INFER
INTERNATIONAL NETWORK FOR ECONOMIC RESEARCH

INFER WORKING PAPER SERIES

INTERNATIONAL NETWORK FOR ECONOMIC RESEARCH

No. 5 | 2024

UIP deviations in times of uncertainty: not all countries behave alike

GOLE Purva *(EHESS, Paris)*
PEREGO Erica *(CEPII, Paris)*
TURCU Camelia *(University of Orléans)*

Website:
https://infer-research.eu/

Contact:
publications@infer.info

UIP deviations in times of uncertainty: not all countries behave alike *

Purva Gole[†] Erica Perego[‡] Camelia Turcu[§]

June 20, 2024

Abstract

In this paper, we reconsider the role of uncertainty in explaining uncovered interest rate parity (UIP) deviations by focusing on 60 emerging and developing (EMDE) and advanced (AE) economies, over the period 1995M1–2023M3. We show that differentiating between EMDE currencies and AE currencies is crucial for understanding UIP deviations as the behaviour of excess returns differs in the two groups in periods of uncertainty: deviations become wider for EMDEs and narrow for AEs. These new results are consistent with the idea that in periods of uncertainty, global investors might change their risk preferences and move from high currency-risk investments in EMDEs towards less risky ones in AEs. This evidence holds for both the short-run and long-run UIP, and becomes stronger since the Global Financial Crisis (GFC).

Keywords: Uncertainty, Uncovered interest rate parity, Risk premia, Emerging countries

JEL Classification: F21, F30, F31, F41

*Acknowledgments: We thank Pablo Winant and Marcel Voia for the interesting discussions and comments and all the participants to the CEPII seminars for their useful remarks. All remaining errors are ours. Camelia Turcu and Purva Gole gratefully acknowledge the support of the APR IA CriseReactGlobal - 2021 00149486.

[†]EHESS, Paris, France. purva.gole@ehess.fr.

[‡]CEPII, Paris, France. erica.perego@cepii.fr. Corresponding Author.

[§]LEO, University of Orléans, France. camelia.turcu@univ-orleans.fr

1 Introduction

The theory of the uncovered interest rate parity (UIP henceforth) suggests that identical assets in two different countries should provide the same returns, once taken into account the exchange rate behaviour of the two countries' currencies. However, the empirical literature has shown—since Fama (1984)'s seminal work—that the UIP condition does not hold in reality. The literature, focusing on developed countries, has identified different explanations: the role of expectations, uncertainty, and country risk premium.

In this paper, we reconsider the role of uncertainty in explaining UIP deviations. We conduct a comprehensive study of monthly UIP deviations in periods of uncertainty by considering a large sample of 60 currencies including both EMDEs and AEs countries. Our contribution is to show that differentiating between EMDE currencies and AE currencies is crucial for understanding UIP deviations as the behaviour of excess returns differs in the two groups: in periods of uncertainty UIP deviations become wider for EMDEs and narrower for AEs.

Heightened uncertainty can increase investors' risk aversion and push investors to postpone their investment decisions and/or to require higher carry trade payoffs (excess returns) as compensation for bearing currency risk. This behaviour blurs the relationship between exchange rates and interest rate differentials leading to the so-called UIP risk premium. In this paper, we conjecture that, when arbitrage opportunity gains become more uncertain, global investors might change their risk preferences and decide to move their investments from high currency risk countries (EMDEs) towards less risky ones (AEs) determining a higher UIP risk premium for the former, and a lower for the latter.

We contribute to the literature in two directions. First, we enlarge the recent literature on UIP and uncertainty by focusing on both EMDEs and AEs. Previous studies have shown that UIP holds in periods of low uncertainty and breaks down during periods of high uncertainty (Ismailov and Rossi, 2018; Husted et al., 2018), and that uncertainty is priced as a global risk in excess returns (Berg and Mark, 2018; Ferrara and Yapi, 2022). Second, we contribute to the literature by studying the differentiated behaviour of the UIP condition in EMDEs versus AEs. The literature has shown that risk premia are higher for EMDEs (Aysun and Lee, 2013; Kumar, 2019); that the forward premium puzzle is mostly important for AEs (Bansal and Dahlquist, 2000; Frankel and Poonawala, 2010) and that global risk correlates positively with UIP deviations for both AEs and EMDEs, but that only for EMDEs policy uncertainty is a determinant of deviations (Kalemli-Özcan and Varela, 2021).[1] More recently considering long-run UIP, Albagli et al. (2024) show that conditional on a global uncertainty shock, UIP violations increase both for emerging and advanced economies. With respect to these papers, our contribution is to do a comprehensive study of UIP deviations in EMDEs and AEs during periods of uncertainty looking both at the short- and long-run relationships.

