate should be the rational market expected value of the future spot rate, hence names such as the "UIP Puzzle" and the "Forward Premium Puzzle". Essentially, the UIP condition states that the interest rate differential between riskless assets denominated in a foreign and domestic currency is equal to the rate at which the foreign currency is expected to depreciate against the domestic currency. It is perhaps not surprising that a lot of authors have focused on interest rate differentials in attempts to study the existence of excess returns on the foreign exchange market. However, several stylized facts have long demonstrated that interest rate differentials do not account for or compensate for currency excess returns, e.g. see Engel (1996) for a survey.

In fact, empirical evidence shows that advanced economy currencies with high interest rates generally do not depreciate as much as UIP would imply [1]. On the contrary, they often tend to appreciate. The reverse holds for advanced economy currencies with low interest rates e.g. Burnside et al. (2011b); Lustig & Verdelhan (2007). It is therefore known to be profitable to invest in high-yield currencies by

[1] Bansal & Dahlquist (2000) provide evidence which suggests that the forward premium puzzle is confined to high GNP per capita economies, i.e. developed economies. The evidence from emerging and lower-income developed economies is consistent with economic intuition - a positive nominal domestic interest rate differential predicts a depreciation of the domestic currency.

borrowing low-yield currencies or to buy forward a currency with a forward discount. This is the famous carry trade – i.e. taking unhedged positions in high-interest-rate currencies and short positions in low-interest-rate currencies.

Carry trades are generally lucrative because investors who enter such a strategy are likely to make profits from two sources: the interest rate differential between the two currencies and the appreciation of the high-interest-rate currency that was originally bought at a forward discount. As some authors have shown e.g. Coudert & Mignon (2013); Brunnermeier et al. (2008), carry trades are especially popular in periods of booming global financial markets when investors' risk appetite is high and volatility is low whereas during "bust" periods investors become more risk averse to carry trade. Consequently, in booming times, carry trade activity helps to strengthen high-yield currencies whereas sudden unwinding of positions during adverse market conditions cause the high-yield currencies to sharply decrease. Under adverse market conditions, investors turn to low-interest-rate currencies, which they regard as safe haven currencies, thereby causing them to appreciate e.g.Ranaldo & Soderlind (2007). Despite the losses during reversals, carry trades are still profitable in the long run e.g.Burnside (2011).

The most obvious explanation for the existence of excess returns is that carry trades are risky and hence the average excess returns reflect a risk premium. Whilst risk-based explanations are common in the literature, there is a divergence on what exactly this risk is[2]. Some of the different risk factors proposed include Lustig et al.

[2]Other theories, such as adverse selection problems between participants in the foreign exchange markets have been put forward as explaining the forward premium puzzle. For example, Burnside et al. (2009) present a model in which adverse selection problems between market makers and traders rationalizes a negative covariance between the forward premium and changes in exchange rates. They

(2011)'s "High Minus Low" factor based on sorting portfolios of currencies according to their forward discount, Menkhoff et al. (2010)'s global currency volatility factor and Rafferty (2010)'s currency "crash" factor based on global currency skewness. The above-mentioned risk factors are all constructed from exchange rates. Other risk-based explanations include the "peso problem": i.e. the argument that exchange rate risk premia compensates investors for extremely negative returns as a result of some low probability events to which they are exposed, e.g. Jurek (2014); Farhi et al. (2009); Burnside et al. (2011b).

More recently, in line with Engel & West (2005)'s definition[3] of exchange rates, Della Corte et al. (2014) and Coudert & Mignon (2013) provide empirical evidence linking exchange rate returns and currency risk premia to sovereign risk. Della Corte et al. (2014) find that a 50 basis point increase in sovereign risk (proxied by CDS spreads), leads to a contemporaneous depreciation of that country's exchange rate by about 3.5% with an R^2 of about 22%. This finding is impressive considering the fact that R^2's are near zero for most regressions of exchange rates on interest rate differentials. In addition, they find that sovereign risk predicts returns to not just

posit that as long as it is difficult to forecast exchange rates using public information and there are informed traders that make positive expected profits, then there must be a forward premium puzzle. As an example, they argue that suppose on the basis of public information, the pound is expected to depreciate. Then uninformed traders (who their model assumes rely on public information) are likely to sell the pound forward. It follows that, if the market maker receives a buy order, he attaches a high probability that the order came from an informed trader who expects the pound to appreciate. Consequently, the market maker quotes a high price for the buy order, that is, a high ask forward exchange rate. The forward premium (evaluated at the ask rate) is, on average, high when the pound depreciates. Their model therefore captures the negative correlation that defines the forward premium puzzle.

[3]Engel & West (2005) define exchange rates as the expected discounted value of a linear combination of observable fundamentals and unobservable shocks. This suggests that country-specific shocks such as macro risk and political risk and other unobservable shocks can explain movements in exchange rates.

the carry trades, but also to returns on other currency strategies such as trading volatility, skewness and kurtosis[4].

Even though sovereign risk provides the most compelling evidence for the existence of currency excess returns, there is little clarity on the channels driving this relationship. This research seeks to fill this gap. Strictly speaking, sovereign risk consists of macro risk – reflecting economic and financial factors, political risk (some authors claim it reflects willingness to pay e.g.Bulow & Rogoff (1989); Buiter & Rahbari (2013); Bekaert et al. (2014)) and risk arising from global shocks e.g.Gonzalez-Rozada & Levy-Yeyati (2008). The question then arises: through which of these channels are sovereign risks, exchange rates and currency risk premia related? Do these channels differ for emerging economies and advanced economies? Are local sovereign risk factors, particularly political risk, priced in currency markets i.e. can country-specific political risk explain currency carry trade excess returns? In this study, I explore further the relationship between sovereign risks and exchange rates by examining the relationship between exchange rates and the various determinants of sovereign risk. By isolating political risk from macro and systematic risk, we will be able to better understand the channels – whether political or otherwise – through which sovereign risk, exchange rates and currency risk premia are related.

I focus on political risk for a number of reasons. First, it is the single most important determinant of sovereign risk (Pastor & Veronesi (2013); Bekaert et al. (2014)). It is reasonable to assume that how it affects exchange rates would be of interest

[4] This is a feat some of the other risk factors are unable to achieve. For example, see Burnside (2011) and the literature review for a critique of some of the previously proposed risk factors.

not only to currency investors but to policymakers as well, especially for those from emerging markets. For example, Pastor & Veronesi (2013) employ a general equilibrium model to show that in economies with weak economic profile, political risk uncertainty requires a risk premium that should increase as economic conditions deteriorate. Lensink et al. (2000) also show that political risk is a strong determinant of capital flight, which undoubtedly will affect the rate of currency depreciation. Second, it has been shown that exchange rates are disconnected from economic fundamentals, even though most of these studies have focused on major industrialized countries e.g. Meese and Rogoff's "disconnect puzzle" (Meese & Rogoff (1983)). There is also little empirical evidence in the literature on how country-specific political risk affects exchange rates, especially for emerging markets; whilst a lot of work has focused on interest rates, which can be reasonably assumed to be more highly correlated with macroeconomic conditions.

Additionally, governments can choose to strategically default on their sovereign debt obligations. This action is a function of various components of political risk, i.e. political institutions, the behavior of policymakers, governance quality etc. (Eichler (2014)). These potential strategic sovereign debt defaults imply possible losses for carry trade investors. From this perspective, do carry trade investors demand a risk premium associated with political risk? [5]

Regarding the question of which channels drive the relationship between exchange rates and sovereign risk, I find that the channels are different, depending on whether

[5] Political risks can also come in other forms e.g. wars, conflicts etc. will affect a government's ability to pay on sovereign bonds.

a country is an emerging market and or an advanced economy. For emerging markets, I find that country-specific political risk, as well as the other determinants of sovereign risk, i.e. macro risk and global factors, all significantly explain movements in exchange rates. An increase in any of these determinants of sovereign risk relative to the US leads to a significant depreciation of that country's currency relative to the US dollar. I find that for emerging markets political risk changes has the biggest effect on exchange rates in terms of magnitude. This finding aligns with those of authors in the sovereign risk literature who argue that country-specific political risk is the most important component of sovereign risk. Sovereign risk seems to have become more significant in explaining emerging market exchange rates in the post 2007 financial crisis era, even though results for pre-crisis and post-crisis samples are similar. For advanced economies, whilst I find no convincing evidence that sovereign risk matters in the pre-crisis era, I do find that the systematic risk component of sovereign risk and political risk do matter in the post-crisis era. However, increasing country-specific macro risk does not significantly lead to a depreciation of the currency for a developed economy. This suggests that the "disconnect puzzle" is an advanced economy phenomenon.

Next, I investigate whether country-specific determinants of sovereign risk can explain or forecast currency carry trade excess returns. To do this, I first carry out a double-sort of currencies into portfolios in the spirit of Fama & French (1993) and construct risk premiums associated with the political risk and macro risk components of sovereign risk[6]. I do find the strongest evidence of political risk being priced in

[6]Lustig et al. (2011), Lustig & Verdelhan (2007) and several other authors also perform currency

the post-crisis sub-sample. For all our macro-risk groups, there is a consistent increase in excess returns and risk premiums from low political risk portfolios to high political risk portfolios in the post-crisis sub-sample. The evidence is less convincing for the pre-crisis and full samples. On the other hand, there is stronger evidence for macro-risk being priced in the pre-crisis and full samples than in the post-crisis era. I also use panel data methods to confirm results from the portfolio sorts. The findings align with the idea that the 2007 global financial crisis has led to important changes in investor behavior and in the global and monetary financial environment.

The remainder of this dissertation is organized as follows: chapter 2 covers the literature review, chapter 3 covers the data, chapter 4 covers the theory and empirical analysis, chapter 5 covers some robustness checks and chapter 6 concludes.

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sorts based on different currency characteristics e.g. forward discounts.

CHAPTER 2: LITERATURE REVIEW

This research is closely-related to several strands of literature. I survey the various related literature below.

2.1 Forward Premium Puzzle

The forward premium anomaly - namely, that future exchange rates tend to move in the opposite direction to current interest rate differentials across countries, instead of a one-for-one movement, is generally understood to be one of the main reasons for the existence of currency excess returns (Burnside (2011)). That is, relatively high domestic nominal interest rates predict an appreciation, instead of a depreciation (as suggested by UIP theory), of the domestic currency.

The standard test of the forward premium anomaly takes the general form of regressing the expected change in the spot rate on the forward premium (a proxy for interest rate differential between the domestic and foreign nominal interest rate[7]) with the expectation that the intercept and slope are 0 and 1 respectively. That is, the depreciation forecasted by the forward rate is equal to the actual depreciation. The deviation of the slope from its hypothesized positive value indicates the extent of the forward premium anomaly. Many authors have found a negative slope.

Even though authors such as Bilson (1981) had done some work related to this

[7]This is only true if covered interest parity holds.

phenomenon[8], Fama (1984) was the first to conclusively explain the meaning of the negative slope when he showed that the negative relation between the expected depreciation and interest rate differential implies the existence of a risk premium. He shows that this risk premium is negatively related to the expected depreciation and is more volatile than the expected depreciation.

Engel (1996) in his survey documents studies mainly in the 80's and 90's that suggest the negative slope is a robust finding. Some of the studies cited include Backus et al. (1993), Mark et al. (1993), Frankel & Froot (1989), Baillie (1989), Bekaert (1992) and McCallum (1994). For example, McCallum (1994) reports an average value of -4 for the slope using monthly yen, mark, and pound rates against the dollar whereas Backus et al. (1993) who also use monthly data, find significantly negative slopes on the Canadian dollar, Japanese yen and most of the major European currencies at the time, all relative to the dollar. Backus et al. (1993) show that their finding is robust by confirming that their results hold when non-dollar cross rates are examined. Furthermore, Baillie (1989) suggests estimating bivariate VARs for the change in spot rates and the forward premium and, using weekly mark/dollar rates, finds that the forward rate is not an unbiased predictor of the future spot rate. Bekaert (1992) confirms the finding of Baillie in a multivariate VAR study for three currencies - the mark, pound and yen relative to the dollar.

An important observation associated with the forward premium puzzle is the finding that it is confined to certain economies and certain time frames. Chinn & Meredith

[8]Bilson (1981), working in the framework that forward prices are the best available forecasts of future spot prices, finds that the average return from a large number of speculative currency transactions is significantly greater than zero.

(2005) and Boudoukh et al. (2005) both find that the coefficients switch from negative to positive at very long horizons, a finding that Boudoukh et al. (2005) attribute to the anomalous behavior of short-term interest rates. Bansal (1997) shows that when the differential between the U.S. interest rate and foreign interest rate becomes negative, the slope becomes positive as desired by UIP and is indifferent from one. Bansal & Dahlquist (2000) not only support this finding but also provide evidence that indicate that the puzzle depends on whether exchange rates being considered are those of an advanced economy or an emerging market.

Several explanations have been offered for the generally-observed negative slope coefficient. The first is an omitted time-varying risk factor which is negatively correlated with the expected change in the exchange rate. Here, the assumption is that investors in the foreign exchange market are rational and risk-averse, and this risk premium is a compensation to investors for bearing this risk. Thus, the interest rate differential between the two countries not only reflects the future depreciation, as indicated by UIP theory, but also contains a risk premium. For instance, Cavaglia et al. (1994) find that both a time-varying risk premia and a forecast error component can explain the bias whilst Landon & Smith (2003) find evidence that supports the existence of a time-varying risk premium. Also, Hansen & Hodrick (1983) develop a latent factor model to explore whether the time-varying risk premium can be explained as compensation for bearing systematic risk. They and other authors[9] who perform similar exercises on a few developed economies find it hard to reject the notion that

[9] see Campbell & Clarida (1987); Giovannini & Jorion (1987); R. Huang (1989); Lewis (1990); Bekaert & Hodrick (1992)

the risk premia is compensation for systematic risk.

Although a risk premium-based explanation is generally accepted by most authors as a reason for the forward premium puzzle, several others have differing opinions. For example, Frankel & Froot (1989) conclude that the puzzle cannot be attributed to a risk premium whereas Chinn & Frankel (2002) find that risk premium is significant in explaining the puzzle at the 12-month horizon but not at longer horizons and essentially conclude that the premium is not enough to explain the puzzle. On the other hand, whilst Bansal & Dahlquist (2000) acknowledge the existence of a risk premium, they argue that it is hard to justify it as compensation for systematic risk.

A second approach to explaining the forward premium anomaly is what may be termed the behavioral or non-rational expectations approach. The argument of De Long et al. (1990) is key to understanding the arguments of proponents of this line of reasoning. They posit that the presence of both rational and non-rational traders in the market tend to distort asset prices significantly away from their fundamental values, and this therefore has the potential to explain many financial market anomalies, including the forward premium puzzle. Mark & Wu (1998) also propose a noise-trader model that corroborates the argument that noise-traders do distort assets from their fundamental values. On the other hand, they demonstrate that there is no empirical support for the behavior of the variance and covariance of the risk premium as suggested by Fama (1984). Finally, Bacchetta & Wincoop (2003) find that comparative variations in the exchange rate and its fundamentals, both in the short run and long run, could be explained by the existence of informational heterogeneity amongst investors.

Bansal & Dahlquist (2000) document that the forward premium puzzle is, contrary to popular belief, not a pervasive phenomenon. They find that it is confined to developed economies, especially to only states where the U.S. interest rate exceeds foreign interest rates. Furthermore, they find that differences across economies are systematically related to per capita GNP, average inflation rates, and inflation volatility, i.e. they find that country-specific attributes seem to be important in characterizing the cross-sectional dispersion in risk premia. More recently, Boudoukh et al. (2013) look at the forward premium anomaly by recasting the UIP relation in terms of future exchange rate movements against lagged forward interest rate differentials across countries. They study a subset of the G10 currencies between 1980-2010 and their results are in stark contrast to previous research. They do find that past forward interest rate differentials have strong forecasting power for exchange rates. They do find R^2s at some horizons exceed 10% for exchange rate changes relative to about 2% for the traditional specification. Moreover, the direction of these forecasts coincide with the theoretical implications of UIP, i.e. there is a reversal of the anomalous sign on the coefficient in the traditional specification.

2.2 Exchange Rates and Macroeconomic Fundamentals

Parallel to the work on the forward premium puzzle, another literature has developed, starting with Meese & Rogoff (1983), documenting an equally startling puzzle – exchange rates do not seem to be related to fundamentals[10]. Starting what has come to be known as the disconnect puzzle, they find that the typical models of exchange

[10]Note that their work mostly focused on advanced economies and their conclusions only apply to advanced economies.

rates cannot outperform a naive random walk model, even when one uses ex-post values of the variables of interest such as money supply, real income, inflation and interest rates. More recently, these findings have been revisited and confirmed by Cheung et al. (2003) using updated data.

The "disconnect puzzle" notwithstanding, other authors maintain that there is a sensible connection between fundamentals and exchange rates. Engel & West (2005) define exchange rates as the expected present value of a linear combination of observable fundamentals and unobservable shocks – a novel definition that motivates part of the investigations carried out in this research. They find that exchange rates Granger-cause macroeconomic fundamentals and could potentially forecast future economic variables such as money, income, prices and interest rates. Possible reasons offered for this connection include: (1) exchange rates may Granger-cause the domestic consumer price level simply because exchange rates are passed on to prices of imported consumer goods with a lag or (2) exchange rates may Granger-cause money supplies because monetary policy makers react to the exchange rate in setting the money supply.

More recently, Sarno & Schmeling (2013) provide evidence that suggests that future macroeconomic fundamentals drive current exchange rates. They find that exchange rates have strong and significant predictive power for nominal fundamentals, i.e. inflation, money balances, nominal GDP whereas predictability of real fundamentals is much weaker and largely confined to the post-Bretton woods era. Others, such as Mark (1995); Mark & Sul (2001); Abhyankar et al. (2005) all seem to find evidence to suggest a predictive relationship from macro fundamentals to exchange rates, albeit at rather long horizons.

2.3 Currency Excess Returns and Risks

This section of the literature review looks at a variety of risk premium-based explanations for the existence of excess returns in the FX markets. Although closely-related to the literature on risk-premium based explanations for deviations from UIP, this strand of literature attempts to use various risk factors to explain carry trade returns and returns to various currency strategies such as momentum in an asset pricing framework.

The primary focus here is not to offer explanations for deviations from UIP nor attempt to correct the deviation per se but to argue that FX trading strategies, such as carry trades, are risky and that the average returns observed reflect a risk premium. In this section, I talk more in depth about some of the literature.

Lustig & Verdelhan (2007) were the first to look at a cross-section of currency portfolios and offered a consumption-based explanation for the existence of currency excess returns. They find that high foreign interest rate currencies, on average, depreciate against the dollar when U.S. consumption growth is low, while low foreign interest rate currencies do not[11]. They argue that if an asset offers low returns when the investor's consumption growth is low, it is risky and investors want to be compensated through a positive excess return. Hence, the observation of higher interest rate foreign currencies yielding higher excess returns for a U.S. investor is a result of the excess returns compensating the investor for taking on more U.S. consumption

[11] Note that when consumption growth is low people are afraid for the future so they hoard money and other relatively safe stores of value.

growth risk.

To uncover the link between exchange rates and consumption growth, they build eight portfolios of foreign currency excess returns on the basis of foreign interest rates. They then estimate the U.S consumption growth betas of the currency portfolios and find that these betas are small for low interest rate portfolios and large for high interest rate portfolios. Also, for the low interest rate portfolios, the betas turn negative when the interest rate gap with the U.S is large. They find that consumption-based models explain up to 80 percent of the variation in currency excess returns across their currency portfolios. However, they acknowledge that their results only hold if we are willing to accept implausibly high levels of risk aversion of about 100. Interestingly, the problem of implausibly high levels of risk aversion exists in other asset markets.

Lustig et al. (2011) also sort currencies into portfolios based on their forward discounts and find large co-movement among exchange rates of different currencies. They argue that this finding supports a risk-based view of exchange rate determination. They come up with two risk factors, a level factor and a slope factor, which are essentially the first two principal components of their currency portfolio returns. The level factor, which they also term the dollar risk factor, is the average excess return on all foreign currency portfolios. The second principal component, the slope factor or "carry trade risk factor HML_{FX}", is essentially a zero-cost strategy that goes long in high interest rate or forward discount portfolios and short in low forward discount portfolios. They find that the exchange rates of high interest rate currencies load positively on the slope factor, whilst those of low interest rate currencies load negatively on it and that these results are the same for exchange rates as for currency returns. They find that the covariation with their slope factor accounts for most of the returns of the currency carry trade.

They argue that in integrated capital markets, risk invariably refers to exposure to some common or global factor, and that their slope factor provides a direct measure of the global risk factor since it explains returns to their currency portfolios as well as variation in the country-level returns. Again, the estimated risk prices are very similar for both country-level returns and currency portfolios. They conclude that currency risk premia are determined by a home risk premium that compensates for home country risk such as their dollar risk premium for the US investor, and a carry trade risk premium i.e. the slope factor, that compensates for global or common risk.

They show that a no-arbitrage model of interest rates and exchange rates with two state variables, i.e. a country-specific factor and a global risk factor, can match the data provided there is sufficient heterogeneity in countries' exposure to the global risk factor. To support this global risk interpretation, they provide evidence that the global risk factor is closely related to changes in volatility of equity markets around the world.

Brunnermeier et al. (2008) tell a story in which carry trades drive currency dynamics until liquidity dries up, at which point traders draw back their positions in tandem causing the currencies which are the targets of their trades to crash. They argue that carry trades are risky because high interest rate currencies are exposed in tandem, to these crashes. They posit that sudden exchange rate movements unrelated to news can be due to the unwinding of carry trades when speculators near funding constraints.

Their empirical study uses time-series data on the exchange rates of eight major currencies relative to the U.S. dollar. For each of the eight currencies, they calculate realized skewness from daily data within (overlapping) quarterly time periods and show in the cross-section and in the time series that high interest rate differentials predict negative skewness, i.e. carry trade returns have crash risk. This finding is consistent with the saying amongst traders that exchange rates for investment currencies "go up by the stairs and down by the elevator".

Next, they also study the risk premium associated with crash risk or the price of crash risk by looking at the risk-reversal strategy. The risk reversal measures the combined effects of expected skewness and a skewness risk premium. It can be thought of as measuring the cost of buying protection on a currency position to limit the possible gains and losses and is constructed as the implied volatility of an out-of-the-money call option minus the implied volatility of an equally out-of-the-money put option. If the exchange rate is symmetrically distributed under the risk-neutral measure, the risk reversal is zero since the implied volatilities are the same and this means the cost of a call can be offset by shorting a put. On the other hand, if the risk-neutral distribution of the exchange rate is negatively (positively) skewed, the price of risk reversal is negative (positive). In the cross-section, they find that the average implied skewness from risk reversals is also negatively related to the average interest rate differential, suggesting a close cross-sectional relationship between their physical skewness measure and the risk-neutral implied skewness.

They find a surprising time-series relationship between actual skewness and price of a risk reversal. In the time series, a higher risk reversal predicts a lower future skewness, controlling for interest rate differential. They interpret this to mean that after a crash, speculators are willing to pay more for insurance, the price of insurance increases, and future crash risk goes down, perhaps because of smaller speculator positions.

They use the VIX and TED spread to examine how rising global risk aversion affects carry trade activity dynamics and they do find that during weeks in which the VIX increases, carry trades tend to incur losses whereas both risk-reversal prices and carry trade activity decline during these times. Finally, they show that controlling for the VIX (or TED spread) helps explain the UIP violation.

Their work is linked to that of Brunnermeier & Pedersen (2009) who show how liquidity affects asset values. In the currency setting, Brunnermeier et al. (2008) cite the example of a country that suddenly increases its interest rate. This action will lead that country to attract foreign capital and in a frictionless and risk-neutral economy, this should lead to an immediate appreciation of the currency – associated with an inflow of more capital – and a future depreciation of the exchange rate such that UIP holds. In the presence of liquidity constraints however, capital only arrives slowly such that the exchange rate only appreciates gradually, occasionally disrupted by sudden depreciations as speculative capital is withdrawn.

Inspired by Brunnermeier et al. (2008), Rafferty (2010) constructs a global currency skewness factor that attempts to measure the coordinated "crashing" of target or investment currencies and tests to see whether it can explain returns to the carry trade. He sorts currencies into two groups, one with positive interest rate differentials or forward discounts and one with negative interest rate differentials. On a monthly basis he measures the realized skewness of the currencies in the first group, and the negative of the skewness of the currencies in the second group and uses the average across available currencies of these skewness statistics as his global currency skewness factor. He finds that this factor is able to explain the cross-sectional differences in returns between currencies sorted separately on interest rate differentials, value and momentum. He also finds that it is also able to explain cross-sectional differences in international bond returns, but is less successful in explaining cross-sectional differences in international equity returns.

Menkhoff et al. (2010) propose a factor that measures global currency volatility as a pricing factor that can explain returns to the currency carry trade. Their volatility factor is constructed on a monthly basis and it is the average intramonth realized volatility of the daily log changes in the value of each currency available in their sample against the USD. They sort currencies by their exposure to past volatility innovations and do find that overall global FX volatility accounts for the cross-sectional spread in expected carry trade returns. They compare their risk factor to liquidity risk and show that it dominates liquidity risk in horse races.

In a paper that is essentially an examination of some of the popular risk models that attempt to explain currency excess returns, Burnside (2011) posits peso events as the likely candidate explanation of the returns to the carry trade. He reviews evidence for and against a variety of risk premium-based explanations and is skeptical about the models discussed above despite their empirical success in describing carry trade returns. Mainly, he argues that if these estimated currency-based models are really informative about the SDFs of investors, then these models should also price stock returns but they do not. He rejects a market segmentation argument in which there is one SDF applicable to stock returns and another applicable to currency returns because if that were the case, then these factors that price carry trade portfolios ought to have some success in pricing other currency portfolios such as momentum and value. However, the evidence from Burnside et al. (2011a) suggest that these same factors that price carry trade portfolios are unable to price momentum portfolios defined using short-term historical returns. He also provides evidence that time varying market risk is unlikely to explain returns to the carry trade. He points out that during the recent financial crisis, carry trade returns and stock market returns became more highly correlated and this should suggest that covariance at times of market distress should explain the returns to the carry trade. However, he demonstrates that the degree of covariance seen in the data is insufficient.

Burnside argues for an alternative explanation to the returns to the currency carry trade – the existence of peso events. It is in fact an argument that has been proposed by many other authors. For example, Burnside et al. (2011b) argue that periods of extreme risk aversion that have not been observed in sample can explain the returns to the carry trade and the stock market. Jurek (2014) investigates whether currency carry trade returns represent compensation for exposure to currency crashes and finds that crash risk premia accounts for some of the excess returns to currency carry trades whereas Farhi et al. (2009), using a structural model to study whether disaster risk is priced in the currency markets, find that disaster risk accounts for more than a third of currency risk premia in advanced countries over the period 1996-2011. Finally, Farhi & Gabaix (2008) develop a model of exchange rates that incorporates the possibility of rare economic disasters and find evidence from the options market that appears to support the model. A key take-away from their model is that each country's exposure to disaster risk varies over time according to a mean-reverting process. Risky countries command high risk premia, i.e. they are characterized by a depreciated exchange rate and high interest rate and as their risk premium mean reverts, their exchange rate appreciates. Therefore, currencies of high interest rate countries appreciate on average. A major challenge though, for future research on peso event based models, as pointed out by Burnside, is that they need to explain the empirical success of some of the models described above, the time-variation in risk premia needed to explain the UIP puzzle, and the cross-section of stock returns.

Most of the risk factors discussed so far are themselves mostly constructed from currency returns. However, recent literature, e.g. Coudert & Mignon (2013), Della Corte et al. (2014), and H. Huang & MacDonald (2015) indicate that sovereign credit default swaps (CDS) spreads, a proxy for sovereign risk, does have substantial power to explain returns to the currency carry trade and also does a better job of explaining movements in FX markets than interest rate differential (which has traditionally been the benchmark) or any other economic variable studied in the literature. Intuitively it makes sense to consider sovereign risk as a candidate risk factor. This is because from a macroeconomic perspective, high credit risk countries are more likely to default, and especially so in times of bad economic shocks. Therefore, currencies of high credit risk countries should be expected to trade at a discount relative to low credit risk countries and be expected to offer higher FX returns. Also, several authors e.g. Bansal & Dahlquist (2000) show that individual country shocks and characteristics are important variables in trying to understand currency market movements.

Della Corte et al. (2014) find that an increase in the sovereign risk of a country by 50 basis points leads to a contemporaneous depreciation of that country's exchange rate by about 3.5 percent with an R^2 of about 22 percent. In addition, they show that innovations in sovereign credit risk are also related to the higher moments of the exchange rate distribution. Using option-implied measures of currency volatility, skewness, and kurtosis, they find that an increase in sovereign risk is accompanied by higher foreign exchange volatility, a shift in skewness such as FX crash insurance becomes more expensive, as well as fattening tails of the FX distribution. Portfolios of countries sorted on sovereign CDS spreads also show that high sovereign credit risk countries have significantly higher excess returns than lower risk countries. They find that sovereign risk predicts returns to not just the carry trades, but also to returns on trading volatility, skewness and kurtosis. This finding corroborates that of H. Huang & MacDonald (2015) who find that sovereign credit premia is the dominant economic fundamental risk in explaining cross-sectional variations in carry trade excess returns, currency momentum and volatility risk premium portfolios. Importantly, it addresses one of Burnside (2011)'s major critiques of some of the other risk factors discussed: i.e. their inability to adequately explain returns to other currency strategies besides the carry trade.

Della Corte et al. (2014) argue that shocks to global credit plays a key role for the contemporaneous link between exchange rates and sovereign risk. This is consistent with the findings of Lustig et al. (2011) and Longstaff et al. (2011) for example, who respectively argue that exposure to global shocks matter for currency risk premia and sovereign risk of individual countries is mainly driven by global systematic factors.

The emergence of sovereign risk as the most important risk factor in explaining FX movements raises important questions – what components of sovereign risk drives this observed relationship and are the dynamics of this relationship different depending on whether a country is an emerging market or an advanced economy? The sovereign risk literature, which is surveyed in the next section, indicates that sovereign risk can arise as a result of three main shocks namely: country political risk, country macroeconomic risk and global or systematic shocks.

None of the papers examining the relationship between sovereign risk and exchange rates addresses these questions satisfactorily – a concern that motivates this research. In this research, I seek to properly elucidate the channels through which exchange rates, currency excess returns and sovereign risk premia are related. The next section of the literature review surveys the sovereign risk literature and sheds more light on the determinants of sovereign risk.

2.4 Determinants of Sovereign Risk and Sovereign Debt Default

Since this dissertation studies how the various determinants of sovereign risks and exchange rates are related, a discussion on the determinants of sovereign risk is warranted. The literature on sovereign risk may be classified into three broad categories namely: (i)theoretical and empirical models of sovereign debt and default; (ii)empirical studies of the predictive power of credit ratings; and (iii)empirical studies of the determination of sovereign spreads. I mainly focus on the first category since it does a good job of giving a broad overview of the determinants of sovereign risk.

The theoretical models are mostly about strategic default, i.e. a country's unwillingness rather than inability to repay its debt. Principally in these models the debtor country is weighing the relative costs and benefits of default and making a decision that maximizes its welfare e.g. Bulow & Rogoff (1989) and Rosenthal (1991). The seminal work by Eaton & Gersovitz (1981) introduces a model that attempts to explain the phenomenon of poor country borrowing in international capital markets. Considering the absence of explicit penalties for non-payment, their model incorporates an endogenous default penalty, i.e. permanent exclusion from future borrowing. In their model, the typical country is not a one-time borrower since the threat of future exclusion will not deter a country with no further intentions of borrowing in the future from repudiating its debt. They suggest that a desire to maintain future access to credit markets provides an incentive for borrowing governments to repay. They also show that lenders will establish a credit ceiling above which they will be unwilling to increase loans. The amount of this ceiling is determined by lenders' perception of borrowers' disutility of exclusion. If the ceiling is below the amount a borrower wishes to obtain then the borrower is rationed. We note that Eaton & Gersovitz (1981) make an important assumption in developing their argument, i.e. a country could not enter into another financial contract (e.g. an investment contract) after it reneged on its debt.

In a paper that was essentially a critique of the efficacy of retaliatory punishments such as exclusion, Bulow & Rogoff (1989) relax this assumption i.e. a country is able to enter into a particular type of contract irrespective of its behavior regarding its debt contract. They then proceed to establish conditions under which a country could default, invest the payments it would have made to foreign creditors with foreign financial institutions in order to generate a higher level of welfare than they could obtain from future borrowing. In essence, they show that the threat of exclusion from future borrowing is not sufficient to enforce repayment of debts[12]. Rosenthal (1991) proposes a model that arrives at a similar conclusion whereas Buiter & Rahbari (2013) show that beyond a certain point on the sovereign debt Laffer Curve, a partial default on the debt that leads to a reduction in the face value may be optimal for both debtor and creditor countries[13].

Beyond the theoretical models on strategic default, there have been several studies – both theoretical and empirical – on the determinants of sovereign debt default or crises. The main determinants that have been studied in the literature have been related to macroeconomic variables and political systems whereas a few authors argue that global shocks matter.

With regard to political determinants, Van Rijckeghem & Weder (2009) find that political institutions matter in explaining defaults on external and domestic debt obligations and that political factors affect democratic and non-democratic regimes differently. They find that in democracies, a parliamentary system (or sufficient checks and balances) almost guarantee the absence of default on external debt when economic fundamentals are sufficiently strong whereas in dictatorships, they find that high stability and long tenure have a similar effect on domestic debt. The findings in

[12]For details of their model, see Bulow & Rogoff (1989); Eaton & Fernandez (1996)

[13]Rosenthal (1991) shows that once a country's future net payments are sufficiently high, the country is better off making use solely of its own technology and defaulting on its debt

this paper align with other literature on the role of politics. For example, Kohlscheen (2010) suggests that parliamentary systems are more favorable to debt repayment than presidential systems since the former imposes more constraints on the executive – especially so when there are a large number of veto players, in-coalition governments and when the tenure of the government is long. On the other hand, Olson (1993) argues that for authoritarian regimes, the role of tenure is important since governments with a short horizon will tend to make opportunistic decisions knowing that negative consequences will be pushed into the future. Amador (2003) and Alichi (2008) consider whether democracies have a greater commitment to debt repayment than non-democracies. Whereas Amador (2003) argues that democracies are more likely to repay, Alichi (2008) argues that democracies may be less credit-worthy[14]. Other prominent political variables found in the literature include elections, degree of political polarization and political instability. Manasse et al. (2003) find that in years with presidential elections, the probability of a debt crisis increases whereas Manasse & Roubini (2009) find that countries with presidential elections in less than five years have a high probability of default when international capital markets are tight. Alesina & Drazen (1991) argue that a system characterized by polarization amongst veto players should have a higher propensity to default whereas Chang (2005) models how political revolts may bring about a default.

Macroeconomic fundamentals (both levels and volatility) have have been shown to be good predictors of a government's ability to meet sovereign debt obligations.

[14]For details, see A Model of Sovereign Debt in Democracies, Alichi (2008) and A Political Economy Model of Sovereign Debt Repayment, Amador (2003)

Hilscher & Nosbusch (2010) find that the volatility of terms of trade in particular, is a statistically and economically significant predictor of default for emerging market sovereign debt. Their findings align with the observations of Bulow & Rogoff (1989), who note that changes in a country's terms of trade affect its ability to generate dollar revenue from exports and therefore its ability to make payments on its external dollar-denominated debt. The debt service to exports and reserves to imports have been known to be good indicators of a country's liquidity position whereas the external debt to GDP ratio has been known to be a good indicator of solvency e.g. Jorra (2012), Detragiache & Spilimbergo (2004).

Macro-factors that have been put forward as affecting a government's willingness to pay (through their output and trade costs of default) include openness, measures of macroeconomic policy such as low inflation and low money growth e.g. Manasse & Roubini (2009). Low output growth affects willingness to pay because when growth is low, being cut off from capital markets is less costly. Openness can affect the costs of default and thus a country's willingness to default or not as more open economies will lose more from the economic disruptions of international trade triggered by default. Measures of macroeconomic policy stability, such as low inflation or low money growth, reflect policy credibility and predictability and thus influence investors' risk attitudes towards a country and their perceptions of the country's willingness to pay. A negative perception by investors may trigger investors' flight and increase the likelihood of a crisis. GDP growth should also influence the probability of a default through it's impact on sovereign borrowers' willingness to pay Arellano (2008).

Finally, a number of papers have emphasized the importance of global factors.

These include Herrera & Perry (2004), Grandes (2003), Diaz Weigel & Gemmill (2006); Garcia Herrero & Ortiz (2004); Longstaff et al. (2011); Gonzalez-Rozada & Levy-Yeyati (2008) and Pan & Singleton (2008). For example, Gonzalez-Rozada & Levy-Yeyati (2008) argue that pricing of debt issued by financially integrated emerging economies should reflect the level of risk of the security, and a risk premium or price of risk that is, in turn, a reflection of the risk aversion – or alternatively, risk appetite – of international investors. They empirically establish that variation in emerging market spreads are driven by exogenous changes in global risk appetite.

The above motivate the empirical decomposition of sovereign risk into three main determinants namely: local political risk shocks, local macroeconomic shocks and global shocks. This research emphasizes on political shocks because as authors such as Pastor & Veronesi (2013) and Bekaert et al. (2014) argue, political risk is the single most important determinant of sovereign risk. This is the first research to study whether local political risk can explain the cross-section of carry trade returns.

2.5 Political Risks, Exchange Rates and Currency Returns

This research contributes to the literature linking exchange rates and political risks. Aliber (1973) and Dooley & Isard (1980) were the pioneers on the body of literature establishing a relationship between exchange rates and political risk. Both sets of authors consider exchange rate risk and political risk as two main avenues linked to deviations from the UIP condition. Aliber (1973) defines the concept of political risk as "the probability that the authority of the state will be interposed between investors in one country and investment opportunities in other countries", to wit, the probability that controls will be imposed on capital inflows or outflows. He distinguishes between exchange rate risk and political risk by arguing that interest rate disparities reflect exchange risk when assets are denominated in different currencies and reflect political risk when assets are issued in different countries, i.e., under different legal jurisdictions [15]. Dooley & Isard (1980) arrive at a similar conclusion by focusing on capital controls and an associated risk premium. They posit that interest rate differentials on assets denominated in the same currency but issued in different political jurisdictions reflect both the probability of capital controls and the supplies of outside government debt.

This research is also related to the work of Blomberg & Hess (1997); Bachman (1992); and Lobo & Tufte (1998). Blomberg & Hess (1997) use data from Gallup Surveys from Germany and UK and approval ratings data from the U.S to study how party-specific, election-specific and election-candidate-specific characteristics forecast bilateral exchange rates for the pound/dollar, mark/dollar and the pound/mark. They find that political risk variables beat the random walk in an out-of-sample exercise at 1-12 month horizons for the three currency pairs. Bachman (1992) also argues that the forward bias changes when the governing party changes. He arrives at this conclusion by studying elections in Canada, France, the United Kingdom and the United States between 1973 and 1985. In addition, Lobo & Tufte (1998) examine the weekly volatility of the Japanese Yen, British Pound, German Mark and Canadian Dollar relative to the U.S Dollar through five U.S. presidential terms and come up

[15] Some authors argue that existing interest rate differentials include a component that measures the differential ways assets are taxed across countries, but political risk measures the likelihood that scenario could change e.g.Blenman (1991), Levi (1977).

with some interesting findings: 1) the volatility of all four exchange rates is impacted by either the year in the electoral cycle and/or the political party in office; and 2)close to a U.S election, an unexpected dollar depreciation impacts the volatility of the Yen and Mark significantly more than does an unexpected dollar appreciation.

More recently, Filippou et al. (2015) show that global political risk is priced in the cross-section of currency momentum and that the global political environment affects all currencies. They find that investors following momentum strategies are compensated for the exposure to the global political risk of those currencies they hold. Lastly, Bailey & Chung (1995) study the role of political risk and movements in exchange rates in the cross-section of stock returns in Mexico and discover evidence of risk premia that are associated with these risks.

This is the first exercise to comprehensively test empirically the relationship between political risks and exchange rates. In contrast to most of the above studies, I construct a political risk measure for a broad set of countries (from both advanced and emerging economies) using data from the International Country Risk Guide Group (ICRG) that captures more than election-specific information[16]. I also construct a measure of economic and financial risk from the same source. The prior studies provide no empirical evidence on the relationship between emerging market exchange rates and political risks. Also, unlike Filippou et al. (2015), in investigating whether political risk explains currency excess returns, I focus on returns to the currency carry trade and country-specific political risk, rather than the global political environment.

[16]Bekaert et al. (2014) construct a similar proxy for country-specific political risk. The components of ICRG's political risk index are thoroughly explained in the appendix.

2.6 Political Risks in Finance

Finally, this research is related to several studies that document that political risks are priced in the equity markets. Particularly, Berkman et al. (2011) show that perceived global political crises (a proxy for disaster uncertainty) have a large impact on both the mean and volatility of world stock market returns. They find that their global political crisis risk measure is positively correlated with earnings-price ratio and the dividend yield. They also find that industries that are more crisis risk sensitive yield higher returns, indicating that this risk is priced in the stock markets. Pastor & Veronesi (2012) on the other hand show that uncertainty regarding government policies adversely affect stock prices. They conclude the political risk related to announcements of policy changes should lead to a drop in equity prices on average, with a comparable increase in the volatility and the correlation. Finally, Lugovsky (2012) and Addoum & Kumar (2013) both demonstrate that investors in the equity markets require a risk premium as a result of higher political uncertainty that arise during changes in political events, such as presidential elections or political regime change.

There is also a strand of literature that attempts to study the effects of political events on the options market. For example, Kelly et al. (2014) show that political uncertainty is priced in the options market, i.e. options with maturities around political events seem to be more expensive.

The last strand of literature considered here are those that attempt to link political risk to capital flight. Lensink et al. (2000) argue that political risk is a strong determinant of capital flight whereas Pastor & Veronesi (2013) posit that it is the main determinant of country-specific shocks.

The above studies also motivate my choice of political risk as a possible risk factor for currency excess returns.

CHAPTER 3: DATA AND DESCRIPTIVE STATISTICS

3.1 Data

This section describes the data used in the empirical analysis below. The data comprises spot and forward exchange rates(sampled monthly), the International Country Risk Guide (ICRG)'s political, financial and economic ratings and the VIX index. Advanced economy currencies[17] generally cover a sample period from January 1984 to November 2014 whereas with the exception of South Africa, Singapore and Malaysia, emerging market currencies generally begin from the mid-nineties to early 2000's and end in November 2014.

To ensure consistency and to avoid dealing with issues of missing data, sample sizes in my carry trade and portfolio analysis start in the 1990's. With regards to the portfolio analysis, this is motivated by the need to have a large enough cross-section of countries for my analysis. The all-country sample for portfolio analysis starts in January 1997 whereas that for the emerging markets sub-sample starts in January 1998.

The overall sample covers a cross-section of 34 countries and is driven largely by data availability and the need to impose filters to select currencies that are appropriate for the empirical analysis.

[17] G10 currencies excluding USA which is used as numeraire. The G10 currencies refer to the most heavily traded and most liquid currencies.

More specifically, the following conditions need to be met for a country-time combination to be included in the data set: (i) there has to be capital mobility and hence the possibility of carry trades, which excludes countries like China, (ii) there needs to be data available on the exchange rate, 1-month forward rate, and the country should be covered by ICRG's ratings. Observations that are known to be associated with large deviations from the covered interest rate parity condition are also excluded from my carry trade or other relevant analysis, i.e South Africa from July 1985 to August 1985; Malaysia from August 1998 to June 2005.[18]

The resulting sample covers 34 countries and exchange rates against the U.S.Dollar. The advanced economy currencies are: Australia (AUD), Canada (CAD), Germany/Euro (DEM/EUR)[19], Japan (JPY), New Zealand (NZD), Norway (NOK), Sweden (SEK), Switzerland (CHF) and United Kingdom (GBP). Emerging market currencies include: Argentina (ARS), Brazil (BRL), Chile (CLP), Colombia (COP), Mexico (MXN), Indonesia (IDR), India (INR), Korea (KRW), Malaysia (MYR), Philippines (PHP), Thailand (THB), Croatia (HRK), Czech Republic (CZK), Hungary (HUF), Poland (PLN), Romania (RON), Russia (RUB), Israel (ILS), Turkey (TRY), South Africa (ZAR), Singapore (SGD), Morocco (MAD), Egypt (EGP), Iceland (ISK) and Taiwan (TWD).

Even though some of these currencies may be traded on small foreign exchange markets and hence their relevance for carry trades questioned, the literature, e.g.Coudert & Mignon (2013) and Hoffman (2011), suggests that they may still be attractive

[18]The idea that interest rate differentials between countries is equivalent to the forward discount does not hold if covered interest rate parity condition is violated.

[19]Following Burnside (2014), I combine the data for the Deutschmark (DEM) and data for the Euro (EUR) and treat it as one currency. The Euro series starts from January 1999.

destinations for carry trades due to high interest rate differentials. Also, the forward contracts of all these currencies are available to investors, and hence carry trade strategies can easily be implemented.

I download spot (S_t) and one-month forward exchange rate ($F_{t,t+1}$) data from Bloomberg and use data collected by Craig Burnside to fill in missing data for some emerging market currencies. The supplemental data originates from Datastream. All exchange rates are against the USD (i.e. the perspective of a U.S. investor is taken) and are defined as USD price per foreign currency unit. Hence a rising exchange rate means that the foreign currency appreciates against the U.S. Dollar. I use the forward discount, $fd_{t,T} = s_t - f_{t,T}$ to measure the interest rate differential i.e. $i^f_{t,T} - i^h_{t,T}$ between the foreign country and the U.S.A due to covered interest parity. Akram et al. (2008) provide empirical evidence showing that this condition holds at various frequencies and it is a widely-used approximation in the foreign exchange literature. I use logs, expressed as lowercase letters, for the analysis.

3.2 Carry Trade Returns for Individual Currencies

The carry trade strategy for individual currencies can be implemented by buying a forward contract now for exchanging the domestic currency into foreign currency in the future. The investor may then convert the proceeds of the forward contract into the domestic currency at the future spot exchange rate. The excess return to this currency trading strategy for a one-month horizon is defined as: $r_{j,t+1} = s_{j,t+1} - f_{j,t}, forj = (1, ..., N)$, where N is the number of exchange rates at month t, $s_{j,t+1}$ is the log of the nominal spot exchange rate defined as the domestic price of foreign currency j at month $t+1$, and $f_{j,t}$ is the log of the one-month forward exchange rate j at month t, which is the rate agreed at month t for an exchange of currencies at $t+1$. An increase in $s_{j,t+1}$ implies a depreciation of the domestic currency, namely the US dollar[20]. Note that $r_{j,t+1}$ is also known as the FX excess return.

If UIP holds, then FX excess return will on average be equal to zero, and hence the carry trade will not be profitable. In other words, under UIP, the interest rate differential will on average be exactly offset by a commensurate depreciation of the investment currency. However, UIP fails extensively meaning carry trades tend to be profitable, e.g. Darvas (2009); Della Corte et al. (2009); Fong (2010); Burnside et al. (2011b).

3.3 Political Risk Data and Other Controls

The measure of country political risk is derived from the political risk rating of the International Country Risk Guide (ICRG). It is forward-looking and reflects political risk as opposed to an aggregate or broad measure of country risk which also incorporates macro-economic factors. While ICRG's rating is mostly subjective assessments of various country experts, there is ample evidence in the literature that it correctly reflects the adverse effects of political risk on investment values across countries[21].

The political risk rating is composed of 12 subcomponents namely: government

[20] For a domestic (U.S.) investor, currency excess returns may also be measured as the differential in the interest rates between the foreign and domestic currency minus the percentage change in the spot rate. This approach is similar to how I measure excess returns. I select my approach due to data availability.

[21] For example, Bekaert et al. (2014), Weiner (2010) show that the ICRG rating has the power to differentiate political risk effects.

stability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religious tensions, ethnic tensions, law and order, democratic accountability and bureaucratic quality.

This measure ranges from 0-100 with higher scores reflecting low level of political risk. Following Bekaert et al. (2014), I construct country political risk as the difference of the log inverse of the ICRG rating for a country and the log inverse of the equivalent rating for the U.S.A, i.e. $log(1/pr^f) - log(1/pr^{us})$.

I construct an equivalent measure for local macro-economic conditions using the combined ICRG ratings for economic and financial risk. I sum these ratings and similarly use the difference of the log inverse of the sum for the foreign country and the equivalent value for the U.S.A to capture country economic and financial risk, i.e. $log(1/macro^f) - log(1/macro^{us})$, where macro= economic risk rating + financial risk rating. In order to control for global factors I include the VIX index as a proxy for global risk aversion and the ted spread, which is an indicator of perceived credit risk in the general economy, to capture changes in aggregate liquidity.

3.4 Descriptive Statistics

Table 1 shows descriptive statistics on monthly spot changes (denominated in US dollar per unit of foreign currency). The means and standard deviations are annualized and expressed as percentages. The descriptive statistics indicate that over the study period about 40% of advanced-economy countries in the sample depreciated against the US dollar. For emerging market economies, 84% of countries in the sample depreciated against the US dollar, with the only exceptions being Croatia, The

Czech Republic, Singapore and Morocco. The volatilities of exchange rate changes for most developed economies hover around $10 - 11\%$ with a dispersion in volatility ranging from 6.67% for Canada to 12.28% for New Zealand. It is also interesting to note that the volatilities of exchange rates for European countries is strikingly similar. For emerging markets, dispersion in volatilities of exchange rates is much wider with a range of 5.04% for Egypt to a high of 26.32% for Indonesia.

Table 2 shows monthly statistics for political risk, economic and financial risk, forward discount and excess returns. A negative political risk value implies that country is seen more favorably than the U.S.A from a political risk standpoint, i.e. that country has a very low political risk. The same principle applies to economic and financial risk. There are some obvious patterns across advanced economies and emerging markets. Emerging markets generally tend to have higher political risk and forward discounts. With regards to excess returns, there are no clear patterns between the two groups. There are also no necessarily clear patterns in variables within groups.

Amongst advanced economies, Australia and New Zealand have the highest excess returns and forward discounts whereas Japan and Switzerland have the lowest values for both variables. Within the emerging markets group, Argentina, Brazil, Turkey, Egypt, Romania, Mexico and Hungary have the highest forward discounts and excess returns. All these emerging market economies, with the exception of Hungary, have high political risk values.

Table 1: Summary statistics of annualized exchange rate changes. The means and standard deviations of currency appreciation (depreciation) are expressed in percentages. Following (Burnside,2014), I combine the Euro and Deutschmark into one series. Euro series begins in January 1999.

Advanced	**Inclusion Date**	**Forex Changes**	
		Mean	**Std Dev**
Australia	12/1984-12/2014	0.83	11.91
Canada	01/1984-12/2014	−0.11	6.67
Germany/Euro	01/1984-12/2014	1.98	12.65
Great Britain	01/1984-12/2014	−0.14	10.28
Japan	01/1984-12/2014	3.09	11.59
New Zealand	12/1984-12/2014	2.43	12.28
Norway	01/1984-12/2014	−0.04	10.54
Sweden	01/1984-12/2014	−0.76	10.92
Switzerland	01/1984-12/2014	3.29	12.12
Emerging	**Inclusion Date**	**Forex Changes**	
		Mean	**Std Dev**
Argentina	01/2003-12/2014	−10.20	15.92
Brazil	01/2003-12/2014	−2.97	19.40
Chile	01/1998-12/2014	−1.39	11.00
Colombia	10/1997-12/2014	−3.69	11.76
Croatia	03/2004-12/2014	0.46	10.32
Czech Republic	06/1996-12/2014	1.98	12.65
Egypt	03/2004-12/2014	−4.02	5.04
Hungary	10/1997-12/2014	−1.37	13.74
Iceland	03/2004-12/2014	−2.32	13.31
India	03/1997-12/2014	−2.80	7.26
Indonesia	02/1995-12/2014	−4.70	26.32
Israel	08/2000-12/2014	−0.67	8.41
Korea Republic	03/1997-12/2014	−0.34	14.88
Malaysia	12/1984-12/2014	−0.61	9.66
Mexico	09/1995-12/2014	−3.55	9.90
Morocco	03/2004-12/2014	0.26	8.01
Philippines	12/1996-12/2014	−2.59	8.74
Poland	05/1995-12/2014	−0.99	13.25
Romania	03/2004-12/2014	−8.43	12.11
Russia	03/2004-12/2014	−10.52	16.20
Singapore	12/1984-12/2014	1.87	5.48
South Africa	01/1984-12/2014	−6.04	15.10
Taiwan	10/1996-12/2014	−0.49	5.57
Thailand	02/1995-12/2014	−0.78	10.99
Turkey	01/2003-12/2014	−15.35	15.91

Table 2: This table reports the mean of monthly statistics for country political risk, macro risk (economic and financial risk), forward discounts, excess returns and spot rates. The unit for the spot is U.S$/FCU whereas all other units are in basis points. Following (Burnside,2014), I combine the Euro and Deutschmark into one series. Euro series begins in January 1999.

Advanced Economies		Means			
	Political_Risk	**Macro_Risk**	**Forward_Dis.**	**Ex_Ret.**	**Spot**
Australia	−171.39	176.06	26.36	27.30	0.759 689
Canada	−279.08	−574.26	7.16	4.37	0.820 270
Germany/Euro	−179.07	−838.88	−10.64	0.11	0.567 770
Great Britain	40.64	−124.33	15.26	9.72	1.687 574
Japan	−39.36	−1080.75	−25.46	−13.13	0.007 754
New Zealand	−461.92	344.58	35.64	49.58	0.625 774
Norway	−528.42	−1574.06	18.10	13.09	0.154 943
Sweden	−509.53	−497.40	15.53	4.20	0.152 320
Switzerland	−785.78	−1513.35	−23.27	−1.99	0.710 662

Emerging Economies					
	Political_Risk	**Macro_Risk**	**Forward_Dis.**	**Ex_Ret.**	**Spot**
Argentina	1891.64	653.53	212.19	117.67	0.481 353
Brazil	2243.60	703.22	83.78	105.49	0.522 284
Chile	714.41	−597.68	25.06	10.01	0.001 874
Colombia	3861.71	343.49	51.10	24.05	0.000 511
Croatia	1267.25	285.16	14.82	13.93	0.164 129
Czech Republic	520.58	−160.70	11.25	21.18	0.041 881
Egypt	3255.62	107.36	96.15	85.28	0.202 802
Hungary	553.87	731.14	50.34	39.12	0.004 663
Iceland	−498.54	809.36	52.21	10.35	0.011 697
India	3100.00	−67.34	39.39	13.46	0.021 762
Indonesia	4037.26	429.85	69.88	−2.18	0.000 151
Israel	2567.03	−512.55	13.75	15.55	0.251 699
Korea Republic	734.76	−1156.92	22.23	12.31	0.000 898
Malaysia	1196.25	−975.53	6.72	−2.40	0.301 366
Mexico	1694.77	−7.74	74.37	40.78	0.095 373
Morocco	1758.29	−22.65	25.97	26.77	0.111 225
Philippines	2516.69	−128.22	35.92	11.11	0.022 278
Poland	574.00	65.17	58.45	42.94	0.310 023
Romania	1815.81	1674.38	49.01	44.43	0.439 193
Russia	3131.13	−108.42	45.09	1.29	0.047 569
Singapore	−28.10	−1240.41	−10.06	4.20	0.625 750
South Africa	1896.15	150.40	59.82	12.86	0.157 342
Taiwan	549.54	−1687.50	−7.60	−12.99	0.031 512
Thailand	2554.12	−537.54	21.95	10.38	0.029 069
Turkey	3499.96	1768.44	232.37	93.10	1.355 047

A negative political or macro risk value implies a more favorable outlook than the United States.

Table 3: Correlations matrix of variables for both advanced and emerging economies.

Advanced Economies

	Logspot	Political_Risk	Macro_Risk	Logvix	Forward_Discount	Ex_Returns
Logspot	1					
Political Risk	-0.046**	1				
Macro_Risk	0.165***	0.335***	1			
Logvix	-0.024	0.007	-0.017	1		
Forward_Discount	0.251***	-0.082***	0.401***	-0.009	1	
Ex_Returns	0.033*	-0.049**	0.018	-0.051**	0.145***	1

Emerging Economies

	Logspot	Political_Risk	Macro_Risk	Logvix	Forward_Discount	Ex_Returns
Logspot	1					
Political_Risk	-0.08***	1				
Macro_Risk	0.134***	0.226***	1			
Logvix	-0.003	0.069***	0.094***	1		
Forward_Discount	0.172***	0.283***	0.511***	0.152***	1	
Ex_Returns	0.045***	0.022	0.046**	-0.075***	0.062***	1

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

CHAPTER 4: THEORY, EMPIRICAL RESULTS AND ANALYSIS

4.1 Theory

Della Corte et al. (2014) provide a theoretical proof that shows that exchange rate risk premium is a positive function of country risk premium[22]. In this section, I outline their proof, which forms the theoretical basis for the empirical analysis carried out in this research.

They consider a simple one-period set-up with a domestic and a foreign economy. In the absence of arbitrage, there is a stochastic discount factor M_{t+1} that prices any domestic currency payoff P_{t+1} such that

$$\begin{aligned} P_t &= E_t[M_{t+1}P_{t+1}] \\ 1 &= E_t[M_{t+1}R_{t+1}] \end{aligned} \tag{1}$$

where $R_{t+1} = \frac{P_{t+1}}{P_t}$. Now if government bonds are risk-free, the price of a one-period government discount bond is given by:

$$P_t = E_t[M_{t+1}] = exp[-r_t] \tag{2}$$

where r_t denotes the riskless short rate. If there is a perceived country risk e.g. political risk, such that the recovery rate is zero for all investors in the event of such

[22] Coudert and Mignon (2013) show a similar proof for sovereign risk.

an occurrence, then the time-t bond price based on the risk-adjusted discount rate is:

$$P_t = exp[-(r_t + h_t)] \quad (3)$$

where h_t is the intensity of the risk level.[23] For simplicity, they assume that shocks are normally distributed, priced by a time-varying price of risk λ_t and that the only risk that matters is a shock to a country's risk intensity, ε^h_{t+1}.

Given the log of the pricing kernel $m_{t+1} = logM_{t+1}$ that prices assets in the home country, this implies that:

$$m_{t+1} = -r_t - h_t - 1/2(\lambda_t)^2 - \lambda_t \varepsilon^h_{t+1} \quad (4)$$

Equivalently, the pricing kernel M^*_{t+1} that prices returns in the foreign currency is obtained as follows:

$$1 = E_t[M^*_{t+1} R^*_{t+1}] \quad (5)$$

where $m^*_{t+1} = logM^*_{t+1}$ is given by:

$$m^*_{t+1} = -r^*_t - h^*_t - 1/2(\lambda_t)^{*2} - \lambda_t \varepsilon^{h*}_{t+1} \quad (6)$$

Now, if the spot price of one unit of foreign currency is denoted by $S_t(Dollar/FCU)$, then the domestic return of investing in a foreign asset is given by:

$$R_{t+1} = (\frac{S_{t+1}}{S_t}) R^*_{t+1} \quad (7)$$

They, along with Backus et al. (2001), show that this relation in combination with

[23] Also see Duffie et al. (2003)

(1) and (5) implies that:

$$\frac{M^*_{t+1}}{M_{t+1}} = \frac{S_{t+1}}{S_t} \tag{8}$$

Defining the log exchange rate $s_t = logS_t$, no arbitrage requires that the depreciation of the exchange rate is given by:

$$\begin{aligned} s_{t+1} - s_t &= m^*_{t+1} - m_{t+1} \\ &= [r_t - r^*_t] + [h_t - h^*_t] + 1/2[(\lambda_t)^2 - (\lambda^*_t)^2] + [\lambda_t \varepsilon^h_{t+1} - \lambda^*_t \varepsilon^{h*}_{t+1}] \end{aligned} \tag{9}$$

This relation shows that country or sovereign risk shocks have a contemporaneous effect on exchange rate. Moreover, the currency excess return given by:

$$rx_{t+1} = s_{t+1} - s_t + [r^*_t + h^*_t] - [r_t + h_t] \tag{10}$$

can be re-written as

$$rx_{t+1} = 1/2[\lambda^2_t - \lambda^{*2}_t] + [\lambda_t \varepsilon^h_{t+1} - \lambda^*_t \varepsilon^{h*}_{t+1}] \tag{11}$$

We see that excess returns is driven by the differences in the squared prices of risks as well as shocks to the hazard rates.

4.2 Empirical Methodology and Results

4.2.1 Bilateral Exchange Rates and Sovereign Political Risks

What are the channels through which exchange rates and sovereign risks are related? To answer this question I decompose sovereign risk into its known determinants and first run pooled regressions of the specification below using monthly data for both emerging markets and advanced economies:[24]

$$\Delta s_{i,t+1} = \alpha + \beta_1 \Delta PoliticalRisk_{i,t+1} + \beta_2 \Delta MacroRisk_{i,t+1} + \beta_3 \Delta GlobalRisk_{t+1} + \tau_{t+1} + \eta_i \tag{12}$$

The terms on the right hand side of equation(21) are the main determinants of sovereign risk. One aspect of political risk is it can indicate a country's willingness to settle its debt obligations whereas macroeconomic risk generally indicates a country's ability to repay its debts. Given that the currency carry trade essentially involves shorting bonds in low interest rate countries and buying bonds in high interest rate countries, it is reasonable to assume that the relative levels of country-specific risks between the two jurisdictions should influence the outcomes of such investments. The country risk metrics as specified are measured relative to the U.S.A. Global risk reflects general market risk aversion and I proxy this with the log of the VIX, which measures the implied volatility of the S&P500 index options for the next 30 days.[25] τ and η represent time and country fixed effects respectively[26].

The forward-looking political risk measure signals possible future policy changes which should affect exchange rates. Unfavorable political conditions could lead to capital flight and motivate currency traders to decrease their holdings of that currency

[24]Currencies from emerging markets and advanced economies have been known to have different characteristics e.g. Bansal & Dahlquist (2000) find that the UIP puzzle is confined to advanced economies. This motivates my decision to run separate pooled regressions for the two sets of economies.

[25]In alternative specifications, I use (i) the Ted Spread and (ii) the Ted Spread and the VIX index as proxies for global risk. In either case, the results are qualitatively similar to when only the VIX index is used as a proxy.

[26]τ and global risk aversion (VIX) may be highly correlated and hence the effects of the VIX may be subsumed by the time fixed effects in specifications in which they are both present. In fact,τ may be used as a proxy for global risk aversion. Hence, in interpreting results, I ignore those specifications with both the VIX and τ as the effects of the VIX are subsumed by τ.

or demand that the currency be traded at a discount. It is expected that an increasing (decreasing) level of political risk relative to the U.S.A should lead to a depreciation (appreciation) of the foreign currency relative to the U.S dollar, i.e. $\beta_1 < 0$. Similarly, it is expected $\beta_2 < 0$. Generally, unless a currency is known to be a popular "funding currency" for carry trade investments, $\beta_3 < 0$. As global risk aversion increases, currency traders are likely to unwind their positions leading to a flow of funds back to the "funding currency". Logs are used to dampen the effect of outliers and first differences are taken to ensure stationarity.