[1] Refer to Alper et al. (2009) for an excellent literature review on the UIP in EMDEs.

2 Data

We consider a sample of 60 countries for which data is available over the period 1995M1–2023M3. Among these countries, 39 are AEs (high-income and upper-middle-income countries), and 21 are EMDEs (lower-middle-income and low-income countries).[2]

We compute ex-post UIP deviations over a 3-month horizon considering the US as the reference country. We employ the 10-year government bond yields for testing long-run UIP.

We use different *financial uncertainty indicators*: VIX, World Uncertainty Index (WUI), Banking, currency, default and inflation composite index (BCDI), Financial Stress (FS), Financial Uncertainty (FU).

Finally, we employ macroeconomic variables as controls: inflation differentials, exchange rate regimes, capital controls. Appendix A presents the data in detail.

3 Empirical analysis

We estimate the standard Fama regression conditioned on the income group:

$$s_{c,t} - s_{c,t-3} = \alpha + \beta_1\, idiff_{c,t-3} + \beta_2 \iota_c + \beta_3\ (idiff_{c,t-3}\ \text{x}\ \iota_c) + \delta_c + \epsilon_t \quad (1)$$

We then estimate the same model adding uncertainty (VIX). Finally, we turn to a non-linear model estimation, in which the slope of the UIP is conditioned on both the uncertainty indicator and the income group:

$$\begin{aligned} s_{c,t} - s_{c,t-3} =& \alpha + \beta_1\, idiff_{c,t-3} + \beta_2\, VIX_{t-3} \\ &+ \beta_3\,(idiff_{c,t-3})\ \text{x}\ VIX_{t-3}) + \beta_4\,(idiff_{c,t-3}\ \text{x}\ \iota_c\ \text{x}\ VIX_{t-3}) \\ &+ \beta_5\,(idiff_{c,t-3}\ \text{x}\ \iota_c) + \beta_6\,(\iota_c\ \text{x}\ VIX_{t-3}) + \delta_c + \delta_{rq} + \delta_t + \epsilon_t \end{aligned} \quad (2)$$

Where $s_{c,t} - s_{c,t-3}$ is the ex-post three-month change in the nominal exchange rate of country c; $idiff_{c,t-3}$ is the difference between the country c nominal interest rate and the one of the US ($i_{c,t-3} - i_{US,t-3}$); VIX is the proxy for global risk perception; and ι is an income group dummy which takes the value 0 for low and lower-middle income countries and 1 otherwise. δ represents fixed effects: country (c), regional-quinquennium (rq)[3] and time (t). The constant is α and the error term is represented by ϵ_t.

[2] A country is assigned to a constant World Bank income category, according to the group in which it most frequently falls under.

[3] The region selection is based on the World Bank regions of 2022: East Asia and Pacific (1), Europe and Central Asia (2), Latin America and the Caribbean (3), Middle East and North Africa (4), North America (5), South Asia (6), Sub-Saharan Africa (7)).

Table 1: Main regressions using VIX as the uncertainty indicator

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
$idiff$	0.028*	0.026*	0.109***	0.070**	0.083**	0.108***
	(0.014)	(0.014)	(0.032)	(0.033)	(0.033)	(0.039)
VIX		0.012*	0.073***	0.079***	-	-
		(0.006)	(0.016)	(0.016)		
$idiff$ **x** VIX			-0.004***	-0.003**	-0.003**	-0.004**
			(0.001)	(0.001)	(0.001)	(0.001)
$idiff$ **x** VIX **x** ι			0.006***	0.005***	0.005**	0.005**
			(0.002)	(0.002)	(0.002)	(0.002)
$idiff$ **x** ι	-0.035*	-0.036*	-0.152***	-0.130***	-0.111**	-0.126**
	(0.021)	(0.021)	(0.046)	(0.047)	(0.047)	(0.053)
VIX **x** ι			-0.080 ***	-0.082***	-0.084***	-0.110**
			(0.018)	0.018	0.018	(0.023)
No. Obs.	18,994	18,994	18,994	18,994	18,994	15,001
Adjusted R^2	0.0717	0.0718	0.0726	0.0763	0.0883	0.0953
Fixed effects	c	c	c	c, rq	c, rq, t	c, rq, t
Other Controls	No	No	No	No	No	Yes