Tables 4&5 report results on the panel regressions. For emerging markets, I find significant negative coefficients for the political risk variable in the pooled regressions for various specifications. I find that increasing an emerging economy's level of political risk relative to the U.S.A by 100 basis points leads to a contemporaneous depreciation of that country's currency relative to the U.S dollar by about 20 basis points with an R^2 of about 6.16%. Furthermore, the coefficient for an emerging economy's level of economic and financial risk (relative to the U.S) is negative and statistically significant, even though the effect is not as strong as political risk. This finding seems to support the argument of some authors, e.g.Pastor & Veronesi (2013) that political risk is the more important country-specific component of sovereign risk. The significantly negative loading on economic and financial risk is also interesting, given the known finding that exchange rates are largely disconnected from economic fundamentals, i.e. Meese & Rogoff (1983)'s "disconnect puzzle".

The full advanced economy sub-sample show negative coefficients for both political risk and macro (economic and financial) risk even though none of them is statisti-

Table 4: Sovereign risk determinants and currency changes for emerging economies full sample(12/31/1993-11/28/2014): This table reports results from panel regressions of changes in monthly log exchange rates on changes in monthly log sovereign risk determinants for the full sample of emerging economies. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). Time and country dummy variable coefficients are not reported.

	(1)	(2)	(3)	(4)	(5)
	D.logspot	D.logspot	D.logspot	D.logspot	D.logspot
D.pol_r	-0.165*	-0.206*	-0.205*	-0.288*	-0.277*
	(-2.14)	(-2.70)	(-2.70)	(-2.53)	(-2.52)
D.macro_r		-0.0996**	-0.100**		-0.152*
		(-2.84)	(-2.87)		(-2.65)
D.logvix		-0.0558***	-0.0559***		-0.0113
		(-8.82)	(-8.80)		(-0.33)
N	5284	5284	5284	5284	5284
R^2	0.0142	0.0538	0.0616	0.2708	0.2786
Country Fixed Effects	Yes	No	Yes	Yes	Yes
Time Fixed Effects	No	No	No	Yes	Yes

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Sovereign risk determinants and currency changes for advanced economies full sample(01/31/1984-11/28/2014): This table reports results from panel regressions of changes in monthly log exchange rates on changes in monthly log sovereign risk determinants for the full sample of advanced economies. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). Time and country dummy variable coefficients are not reported.

	(1)	(2)	(3)	(4)	(5)
	D.logspot	D.logspot	D.logspot	D.logspot	D.logspot
D.pol_r	-0.0438	-0.0460	-0.0462	-0.0419	-0.0189
	(-1.43)	(-1.46)	(-1.47)	(-0.87)	(-0.37)
D.macro_r		-0.0121	-0.0121		-0.0741
		(-0.56)	(-0.56)		(-1.32)
D.logvix		-0.0327*	-0.0327*		0.0348
		(-2.64)	(-2.63)		(1.59)
N	3308	2682	2682	3308	2682
R^2	0.0011	0.0229	0.0233	0.5531	0.5524
Country Fixed Effects	Yes	No	Yes	Yes	Yes
Time Fixed Effects	No	No	No	Yes	Yes

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

cally significant. Indeed, the disconnect puzzle seems to be an advanced economy phenomenon. For both sets of economies, the significance of the VIX (the proxy for global risk) disappears once time fixed effects are controlled for. This suggests that the global risk aversion proxy is correlated with time.

The financial crisis of 2007 led directly to increased fears of a sovereign debt crisis globally. As Rohde (2011) points out, the Irish government for instance "nationalised" the enormous negative equity in the banking system by deciding to fully guarantee a large and inflated banking sector. Similar moves on the part of some governments, especially in the Eurozone, in addition to large public sector deficits, cast doubts on the ability and willingness of governments such as Greece, Ireland and Portugal to meet their sovereign debt obligations. I therefore test the above specifications for both the pre-crisis and post-crisis periods to capture the different risk aversion climates.

4.2.1.1 Pre and Post Crisis Panel Regressions

The sub-period regression results are similar to the results of the full sample for emerging economies. The pre-crisis and post-crisis sample regressions for emerging markets are similar in terms of the magnitude of the coefficients of the political risk variable even though the level of statistical significance seems to have increased in the post-crisis era. Emerging market political risk also seems to have become correlated with the time dummy variables in the post-crisis era. The other country-specific variable, macroeconomic risk also seems to have become more statistically significant in the post-crisis era.

With regards to advanced economies, even though there is no evidence that increasing political and macro risk significantly cause exchange rate depreciation in the pre-crisis period, there is evidence that political risk, in addition to global factors, does drive the relationship between sovereign risk and exchange rates in the post-crisis period. This reinforces the idea that the financial crisis has changed the dynamics of the relationship between sovereign risk and exchange rates.

Table 6: Emerging economies pre-crisis sub-sample: This table reports results from panel regressions of changes in monthly log exchange rates on changes in monthly log sovereign risk determinants for the **pre-crisis sub-sample (December 1993 - June 2007)** of our emerging economies. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). Time and country dummy variable coefficients are not reported.

	(1)	(2)	(3)	(4)	(5)
	D.logspot	D.logspot	D.logspot	D.logspot	D.logspot
D.pol_r	-0.182	-0.201*	-0.203*	-0.334*	-0.321*
	(-1.93)	(-2.17)	(-2.18)	(-2.45)	(-2.46)
D.macro_r		-0.0986	-0.101		-0.165*
		(-1.84)	(-1.90)		(-2.30)
D.logvix		-0.0448***	-0.0449***		0.150*
		(-4.95)	(-4.92)		(2.23)
N	3148	3148	3148	3148	3148
R^2	2.14%	3.04%	4.29%	16.59%	17.48%
Country Fixed Effects	Yes	No	Yes	Yes	Yes
Time Fixed Effects	No	No	No	Yes	Yes

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7: Emerging economies post-crisis sub-sample: This table reports results from panel regressions of changes in monthly log exchange rates on changes in monthly log sovereign risk determinants for the **post-crisis sub-sample (July 2007 - November 2014)** of our emerging economies. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). Time and country dummy variable coefficients are not reported.

	(1)	(2)	(3)	(4)	(5)
	D.logspot	D.logspot	D.logspot	D.logspot	D.logspot
D.pol_r	-0.0920	-0.218***	-0.212***	-0.0656	-0.0604
	(-1.41)	(-4.05)	(-3.91)	(-1.66)	(-1.48)
D.macro_r		-0.0980**	-0.0973**		-0.128*
		(-3.62)	(-3.64)		(-2.24)
D.logvix		-0.0641***	-0.0641***		0.0521**
		(-10.12)	(-10.05)		(3.06)
N	2136	2136	2136	2136	2136
R^2	0.78%	10.90%	11.54%	50.98%	51.56%
Country Fixed Effects	Yes	No	Yes	Yes	Yes
Time Fixed Effects	No	No	No	Yes	Yes

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8: Advanced economies pre-crisis sub-sample: This table reports results from panel regressions of changes in monthly log exchange rates on changes in monthly log sovereign risk determinants for the **pre-crisis sub-sample (January 1984 - June 2007)** of our developed economies. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). Time and country dummy variable coefficients are not reported.

	(1)	(2)	(3)	(4)	(5)
	D.logspot	D.logspot	D.logspot	D.logspot	D.logspot
D.pol_r	-0.0510	-0.00522	-0.00529	-0.0212	0.0119
	(-1.80)	(-0.17)	(-0.17)	(-0.49)	(0.24)
D.macro_r		0.0592*	0.0589*		-0.0290
		(2.89)	(2.86)		(-0.54)
D.logvix		0.00155	0.00155		0.154*
		(0.16)	(0.16)		(2.36)
N	2507	1881	1881	2507	1881
R^2	0.0015	0.0019	0.0022	0.5269	0.5104
Country Fixed Effects	Yes	No	Yes	Yes	Yes
Time Fixed Effects	No	No	No	Yes	Yes

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9: Advanced economies post-crisis sub-sample: This table reports results from panel regressions of changes in monthly log exchange rates on changes in monthly log sovereign risk determinants for the **post-crisis sub-sample (July 2007 - November 2014)** of our developed economies. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991). Time and country dummy variable coefficients are not reported.

	(1)	(2)	(3)	(4)	(5)
	D.logspot	D.logspot	D.logspot	D.logspot	D.logspot
D.pol_r	0.0210	-0.210**	-0.210**	-0.194	-0.202
	(0.31)	(-3.44)	(-3.42)	(-1.47)	(-1.62)
D.macro_r		-0.108	-0.107		-0.138*
		(-1.80)	(-1.78)		(-2.14)
D.logvix		-0.0715**	-0.0715**		-0.00661
		(-4.04)	(-4.02)		(-0.28)
N	792	792	792	792	792
R^2	0.0016	0.1240	0.1255	0.6085	0.6113
Country Fixed Effects	Yes	No	Yes	Yes	Yes
Time Fixed Effects	No	No	No	Yes	Yes

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.2.1.2 Individual Country Regressions

To learn about which countries' exchange rates are more sensitive to movements in political risk and the various other determinants of sovereign risk, I run similar regressions as above for individual countries, i.e. the specification:

$$\Delta s_{t+1} = \alpha + \beta_1 \Delta PoliticalRisk_{t+1} + \beta_2 \Delta MacroRisk_{t+1} + \beta_3 \Delta GlobalRisk_{t+1} + \mu_{t+1} \tag{13}$$

The individual country regression results confirm the panel regression results and offer further insights. The currencies of Mexico, Romania, India, South Africa, Thailand, Indonesia and Malaysia seem to have the greatest sensitivity to political risk. However, increasing political risk is not a significant cause of currency depreciation for every emerging market currency e.g. Chile and Colombia. Colombia puzzlingly returns a positive and significant coefficient on political risk. It is also interesting to note that increasing political risk ratings for Canada and Australia relative to the US leads to a depreciation of the Canadian and Australian dollar respectively. I also find that for most countries (i.e. both emerging and advanced), increasing global risk aversion leads to a depreciation of the local currency relative to the US dollar. The only exceptions are Japan and Switzerland. Increasing global risk aversion actually leads to a statistically significant appreciation of the Japanese Yen and seems to have no significant effect on the Swiss Franc. This finding, especially for Japan, is consistent with the literature. The likely explanation is that in times of high risk aversion currency traders unwind positions leading to a return of funds to countries like Japan and Switzerland whose currencies are well known "funding currencies" in the currency markets. I present results of the country-level regressions in tables 10-11.

Table 10: Advanced country-level regressions: The dependent variable is the log change in spot exchange rate and all exchange rates use the USD as the base currency. The table shows estimates of t-stats (in square brackets) based on HAC standard errors following Newey and West (1987) and Andrews (1991).

	bpol	bmacro	bglobal	R^2	N
Australia	-0.169	0.0317	-0.0881	14.59%	298
	[-1.58]	[0.34]	[-4.47]		
Canada	-0.184	-0.028	-0.0574	14.12%	298
	[-2.06]	[-0.44]	[-4.77]		
Germany	-0.0671	-0.07	-0.0212	1.30%	298
	[-0.53]	[-0.67]	[-1.22]		
Great Britain	-0.0233	-0.0944	-0.0136	1.11%	298
	[-0.23]	[-1.14]	[-0.91]		
Japan	-0.0158	-0.0113	0.0341	2.56%	298
	[-0.17]	[-0.12]	[2.94]		
Norway	-0.0529	-0.029	-0.038	2.87%	298
	[-0.54]	[-0.31]	[-1.86]		
New Zealand	-0.0135	-0.0014	-0.0699	8.87%	298
	[-0.11]	[-0.01]	[-4.23]		
Sweden	-0.0267	0.0189	-0.0383	2.69%	298
	[-0.18]	[0.29]	[-2.19]		
Switzerland	0.164	0.151	0.00176	1.50%	298
	[1.12]	[1.42]	[0.11]		

4.2.2 Carry Trade Excess Returns and Sovereign Risk

As is common in the literature, e.g. Della Corte et al. (2014), Menkhoff et al. (2010), Rafferty (2010), I explore a risk-based channel to try to understand the relationship between exchange rates and the country-specific determinants of sovereign risk, especially for emerging markets. If priced, then the argument is that the observed negative relationship between exchange rates and the local determinants of sovereign risk is because investors demand a higher risk premium for holding currencies with higher country-specific sovereign risks. Of course such an explanation also

Table 11: Emerging country-level regressions: The dependent variable is the log change in spot exchange rate and all exchange rates use the USD as the base currency. The table shows estimates of t-stats (in square brackets) based on HAC standard errors following Newey and West (1987) and Andrews (1991).

	bpol	bmacro	bglobal	R^2	N
Argentina	-0.206	-0.184	-0.00399	2.47%	215
	[-1.14]	[-1.19]	[-0.20]		
Brazil	0.0535	-0.119	-0.117	9.15%	215
	[0.47]	[-1.30]	[-4.06]		
Chile	0.0564	-0.129	-0.0808	15.51%	215
	[0.47]	[-1.41]	[-3.13]		
Colombia	0.123	-0.0175	-0.0726	12.36%	215
	[3.07]	[-0.16]	[-4.11]		
Croatia	-0.112	-0.0259	-0.0408	4.42%	191
	[-0.78]	[-0.26]	[-2.05]		
Czech Rep	-0.0996	0.103	-0.0388	3.01%	221
	[-0.66]	[1.08]	[-2.30]		
Egypt	0.0283	0.0421	-0.00285	0.69%	215
	[0.66]	[0.87]	[-0.54]		
Hungary	0.0133	-0.014	-0.0664	6.43%	215
	[0.08]	[-0.11]	[-3.11]		
Iceland	-0.224	-0.00247	-0.063	6.72%	210
	[-0.83]	[-0.09]	[-1.96]		
India	-0.092	-0.0749	-0.0421	10.40%	215
	[-2.30]	[-1.22]	[-4.34]		
Indonesia	-0.811	-0.513	-0.0754	14.07%	237
	[-1.56]	[-1.45]	[-2.83]		
Israel	-0.0885	-0.0251	-0.0397	6.57%	215
	[-1.38]	[-0.39]	[-3.57]		
Malaysia	-0.34	0.0442	-0.0194	3.01%	251
	[-1.25]	[0.28]	[-1.94]		
Mexico	-0.208	-0.067	-0.0784	17.87%	230
	[-2.11]	[-0.86]	[-4.89]		
Morocco	-0.0985	0.0737	-0.0283	4.24%	215
	[-0.96]	[1.16]	[-2.75]		
Philippines	-0.0307	-0.0151	-0.0359	4.52%	215
	[-0.31]	[-0.22]	[-3.34]		
Poland	-0.163	-0.0743	-0.0936	13.05%	234
	[-1.10]	[-0.76]	[-5.30]		
Romania	-0.264	-0.0976	-0.0441	6.30%	210
	[-1.76]	[-1.67]	[-2.78]		
Russia	-0.537	-0.093	-0.0878	12.57%	215
	[-1.33]	[-1.47]	[-1.63]		
Singapore	-0.0681	0.0241	-0.0138	1.80%	298
	[-0.66]	[0.55]	[-2.09]		
South Africa	-0.392	-0.157	-0.0835	10.58%	251
	[-2.43]	[-1.33]	[-4.22]		
South Korea	-0.338	-0.0426	-0.0698	6.41%	215
	[-1.50]	[-0.37]	[-3.86]		
Taiwan	-0.0551	-0.0172	-0.0218	4.25%	217
	[-1.07]	[-0.47]	[-3.55]		
Thailand	-0.26	-0.191	-0.0276	7.28%	237
	[-1.79]	[-1.89]	[-3.15]		
Turkey	-0.0837	-0.135	-0.105	12.21%	215
	[-0.82]	[-2.49]	[-4.54]		

suggests that the country-specific sovereign risks should be able to forecast currency excess returns in the cross-section.

4.2.2.1 Currency Portfolios

To explore the risk-based channel, I carry out asset pricing tests in the spirit of Fama & French (1993). The use of their portfolio formation approach in the foreign currency literature was pioneered by Lustig et al. (2011) and has since become popular in the forex literature. The idea here is to regress a time series of currency excess returns or portfolios of currency excess returns on a set of candidate risk factors that are supposed to explain the cross-section of excess returns. As Fama & French (1993) indicate, in such regressions, a well-specified asset pricing model produces intercepts that are indistinguishable from 0. Hence, the estimated intercepts provide a simple test of how well the model performs.

I begin by forming currency portfolios based on local political risk and macro (financial and economic) risk. At the end of each month t, I first rank currencies based on macro risk and sort into three groups, with the bottom third categorized as the low macro risk group (LM), the middle third categorized as the medium macro-risk group (MM), and the final third categorized as the high-macro risk group (HM)[27]. Then within each macro risk group at time t, I rank countries based on political risk and sort into two groups using the median as the breakpoint. Hence we have high (HP) and low (LP) political risk groups under each macro-risk group. I do a double-sort to disentangle the effects of political risk from macro risk, as against doing just a

[27] The choice to form three portfolios is completely arbitrary. For some sub-samples, I form two macro-risk portfolios instead of three and the results are qualitatively similar.

single sort on political risk. At time t, I construct six portfolios from the above sorts, i.e. from the intersection of the three macro and two political risk groups. [28]

I then compute the log currency excess returns of each portfolio at time t by taking the simple average of the log currency excess returns of the constituents of each portfolio, i.e. portfolio excess returns is simply:

$$r_t^{portfolio} = \frac{1}{N}\sum_i r_{i,t} \tag{14}$$

where N = number of currencies in portfolio.

Portfolios are re-balanced at each time step (i.e. monthly) to get a time series of returns for each portfolio. The total number of countries in portfolios may vary over time and changing country risk profiles are appropriately captured by the monthly portfolio formation process. The analysis is carried out on various sub-samples of the data i.e. (full sample, pre-crisis and post-crisis for both the all-country sample and the emerging market sub-sample). Sample start dates also vary due to the need to have data on enough countries for the sorting and portfolio formation process. For example, data used to form our emerging market portfolios start from 1/31/1998 whereas data used for portfolios consisting of all countries start from 1/31/1997. Tables 12-17 provide summary statistics on the currency portfolios.

Portfolios formed on political and macro risk produce a wide range of average excess returns, from −0.09% to 12.26% per annum. Summary statistics are summarized

[28] The six portfolios belong to the following groups: low macro risk and low political risk; low macro risk and high political risk; medium macro risk and low political risk; medium macro risk and high political risk; high macro risk and high political risk and finally high macro risk and low political risk.

below. Monthly mean returns are annualized by multiplying by 12 whereas monthly standard deviations are annualized by multiplying by $\sqrt{12}$.

1. Full Sample: In the all-country sample, average excess returns consistently increase from low macro risk to high macro risk for both political risk groups. Similarly, we see increases in average excess returns from low to high political risk under both the high and low risk macro groups.

   Annualized excess returns range from -0.31% for low political low macro risk portfolio to 7.16% for the high political high macro risk portfolio. Returns are negatively skewed and kurtosis range from 4.2 to 11.01. T-statistics for monthly returns range from -0.17 to 2.3.

   The full emerging markets sub-sample exhibits similar statistics and similar pattern of statistics. Annualized excess returns range from 0.52% to 9.43%.

2. Pre-Crisis Sub-sample: In the all-country sample, portfolio excess returns increase from low to high political risk group under both the low and high macro risk groups, but decrease from low to high political risk under the medium macro risk group. Similarly, whereas there is an increase in excess returns from low macro risk to high macro risk under the low political risk group, the pattern is less consistent under the high political risk group.

   Annualized excess returns range from -0.99% for the low political low macro risk group to 9.74% for the high political high macro risk group. There is a mixture of positive and negative skewness in the return distribution whereas kurtosis range from 2.76 to 12.39. T-stats for monthly excess returns range from 0.23 to 2.94.

Under the emerging markets sub-sample, excess returns on portfolios sorted on macro risk increase from low to high under both political risk groups whereas the relationship is less consistent for portfolios sorted on political risk. Annualized excess returns range from −0.09% for high political low macro risk portfolio to 12.26% for the high political high macro risk portfolio. Low political risk portfolio returns (LP/LM; LP/HM) are positively skewed whereas high political risk portfolios (HP/LM; HP/HM) are negatively skewed. Kurtosis ranges from 2.94 to 15.39. All but the low macro risk high political risk portfolio have monthly excess returns that are more than 2.3 standard errors from 0.

3. Post-Crisis Sub-sample: The clearest evidence of political risk being priced is seen in our post-crisis sub-samples (for both all-country sample and emerging markets sub-sample). Under each macro risk group, there is a consistent increase in excess returns from the low political risk to the high political risk portfolios. Annualized excess returns range from −0.51% for the low political risk medium macro risk group to 3.52% for the high macro risk high political risk group under the all country sample whereas under the emerging markets sub-sample, the range is −0.97% for the high macro risk low political risk group to 4.27% for the high macro risk high political risk group.

   On the contrary, there are no such clear cut increases in excess returns for macro-risk portfolios in both the all country sample and emerging markets sub-sample.

For example, whereas excess returns increase monotonically from low macro risk to high macro risk countries under the high-political risk group, we see no such increases in excess returns from low to high macro risk countries under the low political risk group. This pattern is true for both emerging markets and the all-country sample.

The monthly standard deviations hover around 2−3%. The return distributions are negatively skewed and tend to have kurtosis from 4 to 6. Understandably, the t-statistics for the mean monthly returns are small due to the relatively small sample size (N=89) and the relatively large standard deviations.

4.2.2.2 Risk Factors

I construct the risk premium associated with political risk as the difference between the simple average return on the three high political risk portfolios and the three low political risk portfolios[29]. This gives me a time series of high minus low political risk excess returns (hpmlp). Similarly, I construct a second risk factor measuring macro risk as the difference between the simple average on the two high macro-risk portfolios and the two low macro risk portfolios to obtain a time series of high minus low macro risk excess returns (hemle). To control for market risk, I find the average excess returns of all foreign currency portfolios, similar to the dollar risk factor of Lustig et al. (2011).

[29]In some cases, due to data limitations, there are only four portfolios instead of six, in which case the risk factor is constructed as the difference between the simple average on the two high minus the two low

Table 12: Summary statistics for portfolios of the full all-country sample (1/31/1997 - 11/28/2014). Means are annualized by multiplying monthly means by 12 whereas standard deviations are annualized by multiplying monthly standard deviations by $\sqrt{12}$. T-statistics for the monthly means are reported in parenthesis and there are 215 observations. Annualized risk premiums (ann. risk pre.) are also reported.

						All_Full						
			Mean				***Std***				***Skew***	
		LM	MM	HM		LM	MM	HM		LM	MM	HM
Monthly	LP	-0.03%	0.14%	0.44%	LP	2.23%	2.46%	3.24%	LP	-0.24	-1.13	-0.64
		-(0.17)	(0.84)	(2.01)								
	HP	0.05%	0.07%	0.60%	HP	1.91%	2.04%	3.80%	HP	-0.32	-0.72	-1.25
		(0.37)	(0.48)	(2.30)								
			Kurt				***Corr***			***Ann.***	***Risk Pre.***	
		LM	MM	HM		Hpmlp	Hemle	mkt_ex_ret		Hpmlp	Hemle	
	LP	4.24	6.65	5.34	Hpmlp	1.00			Mean	0.61%	6.10%	
					Hemle	0.18	1.00		Std Dev	5.51%	7.71%	
	HP	4.64	4.77	11.01	mkt_ex_ret	-0.32	0.39	1.00				
			Mean				***Std***				***SR***	
		LM	MM	HM		LM	MM	HM		LM	MM	HM
Annualized	LP	-0.31%	1.69%	5.33%	LP	7.73%	8.51%	11.22%	LP	-0.04	0.20	0.48
	HP	0.59%	0.80%	7.16%	HP	6.61%	7.08%	13.16%	HP	0.09	0.11	0.54

Note:
LP = Low Political Risk Portfolio
HP = High Political Risk Portfolio
LM = Low Macro Risk Portfolio
MM = Medium Macro Risk Portfolio
HM = High Macro Risk Portfolio

Table 13: Summary statistics for portfolios of the pre-crisis all-country sub-sample (1/31/1997 - 6/29/2007). There are 126 observations.

							All_Pre_Crisis					
			Mean				***Std***				***Skew***	
		LM	MM	HM		LM	MM	HM		LM	MM	HM
Monthly	LP	-0.08%	0.27%	0.74%	LP	1.93%	2.07%	2.81%	LP	0.49	-0.49	0.17
		-(0.48)	(1.47)	(2.94)								
	HP	0.04%	-0.08%	0.81%	HP	1.74%	1.89%	4.14%	HP	0.24	-1.23	-1.46
		(0.23)	-(0.50)	(2.20)								
			Kurt				***Corr***			***Ann.***	***Risk Pre.***	
		LM	MM	HM		Hpmlp	Hemle	mkt_ex_ret			Hpmlp	Hemle
	LP	2.76	4.54	3.46	Hpmlp	1.00				Mean	-0.64%	9.55%
					Hemle	0.41	1.00			Std Dev	6.26%	8.76%
	HP	4.36	5.98	12.39	mkt_ex_ret	-0.18	0.25	1.00				
			Mean				***Std***				***SR***	
		LM	MM	HM		LM	MM	HM		LM	MM	HM
Annualized	LP	-0.99%	3.25%	8.84%	LP	6.68%	7.18%	9.74%	LP	-0.15	0.45	0.91
	HP	0.43%	-1.00%	9.74%	HP	6.02%	6.54%	14.34%	HP	0.07	-0.15	0.68

Table 14: Summary statistics for portfolios of the post-crisis all-country sub-sample (7/31/2007 - 11/28/2014). There are 89 observations.

							All_Post					
			Mean				***Std***				***Skew***	
		LM	MM	HM		LM	MM	HM		LM	MM	HM
Monthly	LP	0.05%	-0.04%	0.03%	LP	2.61%	2.92%	3.74%	LP	-0.68	-1.30	-0.97
		(0.20)	-(0.14)	(0.08)								
	HP	0.07%	0.28%	0.29%	HP	2.14%	2.24%	3.26%	HP	-0.75	-0.37	-0.76
		(0.30)	(1.17)	(0.85)								
			Kurt				***Corr***			***Ann.***	***Risk Pre.***	
		LM	MM	HM		Hpmlp	Hemle	mkt_ex_ret		Hpmlp	Hemle	
	LP	4.48	6.22	5.21	Hpmlp	1.00			Mean	2.38%	1.21%	
					Hemle	-0.48	1.00		Std Dev	4.20%	5.69%	
	HP	4.54	3.58	4.54	mkt_ex_ret	-0.58	0.69	1.00				
			Mean				***Std***				***SR***	
		LM	MM	HM		LM	MM	HM		LM	MM	HM
Annualized	LP	0.66%	-0.51%	0.36%	LP	9.04%	10.10%	12.95%	LP	0.07	-0.05	0.03
	HP	0.81%	3.32%	3.52%	HP	7.41%	7.76%	11.28%	HP	0.11	0.43	0.31

Table 15: Summary statistics for portfolios of the full emerging markets sub-sample (1/30/1998 - 11/28/2014). There are 203 observations.

Eme_Full											
		Mean			***Std***				***Skew***		
		LM	HM		LM	HM			LM	HM	
Monthly	LP	0.23%	0.44%	LP	2.20%	3.08%		LP	-0.92	-0.67	
		(1.49)	(2.06)								
	HP	0.04%	0.79%	HP	1.83%	3.45%		HP	-0.64	-1.40	
		(0.34)	(3.24)								
		Kurt				***Corr***			***Ann.***	***Risk Pre.***	
		LM	HM		hpmlp	hemle	mkt_ex_ret		hpmlp	hemle	
	LP	6.82	5.03	hpmlp	1.00			Mean	0.94%	5.74%	
				hemle	0.23	1.00		Std Dev	6.53%	6.54%	
	HP	4.08	14.34	mkt_ex_ret	-0.28	0.38	1.00				
		Mean			***Std***				***S R***		
		LM	HM		LM	HM			LM	HM	
Annualized	LP	2.75%	5.34%	LP	7.61%	10.67%		LP	0.36	0.50	
	HP	0.52%	9.43%	HP	6.35%	11.95%		HP	0.08	0.79	

Table 16: Summary statistics for portfolios of the emerging markets pre-crisis sub-sample (1/30/1998 - 06/29/2007). There are 114 observations.

				Eme_Pre						
		Mean			***Std***				***Skew***	
		LM	HM		LM	HM			LM	HM
Monthly	LP	0.38%	0.83%	LP	1.69%	2.44%		LP	0.34	0.35
		(2.37)	(3.62)							
	HP	-0.01%	1.02%	HP	1.62%	3.90%		HP	-0.59	-1.65
		-(0.05)	(2.80)							
		Kurt				***Corr***			***Ann.***	***Risk Pre.***
		LM	HM		hpmlp	hemle	mkt_ex_ret		hpmlp	hemle
	LP	2.94	3.36	hpmlp	1.00			Mean	-1.10%	8.85%
				hemle	0.45	1.00		Std Dev	7.48%	7.42%
	HP	4.66	15.39	mkt_ex_ret	-0.03	0.30	1.00			
		Mean			***Std***				***SR***	
		LM	HM		LM	HM			LM	HM
Annualized	LP	4.51%	9.95%	LP	5.86%	8.47%		LP	0.77	1.18
	HP	-0.09%	12.26%	HP	5.62%	13.51%		HP	-0.02	0.91

Table 17: Summary statistics for portfolios of the emerging markets post-crisis sub-sample (7/31/2007 - 11/28/2014). There are 89 observations.

							Eme_Post					
			Mean				***Std***				***Skew***	
		LM	MM	HM		LM	MM	HM		LM	MM	HM
Monthly	LP	0.05%	0.17%	-0.08%	LP	2.56%	2.88%	3.79%	LP	-1.11	-0.78	-0.70
		(0.18)	(0.57)	-(0.20)								
	HP	0.14%	0.18%	0.36%	HP	2.02%	2.52%	3.22%	HP	-0.90	-0.54	-1.06
		(0.67)	(0.68)	(1.04)								
			Kurt				***Corr***			***Ann.***	***Risk Pre.***	
		LM	MM	HM		hpmlp	hemle	mkt_ex_ret		hpmlp	hemle	
	LP	6.09	4.07	4.04	hpmlp	1.00			Mean	2.16%	0.51%	
					hemle	-0.45	1.00		Std Dev	4.07%	6.55%	
	HP	3.94	4.02	5.26	mkt_ex_ret	-0.51	0.68	1.00				
			Mean				***Std***				***S R***	
		LM	MM	HM		LM	MM	HM		LM	MM	HM
Annualized	LP	0.57%	2.08%	-0.97%	LP	8.86%	9.98%	13.13%	LP	0.06	0.21	-0.07
	HP	1.71%	2.19%	4.27%	HP	6.98%	8.75%	11.16%	HP	0.25	0.25	0.38

Thus risk factors are constructed as follows:

$$hpmlp_t = \frac{1}{3}(LM_t/HP_t+MM_t/HP_t+HM_t/HP_t)-\frac{1}{3}(LM_t/LP_t+MM_t/LP_t+HM_t/LP_t) \tag{15}$$

$$hemle_t = \frac{1}{2}(HM_t/HP_t + HM_t/LP_t) - \frac{1}{2}(LM_t/HP_t + LM_t/LP_t) \tag{16}$$

$$r_t^{market} = \frac{1}{N}\sum_i r_{i,t} \tag{17}$$

where N = number of currencies in sample.

The risk factors are the returns on a zero-cost strategy that goes long on the high risk portfolios (political and macro) and short on low risk portfolios (political and macro) and is interpreted similarly to the carry trade risk factor HML_{FX} of Lustig et al. (2011). The average returns on these portfolios are the average premiums per unit of risk for the candidate risk factors in returns.

From tables 12 to 17, it can be seen that whereas the average risk premiums associated with macro risk has decreased from the pre-crisis to the post-crisis era, that for political risk has increased from the pre-crisis to the post-crisis era. For instance, *hpmlp* increases from −0.64% to 2.38% whereas *hemle* decreases from 9.55% to 1.21% under the all country full sample.

4.2.2.3 Time-Series Regression

To test whether local sovereign risk factors explain currency excess returns, I run the following time series regressions for various portfolios:

$$r_t^{portfolio} = \alpha + \beta_1 hpmlp_t + \beta_2 hemle_t + \beta_3 r_t^{market} + \mu_t \tag{18}$$

If political risk is priced, the risk premium associated with political risk should increase monotonically from low political risk portfolios to high political risk portfolios and should also be statistically significant. A similar argument can be made for macro risk. Also, if the proposed model does a good job, intercepts should be statistically indistinguishable from 0.

Tables 18 to 23 report the results of the time series regressions. Under all sub-samples risk premiums increase from low political risk portfolios to high political risk portfolios under all macro risk portfolios. The results appear more convincing under the post-crisis sub-samples. Similarly, risk premiums on portfolios sorted on macro risk increase monotonically from low to high under all political risk groups.

Table 18: Tables 18-23 report results of the regression $r_t^{portfolio} = \alpha + \beta_1 hpmlp_t + \beta_2 hemle_t + \beta_3 r_t^{market} + \mu_t$ for various sub-samples. Table 18 reports results for the full all-country sample.

All_Full

hpmlp	LM	MM	HM
LP	-0.176	-0.377	-0.695
HP	0.403	0.426	0.923

hemle	LM	MM	HM
LP	-0.217	0.071	0.601
HP	-0.295	-0.137	0.887

mkt_ret	LM	MM	HM
LP	0.988	0.873	0.856
HP	0.900	0.784	1.032

const.	LM	MM	HM
LP	0.000	0.000	0.001
HP	0.001	0.000	0.000

t (hpmlp)	LM	MM	HM
LP	-6.17	-7.11	-9.15
HP	6.46	3.79	12.97

t (hemle)	LM	MM	HM
LP	-8.83	1.61	10.99
HP	-6.71	-2.33	23.92

t (mkt_ret)	LM	MM	HM
LP	51.43	19.62	14.06
HP	17.76	10.41	21.98

t (const.)	LM	MM	HM
LP	-0.79	0.29	0.91
HP	1.11	0.18	-0.44

se (hpmlp)	LM	MM	HM
LP	0.028	0.053	0.076
HP	0.062	0.112	0.071

se (hemle)	LM	MM	HM
LP	0.025	0.044	0.055
HP	0.044	0.059	0.037

se (mkt_ret)	LM	MM	HM
LP	0.019	0.044	0.061
HP	0.051	0.075	0.047

se (const.)	LM	MM	HM
LP	0.000	0.001	0.001
HP	0.001	0.001	0.001

R-squared	LM	MM	HM
LP	0.949	0.841	0.895
HP	0.778	0.559	0.952

Note:
LP = Low Political Risk Portfolio
HP = High Political Risk Portfolio
LM = Low Macro Risk Portfolio
MM = Medium Macro Risk Portfolio
HM = High Macro Risk Portfolio

Table 19: Portfolio regressions for the all-country pre-crisis sub-sample.

All_Pre															
		hpmlp				**hemle**				**mkt_ret**				**const.**	
	LM	MM	HM		LM	MM	HM		LM	MM	HM		LM	MM	HM
LP	-0.166	-0.353	-0.795	LP	-0.196	0.053	0.671	LP	0.995	0.885	0.726	LP	-0.001	0.001	0.000
HP	0.354	0.350	0.983	HP	-0.255	-0.095	0.878	HP	0.848	0.641	1.118	HP	0.001	-0.001	0.000
		t (hpmlp)				**t (hemle)**				**t (mkt_ret)**				**t (const.)**	
	LM	MM	HM		LM	MM	HM		LM	MM	HM		LM	MM	HM
LP	-5.47	-6.50	-9.64	LP	-7.96	1.12	11.89	LP	34.97	17.78	8.00	LP	-2.02	0.81	0.36
HP	4.56	2.61	12.4	HP	-5.17	-1.37	19.97	HP	11.15	5.16	14.53	HP	1.34	-0.56	-0.17
		se (hpmlp)				**se (hemle)**				**se (mkt_ret)**				**se (const.)**	
	LM	MM	HM		LM	MM	HM		LM	MM	HM		LM	MM	HM
LP	0.030	0.054	0.082	LP	0.025	0.047	0.056	LP	0.028	0.050	0.091	LP	0.000	0.001	0.001
HP	0.078	0.134	0.079	HP	0.049	0.069	0.044	HP	0.076	0.124	0.077	HP	0.001	0.002	0.001
		R-squared													
	LM	MM	HM												
LP	0.931	0.791	0.817												
HP	0.667	0.362	0.952												

Table 20: Portfolio regressions for the all-country post-crisis sub-sample.

All_Post															
	hpmlp				**hemle**				**mkt_ret**				**const.**		
	LM	MM	HM		LM	MM	HM		LM	MM	HM		LM	MM	HM
LP	-0.327	-0.417	-0.452	LP	-0.343	0.102	0.385	LP	0.993	0.848	1.065	LP	0.001	0.000	0.000
HP	0.514	0.650	0.639	HP	-0.477	-0.175	0.795	HP	1.023	0.932	0.951	HP	-0.001	0.001	0.000
	t (hpmlp)				**t (hemle)**				**t (mkt_ret)**				**t (const.)**		
	LM	MM	HM		LM	MM	HM		LM	MM	HM		LM	MM	HM
LP	-9.45	-3.14	-9.20	LP	-8.59	0.88	7.98	LP	36.15	9.37	33.95	LP	2.44	-0.32	0.12
HP	6.59	4.94	8.07	HP	-6.19	-1.24	14.70	HP	20.99	13.15	21.49	HP	-0.77	0.70	0.30
	se (hpmlp)				**se (hemle)**				**se (mkt_ret)**				**se (const.)**		
	LM	MM	HM		LM	MM	HM		LM	MM	HM		LM	MM	HM
LP	0.035	0.133	0.049	LP	0.040	0.116	0.048	LP	0.027	0.090	0.031	LP	0.000	0.001	0.001
HP	0.078	0.132	0.079	HP	0.077	0.141	0.054	HP	0.049	0.071	0.044	HP	0.001	0.001	0.001
	R-squared														
	LM	MM	HM												
LP	0.970	0.878	0.974												
HP	0.906	0.793	0.964												

Table 21: Portfolio regressions for the emerging markets full sample.

Eme_Full											
	hpmlp			**hemle**			**mkt_ret**			**const.**	
	LM	HM		LM	HM		LM	HM		LM	HM
LP	-0.120	-0.670	LP	-0.163	0.591	LP	0.919	0.843	LP	0.001	0.000
HP	0.323	0.880	HP	-0.403	0.837	HP	0.835	0.919	HP	0.000	0.001
	t (hpmlp)			**t (hemle)**			**t (mkt_ret)**			**t (const.)**	
	LM	HM		LM	HM		LM	HM		LM	HM
LP	-2.56	-11.20	LP	-2.91	9.19	LP	21.74	16.44	LP	1.81	0.32
HP	5.43	18.77	HP	-6.40	14.95	HP	16.45	21.74	HP	0.39	1.81
	se (hpmlp)			**se (hemle)**			**se (mkt_ret)**			**se (const.)**	
	LM	HM		LM	HM		LM	HM		LM	HM
LP	0.047	0.060	LP	0.056	0.064	LP	0.042	0.051	LP	0.001	0.001
HP	0.060	0.047	HP	0.063	0.056	HP	0.051	0.042	HP	0.001	0.001
	R-squared										
	LM	HM									
LP	0.842	0.903									
HP	0.725	0.936									

Table 22: Portfolio regressions for the emerging markets pre-crisis sub-sample.

Eme_Pre											
	hpmlp			**hemle**			**mkt_ret**			**const.**	
	LM	HM		LM	HM		LM	HM		LM	HM
LP	-0.156	-0.689	LP	-0.046	0.635	LP	0.829	0.674	LP	0.001	0.001
HP	0.308	0.844	HP	-0.362	0.954	HP	0.667	0.829	HP	0.001	0.001
	t (hpmlp)			**t (hemle)**			**t (mkt_ret)**			**t (const.)**	
	LM	HM		LM	HM		LM	HM		LM	HM
LP	-3.27	-9.59	LP	-0.92	7.72	LP	17.39	7.76	LP	1.39	0.53
HP	4.37	17.71	HP	-4.50	19.35	HP	8.05	17.39	HP	0.58	1.39
	se (hpmlp)			**se (hemle)**			**se (mkt_ret)**			**se (const.)**	
	LM	HM		LM	HM		LM	HM		LM	HM
LP	0.048	0.072	LP	0.049	0.082	LP	0.048	0.087	LP	0.001	0.001
HP	0.070	0.048	HP	0.080	0.049	HP	0.083	0.048	HP	0.001	0.001
	R-squared										
	LM	HM									
LP	0.749	0.783									
HP	0.510	0.953									

Table 23: Portfolio regressions for the emerging markets post-crisis sub-sample.

Eme_Post															
		hpmlp				**hemle**				**mkt_ret**				**const.**	
	LM	MM	HM		LM	MM	HM		LM	MM	HM		LM	MM	HM
LP	-0.205	-0.609	-0.431	LP	-0.496	-0.053	0.514	LP	1.030	0.851	1.012	LP	0.000	0.002	-0.001
HP	0.403	0.723	0.629	HP	-0.332	-0.361	0.658	HP	0.895	1.085	0.913	HP	0.000	0.000	0.002
		t (hpmlp)				**t (hemle)**				**t (mkt_ret)**				**t (const.)**	
	LM	MM	HM		LM	MM	HM		LM	MM	HM		LM	MM	HM
LP	-1.79	-4.83	-5.99	LP	-6.05	-0.50	8.92	LP	21.54	9.80	21.17	LP	0.41	1.84	-1.35
HP	3.44	5.16	3.81	HP	-5.28	-2.90	8.21	HP	18.42	12.94	15.70	HP	0.27	-0.04	1.40
		se (hpmlp)				**se (hemle)**				**se (mkt_ret)**				**se (const.)**	
	LM	MM	HM		LM	MM	HM		LM	MM	HM		LM	MM	HM
LP	0.114	0.126	0.072	LP	0.082	0.105	0.058	LP	0.048	0.087	0.048	LP	0.001	0.001	0.001
HP	0.117	0.140	0.165	HP	0.063	0.124	0.080	HP	0.049	0.084	0.058	HP	0.001	0.002	0.001
		R-squared													
	LM	MM	HM												
LP	0.863	0.856	0.971												
HP	0.867	0.795	0.910												

CHAPTER 5: ROBUSTNESS CHECKS

5.1 Panel Data Methods for Predictability

Next, I use panel data methods to test predictability. I am primarily interested in predictability in the cross-section and running panel regressions with time fixed effects achieves this. I try to predict which country in subsequent months (forecast horizons $k = 1, 3, 6, 9, 12$) will have higher excess returns compared to the other countries in the sample. I regress future FX excess returns of the individual countries on lagged variables of our country-specific sovereign risks:

$$r_{i,t+k} = \alpha + \gamma_1 PoliticalRisk_{i,t} + \gamma_2 MacroRisk_{i,t} + \gamma_3 GlobalRisk_t + \tau_{t+k} + \eta_i \quad (19)$$

where τ is a time fixed effect, η represents country fixed effects and k denotes the forecast horizon in months. In addition to testing whether local sovereign risk factors forecast FX excess returns in the cross-section (time fixed-effects), I also run regressions with country fixed effects to test forecasting ability in the time series and with both time and country effects to determine whether fluctuations of our sovereign risk factors around the unconditional mean of all currencies forecast FX excess returns[30]. Tables 30-39 report results of this exercise. Results for forecast horizons $k = 1, 3, 6, 9, 12$ are reported. Pooled regression results are also reported as a benchmark.

[30] Della Corte et al. (2014) use a similar method when they try to determine whether CDS spreads forecast FX excess returns.

TABLES 30-39 ABOUT HERE

The results confirm the findings of the previous regressions. Macro-risk is able to forecast FX excess returns in the cross-section of the unrestricted full and pre-crisis samples but its ability to forecast FX excess returns disappears when the sample is restricted to the post-crisis era. On the other hand, whereas there is no evidence of predictability for political risk before the financial crisis, the post-crisis sample indicates that political risk can predict FX excess returns in the cross-section. The results align with those earlier papers that document that FX excess returns are predictable in the cross-section e.g.Della Corte et al. (2014), Hassan & Mano (2015).

5.2 Further Tests and Augmented UIP Regression

The macroeconomic risk control was constructed by aggregating the economic risk rating and the financial risk rating of ICRG. The problem with this though is that the financial risk rating has exchange rate stability as one of its components, and this could potentially bias the results obtained. To address this, I use only the economic risk rating to estimate my macroeconomic risk control as follows:

$$MacroRisk_t = \log(\frac{1}{econ_t^f}) - \log(\frac{1}{econ_t^{US}}) \quad (20)$$

Secondly, I restrict both the emerging markets and advanced economy sub-samples to the same sample period (12/31/1993-11/28/2014) as the argument could be made that the different estimation periods could be driving the observed differences in the results.

Finally, I control for interest rate differential (forward discount in this case if CIP holds). The results are also compared to the benchmark UIP regression of exchange rates on interest rate differentials. Hence, I run the following specification which is equivalent to an augmented Fama (1984) regression:

$$\Delta s_{i,t+1} = \alpha + \beta_1 \Delta PoliticalRisk_{i,t+1} + \beta_2 \Delta MacroRisk_{i,t+1} + \beta_3 \Delta Global_{t+1} + \beta_4 fd_{i,t} + \mu_t \tag{21}$$

The forward discount, $fd_{t,t+1} = s_t - f_{t,t+1}$ is equivalent to the interest rate differential between the foreign and domestic country, i.e. $i_t^f - i_t^h$.

The results are reported in tables 24-29. They confirm our earlier findings and also show that the determinants of sovereign risk do a better job than the benchmark interest rate differentials that has traditionally been used to explain forex movements.

Table 24: Emerging markets full sample (12/31/1993 - 11/28/2014) : This table reports panel regression results for the specification $\Delta s_{i,t+1} = \alpha + \beta_1 \Delta PoliticalRisk_{i,t+1} + \beta_2 \Delta MacroRisk_{i,t+1} + \beta_3 \Delta Global_{t+1} + \beta_4 fd_{i,t} + \mu_t$. The forward discount, $fd_{t,t+1}$ is equivalent to the differential between the foreign and US interest rate at time t. The VIX index is used as a proxy for global risk. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991).

	(1)	(2)	(3)
	D.logspot	D.logspot	D.logspot
D.pol_r	-0.212*		-0.219*
	(-2.72)		(-2.49)
D.macro_r	-0.0115		-0.00195
	(-0.46)		(-0.07)
D.logvix	-0.0553***		-0.0537***
	(-8.79)		(-8.33)
$fd_{t,t+1}$		-0.901***	-0.866***
		(-5.66)	(-5.54)
N	5284	4593	4593
R^2	0.0482	0.0583	0.1059

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 25: Emerging markets pre-crisis sub-sample (12/31/1993 - 06/29/2007): This table reports panel regression results for the specification $\Delta s_{i,t+1} = \alpha + \beta_1 \Delta PoliticalRisk_{i,t+1} + \beta_2 \Delta MacroRisk_{i,t+1} + \beta_3 \Delta Global_{t+1} + \beta_4 fd_{i,t} + \mu_t$. The forward discount, $fd_{t,t+1}$ is equivalent to the differential between the foreign and US interest rate at time t. The VIX index is used as a proxy for global risk. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991).

	(1) D.logspot	(2) D.logspot	(3) D.logspot
D.pol_r	-0.205*		-0.208
	(-2.15)		(-1.85)
D.macro_r	-0.0518		-0.0497
	(-1.39)		(-0.99)
D.logvix	-0.0427***		-0.0363***
	(-4.88)		(-5.06)
$fd_{t,t+1}$		-1.001***	-0.962***
		(-4.09)	(-3.84)
N	3148	2457	2457
R^2	0.0273	0.0877	0.1095

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 26: Emerging markets post-crisis sub-sample (7/31/2007-11/28/2014) : This table reports panel regression results for the specification $\Delta s_{i,t+1} = \alpha + \beta_1 \Delta PoliticalRisk_{i,t+1} + \beta_2 \Delta MacroRisk_{i,t+1} + \beta_3 \Delta Global_{t+1} + \beta_4 fd_{i,t} + \mu_t$. The forward discount, $fd_{t,t+1}$ is equivalent to the differential between the foreign and US interest rate at time t. The VIX index is used as a proxy for global risk. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991).

	(1)	(2)	(3)
	D.logspot	D.logspot	D.logspot
D.pol_r	-0.204**		-0.201**
	(-3.61)		(-3.48)
D.macro_r	0.0368**		0.0387**
	(3.12)		(3.30)
D.logvix	-0.0645***		-0.0637***
	(-10.12)		(-9.57)
$fd_{t,t+1}$		-0.602***	-0.552***
		(-5.72)	(-4.66)
N	2112	2112	2112
R^2	0.1069	0.0157	0.1200

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 27: Advanced economies full sample (12/31/1993-11/28/2014): This table reports panel regression results for the specification $\Delta s_{i,t+1} = \alpha + \beta_1 \Delta PoliticalRisk_{i,t+1} + \beta_2 \Delta MacroRisk_{i,t+1} + \beta_3 \Delta Global_{t+1} + \beta_4 fd_{i,t} + \mu_t$. The forward discount, $fd_{t,t+1}$ is equivalent to the differential between the foreign and US interest rate at time t. The VIX index is used as a proxy for global risk. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991).

	(1)	(2)	(3)
	D.logspot	D.logspot	D.logspot
D.pol_r	-0.115**		-0.116**
	(-4.73)		(-4.71)
D.macro_r	-0.00115		-0.00165
	(-0.06)		(-0.08)
D.logvix	-0.0432*		-0.0429*
	(-3.33)		(-3.30)
$fd_{t,t+1}$		0.923**	0.822**
		(3.61)	(3.44)
N	2259	2259	2259
R^2	0.0429	0.0035	0.0457

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 28: Advanced economies pre-crisis sub-sample (12/31/1993 - 06/29/2007) : This table reports panel regression results for the specification $\Delta s_{i,t+1} = \alpha + \beta_1 \Delta PoliticalRisk_{i,t+1} + \beta_2 \Delta MacroRisk_{i,t+1} + \beta_3 \Delta Global_{t+1} + \beta_4 fd_{i,t} + \mu_t$. The forward discount, $fd_{t,t+1}$ is equivalent to the differential between the foreign and US interest rate at time t. The VIX index is used as a proxy for global risk. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991).

	(1) D.logspot	(2) D.logspot	(3) D.logspot
D.pol_r	-0.0748*		-0.0731*
	(-2.91)		(-2.86)
D.macro_r	-0.0149		-0.0126
	(-0.84)		(-0.67)
D.logvix	-0.0120		-0.0113
	(-1.25)		(-1.18)
$fd_{t,t+1}$		1.626***	1.603***
		(5.28)	(5.25)
N	1458	1458	1458
R^2	0.0048	0.0166	0.0209

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 29: Advanced economies post-crisis sub-sample (7/31/2007-11/28/2014) : This table reports panel regression results for the specification $\Delta s_{i,t+1} = \alpha + \beta_1 \Delta PoliticalRisk_{i,t+1} + \beta_2 \Delta MacroRisk_{i,t+1} + \beta_3 \Delta Global_{t+1} + \beta_4 fd_{i,t} + \mu_t$. The forward discount, $fd_{t,t+1}$ is equivalent to the differential between the foreign and US interest rate at time t. The VIX index is used as a proxy for global risk. The table shows estimates of t-stats based on HAC standard errors following Newey and West (1987) and Andrews (1991).

	(1)	(2)	(3)
	D.logspot	D.logspot	D.logspot
D.pol_r	-0.196*		-0.194*
	(-2.93)		(-2.97)
D.macro_r	-0.00305		-0.000351
	(-0.08)		(-0.01)
D.logvix	-0.0714**		-0.0718**
	(-3.98)		(-4.06)
$fd_{t,t+1}$		-0.848	-1.220
		(-1.23)	(-1.65)
N	792	792	792
R^2	0.1192	0.0010	0.1213

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

CHAPTER 6: CONCLUSIONS

In the first part of this paper I sought to elucidate the channels through which exchange rates and sovereign risks are related for a broad set of countries from both emerging markets and advanced economies.

I find that for emerging markets, an increasing level of political risk generally leads to a depreciation of the currency. A rising level of the other country-specific component of sovereign risk, i.e. macroeconomic risk also generally leads to a depreciation of the local currency. Of the two country-specific risks, political risk seems to have the stronger effect on currency depreciation in terms of magnitude. Whereas I find no such effect of country-specific political risk and macroeconomic risk on exchange rates for developed economies in the pre-2007 financial crisis period, I do find that political risk does matter for advanced economies post-2007 crisis. For both sets of economies, increasing global risk aversion generally leads to a depreciation of the currency under all sub-samples. Thus whereas country-specific risks and global factors are important drivers of exchange rates for emerging markets under all sub-periods, only global factors seem to matter for advanced economies under all sub-periods. Political risk seems to have assumed importance for advanced economies only since the 2007 financial crisis. Increasing country-specific macro risk does not seem to matter for advanced economy currency depreciation. This suggests that the "disconnect puzzle" is an advanced economy phenomenon.

Secondly, I investigated whether our local determinants of sovereign risk have the ability to explain currency carry trade excess returns. I do find that they indeed do. Portfolios double-sorted on country-political risk and macroeconomic risk produce excess returns and slopes that increase from low political risk portfolios to high political risk portfolios under all macro risk groups in the post-2007 crisis sub-period. The argument for political risk being priced is less convincing under the pre-2007 crisis sub-sample. Instead, there is a stronger case for macro risk being priced pre-2007 financial crisis whereas the argument for macro risk is weaker post-2007 financial crisis.

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APPENDIX A: TABLES

Table 30: Tables 30-39 report panel regression results of FX excess returns on the lagged values of sovereign risk factors at various forecast horizons. Results for pooled regressions (P), fixed effects (FE), time effects (TE) and both fixed and time effects (CTFE) are reported. T-statistics based on the HAC standard errors following Newey and West (1987) are reported in brackets. Table 26 reports results for the all-country sample at the 1 month horizon (k=1).

Full sample for all countries at forecast horizon $k = 1$

	P	CFE	TFE	CTFE
L.pol_r	0.00285	0.000354	0.00271	0.0223*
	(1.11)	(0.03)	(0.70)	(2.65)
L.macro_r	0.0126*	0.00931	0.0237**	0.0333*
	(2.28)	(1.14)	(2.97)	(2.24)
L.logvix	0.000873	0.00124	-0.0609**	-0.0551**
	(0.84)	(1.14)	(-3.53)	(-3.10)
_cons	-0.000164	0.00790*	0.160**	0.144**
	(-0.05)	(2.38)	(3.42)	(2.95)
N	7089	7089	7089	7089
R^2	0.0028	0.0076	0.3372	0.3425

Pre-crisis sample for all countries at forecast horizon $k = 1$

	P	CFE	TFE	CTFE
L.pol_r	-0.00479	-0.00592	-0.00787	0.0293**
	(-1.60)	(-0.33)	(-1.77)	(2.96)
L.macro_r	0.0288***	0.0227	0.0454***	0.0640***
	(3.75)	(1.99)	(5.72)	(4.73)
L.logvix	-0.00511**	-0.00306	-0.0258	0.0237
	(-3.33)	(-1.35)	(-0.66)	(0.57)
_cons	0.0190***	0.0216***	0.0752	-0.0619
	(4.11)	(4.81)	(0.75)	(-0.57)
N	4063	4063	4063	4063
R^2	0.0087	0.0188	0.2127	0.2248

Post-crisis sample for all countries at forecast horizon $k = 1$

	P	CFE	TFE	CTFE
L.pol_r	0.0109**	0.0455**	0.00790	0.0253
	(2.94)	(3.03)	(2.00)	(1.15)
L.macro_r	-0.00608	-0.0195*	0.00186	0.0136
	(-1.88)	(-2.57)	(0.29)	(0.58)
L.logvix	0.00662***	0.00740***	-0.0813	-0.124
	(4.83)	(5.04)	(-0.55)	(-0.82)
_cons	-0.0210***	-0.0239***	0.217	0.347
	(-5.18)	(-3.68)	(0.51)	(0.79)
N	2992	2992	2992	2992
R^2	0.0063	0.0126	0.5142	0.5190

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 31: Time-series versus cross-sectional predictability at k=3 for the all-country sample.

Full sample for all countries at forecast horizon $k = 3$

	P	CFE	TFE	CTFE
L3.pol_r	0.00269	-0.000812	0.00323	0.0267**
	(1.08)	(-0.07)	(0.86)	(2.76)
L3.macro_r	0.0131*	0.0101	0.0237**	0.0330*
	(2.29)	(1.18)	(3.12)	(2.43)
L3.logvix	0.00196*	0.00232**	-0.121**	-0.105*
	(2.64)	(3.13)	(-2.86)	(-2.41)
_cons	-0.00339	0.00494	0.299**	0.257*
	(-1.44)	(1.49)	(2.80)	(2.33)
N	7065	7065	7065	7065
R^2	0.0034	0.0083	0.3376	0.3433

Pre-crisis sample for all countries at forecast horizon $k = 3$

	P	CFE	TFE	CTFE
L3.pol_r	-0.00338	-0.00151	-0.00696	0.0379**
	(-1.18)	(-0.08)	(-1.54)	(2.90)
L3.macro_r	0.0265**	0.0181	0.0451***	0.0629***
	(3.28)	(1.53)	(5.71)	(4.93)
L3.logvix	-0.00266*	-0.000384	0.0137	0.0419
	(-2.20)	(-0.22)	(0.60)	(1.73)
_cons	0.0116**	0.0135***	-0.0284	-0.117
	(2.89)	(3.65)	(-0.47)	(-1.79)
N	4039	4039	4039	4039
R^2	0.0077	0.0185	0.2130	0.2265

Post-crisis sample for all countries at forecast horizon $k = 3$

	P	CFE	TFE	CTFE
L3.pol_r	0.0105*	0.0354*	0.00835*	0.0240
	(2.63)	(2.26)	(2.04)	(0.97)
L3.macro_r	-0.00392	-0.0111	0.00235	0.0169
	(-1.23)	(-1.65)	(0.44)	(0.89)
L3.logvix	0.00722***	0.00779***	0.164***	0.173***
	(5.67)	(6.02)	(7.71)	(8.04)
_cons	-0.0228***	-0.0224***	-0.446***	-0.462***
	(-6.05)	(-4.17)	(-7.48)	(-7.58)
N	2924	2924	2924	2924
R^2	0.0070	0.0124	0.5129	0.5181

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 32: Time-series versus cross-sectional predictability at k=6 for the all-country sample.

Full sample for all countries at forecast horizon $k = 6$

	P	CFE	TFE	CTFE
L6.pol_r	0.00121	-0.00732	0.00398	0.0288**
	(0.49)	(-0.66)	(1.16)	(2.99)
L6.macro_r	0.0151**	0.0140*	0.0213**	0.0255*
	(3.53)	(2.43)	(3.50)	(2.50)
L6.logvix	0.00368***	0.00402***	-0.337***	-0.318**
	(4.23)	(4.61)	(-3.68)	(-3.39)
_cons	-0.00828**	0.00121	0.834***	0.785**
	(-3.22)	(0.38)	(3.65)	(3.35)
N	7027	7027	7027	7027
R^2	0.0051	0.0101	0.3371	0.3425

Pre-crisis sample for all countries at forecast horizon $k = 6$

	P	CFE	TFE	CTFE
L6.pol_r	-0.00492	-0.0106	-0.00539	0.0430**
	(-1.89)	(-0.56)	(-1.27)	(3.12)
L6.macro_r	0.0258***	0.0166	0.0414***	0.0505**
	(4.05)	(1.70)	(6.37)	(3.52)
L6.logvix	-0.000911	0.00167	0.142	-0.0328
	(-0.75)	(0.89)	(0.66)	(-0.13)
_cons	0.00647	0.00954*	-0.330	0.0771
	(1.66)	(2.49)	(-0.64)	(0.13)
N	4001	4001	4001	4001
R^2	0.0072	0.0188	0.2114	0.2242

Post-crisis sample for all countries at forecast horizon $k = 6$

	P	CFE	TFE	CTFE
L6.pol_r	0.0107*	0.0471**	0.00824	0.0191
	(2.65)	(3.01)	(2.03)	(0.87)
L6.macro_r	0.00366	0.0194	0.000978	0.0123
	(0.93)	(2.00)	(0.25)	(1.09)
L6.logvix	0.0107***	0.0113***	0.0873***	0.0924***
	(7.37)	(7.67)	(3.68)	(3.90)
_cons	-0.0332***	-0.0337***	-0.239***	-0.245***
	(-7.62)	(-6.25)	(-3.75)	(-3.84)
N	2822	2822	2822	2822
R^2	0.0131	0.0209	0.5149	0.5200

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 33: Time-series versus cross-sectional predictability at k=9 for the all-country sample.

Full sample for all countries at forecast horizon $k = 9$

	P	CFE	TFE	CTFE
L9.pol_r	0.00574*	0.0118	0.00493	0.0286*
	(2.57)	(1.14)	(1.56)	(2.61)
L9.macro_r	0.00927*	0.00220	0.0164***	0.0106
	(2.51)	(0.43)	(3.78)	(1.64)
L9.logvix	0.00125	0.00155	-0.0985***	-0.0975***
	(1.45)	(2.03)	(-5.11)	(-4.95)
_cons	-0.00191	0.00456	0.254***	0.251***
	(-0.71)	(1.36)	(5.16)	(4.91)
N	6988	6988	6988	6988
R^2	0.0027	0.0080	0.3357	0.3405

Pre-crisis sample for all countries at forecast horizon $k = 9$

	P	CFE	TFE	CTFE
L9.pol_r	0.00216	0.00775	-0.00277	0.0435*
	(0.93)	(0.44)	(-0.74)	(2.66)
L9.macro_r	0.0122*	-0.00919	0.0332***	0.0217
	(2.32)	(-1.34)	(7.89)	(1.70)
L9.logvix	0.00138	0.00444**	-0.0859	-0.0776
	(1.08)	(2.94)	(-1.21)	(-0.89)
_cons	-0.00143	0.00113	0.223	0.193
	(-0.36)	(0.22)	(1.27)	(0.89)
N	3962	3962	3962	3962
R^2	0.0031	0.0185	0.2072	0.2181

Post-crisis sample for all countries at forecast horizon $k = 9$

	P	CFE	TFE	CTFE
L9.pol_r	0.0150***	0.0904***	0.00877*	0.00604
	(4.09)	(4.36)	(2.30)	(0.29)
L9.macro_r	0.00854*	0.0294*	0.00218	0.00667
	(2.06)	(2.64)	(0.82)	(0.86)
L9.logvix	0.00680***	0.00825***	0.196**	0.196**
	(6.68)	(7.55)	(3.33)	(3.37)
_cons	-0.0219***	-0.0328***	-0.556**	-0.544**
	(-7.28)	(-5.70)	(-3.37)	(-3.34)
N	2720	2720	2720	2720
R^2	0.0092	0.0251	0.5270	0.5323

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 34: Time-series versus cross-sectional predictability at k=12 for the all-country sample.