***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

4 Results

4.1 Main results

Table 1 shows the baseline results.[4] Column (1) presents the estimation of the model in equation 1; column (2) adds the VIX as a regressor; and columns (3)-(6) present different forms of the estimation of the model in equation 2.

Columns (1)-(2) show that the UIP is not satisfied, on average, over the whole countries' sample and that the VIX explains only partly the exchange rate volatility. Columns (3)-(6) display the key result. In periods of uncertainty, the deviations from the UIP are stronger for developing countries (negative coefficient of the interaction term $idiff$ x VIX) whereas they narrow for advanced economies (positive coefficient of the triple interaction). Moreover, in periods of uncertainty, only advanced economies suffer from the so-called "forward premium puzzle" which is the tendency of a currency to appreciate when the country's interest rate is higher than the one of the reference country (the overall value of the coefficient $idiff$ is negative for these economies). This evidence is robust to controlling for region-business cycle and time-fixed effects—column (5)— and to including macroeconomic variables—column (6)—as controls. In

[4] Appendix B presents the results of the estimations at the country and income-group level. The results are coherent with Table 1.

detail, we control for i) inflation differentials to gauge expected monetary policy conduct and real value of the currencies; ii) exchange rate regime, and iii) capital controls to account for impediments to the free movement of capital as required by the UIP condition.

4.2 Different measures of uncertainty

Table 2 confirms the previous results. In particular, it seems that the uncertainty measures for which the heterogeneous behaviour of UIP risk premiums across EMDEs and AEs is more marked are those linked to international financial uncertainty (BDCI, FS, FU). We do not find evidence of the same heterogeneous behaviour for other macroeconomic uncertainty indicators (see Appendix B). This reinforces our conjecture that in periods of financial uncertainty, international investors change their risk preferences and move their investments from EMDEs to AEs. These behaviours are consistent with Bhattarai et al. (2020) who shows that US uncertainty shock negatively affects EMEs exchange rates, raises EMEs country spreads, and reduces their capital inflows.

Table 2: Main regression using different financial uncertainty indicators

	VIX	**WUI**	**BCDI**	**FS**	**FU**
$idiff$	0.108***	0.191***	0.130**	5.811***	0.127**
	(0.039)	(0.071)	(0.039)	(1.61)	(0.064)
$idiff$ **x** $uncert$	-0.004**	-0.000	-0.002***	-0.057***	-0.115*
	(0.001)	(0.000)	(0.000)	(0.015)	(0.068)
$idiff$ **x** $uncert$ **x** ι	0.005**	-0.000	0.004***	0.075***	0.189**
	(0.002)	(0.000)	(0.001)	(0.023)	(0.092)
$idiff$ **x** ι	-0.126**	-0.126	-0.211***	-7.666***	-0.182**
	(0.053)	(0.115)	(0.059)	(2.400)	(0.085)
$uncert$ **x** ι	-0.110**	0.000	-0.064***	-0.696***	-3.933***
	(0.023)	(0.000)	(0.009)	(0.222)	(0.933)
No. Obs.	15,001	7,369	9,488	13,275	15,001
Adjusted R^2	0.0953	0.0960	0.1026	0.1011	0.0951
Fixed effects	c, rq, t	c, rq, t	c, rq, t	c, rq, t	c, rq, t
Other Controls	Yes	Yes	Yes	Yes	Yes

***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

4.3 Main results over time

Table 3 shows the evolution of our main results over time, along two lines: by splitting the sample for short-run UIP and by considering long-run UIP.

We split the sample around the Global Financial Crisis (GFC) using two key dates: 2007m1 as in Engel et al. (2022) and 2008m8 following Andrews et al. (2024). In line with the previous literature, we observe a shift in the beta coefficient of the UIP relationship and, more related to our results, a stronger heterogeneous effect of VIX across countries in the second part of the sample. This difference can be explained by the higher level of uncertainty in the recent period.