Full sample for all countries at forecast horizon $k = 12$

	P	CFE	TFE	CTFE
L12.pol_r	0.00388	0.00323	0.00361	0.0158
	(1.87)	(0.37)	(1.31)	(1.76)
L12.macro_r	0.0122**	0.00798	0.0156***	0.00865
	(2.88)	(1.41)	(3.75)	(1.45)
L12.logvix	-0.00124	-0.000999	-0.162***	-0.167***
	(-1.22)	(-0.97)	(-3.96)	(-4.22)
_cons	0.00584	0.0139***	0.398***	0.415***
	(1.76)	(3.94)	(3.94)	(4.23)
N	6949	6949	6949	6949
R^2	0.0028	0.0077	0.3347	0.3387

Pre-crisis sample for all countries at forecast horizon $k = 12$

	P	CFE	TFE	CTFE
L12.pol_r	-0.00140	-0.00719	-0.00418	0.0263
	(-0.86)	(-0.45)	(-1.64)	(1.73)
L12.macro_r	0.0156*	-0.00368	0.0313***	0.0136
	(2.46)	(-0.68)	(7.02)	(1.53)
L12.logvix	0.000413	0.00326*	0.00792	0.00212
	(0.30)	(2.25)	(0.81)	(0.20)
_cons	0.00180	0.00700	-0.0146	-0.00259
	(0.41)	(1.59)	(-0.56)	(-0.09)
N	3923	3923	3923	3923
R^2	0.0031	0.0180	0.2041	0.2128

Post-crisis sample for all countries at forecast horizon $k = 12$

	P	CFE	TFE	CTFE
L12.pol_r	0.0142***	0.0837***	0.00793*	-0.0121
	(3.93)	(3.89)	(2.10)	(-0.57)
L12.macro_r	0.0109*	0.0474**	0.001000	0.0117
	(2.69)	(3.37)	(0.32)	(1.37)
L12.logvix	0.00242*	0.00358**	0.0910***	0.0872***
	(2.47)	(3.24)	(3.79)	(3.62)
_cons	-0.00822**	-0.0158*	-0.251***	-0.226**
	(-2.87)	(-2.68)	(-3.86)	(-3.45)
N	2618	2618	2618	2618
R^2	0.0056	0.0234	0.5384	0.5442
adj. R^2	0.004421	0.009763	0.524263	0.524034

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 35: Time series versus cross-sectional predictability at k=1 for the emerging markets sub-sample.

Full sample of emerging market currencies at forecast horizon $k = 1$

	P	CFE	TFE	CTFE
L.pol_r	0.00461	0.0101	0.00636	0.0254*
	(1.18)	(0.90)	(1.13)	(2.71)
L.macro_r	0.0167*	0.0140	0.0296**	0.0372
	(2.46)	(1.50)	(2.84)	(1.98)
L.logvix	0.000311	0.000563	0.000282	0.000587
	(0.22)	(0.38)	(0.02)	(0.03)
_cons	0.00144	0.00767	-0.0181	-0.0184
	(0.36)	(1.91)	(-0.37)	(-0.35)
N	4579	4579	4579	4579
R^2	0.0040	0.0094	0.3166	0.3224

Pre-crisis sample of emerging market currencies at forecast horizon $k = 1$

	P	CFE	TFE	CTFE
L.pol_r	-0.00720	0.0116	-0.0110	0.0317**
	(-1.36)	(0.59)	(-1.77)	(2.81)
L.macro_r	0.0379***	0.0320*	0.0609***	0.0795***
	(3.91)	(2.14)	(6.40)	(5.10)
L.logvix	-0.00690*	-0.00543	0.153***	0.185***
	(-2.53)	(-1.13)	(4.63)	(6.35)
_cons	0.0252**	0.0234*	-0.389***	-0.484***
	(3.11)	(2.35)	(-4.64)	(-6.48)
N	2443	2443	2443	2443
R^2	0.0113	0.0224	0.2038	0.2168

Post-crisis sample of emerging market currencies at forecast horizon $k = 1$

	P	CFE	TFE	CTFE
L.pol_r	0.0160**	0.0506*	0.0136**	0.0266
	(3.46)	(2.64)	(2.81)	(1.07)
L.macro_r	-0.00304	-0.0160	0.00475	0.0144
	(-0.80)	(-1.85)	(0.65)	(0.57)
L.logvix	0.00590**	0.00711**	-0.118	-0.155
	(3.50)	(3.77)	(-0.71)	(-0.99)
_cons	-0.0199***	-0.0239*	0.321	0.434
	(-3.84)	(-2.76)	(0.68)	(0.97)
N	2112	2112	2112	2112
R^2	0.0063	0.0129	0.4988	0.5038

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 36: Time series versus cross-sectional predictability at k=3 for the emerging markets sub-sample.

Full sample of emerging market currencies at forecast horizon $k = 3$

	P	CFE	TFE	CTFE
L3.pol_r	0.00478	0.0110	0.00712	0.0302*
	(1.32)	(0.87)	(1.32)	(2.74)
L3.macro_r	0.0158*	0.0124	0.0286**	0.0340
	(2.21)	(1.25)	(2.91)	(1.98)
L3.logvix	0.00180	0.00208	-0.135*	-0.138*
	(1.67)	(1.92)	(-2.38)	(-2.41)
_cons	-0.00306	0.00304	0.334*	0.341*
	(-0.88)	(0.80)	(2.33)	(2.35)
N	4575	4575	4575	4575
R^2	0.0043	0.0098	0.3164	0.3224

Pre-crisis sample of emerging market currencies at forecast horizon $k = 3$

	P	CFE	TFE	CTFE
L3.pol_r	-0.00495	0.0184	-0.00947	0.0423*
	(-0.99)	(0.87)	(-1.52)	(2.55)
L3.macro_r	0.0336**	0.0246	0.0592***	0.0737***
	(3.15)	(1.58)	(5.86)	(4.53)
L3.logvix	-0.00400	-0.00208	0.00508	0.0192
	(-1.82)	(-0.54)	(0.15)	(0.50)
_cons	0.0164*	0.0132	-0.00694	-0.0589
	(2.26)	(1.80)	(-0.08)	(-0.56)
N	2439	2439	2439	2439
R^2	0.0094	0.0220	0.2030	0.2171

Post-crisis sample of emerging market currencies at forecast horizon $k = 3$

	P	CFE	TFE	CTFE
L3.pol_r	0.0151**	0.0405*	0.0139*	0.0250
	(3.00)	(2.07)	(2.61)	(0.94)
L3.macro_r	-0.00367	-0.0147	0.00390	0.0145
	(-1.12)	(-1.99)	(0.69)	(0.77)
L3.logvix	0.00714***	0.00806***	0.174***	0.180***
	(4.31)	(4.72)	(6.20)	(6.42)
_cons	-0.0238***	-0.0246**	-0.472***	-0.483***
	(-4.70)	(-3.33)	(-6.02)	(-6.11)
N	2064	2064	2064	2064
R^2	0.0075	0.0134	0.4972	0.5024
adj. R^2	0.006067	0.000779	0.475089	0.474355

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 37: Time series versus cross-sectional predictability at k=6 for the emerging markets sub-sample.

Full sample of emerging market currencies at forecast horizon $k = 6$

	P	CFE	TFE	CTFE
L6.pol_r	0.00254	0.00342	0.00842	0.0373**
	(0.70)	(0.30)	(1.85)	(3.37)
L6.macro_r	0.0177**	0.0163*	0.0246**	0.0224
	(3.44)	(2.49)	(3.31)	(1.92)
L6.logvix	0.00318*	0.00344*	-0.0867	-0.111
	(2.57)	(2.79)	(-1.24)	(-1.57)
_cons	-0.00673	0.000547	0.201	0.261
	(-1.87)	(0.15)	(1.17)	(1.51)
N	4567	4567	4567	4567
R^2	0.0055	0.0109	0.3152	0.3214

Pre-crisis sample of emerging market currencies at forecast horizon $k = 6$

	P	CFE	TFE	CTFE
L6.pol_r	-0.00806	0.00761	-0.00590	0.0574**
	(-2.01)	(0.38)	(-1.04)	(3.03)
L6.macro_r	0.0336***	0.0243	0.0522***	0.0527**
	(4.24)	(1.81)	(5.98)	(3.56)
L6.logvix	-0.00284	-0.000416	-0.524***	-0.532***
	(-1.39)	(-0.10)	(-5.53)	(-4.38)
_cons	0.0135*	0.0105	1.262***	1.266***
	(2.07)	(1.45)	(5.49)	(4.35)
N	2431	2431	2431	2431
R^2	0.0094	0.0207	0.1996	0.2146

Post-crisis sample of emerging market currencies at forecast horizon $k = 6$

	P	CFE	TFE	CTFE
L6.pol_r	0.0179**	0.0495*	0.0133*	0.0175
	(3.57)	(2.56)	(2.50)	(0.77)
L6.macro_r	0.00383	0.00856	0.00134	0.00823
	(1.05)	(0.97)	(0.34)	(0.80)
L6.logvix	0.0107***	0.0116***	0.0857*	0.0883**
	(5.43)	(5.89)	(2.72)	(2.90)
_cons	-0.0350***	-0.0358***	-0.236*	-0.235**
	(-5.85)	(-4.81)	(-2.80)	(-2.90)
N	1992	1992	1992	1992
R^2	0.0137	0.0208	0.4982	0.5034

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 38: Time series versus cross-sectional predictability at k=9 for the emerging markets sub-sample

Full sample of emerging market currencies at forecast horizon $k = 9$

	P	CFE	TFE	CTFE
L9.pol_r	0.00692*	0.0188	0.00846	0.0366*
	(2.18)	(1.66)	(1.95)	(2.67)
L9.macro_r	0.0114*	0.00487	0.0174**	0.00461
	(2.70)	(0.87)	(3.56)	(0.70)
L9.logvix	0.000813	0.00100	-0.0591*	-0.0732**
	(0.73)	(1.11)	(-2.70)	(-3.37)
_cons	-0.000675	0.00464	0.144*	0.182**
	(-0.19)	(1.21)	(2.65)	(3.34)
N	4558	4558	4558	4558
R^2	0.0029	0.0091	0.3130	0.3190

Pre-crisis sample of emerging market currencies at forecast horizon $k = 9$

	P	CFE	TFE	CTFE
L9.pol_r	-0.00143	0.0189	-0.00328	0.0577*
	(-0.39)	(0.96)	(-0.59)	(2.51)
L9.macro_r	0.0166*	-0.00426	0.0399***	0.0175
	(2.78)	(-0.49)	(7.63)	(1.44)
L9.logvix	0.000804	0.00437	0.0802	-0.0121
	(0.44)	(1.53)	(1.54)	(-0.22)
_cons	0.00165	-0.00189	-0.195	0.0241
	(0.29)	(-0.30)	(-1.53)	(0.18)
N	2422	2422	2422	2422
R^2	0.0031	0.0188	0.1935	0.2066

Post-crisis sample of emerging market currencies at forecast horizon $k = 9$

	P	CFE	TFE	CTFE
L9.pol_r	0.0235***	0.0808**	0.0130*	0.00201
	(5.38)	(3.42)	(2.54)	(0.09)
L9.macro_r	0.00946*	0.0144	0.00138	0.00207
	(2.29)	(1.93)	(0.43)	(0.27)
L9.logvix	0.00655***	0.00829***	0.241**	0.233**
	(7.05)	(7.62)	(3.28)	(3.12)
_cons	-0.0235***	-0.0319***	-0.681**	-0.645**
	(-7.95)	(-4.50)	(-3.30)	(-3.07)
N	1920	1920	1920	1920
R^2	0.0101	0.0221	0.5125	0.5182

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 39: Time series versus cross-sectional predictability at k=12 for the emerging markets sub-sample

Full sample of emerging market currencies at forecast horizon $k = 12$

	P	CFE	TFE	CTFE
L12.pol_r	0.00439	0.0107	0.00548	0.0206
	(1.42)	(1.16)	(1.43)	(1.77)
L12.macro_r	0.0143*	0.0105	0.0162**	0.00417
	(2.71)	(1.58)	(3.25)	(0.63)
L12.logvix	-0.00214	-0.00204	-0.138*	-0.170**
	(-1.48)	(-1.43)	(-2.77)	(-3.53)
_cons	0.00867	0.0153**	0.336*	0.420**
	(1.88)	(3.32)	(2.77)	(3.58)
N	4549	4549	4549	4549
R^2	0.0030	0.0086	0.3119	0.3168

Pre-crisis sample of emerging market currencies at forecast horizon $k = 12$

	P	CFE	TFE	CTFE
L12.pol_r	-0.00445	0.00852	-0.00586	0.0374
	(-1.60)	(0.51)	(-1.61)	(1.66)
L12.macro_r	0.0174	-0.00322	0.0353***	0.00488
	(2.06)	(-0.52)	(6.50)	(0.51)
L12.logvix	-0.00108	0.00228	0.0123	-0.00991
	(-0.50)	(0.92)	(1.26)	(-1.01)
_cons	0.00774	0.00628	-0.0297	0.0271
	(1.12)	(1.16)	(-1.23)	(1.06)
N	2413	2413	2413	2413
R^2	0.0025	0.0167	0.1902	0.2004

Post-crisis sample of emerging market currencies at forecast horizon $k = 12$

	P	CFE	TFE	CTFE
L12.pol_r	0.0226***	0.0619*	0.0115*	-0.0255
	(4.09)	(2.76)	(2.16)	(-1.09)
L12.macro_r	0.0154*	0.0467**	0.00198	0.0197**
	(2.72)	(3.09)	(0.42)	(3.49)
L12.logvix	0.00269	0.00331*	0.125***	0.116***
	(2.05)	(2.26)	(4.26)	(3.80)
_cons	-0.0111**	-0.0102	-0.340***	-0.297**
	(-2.93)	(-1.38)	(-4.25)	(-3.55)
N	1848	1848	1848	1848
R^2	0.0076	0.0214	0.5254	0.5327

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

APPENDIX B: FIGURES

Figure 1: Australia spot versus sovereign risk determinants and forward discount

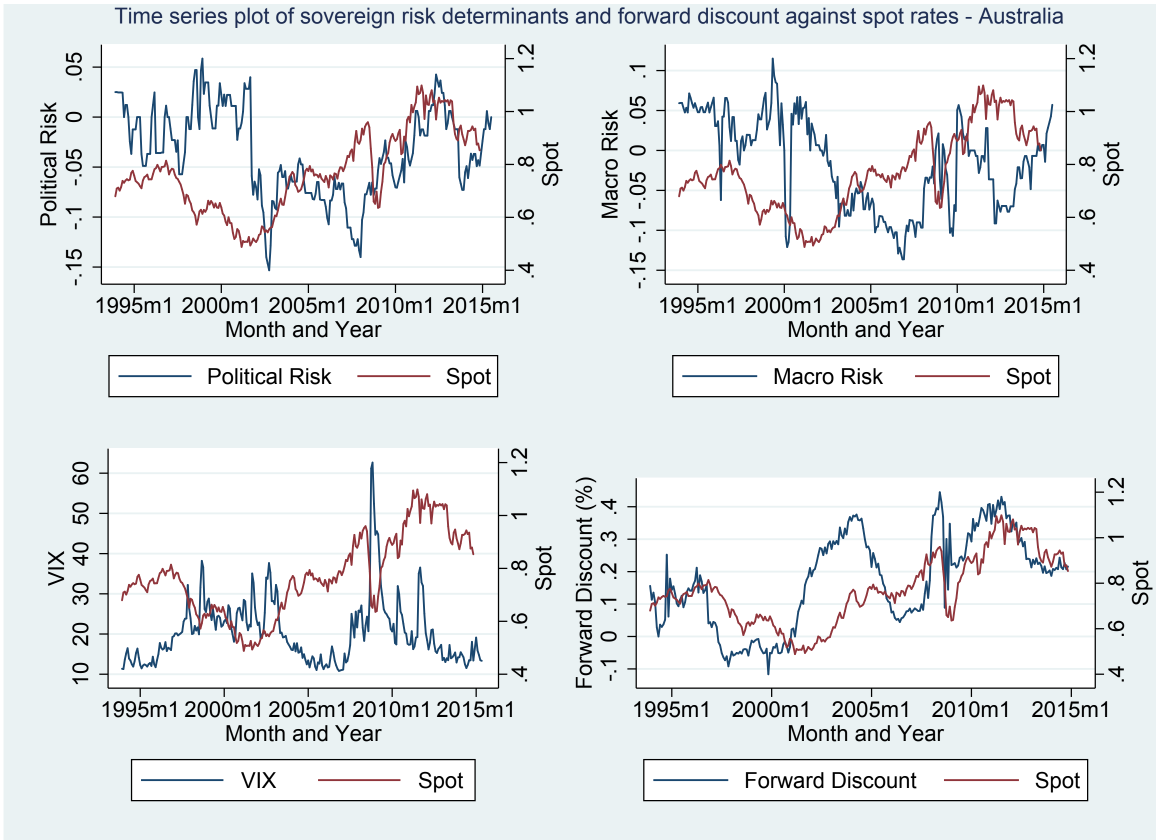


Figure 2: Canada spot versus sovereign risk determinants and forward discount

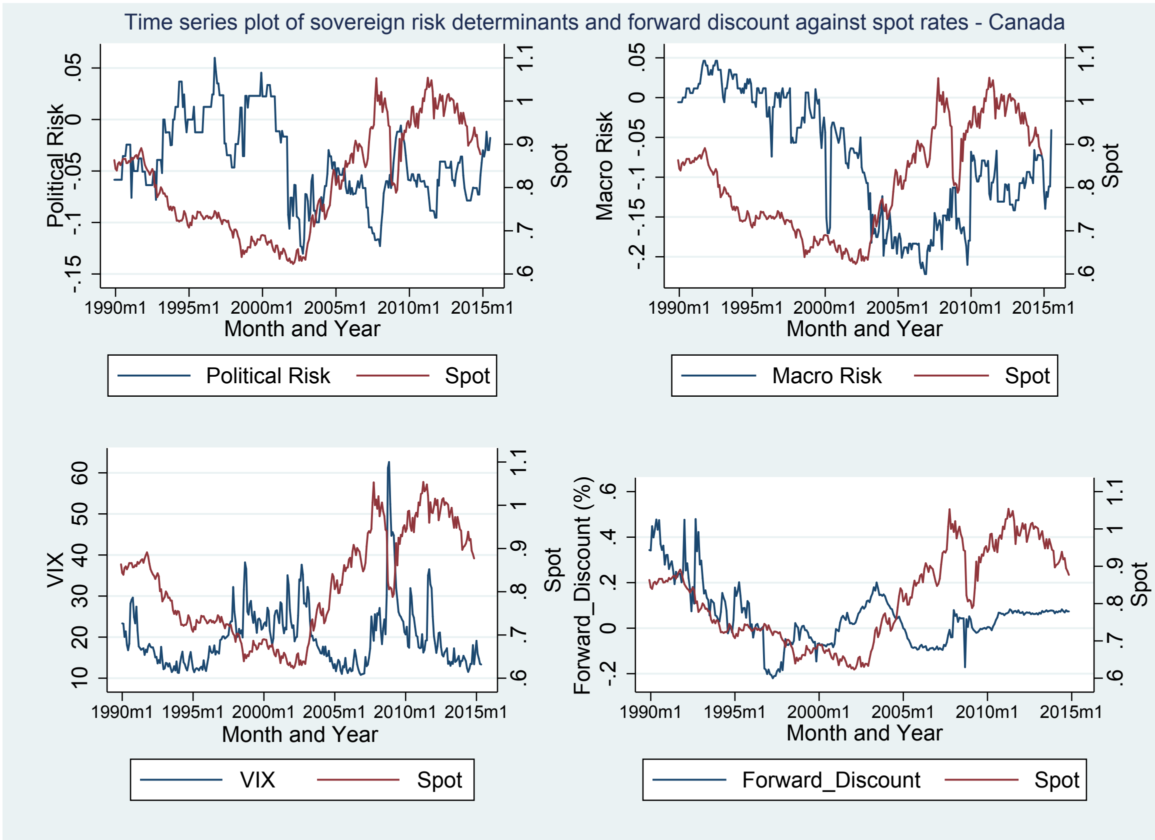


Figure 3: Germany/Euro spot versus sovereign risk determinants and forward discount

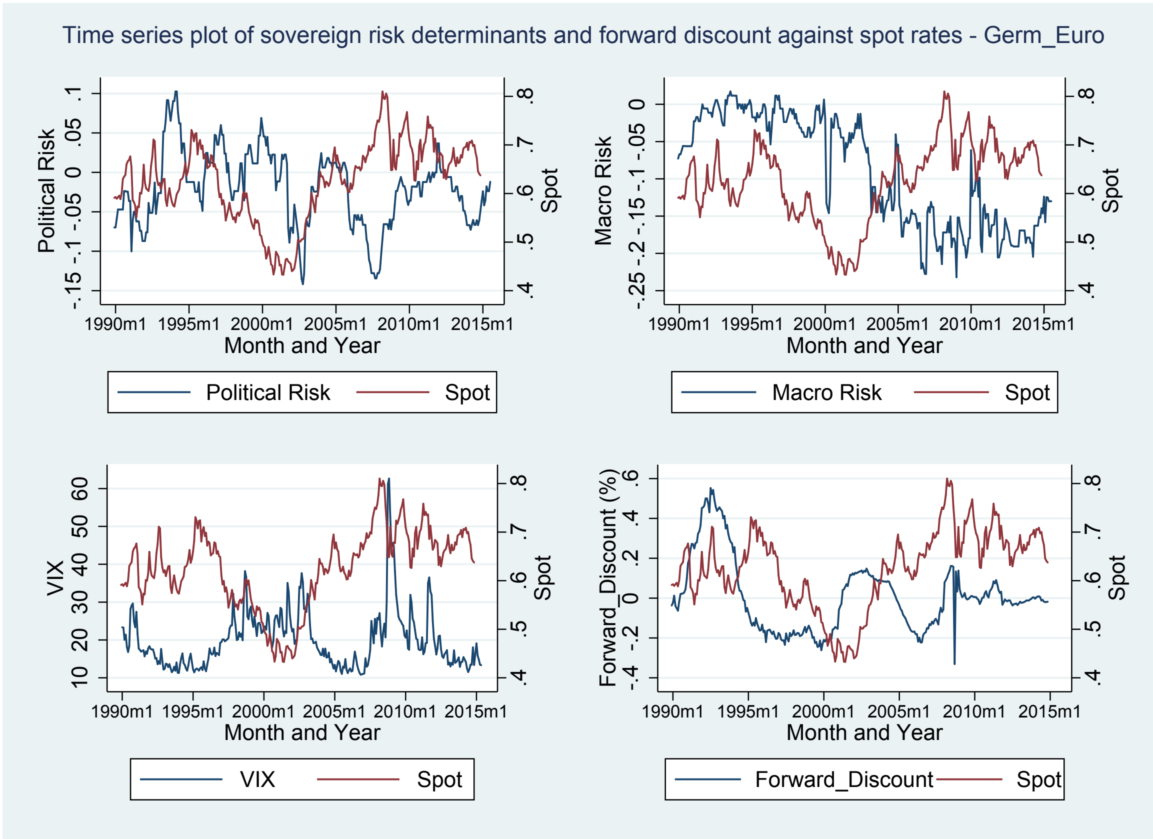


Figure 4: Japan spot versus sovereign risk determinants and forward discount

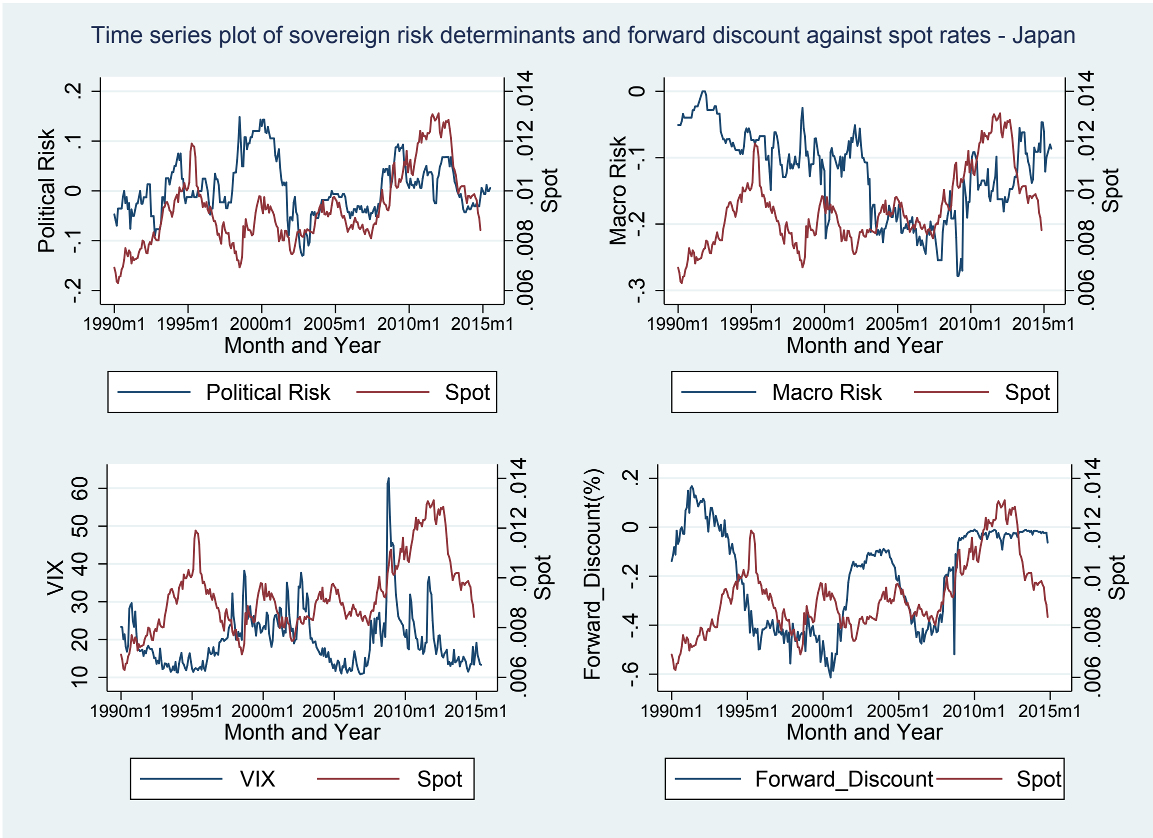


Figure 5: Norway spot versus sovereign risk determinants and forward discount

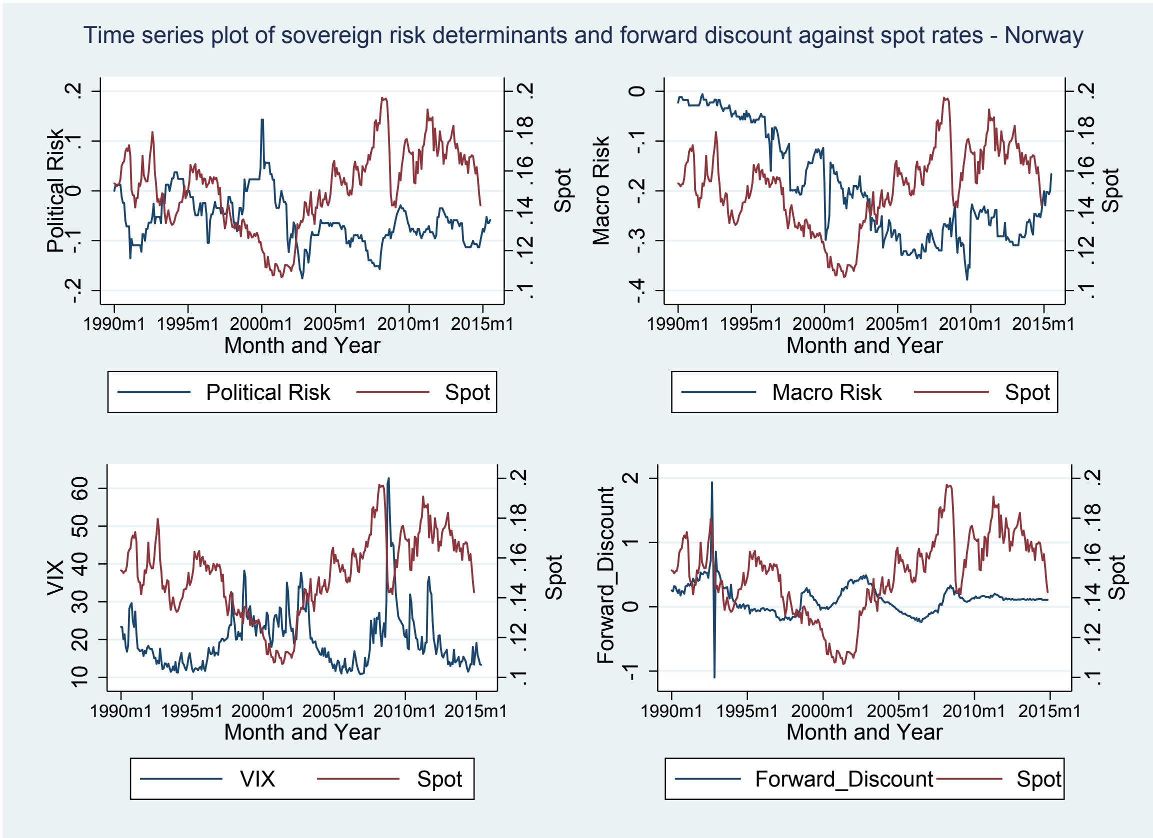


Figure 6: New Zealand spot versus sovereign risk determinants and forward discount

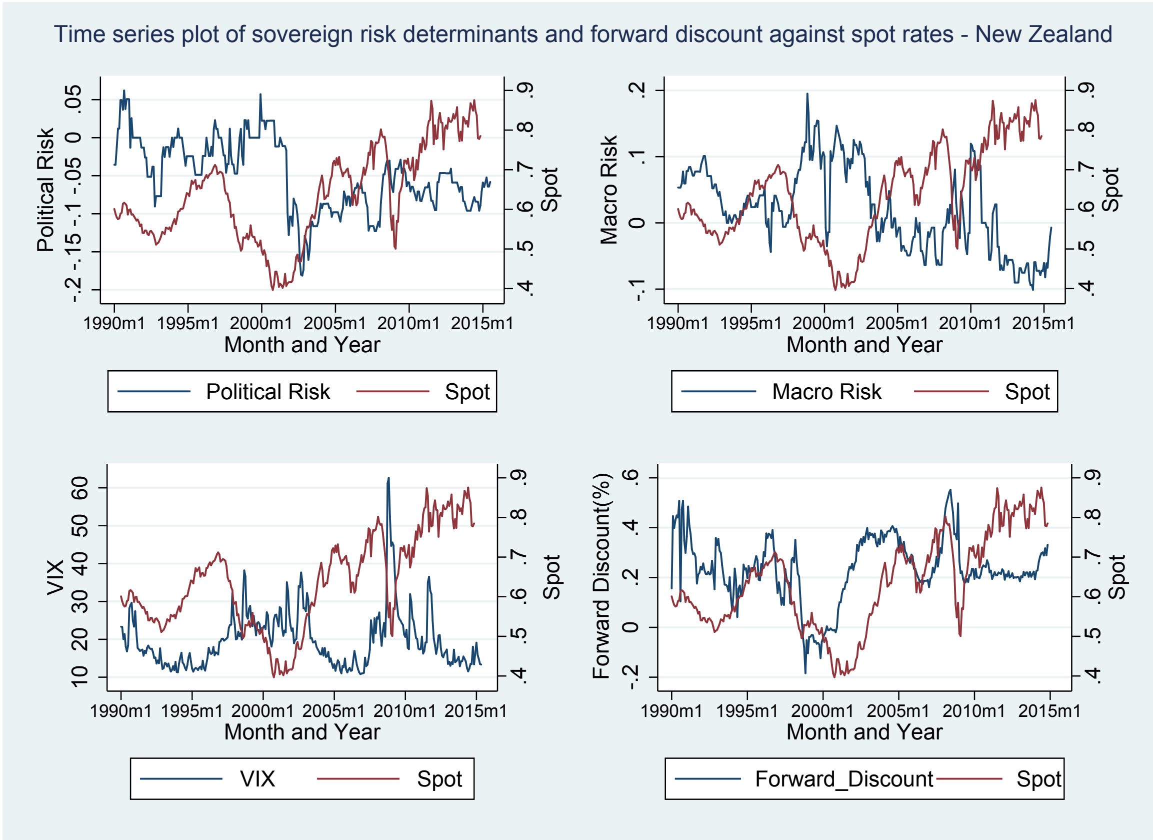


Figure 7: Sweden spot versus sovereign risk determinants and forward discount

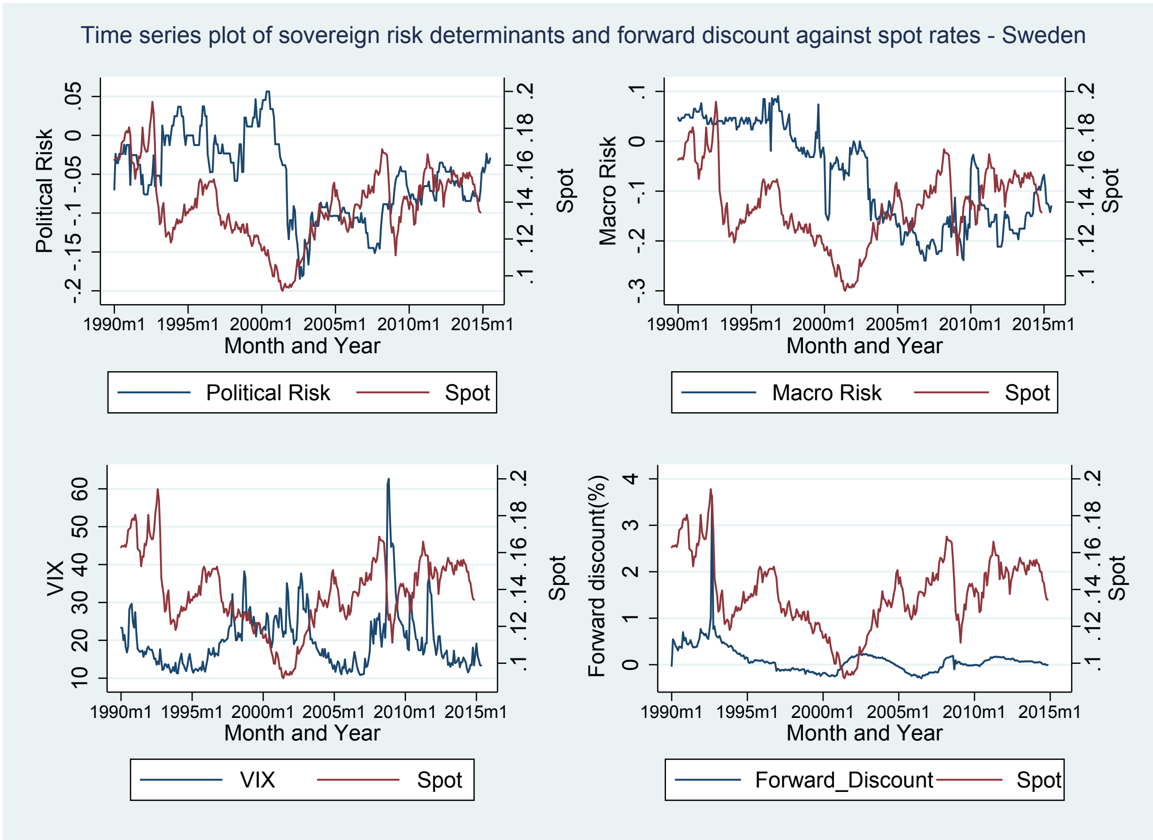


Figure 8: Switzerland spot versus sovereign risk determinants and forward discount

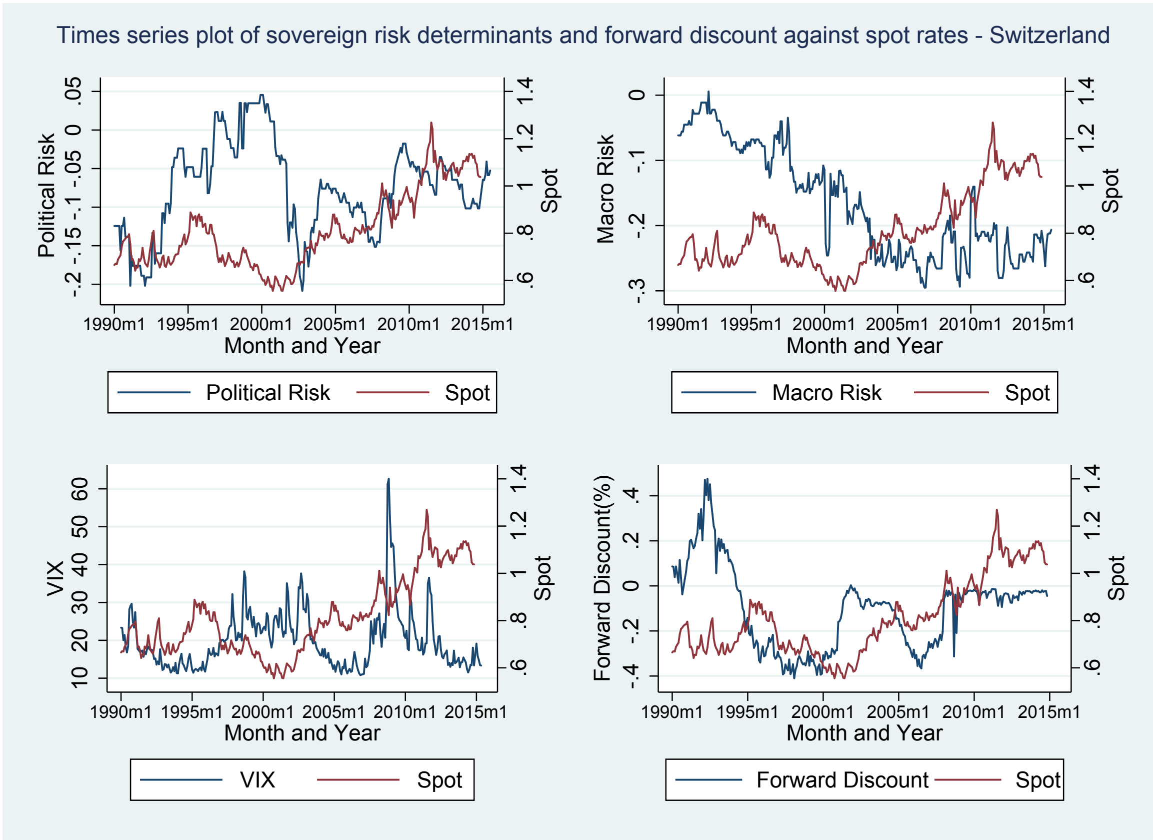


Figure 9: UK spot versus sovereign risk determinants and forward discount

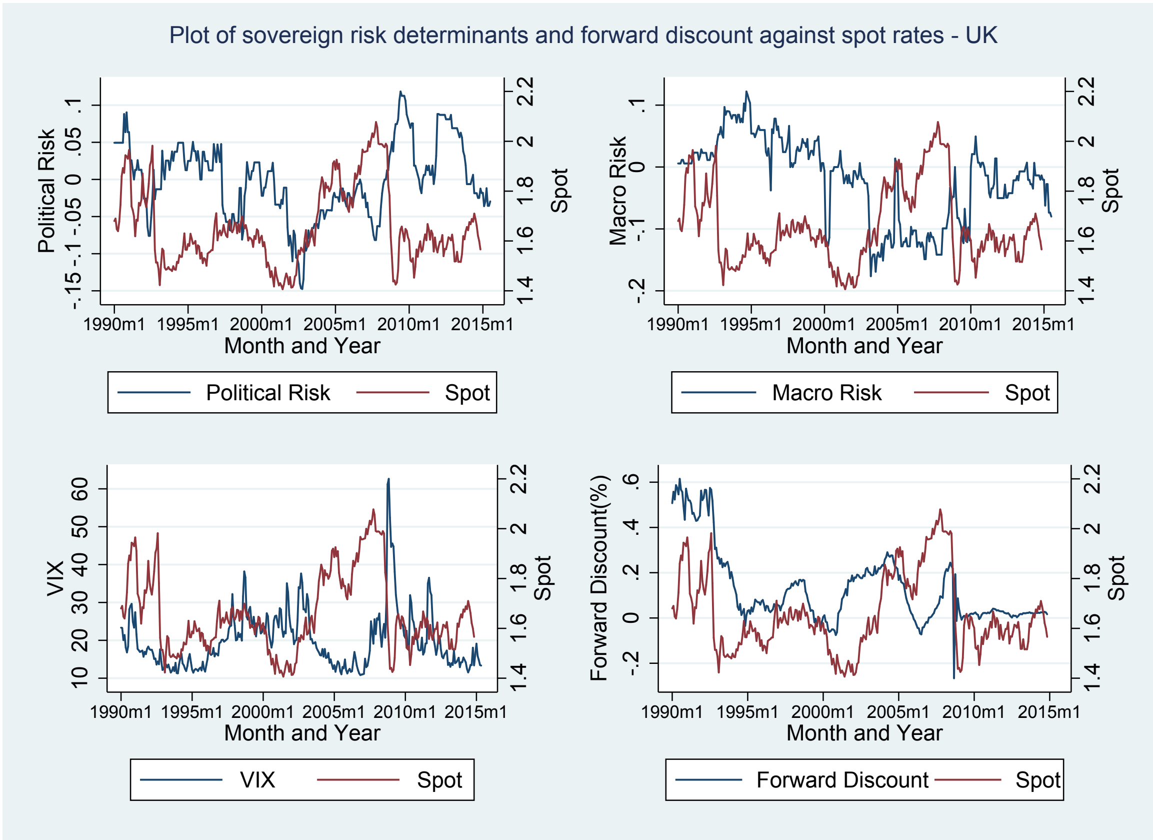


Figure 10: Singapore spot versus sovereign risk determinants and forward discount

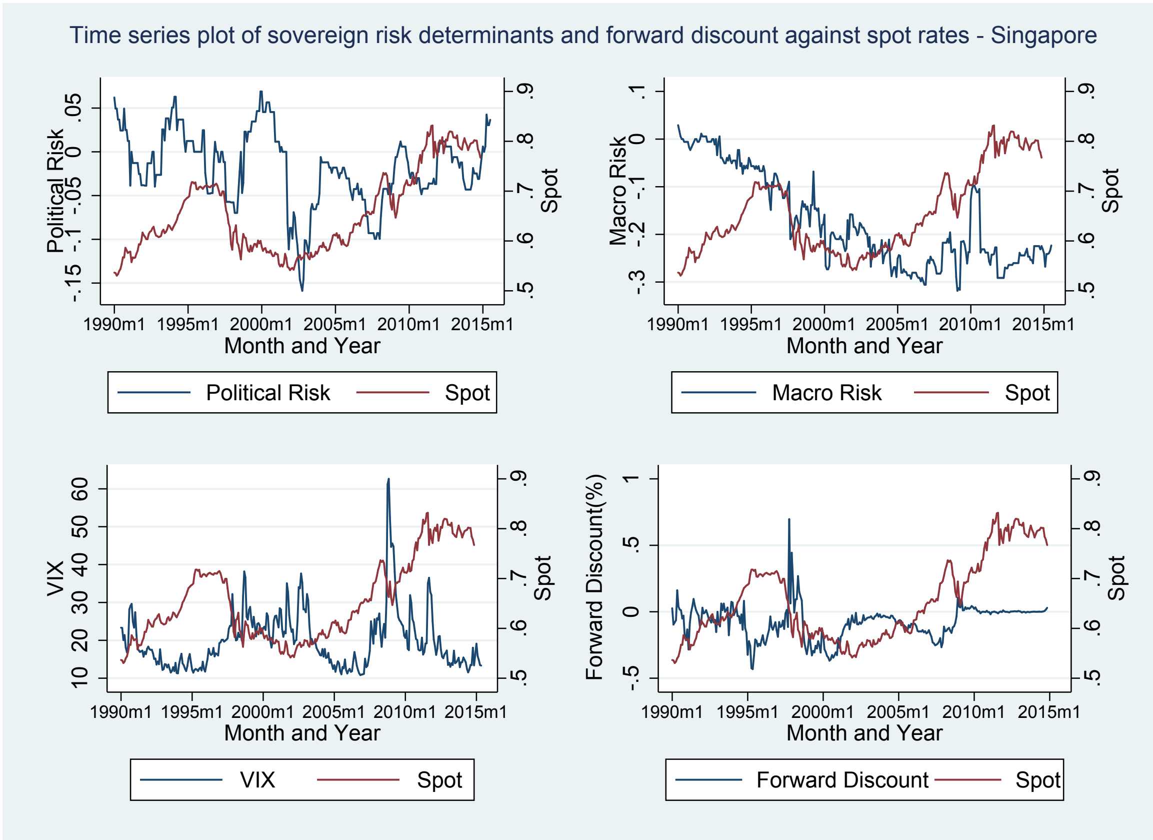


Figure 11: South Korea spot versus sovereign risk determinants and forward discount

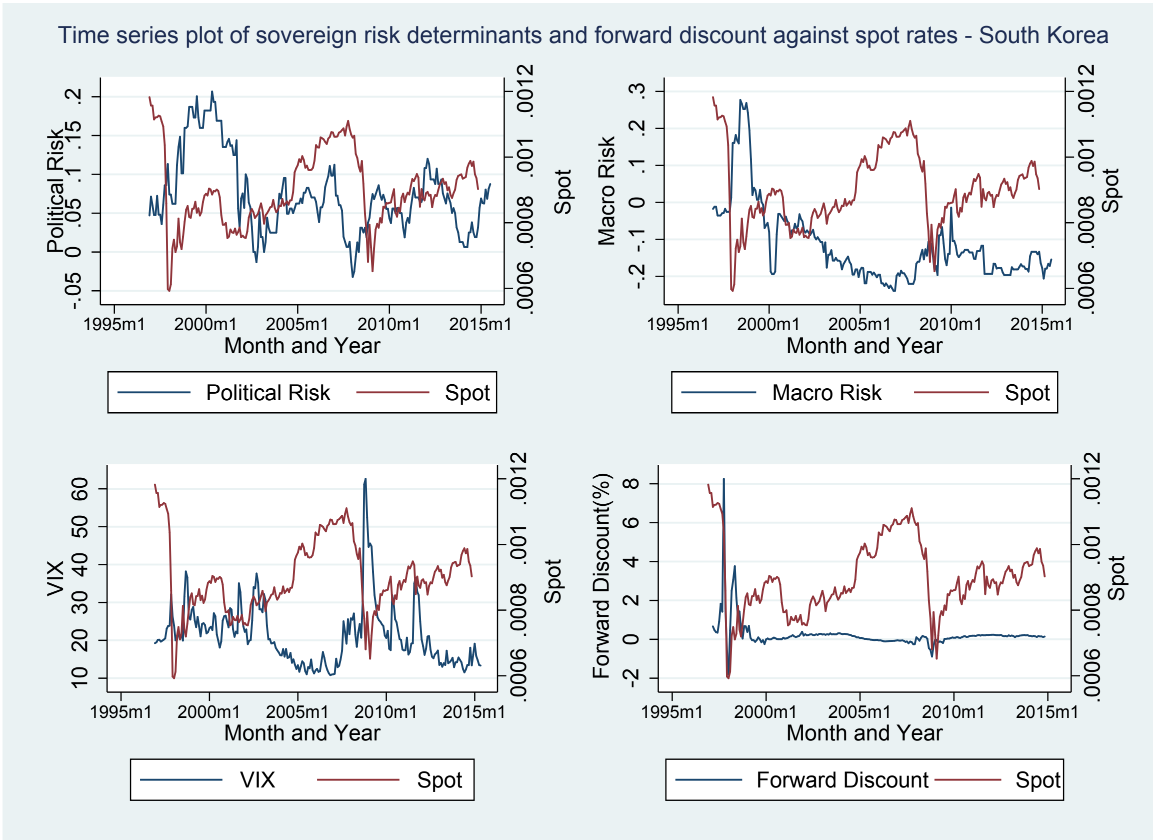


Figure 12: Argentina spot versus sovereign risk determinants and forward discount

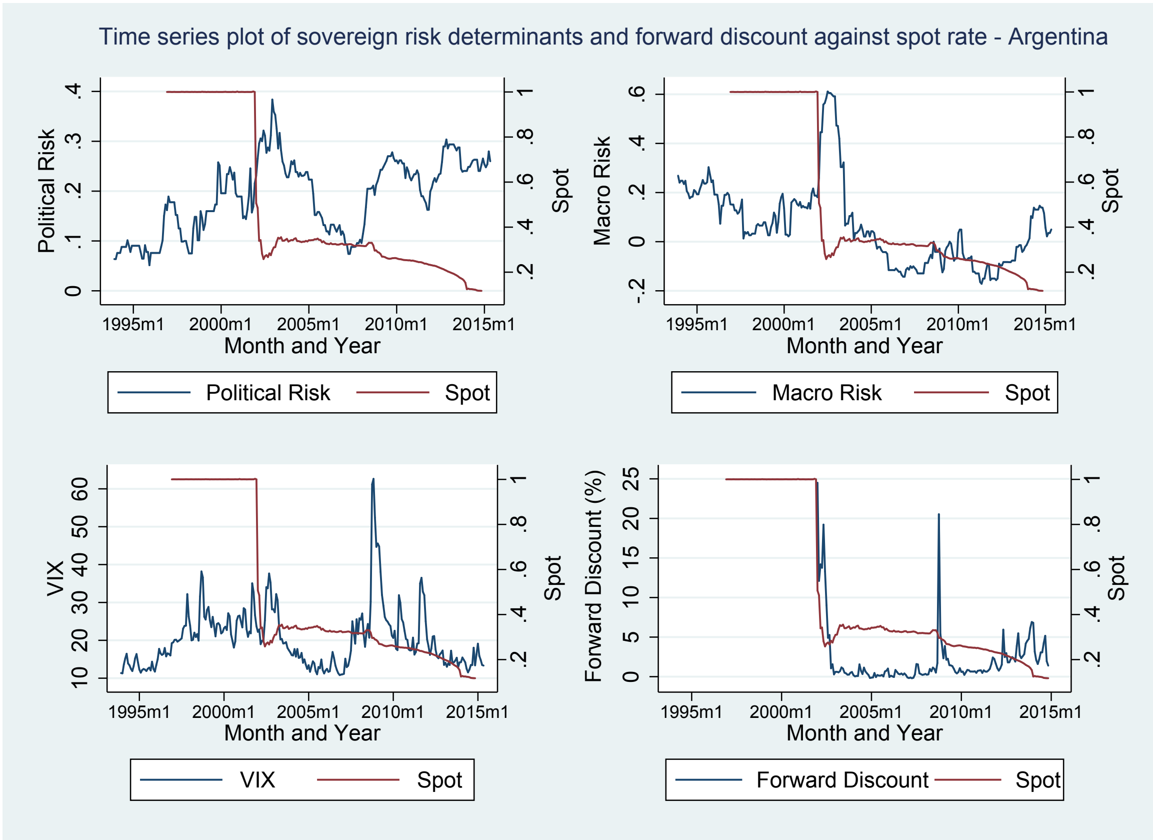


Figure 13: Brazil spot versus sovereign risk determinants and forward discount

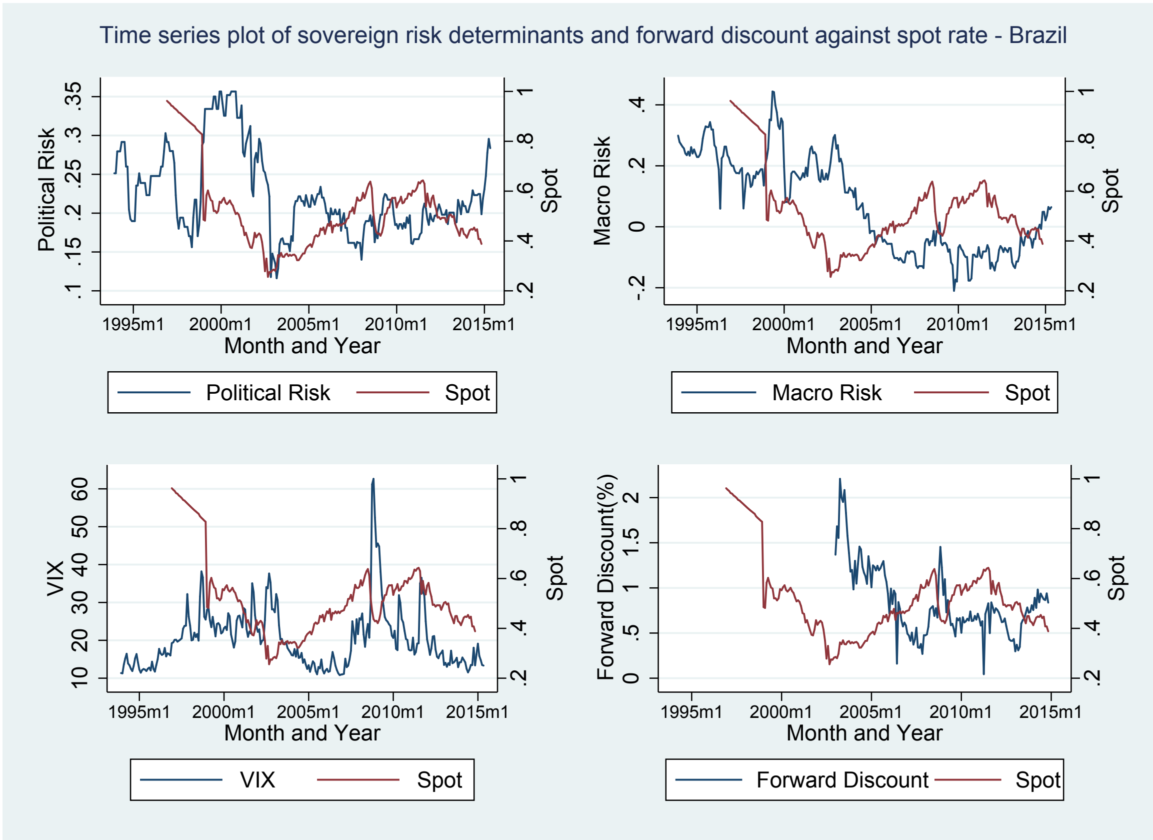


Figure 14: Chile spot versus sovereign risk determinants and forward discount

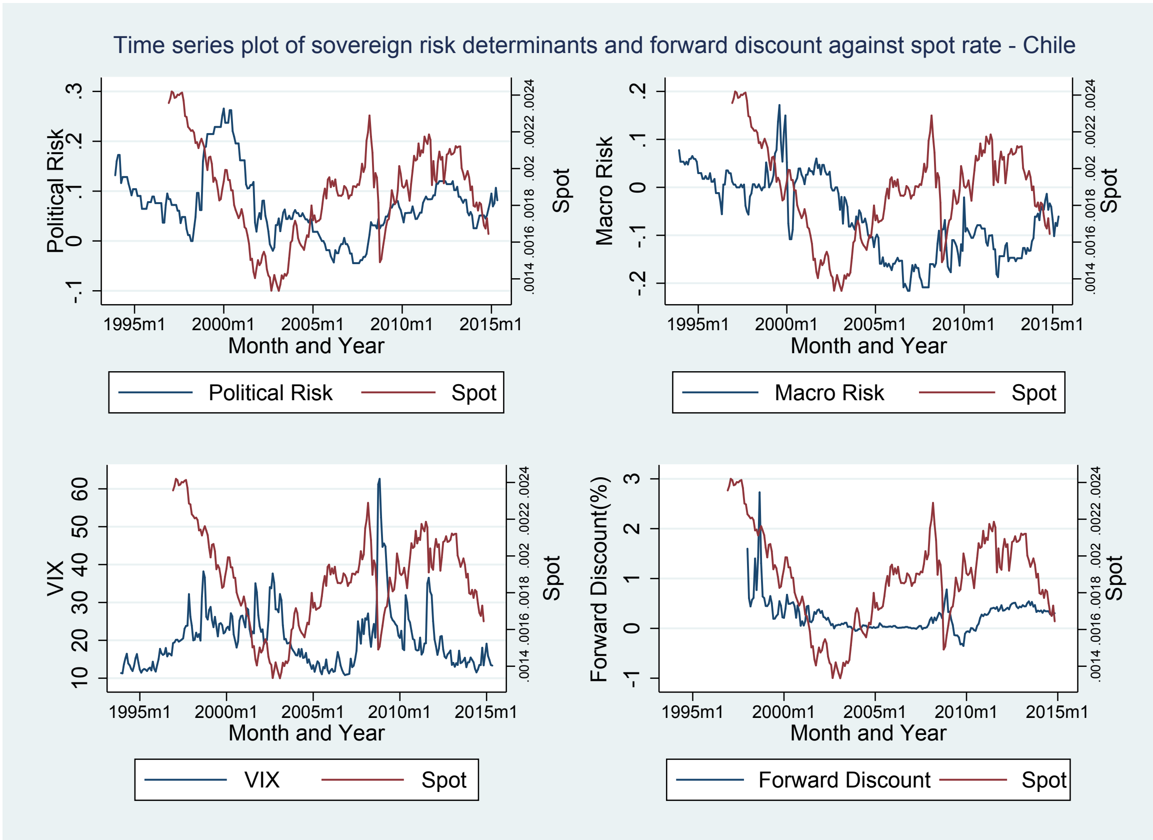


Figure 15: Colombia spot versus sovereign risk determinants and forward discount

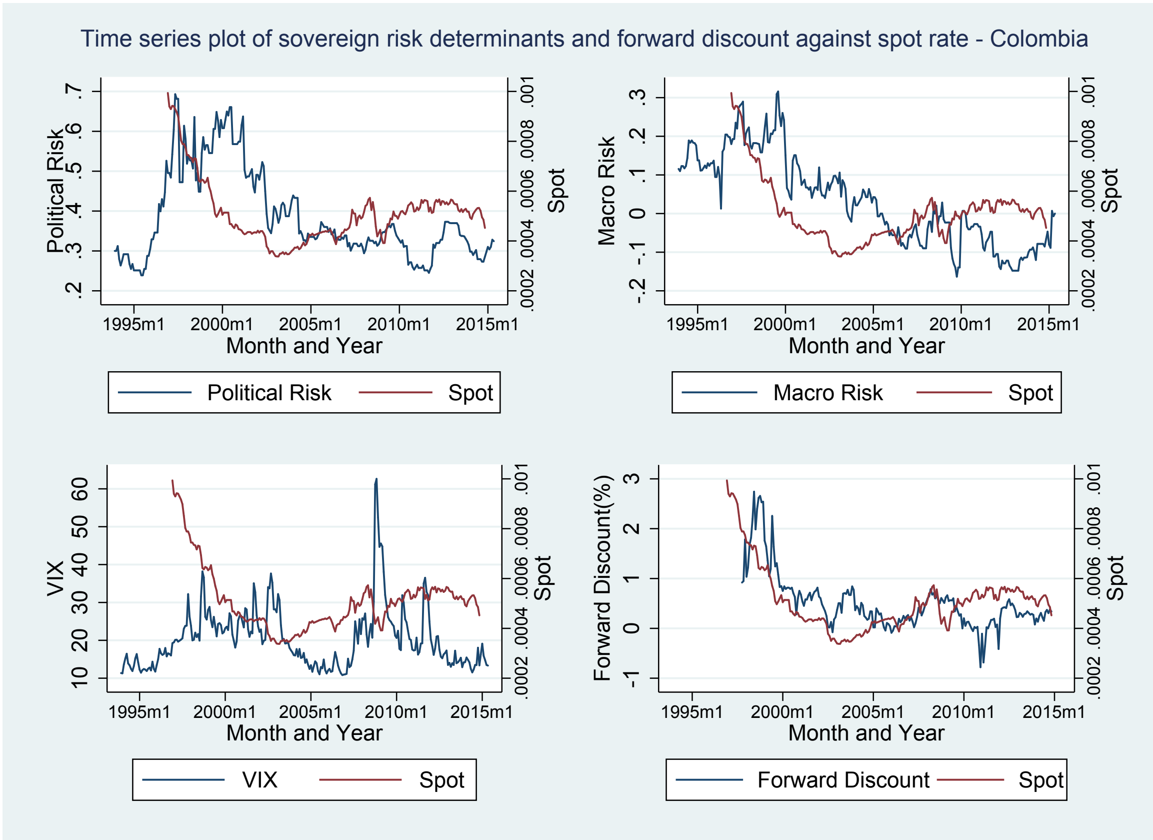


Figure 16: Croatia spot versus sovereign risk determinants and forward discount

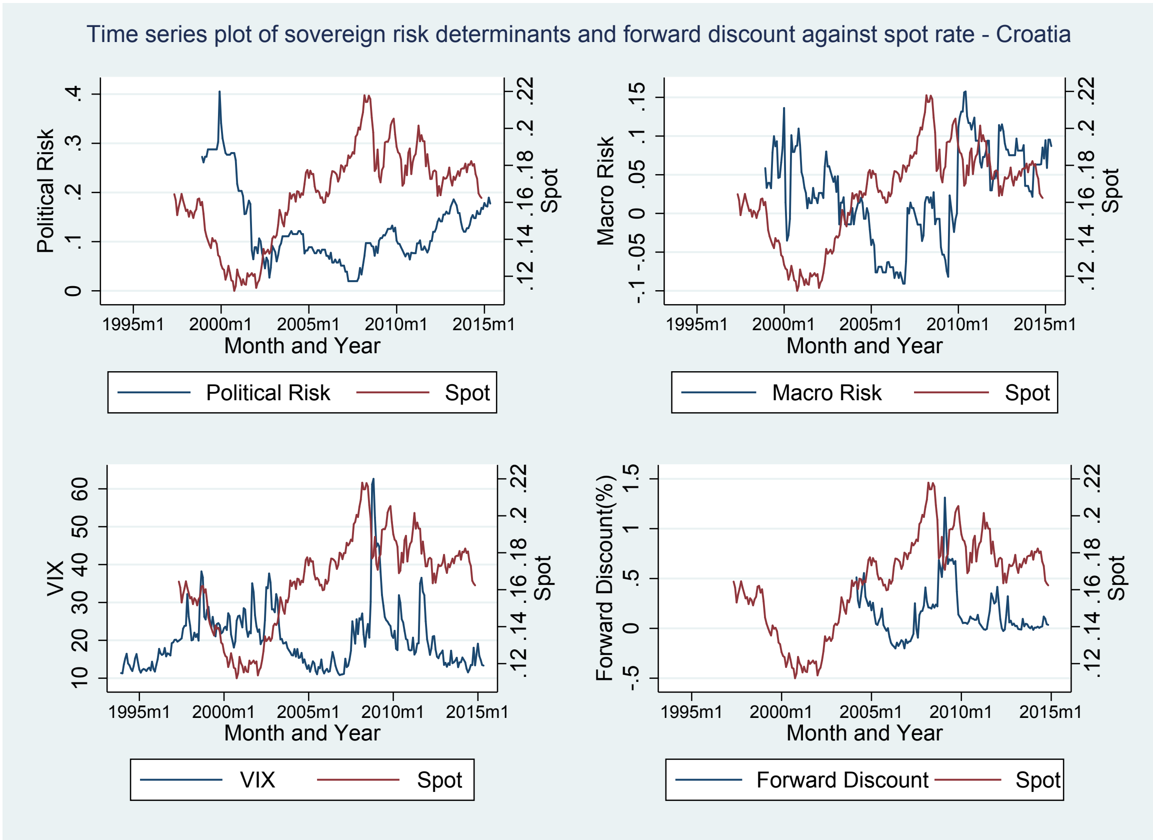


Figure 17: Czech Republic spot versus sovereign risk determinants and forward discount