For long-run UIP, we regress the 10-year government bonds' yield differentials over the 10-year exchange rates' change in line with Chinn and Meredith (2004). We find evidence that our main results hold also for long-run UIP.

Table 3: Main regressions over time

		Before		From		Long-run UIP
	Baseline	2007m1	2008m8	2007m1	2008m8	10y-10y
$idiff$	0.108***	0.110**	0.084*	0.208***	0.195***	5.682***
	(0.039)	(0.053)	(0.050)	(0.064)	(0.068)	(2.170)
$idiff$ **x** VIX	-0.004**	-0.002	-0.002	-0.002	-0.003	-0.119
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.089)
$idiff$ **x** VIX **x** ι	0.005**	0.002	0.002	0.009**	0.008**	0.537***
	(0.002)	(0.003)	(0.002)	(0.004)	(0.004)	(0.127)
$idiff$ **x** ι	-0.126**	-0.081	-0.057	-0.434***	-0.370***	-29.128***
	(0.053)	(0.069)	(0.065)	(0.105)	(0.116)	(3.634)
VIX **x** ι	-0.110**	-0.154***	-0.138***	-0.073**	-0.077**	-3.094***
	(0.023)	(0.039)	(0.036)	(0.032)	(0.034)	(1.125)
No. Obs.	15,001	6,864	7,835	8,137	7,166	4,935
Adjusted R^2	0.0953	0.1320	0.1139	0.0783	0.1019	0.5803
Fixed effects	c, rq, t	c, rq, t	c, rq, t	c, rq, t	c, rq, t	c, rq, t
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes

***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

5 Conclusion

We study UIP deviations in periods of uncertainty by differentiating between advanced and developing-emerging countries. We find that UIP deviations widen in periods of uncertainty for developing and emerging countries, whereas they narrow for advanced economies. This evidence is stronger since the global financial crisis and finds validation also when considering long-run UIP. Our results hold across various financial uncertainty measures and do not seem to be triggered by macroeconomic uncertainty.

References

Albagli, E., Ceballos, L., Claro, S., and Romero, D. (2024). Uip deviations: Insights from event studies. *Journal of International Economics*, 148:103877.

Alper, C. E., Ardic, O. P., and Fendoglu, S. (2009). The economics of the uncovered interest parity condition for emerging markets. *Journal of Economic Surveys*, 23(1):115–138.

Andrews, S., Colacito, R., Croce, M. M., and Gavazzoni, F. (2024). Concealed carry. *Journal of Financial Economics*, forthcoming.

Aysun, U. and Lee, S. (2013). The determinants of the deviations from the interest rate parity condition. Technical report.

Bansal, R. and Dahlquist, M. (2000). The forward premium puzzle: different tales from developed and emerging economies. *Journal of international Economics*, 51(1):115–144.

Berg, K. A. and Mark, N. C. (2018). Measures of global uncertainty and carry-trade excess returns. *Journal of International Money and Finance*, 88:212–227.

Bhattarai, S., Chatterjee, A., and Park, W. Y. (2020). Global spillover effects of US uncertainty. *Journal of Monetary Economics*, 114:71–89.

Chinn, M. D. and Meredith, G. (2004). Monetary Policy and Long-Horizon Uncovered Interest Parity. *IMF Staff Papers*, 51(3):409–430.

Engel, C., Kazakova, K., Wang, M., and Xiang, N. (2022). A reconsideration of the failure of uncovered interest parity for the us dollar. *Journal of International Economics*, 136:103602.

Fama, E. F. (1984). Forward and spot exchange rates. *Journal of monetary economics*, 14(3):319–338.

Ferrara, L. and Yapi, J. (2022). Measuring exchange rate risks during periods of uncertainty. *International Economics*, 170:202–212.

Frankel, J. and Poonawala, J. (2010). The forward market in emerging currencies: Less biased than in major currencies. *Journal of International Money and Finance*, 29(3):585–598.

Husted, L., Rogers, J., and Sun, B. (2018). Uncertainty, currency excess returns, and risk reversals. *Journal of International Money and Finance*, 88(C):228–241.