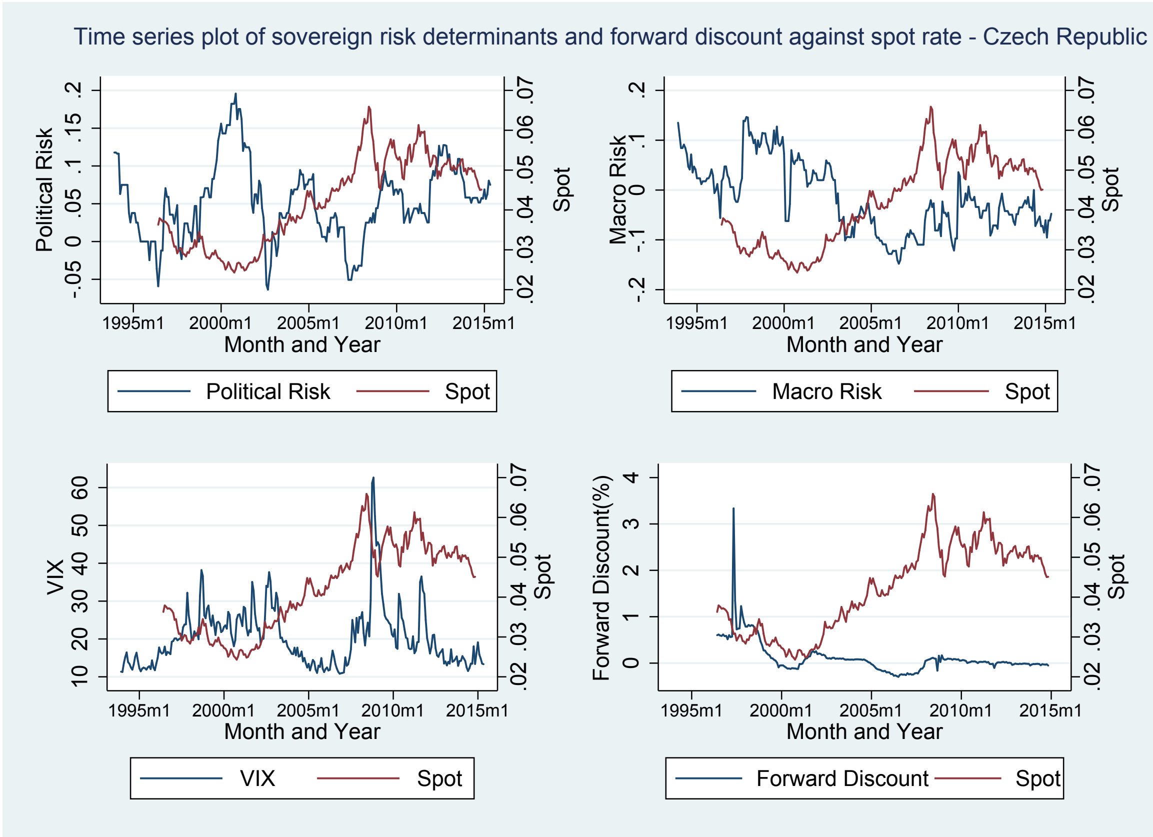


Figure 18: Egypt spot versus sovereign risk determinants and forward discount

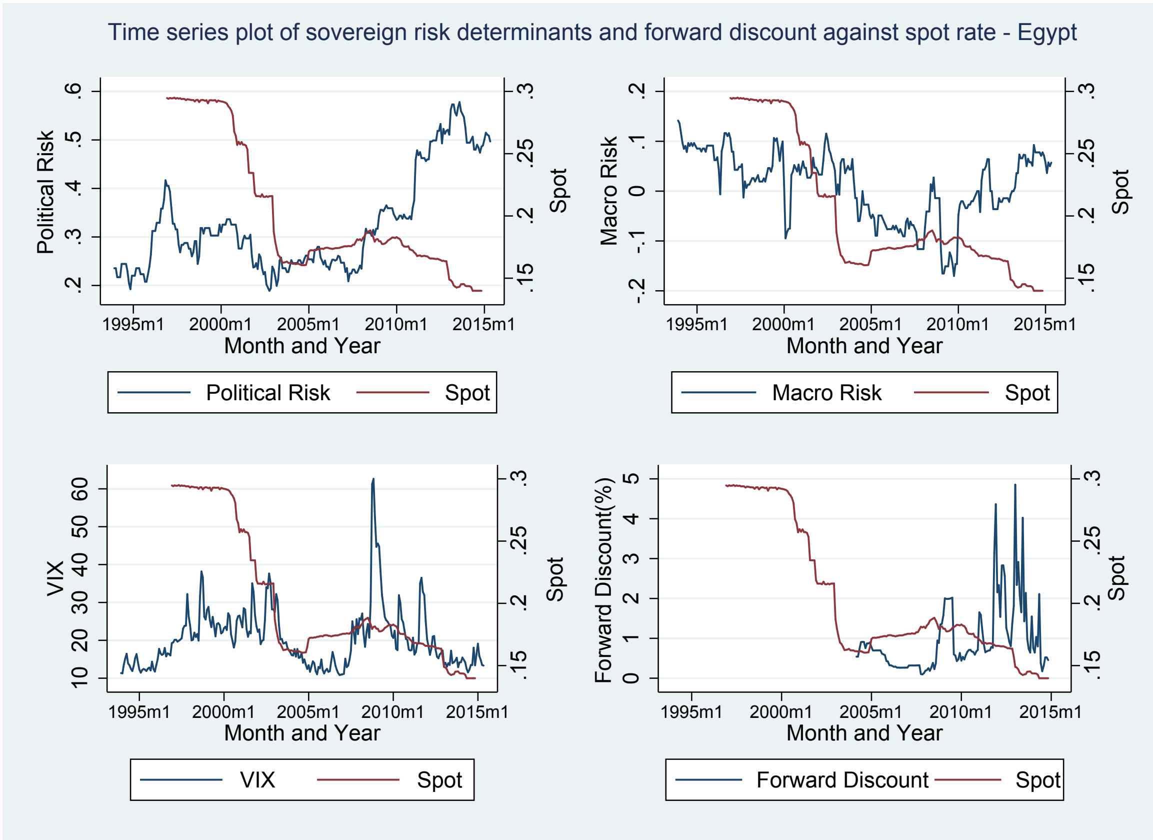


Figure 19: Hungary spot versus sovereign risk determinants and forward discount

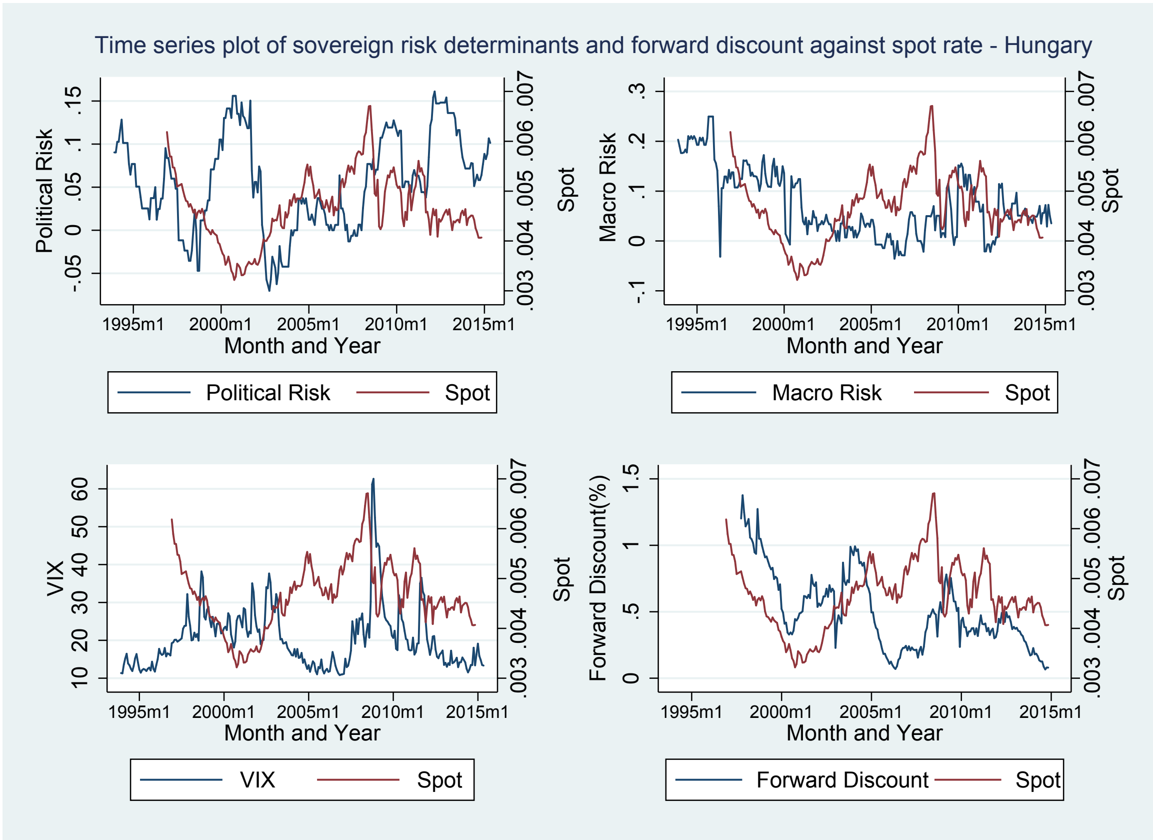


Figure 20: Iceland spot versus sovereign risk determinants and forward discount

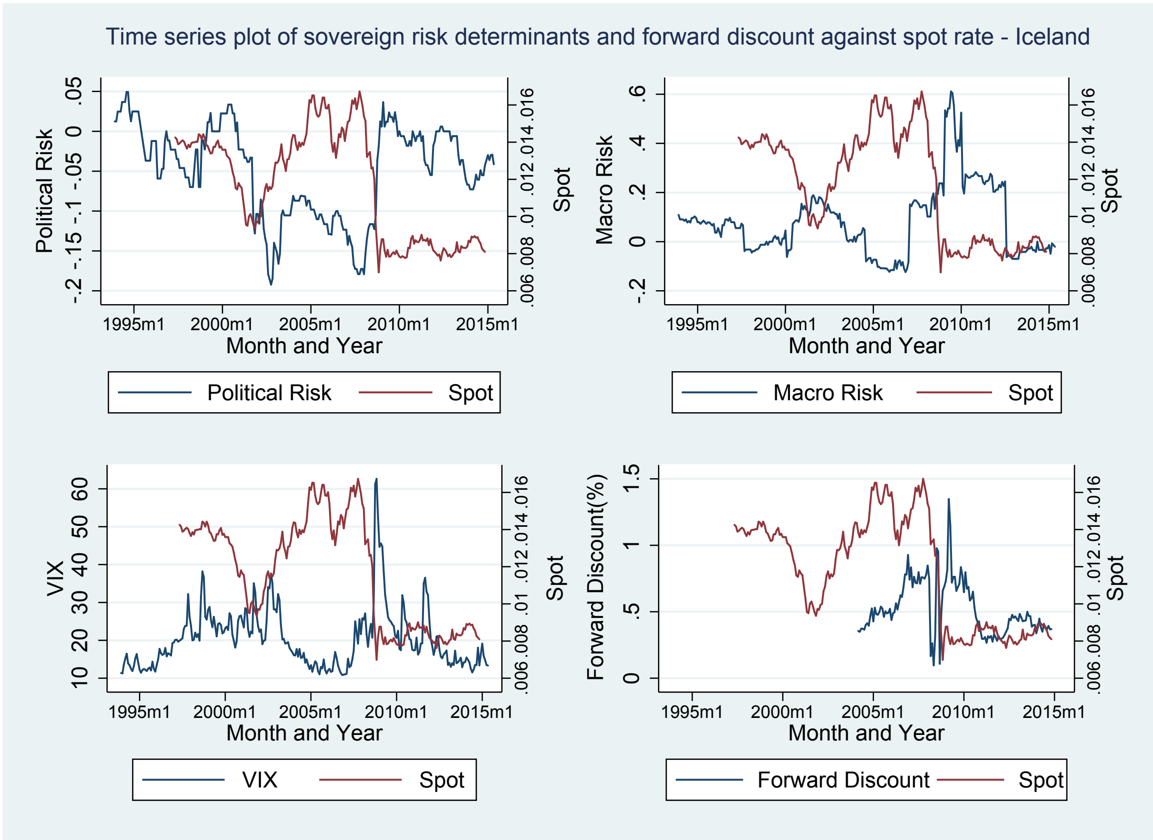


Figure 21: India spot versus sovereign risk determinants and forward discount

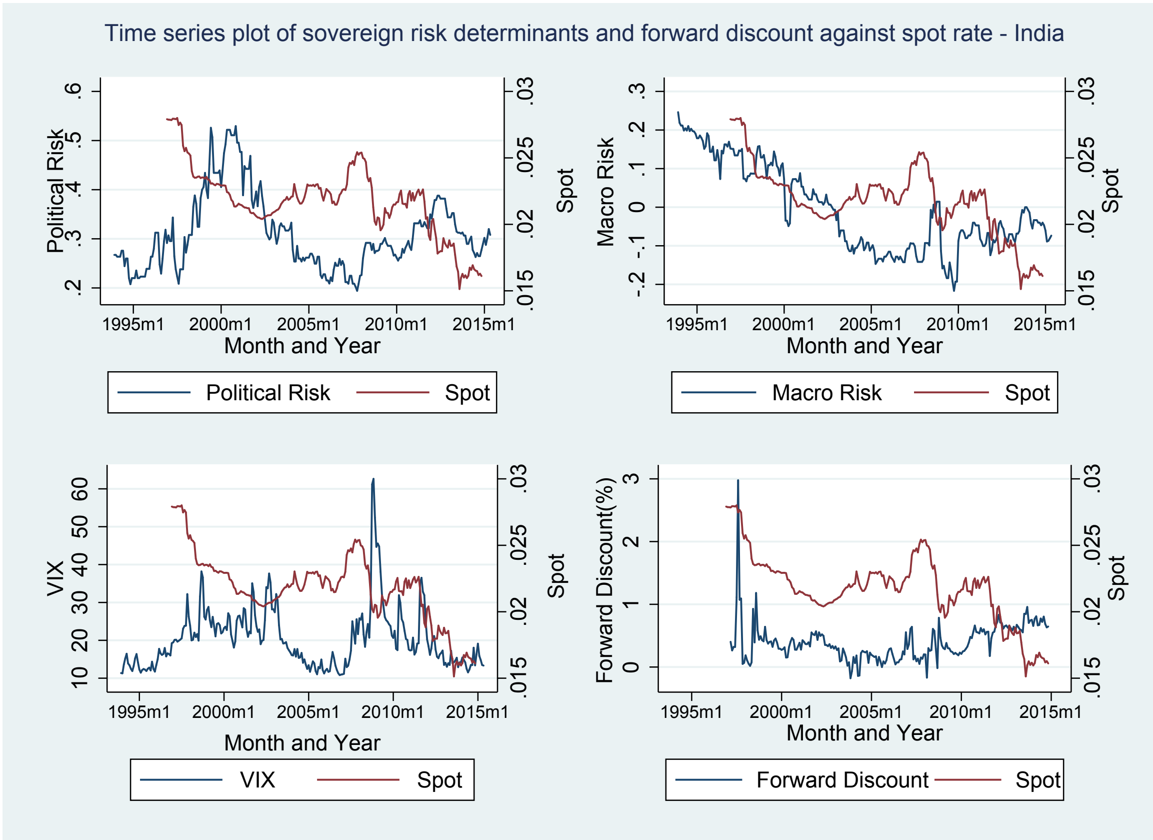


Figure 22: Indonesia spot versus sovereign risk determinants and forward discount

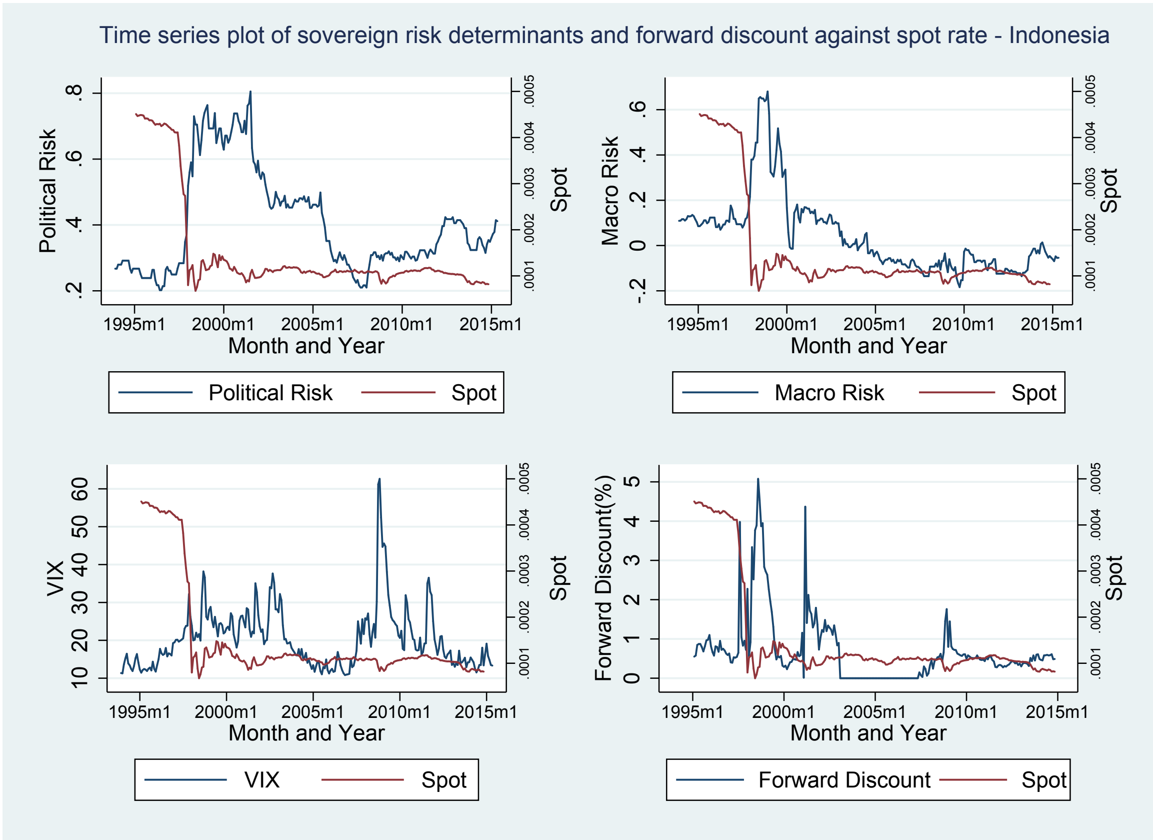


Figure 23: Israel spot versus sovereign risk determinants and forward discount

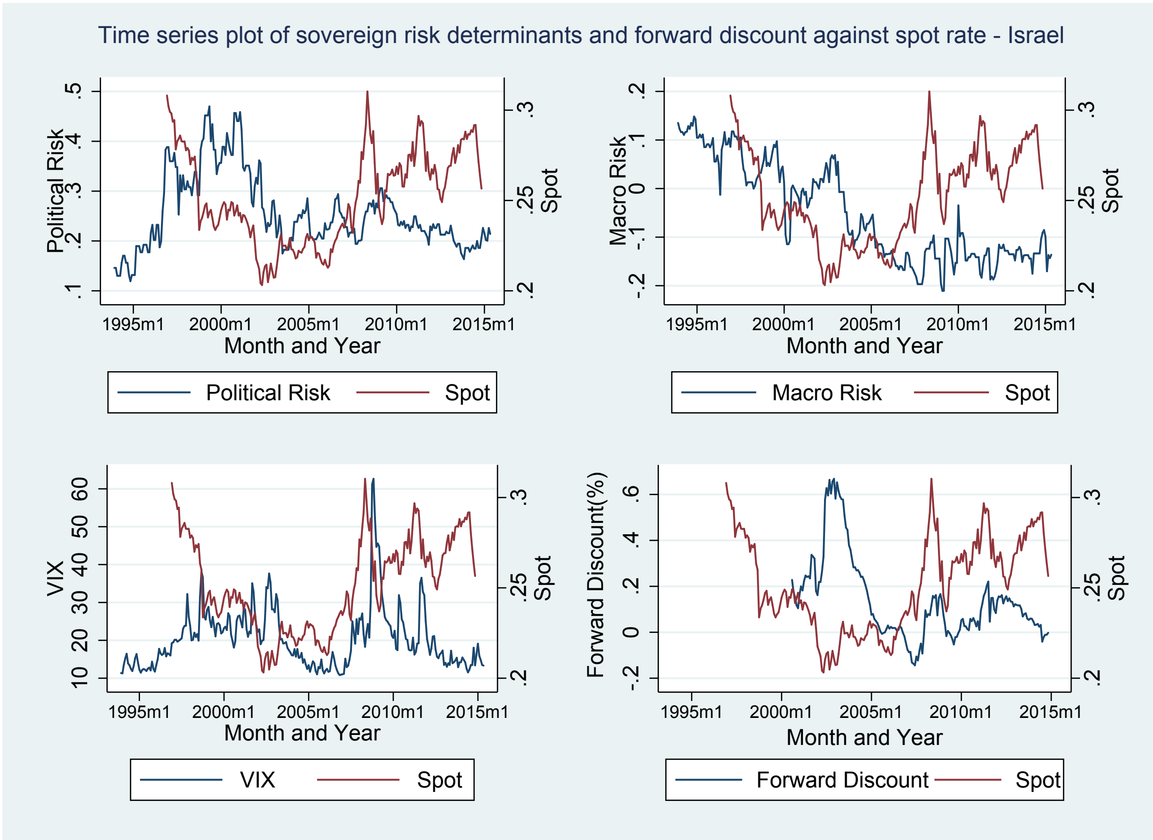


Figure 24: Malaysia spot versus sovereign risk determinants and forward discount

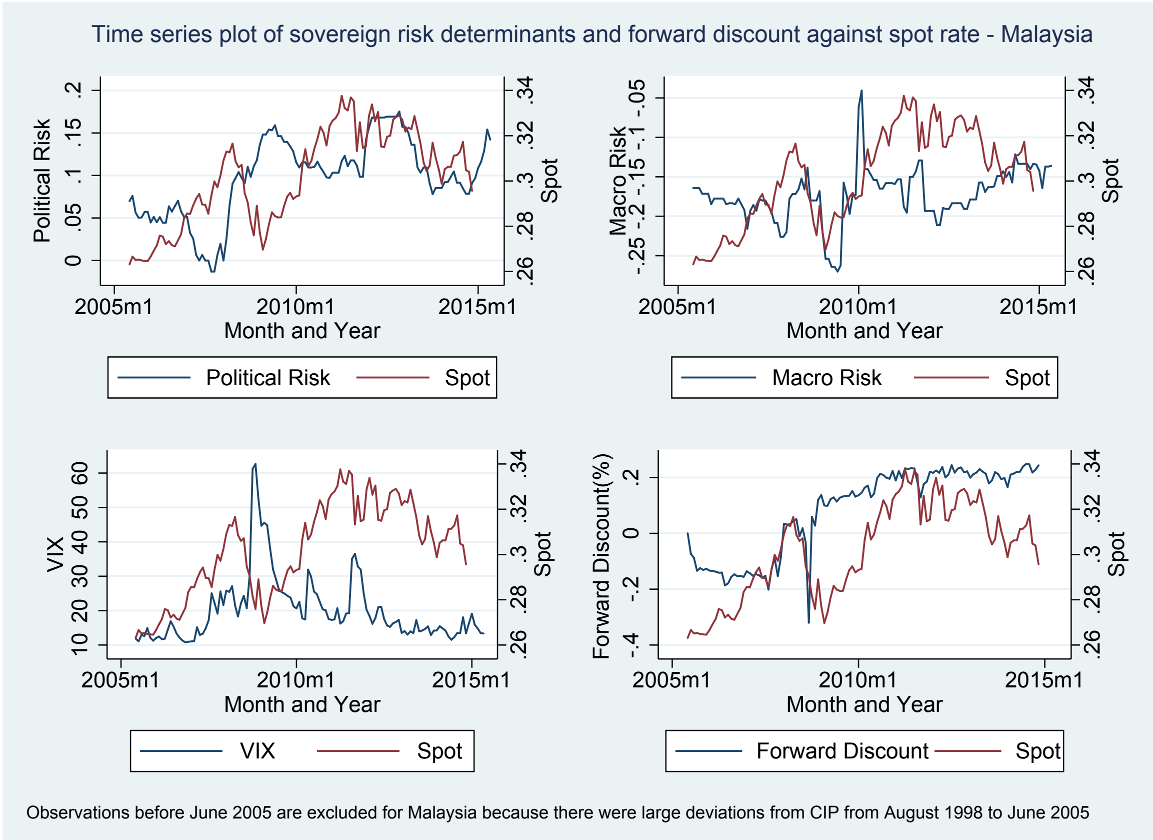


Figure 25: Mexico spot versus sovereign risk determinants and forward discount

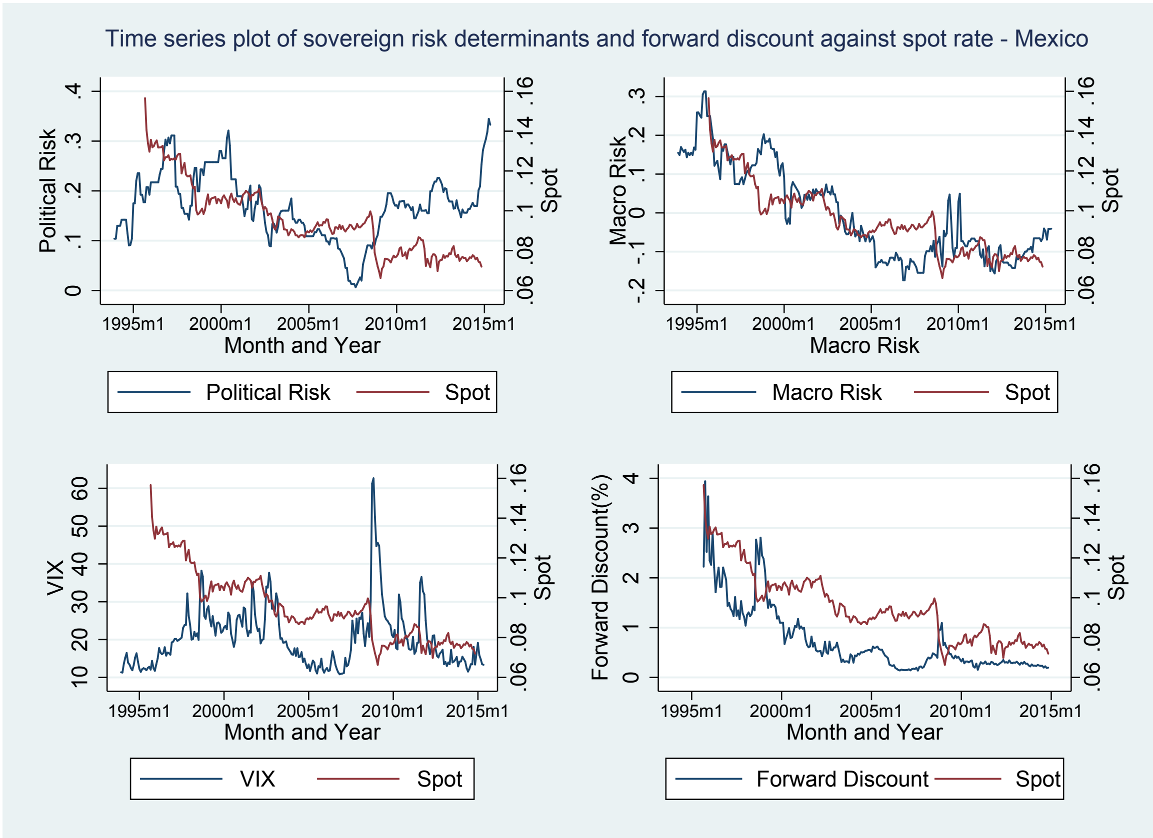


Figure 26: Morocco spot versus sovereign risk determinants and forward discount

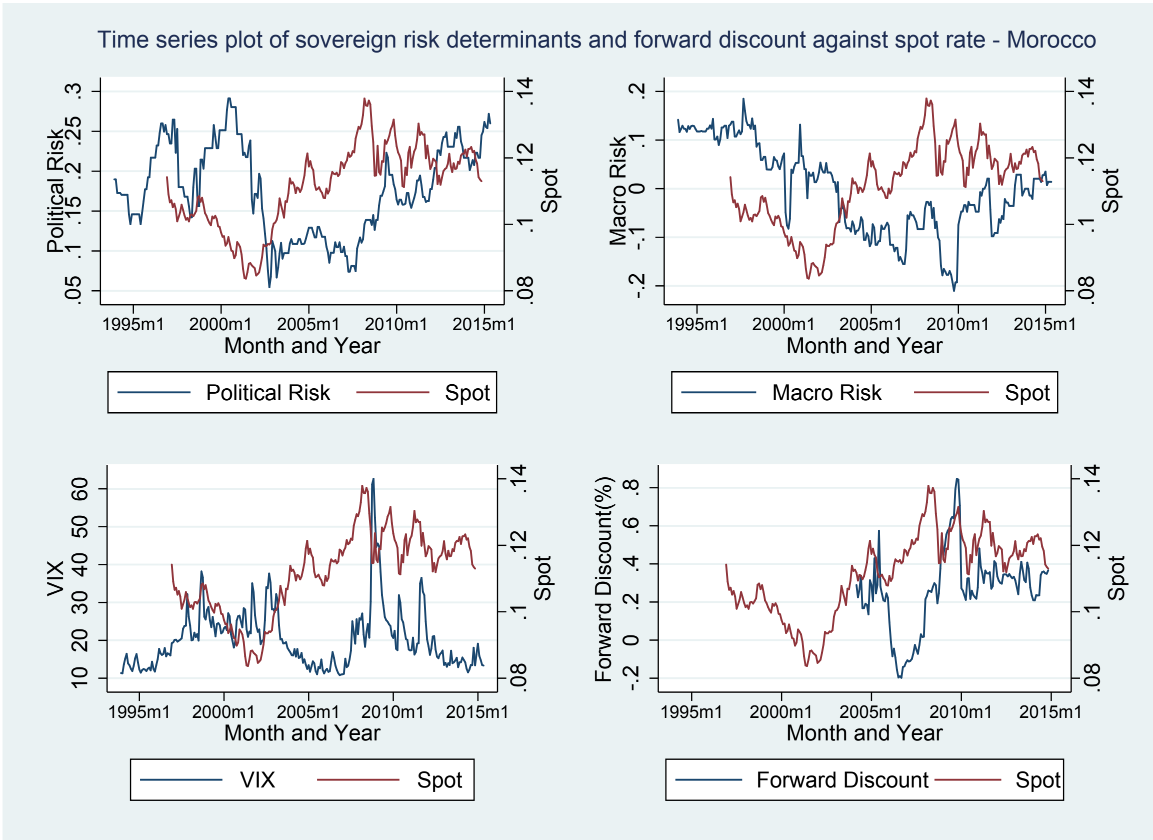


Figure 27: Philippines spot versus sovereign risk determinants and forward discount