Ismailov, A. and Rossi, B. (2018). Uncertainty and deviations from uncovered interest rate parity. *Journal of International Money and Finance*, 88:242–259.

Kalemli-Özcan, nd Varela, L. (2021). Five facts about the UIP premium. Technical report, National Bureau of Economic Research.

Kumar, S. (2019). Does risk premium help uncover the uncovered interest parity failure? *Journal of International Financial Markets, Institutions and Money*, 63(C).

A Data

Table A.1 presents the data used in the estimations and its sources. Table A.2 shows the correlation across different uncertainty indicators. Before running the econometric analysis, we preprocess the data and remove the outliers by constructing the excess returns' variable:

$$X_{c,t} = ediff_{c,t-3} - idiff_{c,t-3} \tag{A.1}$$

and dropping the 1st and 99th percentiles from its distribution.

For the long-run UIP regression, we follow the same procedure after constructing the excess returns variable corresponding to the data used.

Using 10-year government bond yields reduces the sample to 35 countries which are composed of 25 AEs and 10 EMDEs: Armenia Australia, Austria, Belgium, Canada, Czech Rep, Denmark, Egypt, France, Germany, Ghana, Hungary, Iceland, India, Italy, Japan, Kenya, Korea Rep, Malawi, Malaysia, Moldova, New Zealand, Nigeria, Norway, Philippines, Poland, Sierra Leone, Singapore, South Africa, Spain, Sweden, Tanzania.

Table A.1: Macroeconomic and uncertainty variables

Variable	Description	Temporal coverage	Source
Uncertainty indicators			
VIX	Measure of stock market's expectations of volatility based on S&P 500	Monthly 1995M01 - 2023M03	Chicago Board Options Exchange
BCDI	Composite world index based on country-specific data of 70 countries on banking crisis, sovereign defaults, defaults on domestic debt, inflation crises and currency crises.	Yearly 1995 - 2010	Reinhart and Rogoff (2010)
USREC	It is based on the US Business cycle Expansions and Contractions data provided by NBER. The time series is composed of dummy variables when takes the value of 1 during a recessionary period in the US while takes 0 during an expansionary period.	Monthly 1995M01 - 2023M03	FRED Economic data
WUI	The World Uncertainty is a text-based crisis indicator that is computed by counting the word "uncertain" or similar words in the Economist Intelligence Unit country reports. The index measure uncertainty all over the world. It is the weighted average of 71 countries	Monthly 2008M01 - 2023M03	Ahir et al. (2022)
Monetary Policy Uncertainty (MPU)	MPU is a text-based indicator for the US that counts the words associated with monetary policy uncertainty across hundreds of daily newspapers covered by Acess World News in the US.	Monthly 1995M01 - 2023M03	Baker et al. (2016)
Trade Policy Uncertainty (TPU)	TPU is also a text-based indicator for the US based on news related to trade policy uncertainty in the US. The index reflects automated text-search results of the electronic archives of 7 leading newspapers discussing trade policy uncertainty: Boston Globe, Chicago Tribune, Guardian, Los Angeles Times, New York Times, Wall Street Journal, and Washington Post	Monthly 1995M01 - 2023M03	Caldara et al. (2020)
Financial Stress (FS)	Text-based indicator for the US based on titles of articles published in five US newspapers: the Boston Globe, Chicago Tribune, Los Angeles Times, Wall Street Journal and Washington Post.	Monthly 1995M01 - 2016M12	Püttmann (2018)
Financial Uncertainty (FU)	The aggregate of the volatility of statistical forecasts for a large number of financial series such as valuation ratios, growth rates of the aggregate dividends and prices, default and term spreads, yield spreads as well as risk factors like market risk premiums. US based indicator.	Monthly 1995M01 - 2022M12	Jurado et al. (2015)
Macroeconomic Uncertainty (MU)	The aggregate of the volatility of statistical forecasts for a large number of macroeconomic time series like real output and income, employment and hours, real retail, manufacturing and trade sales, consumer spending, etc. The indicator is constructed by the factor augmented vector autoregression.US based indicator.	Monthly 1995M01 - 2022M12	Jurado et al. (2015)
Real Uncertainty (RU)	Aggregates the volatility of statistical forecasts of the macroeconomic and financial series combined. US based indicator.	Monthly 1995M01 - 2022M12	Jurado et al. (2015)
Macroeconomic variables			
Interest Rates (short-run)	3-months Interest Rates on Government Bonds, Securities and Treasury Bills	Monthly 1995M01 - 2023M03	International financial statistics (IMF) and DATASTREAM
Interest Rates (long-run)	10 year government bond yields.	Monthly 1995M01 - 2023M03	DATASTREAM
Exchange rates	Exchange rates (National Currency Per U.S. Dollar)	Monthly 1995M01 - 2023M03	International financial statistics (IMF) and DATASTREAM
Inflation differentials	We compute the inflation differential as the difference in the domestic CPI and US CPI. No data is available for Australia, Belize, New Zealand, and Vanuatu. Data starts from 2002 for Namibia, from 2006 for Lesotho and Sierra Leone	Monthly 1995M01 - 2023M03	**Macroeconomic and Financial Data**(IMF)
Exchange rate regime	Regime with the highest frequency for each country is taken for all the years till 2023M3. The dataset does not include Eswatini but since its currency has always been pegged to South African Rand, ER regime is given the value 1. No data available for Zambia since 2017	Monthly 1995M01 - 2019M12	Ilzetzki et al. (2019)
Capital controls	The capital control variable is a dummy variable that takes the value 0 for a unified market and 1 if there are dual, multiple, or parallel rates	Monthly 1995M01 - 2021M06	Ilzetzki et al. (2019)
Country classification	Country classification by income level The countries are assigned the income categories which they most frequently fall under. That income category is kept constant through the years for that country to ensure the results are not driven by sample composition effects.	Monthly 1995M01 - 2021M12	World bank data 2022
Region classification	Region classification by geographical zones. The countries are indexed according to the region that they are located in, which are - East Asia and Pacific, Europe and Central Asia, Latin America and the Carribean, Middle East and North Africa, North America, South Asia and Sub-Saharan Africa	Monthly 1995M01 - 2021M12	World bank data 2022

Table A.2: Correlation between different uncertainty indicators

	VIX	**BCDI**	**USREC**	**WUI**	**MPU**	**TPU**	**FS**	**FU**	**MU**	**RU**
VIX	1									
BCDI	0.1606	1								
USREC	0.4486	0.6903	1							
WUI	-0.1994	-0.4756	-0.5583	1						
MPU	0.3883	0.4027	0.2902	-0.0352	1					
TPU	0.0367	0.2130	-0.0547	-0.1992	0.1725	1				
FS	0.8583	0.3561	0.5189	-0.2289	0.4611	-0.0399	1			
FU	0.8475	0.2256	0.5854	-0.3349	0.1954	0.0170	0.8114	1		
MU	0.7566	0.3531	0.6840	-0.5243	0.1150	-0.0346	0.7979	0.9172	1	
RU	0.7466	0.1566	0.5055	-0.4295	0.0047	-0.0497	0.7711	0.9278	0.9621	1

Table A.3: Summary Statistics of Uncertainty Variables

			Percentiles					
	Mean	SD	5%	50%	95%	Min	Max	N
VIX	20.33	7.86	11.56	18.63	34.54	9.51	59.89	18994.00
USREC	0.08	0.28	0.00	0.00	1.00	0.00	1.00	18994.00
WUI	22547.05	9044.29	12265.10	20446.37	39762.47	9050.27	57517.98	10197.00
BCDI	35.84	22.86	0.68	36.45	72.25	0.68	72.25	10833.00
FS	101.19	0.90	99.87	101.15	102.59	99.54	105.89	14978.00
FU	0.92	0.19	0.68	0.89	1.22	0.63	1.55	18994.00
MPU	87.22	56.48	29.81	71.18	189.91	16.57	407.94	18994.00
TPU	45.30	40.06	21.15	31.69	141.71	11.30	266.00	18994.00
MU	0.66	0.12	0.54	0.62	0.91	0.53	1.22	18994.00
RU	0.64	0.13	0.54	0.60	0.88	0.53	1.39	18994.00

Data Sources

Ahir, H., Bloom, N., and Furceri, D. (2022). The World Uncertainty Index. (29763).