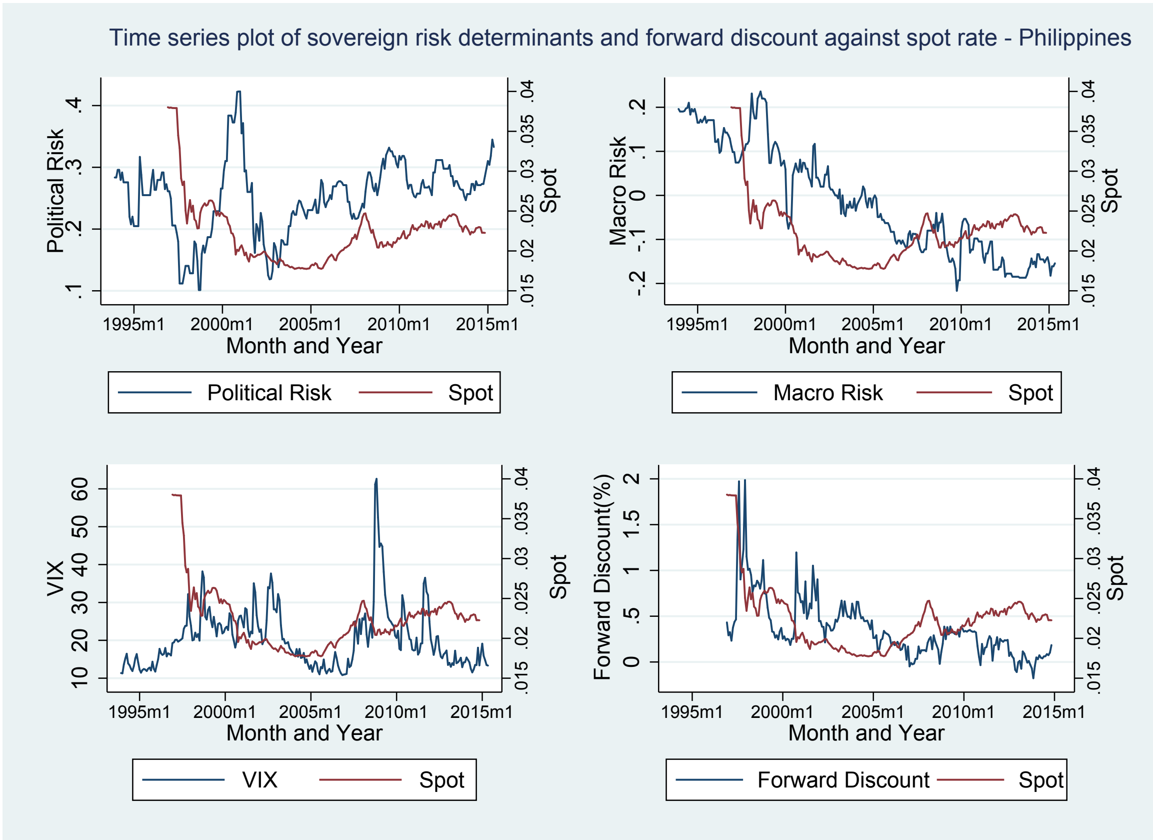


Figure 28: Poland spot versus sovereign risk determinants and forward discount

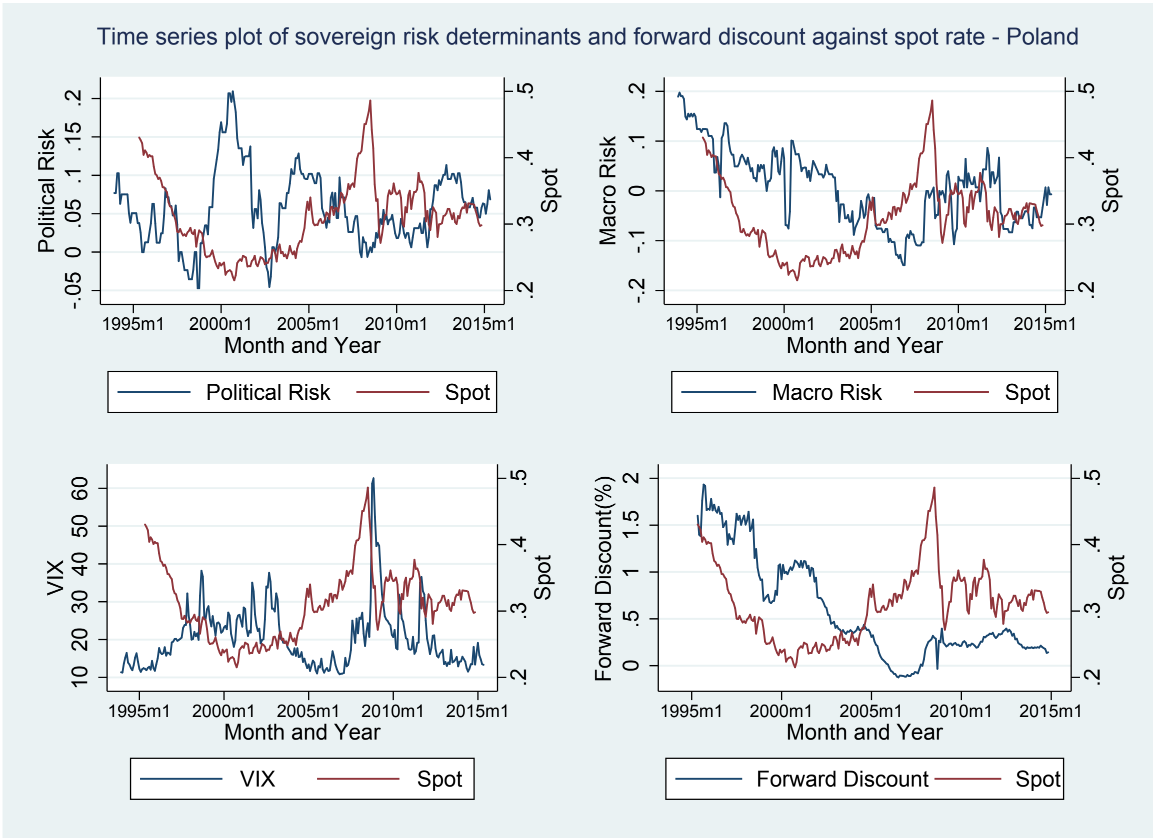


Figure 29: Romania spot versus sovereign risk determinants and forward discount

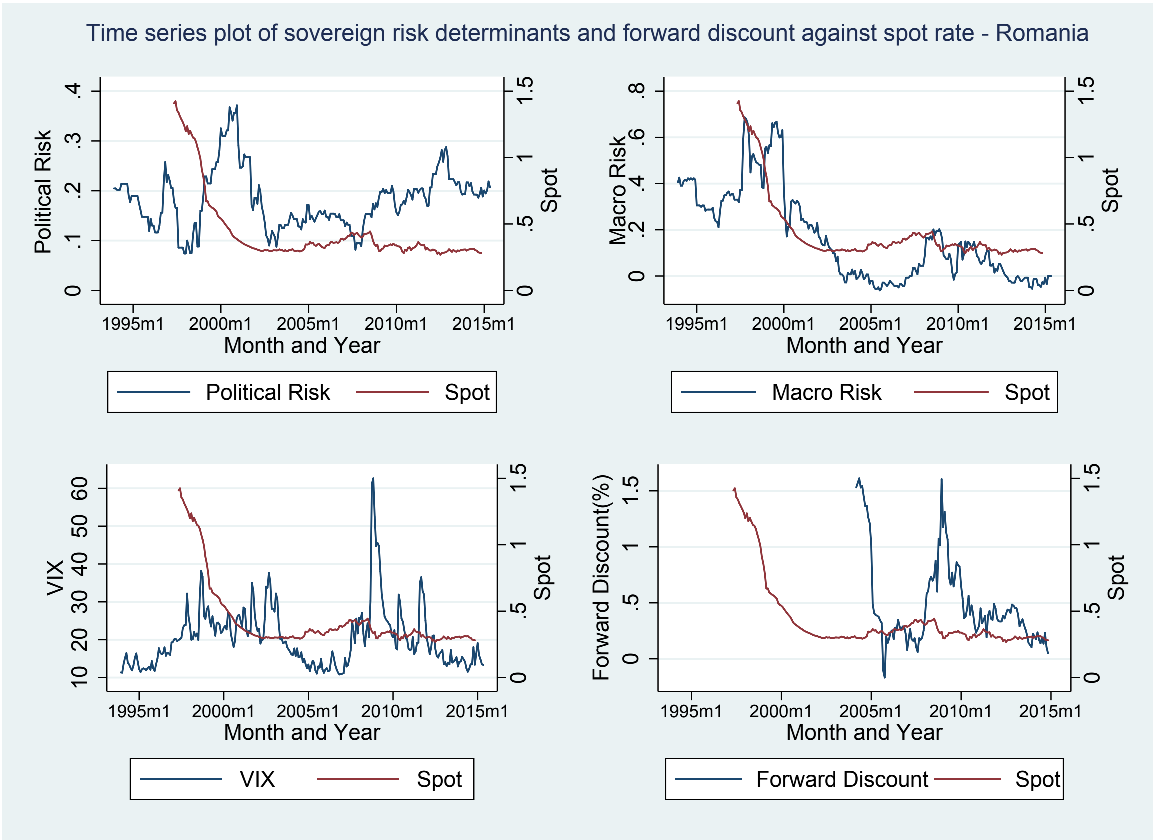


Figure 30: Russia spot versus sovereign risk determinants and forward discount

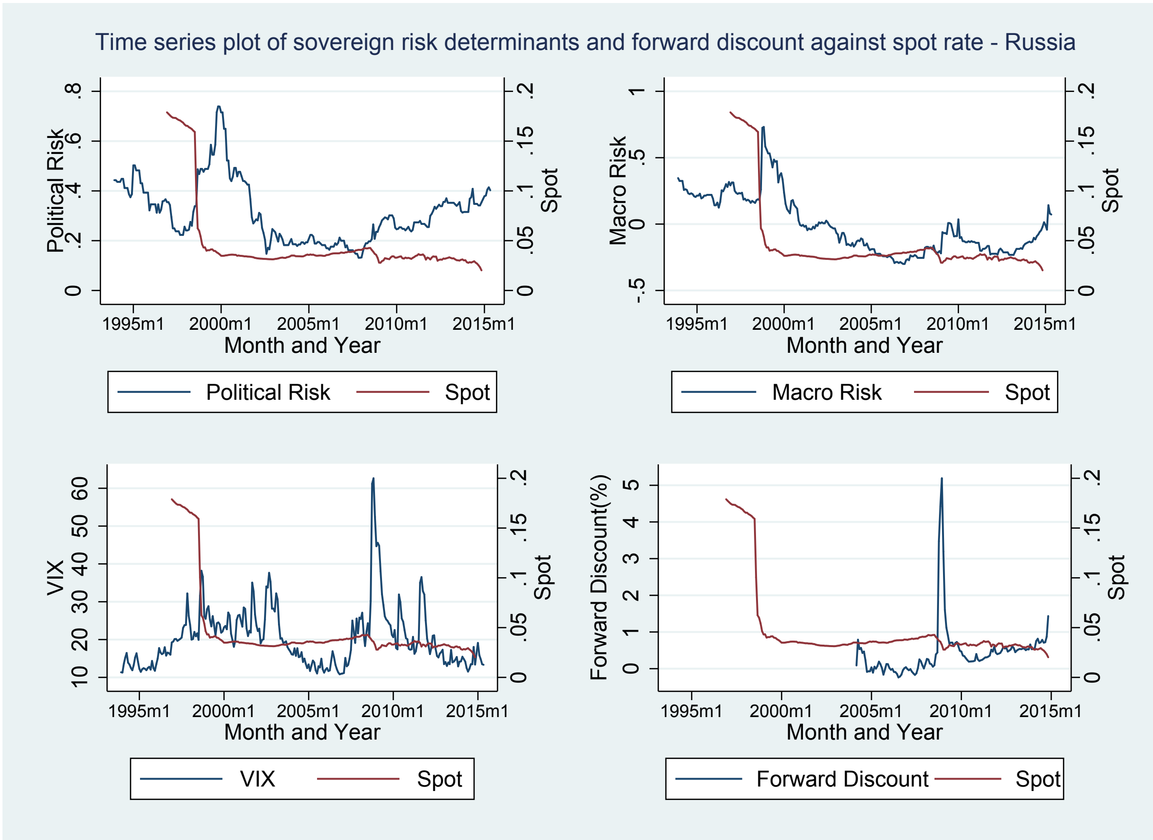


Figure 31: South Africa spot versus sovereign risk determinants and forward discount

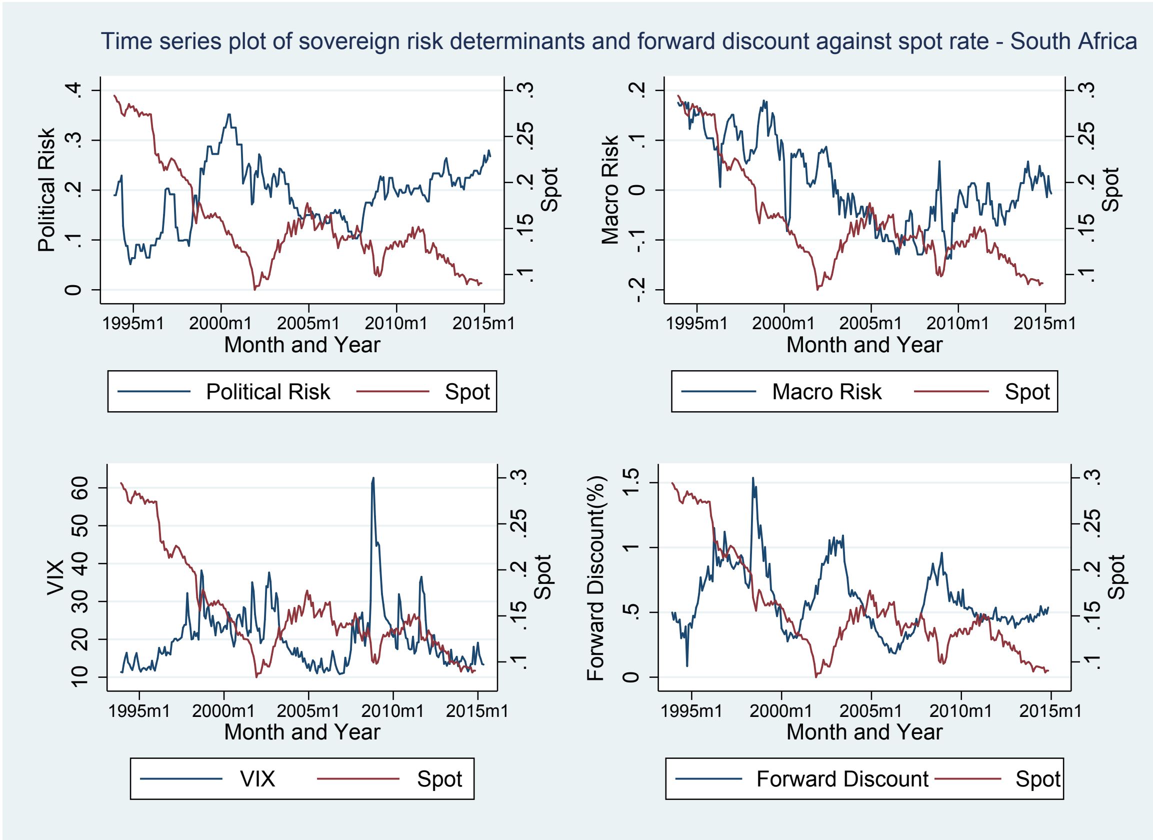


Figure 32: Taiwan spot versus sovereign risk determinants and forward discount

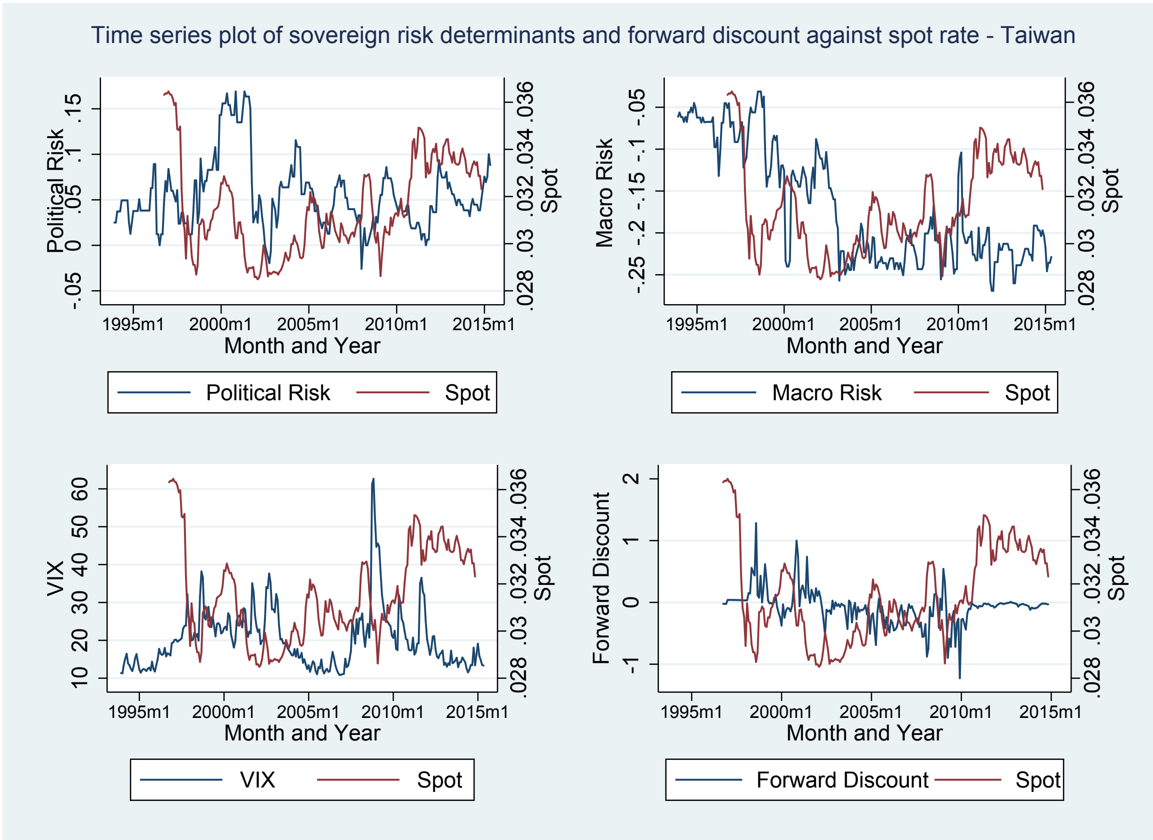


Figure 33: Thailand spot versus sovereign risk determinants and forward discount

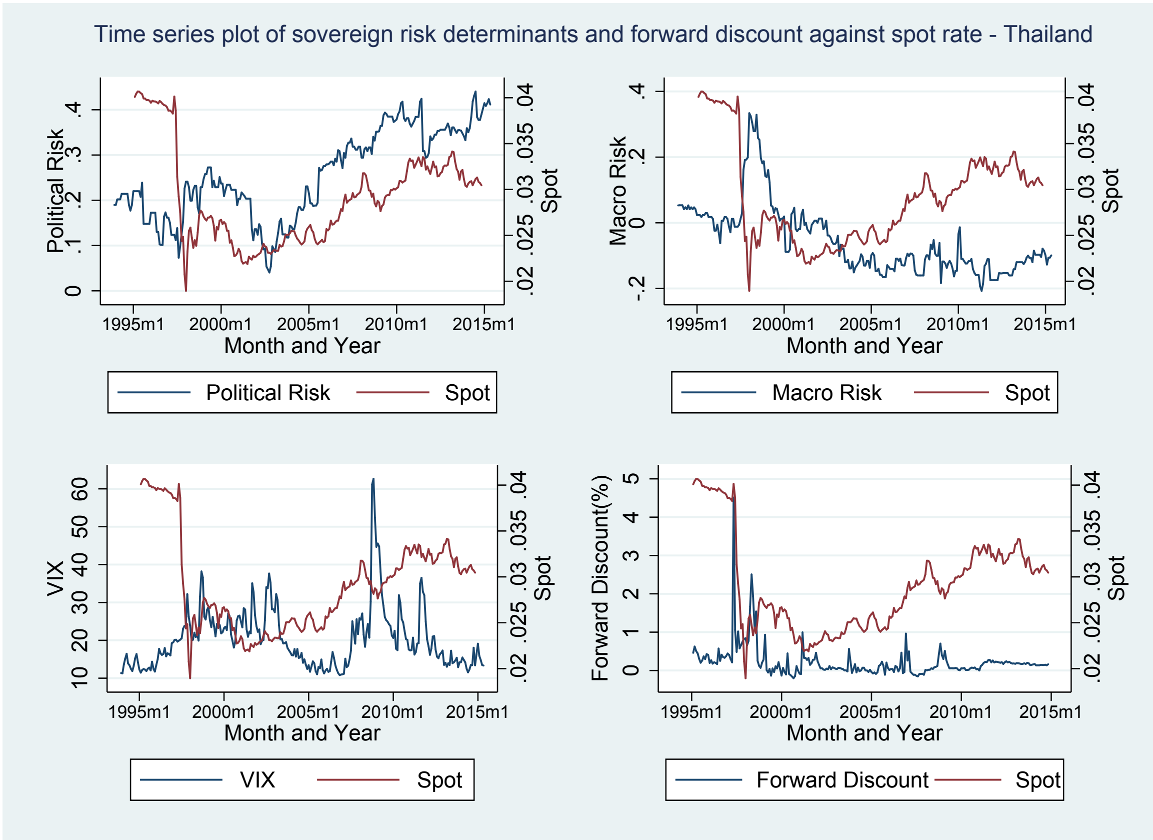
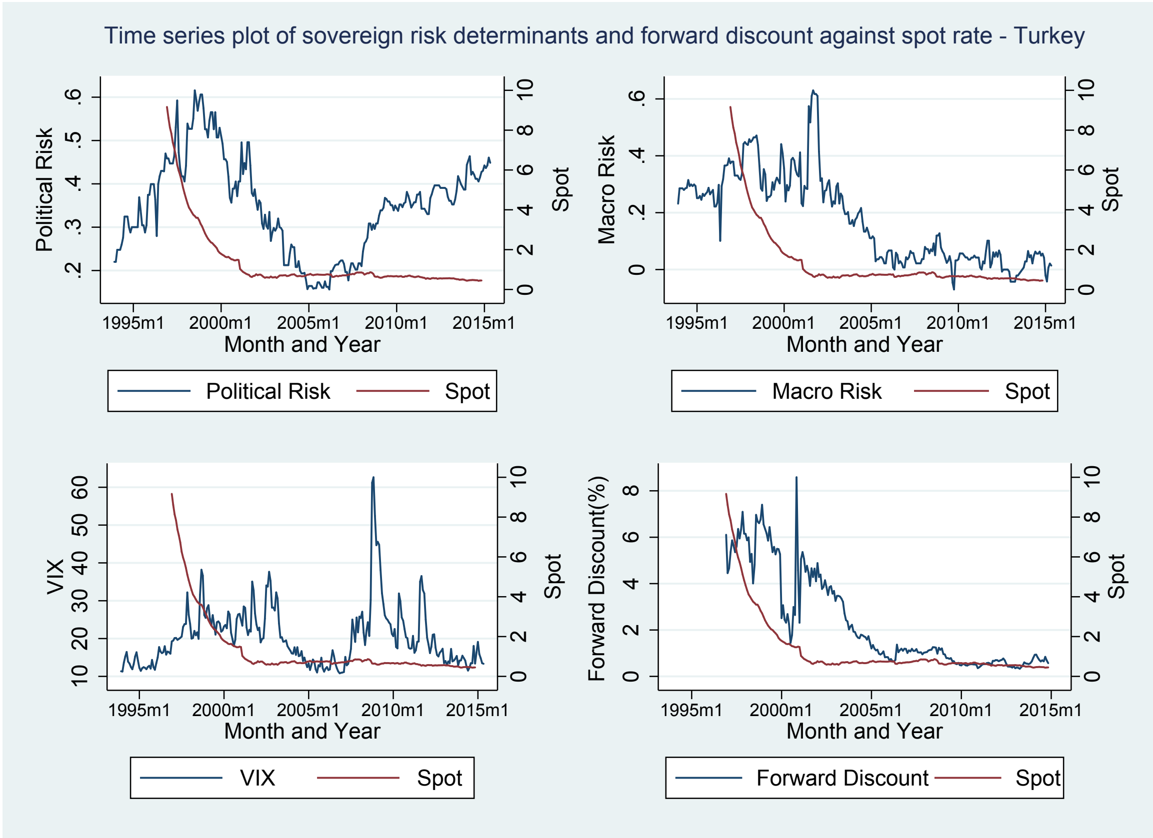


Figure 34: Turkey spot versus sovereign risk determinants and forward discount



APPENDIX C: ICRG RISK RATINGS

ICRG Political Risk Rating Components:

1. Government Stability: An assessment of both the government's ability to carry out its declared program(s), and its ability to stay in office. The risk rating assigned is the sum of three subcomponets, namely: Government Unity, Legislative Strength and Popular Support.

2. Socioeconomic Conditions: A measure of the socioeconomic pressures at work in a society that could constrain government action or fuel social dissatisfaction. The risk rating assigned is the sum of three subcomponents, namely: Unemployment, Consumer Confidence and Poverty.

3. Investment Profile: An assessment of factors affecting the risk to investment that are not covered by other political, economic and financial risk components. The risk rating assigned is the sum of three subcomponets, namely: Contract Viability/Expropriation, Profits Repatriation and Payment Delays.

4. Internal Conflict: An assessment of political violence in a country and its actual or potential impact on governance. The highest rating is given to those countries where there is no armed or civil opposition to the government and the government does not indulge in arbitrary violence, direct or indirect, against its own people. The lowest rating is given to a country embroiled in an on-going civil war. The risk rating assigned is the sum of three subcomponents, namely: Civil War/ Coup Threat, Terrorism/Political Violence and Civil Disorder.

5. External Conflict: An assessment both of the risk to the incumbent government from foreign action, ranging from non-violent external pressure (diplomatic pressures, withholding of aid, trade restrictions, territorial disputes, sanctions etc) to violent external pressure (cross-border conflicts to all-out . External conflicts can adversely affect foreign business in many ways, ranging from restrictions on operations to trade and investment sanctions, to distortions in the allocation of economic resources, to violent change in the structure of society. The risk rating assigned is the sum of three subcomponents, namely: War, Cross-Border Conflict, Foreign Pressures.

6. Corruption: An assessment of corruption within the political system. Corruption is a threat to foreign investment for several reasons: it distorts the economic and financial environment; it reduces the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability; and, last but not least, introduces an inherent instability into the political process. The most common form of corruption include financial corruption in the form of demands for special payments and bribes connected with import and export licenses, exchange controls, tax assessments, police protection, or loans. Such corruption can make it difficult to conduct business effectively, and in some cases may force the withdrawal or withholding of an investment. ICRG's measure takes such corruption into account, however it is more concerned with actual or potential corruption in the form of excessive patronage, nepotism, job reservations, "favor-for-favors", secret party funding, and suspiciously close ties

between politics and business. In ICRG's view, these insidious sorts of corruption are potentially of much greater risk to foreign business in that they can lead to popular discontent, unrealistic and inefficient controls on the state economy, and encourage the development of the black market. The greatest risk in such corruption is that at some point it will become so overweening, or some major scandal will be suddenly revealed, as to provoke a popular backlash, resulting in a fall or overthrow of the government, a major reorganizing or restructuring of the country's political institutions, or, at worst, a break down in law and order, rendering the country ungovernable.

7. Military in Politics:The military is not elected by anyone. Therefore, its involvement in politics, even at a peripheral level, is a dimunition of democratic accountability. However, it also has other significant implications. The military might, for example, become involved in government because of an actual or created internal or external threat. Such a situation would imply the distortion of government policy in order to meet this threat, for example by increasing the defense budget at the expense of other budget allocations. In some countries, the threat of military take-over can force an elected government to change policy or cause its replacement by another government more amenable to the military's wishes. A military takeover or threat of a takeover may also represent a high risk if it is an indication that the government is unable to function effectively and the country therefore has an uneasy environment for foreign businesses. A full-scale military regime poses the greatest risk. In the short-term a military

regime may provide a new stability and thus reduce business risks. However, in the longer term the risk will almost certainly arise, partly because the system of governance will become corrupt and partly because the continuation of such a government is likely to create an armed opposition. In some cases, military participation in government may be a symptom rather than a cause of underlying difficulties. Overall, lower risk ratings indicate a greater degree of military participation in politics and a higher level of political risk.

8. Religious Tensions: They may stem from the domination of society and/or governance by a single religious group that seeks to replace civil law by religious law and to exclude other religions from the political and/or social process; the desire of a single religious group to dominate governance; the suppression of religious freedom; the desire of a religious group to express its own identity, separate from the country as a whole. The risk involved in these situations range from inexperienced people imposing inappropriate policies through civil dissent to civil war.

9. Law and Order: To assess the "Law" component, the strength and impartiality of the judicial system are considered, while the "Order" component is an assessment of popular observance of the law. A country may enjoy a high rating in terms of its judicial system, but a low rating if it suffers from a very high crime rate or if the law is routinely ignored without effective sanction (for example, wisdespread illegal strikes).

10. Ethnic Tensions: An assessment of the degree of tension within a country at-

tributable to racial, nationality, or language divisions. Lower ratings are given to countries where racial and nationality tensions are high because opposing groups are intolerant and unwilling to compromise. High ratings are given to countries where tensions are minimal, even though such differences may still exist.

11. Democratic Accountability: This is a measure of how responsive a government is to its people, on the basis that the less responsive it is, the more likely it is that the government will fall, peacefully in a democratic society, but possibly violently in a non-democratic society. The points in this component are awarded on the basis of the type of governance enjoyed by the country in question. For this purpose ICRG defines the following types of governance: Alternating democracy (a government / executive that has not served more than two successive terms with an active a viable opposition; Dominated democracy (a government/executive that has served more than two successive terms); De-facto one-party state (a government/executive has served more than two successive terms, or where the political/electoral system is designed or distorted to ensure the domination of governance by a particular government/executive, and where there is evidence of restrictions on the activity of non-government political parties); De-jure one-party state (a constitutional requirement that there be only one governing party and a lack of any legally recognized political opposition); and Autarchy (leadership of the state by a group or single person, without being subject to any franchise, either through military might or inherited right). In

an autarchy, the leadership might indulge in some quasi-democratic processes. In its most developed form this allows competing political parties and regular elections, through popular franchise, to an assembly with restricted legislative powers (approaching the category of a de jure or de-facto one-party state. However, the defining feature is whether the leadership, i.e.the head of government, is subject to election in which political opponents are allowed to participate. In general, the highest number of risk points (lowest risk) is assigned to Alternating democracies, while the lowest number of risk points (highest risk) is assigned to Autarchies.

12. Bureaucracy Quality: The institutional strength and quality of the bureaucracy is another shock absorber that tends to minimize revisions of policy when governments change. Therefore, high points are given to countries where the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services. In these low-risk countries, the bureaucracy tends to be somewhat autonomous from political pressure and to have an established mechanism for recruitment and training. Countries that lack the cushioning effect of a strong bureaucracy receive low points because a change in government tends to be traumatic in terms of policy formulation and day-to-day administrative functions.

ICRG Economic Risk Rating Components:

1. GDP per capita: The estimated GDP per capita for a given year, converted into US dollars at the average exchange rate for that year, is expressed as

a percentage of the average of the estimated total GDP of all the countries covered by ICRG.

2. Real GDP growth: The annual change in the estimated GDP, at constant 1999 prices, of a given country is expressed as a percentage increase or decrease.

3. Annual Inflation Rate: The estimated annual inflation rate (the unweighted average of the Consumer Price Index) is calculated as a percentage change.

4. Budget Balance as a percentage of GDP: The estimated central government budget balance (including grants) for a given year in the national currency is expressed as a percentage of the estimated GDP for that year in the national currency.

5. Current Account as a percentage of GDP: The estimated balance on the current account of the balance of payments for a given year, converted into US dollars at the average exchange rate for that year, is expressed as a percentage of the estimated GDP of the country concerned, converted into US dollars at the average rate of exchange rate for the period covered.

ICRG Financial Risk Rating Components:

1. Foreign Debt as a percentage of GDP: The estimated gross foreign debt in a given year, converted into US dollars at the average exchange rate for that year, is expressed as a percentage of the gross domestic product converted into US dollars at the average exchange rate for that year.

2. Exchange Rate Stability: The appreciation or depreciation of a currency against the US dollar (against the euro in the case of the USA) over a calender year or the most recent 12-month period is calculated as a percentage change.

3. Foreign Debt Service as a Percentage of Exports of Goods and Services: The estimated foreign debt service, for a given year, converted into US dollars at the average exchange rate for that year, is expressed as a percentage of the sum of the estimated total exports of goods and services for that year, converted into US dollars at the average exchange rate for that year.

4. Current Account as a Percentage of Exports of Goods and Services: The balance of the current of the balance of payments for a given year, converted into US dollars at the average exchange rate for that year, is expressed as a percentage of the sum of the estimated total exports of goods and services for that year, converted into US dollars at the average exchange rate for that year.

5. Net International Liquidity as Months of Import Cover: The total estimated official reserves for a given year, converted into US dollars at the average exchange rate for that year, including official holdings of gold, converted into US dollars at the free market price for the period, but excluding the use of IMF credits and the foreign liabilities of the monetary authorities, is divided by the average monthly merchandise import cost, converted into US dollars at the average exchange rate for the period.