Baker, S. R., Bloom, N., and Davis, S. J. (2016). Measuring economic policy uncertainty. *The Quarterly Journal of Economics*, 131(4):1593–1636.

Caldara, D., Iacoviello, M., Molligo, P., Prestipino, A., and Raffo, A. (2020). The economic effects of trade policy uncertainty. *Journal of Monetary Economics*, 109:38–59.

Ilzetzki, E., Reinhart, C. M., and Rogoff, K. S. (2019). Exchange arrangements entering the 21st century: Which anchor will hold? *Quarterly Journal of Economics*, 134(2):599–646.

Jurado, K., Ludvigson, S. C., and Ng, S. (2015). Measuring uncertainty. *American Economic Review*, 105(3):1177–1216.

Püttmann, L. (2018). Patterns of panic: Financial crisis language in historical newspapers. *Available at SSRN 3156287*.

Reinhart, C. M. and Rogoff, K. S. (2010). Growth in a time of debt. *American Economic Review*, 100(2):573–78.

B Additional regressions

B.1 Country-by-country and income-group regressions

Table B.1: Income-group regressions

	Emerging and Developing Countries					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
$idiff$	0.028	0.024	0.109**	0.040	0.057	0.083
	(0.019)	(0.019)	(0.043)	(0.044)	(0.047)	(0.058)
VIX		0.039***	0.073***	0.083***	-	-
		(0.014)	(0.021)	(0.021)		
$idiff$ **x** VIX			-0.004**	-0.002	-0.003*	-0.004*
			(0.001)	(0.001)	(0.002)	(0.002)
No. Obs.	6,342	6,342	6,342	6,342	6,342	4,795
Adjusted R^2	0.1031	0.1040	0.1046	0.1193	0.1230	0.1320
Fixed effects	c	c	c	c, rq	c, rq, t	c, rq, t
Other Controls	No	No	No	No	No	Yes
	Advanced Economies					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
$idiff$	-0.007	-0.007	-0.043*	-0.040	-0.018	0.019
	(0.012)	(0.012)	(0.036)	(0.027)	(0.028)	(0.032)
VIX		-0.000	-0.006	-0.005	-	-
		(0.06)	(0.007)	(0.007)		
$idiff$ **x** VIX			0.001	0.002*	0.001	0.001
			(0.001)	(0.001)	(0.001)	(0.001)
No. Obs.	12,652	12,652	12,652	12,652	12,652	10,206
Adjusted R^2	0.0062	0.0093	0.0063	0.0076	0.0237	0.0218
Fixed effects	c	c	c	c, rq	c, rq, t	c, rq, t
Other Controls	No	No	No	No	No	Yes

In all regressions, control variables include inflation differentials, exchange rate regimes, capital controls. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively. The separation into EMDEs and AEs follows the Income group definition in table B.2.

Table B.2: Country-by-country regressions

Country	(1)	(2)			(3)			Income class	Income group	Region code
	β_1	β_1	β_4		β_1	β_2	β_3			
Antigua and Barb	0.000	0.000	0.000		-0.001	0.000	0.000	1	1	3
Australia	-0.006***	-0.005***	0.002***		0.010	-0.003***	0.000	1	1	1
Austria	-0.086*	-0.078*	-0.008		-0.008	-0.003	-0.003	1	1	2
Bahamas	0.000	0.000	0.000		0.000	0.000	0.000	1	1	3
Bahrian	0.000***	0.000***	0.000*		0.000	0.000*	0.000	1	1	4
Barbados	0.000	0.000	0.000		0.000	0.000	0.000	1	1	3
Belgium	0.007	0.078	-0.034		-0.319***	0.034	0.018*	1	1	2
Canada	0.000	0.001	-0.001**		0.006	-0.001*	0.000	1	1	5
Hong Kong	-0.001	0.000	0.000*		-0.004	0.000*	0.000	1	1	1
Czech Republic	0.060	0.069*	-0.009		0.048	-0.011	0.001	1	1	2
Denmark	-0.011	-0.010	-0.002		0.007	0.000	-0.001	1	1	2
France	-0.038**	-0.035**	0.004		0.003	-0.001	-0.002	1	1	2
Germany	-0.009**	-0.009**	0.001		0.003	0.000	-0.001*	1	1	2
Greece	-0.007	-0.021	-0.104**		-0.153	-0.135**	0.007	1	1	2
Hungary	0.141*	0.145**	0.036		0.027	-0.086	0.007	1	1	2
Iceland	0.064	0.052	0.031		-0.850***	0.176***	0.035***	1	1	2
Isreal	0.006***	0.005***	0.001		-0.001	0.000	0.000	1	1	4
Italy	-1.435***	-1.600***	0.225***		3.977***	0.112	0.134***	1	1	2
Japan	-0.040	-0.010	-0.082*		-0.856	-0.025	0.041	1	1	1
Korea Rep.	-0.643	-0.660	0.029		-0.577	0.043	-0.005	1	1	1
Luxembourg	-0.353**	-0.302*	-0.023		-0.312	-0.024	0.000	1	1	2
New Zealand	-0.001	-0.001	-0.002***		0.024***	0.004**	0.001	1	1	1
Norway	-0.035**	-0.026	-0.005		-0.039	-0.005	0.001	1	1	2
Poland	0.004***	0.004***	0.000		0.001	-0.001	0.000	1	1	2
Singapore	-0.002*	-0.002	0.000		0.012***	0.000	-0.001***	1	1	1
Spain	-0.137	-0.144	0.037*		0.086	0.063	-0.012	1	1	2
Sweden	-0.031**	-0.028*	-0.004		-0.072*	-0.005	0.002	1	1	2
Trinidad and Tob	0.000	0.000	0.000		-0.002	0.000	0.000	1	1	3
United Kingdom	-0.727	-0.707	0.331		0.692	0.818	-0.071	1	1	2
Belize	0.000	0.000	0.000		0.000	0.000	0.000	2	1	3
Brazil	-0.003*	-0.003*	-0.001		0.001	0.001	0.000	2	1	3
Fiji	-0.008***	0.008***	0.000		-0.016*	0.000	0.000	2	1	1
Jamaica	-0.034*	-0.043***	0.067***		0.088	0.038	0.002	2	1	3
Malaysia	0.010***	0.010***	0.000		0.029***	0.001	-0.001*	2	1	1
Mexico	0.000	0.000	-0.009		0.002	-0.008	0.000	2	1	3
Namibia	-0.036**	-0.031*	-0.005		-0.005	0.004	-0.001	2	1	7
Romania	0.002***	0.002***	0.000		-0.002	-0.002	0.000***	2	1	2
Seychelles	-0.035*	-0.044**	0.024		-0.096	0.011	0.002	2	1	7
South Africa	-0.045***	0.032*	-0.013*		-0.019	-0.009	-0.001	2	1	7
Algeria	0.306***	0.297***	0.007		0.355*	0.009	-0.003	3	0	4
Armenia	1.096***	0.928***	0.269		1.589**	0.536*	-0.033	3	0	2
Cabo Verde	-0.084	-0.067	-0.018		0.089	-0.001	-0.008	3	0	7
Egypt	0.028*	0.030**	0.007		0.004	-0.006	0.001	3	0	4
Eswatini	-0.054**	-0.051**	0.003		-0.023	0.006	-0.001	3	0	7
Guyana	0.060	0.041	0.048**		-0.492*	-0.055	0.034 *	3	0	3
India	0.208***	0.208***	0.002		0.040	-0.050	0.009	3	0	6
Lesotho	-0.048***	0.045**	0.003		0.015	0.016	-0.003	3	0	7
Moldova	0.013**	0.010**	0.012*		-0.057***	0.030***	0.003***	3	0	2
Nigeria	-0.182	-0.137	0.297***		0.009	0.346*	-0.007	3	0	7
Philippines	0.078	0.081*	-0.006		0.129	0.002	-0.002	3	0	1
Solomon Islands	0.011***	0.010***	0.002**		-0.012	-0.001	0.001*	3	0	1
Vanuatu	-0.310**	-0.295**	0.029		0.454	0.212	-0.037	3	0	1
Ghana	-0.001	-0.002**	0.003**		0.007***	0.012***	0.000***	4	0	7
Kenya	-0.038	-0.032	-0.035		0.373**	0.131 **	0.020***	4	0	7
Malawi	0.017	0.007	-0.186**		-0.039	-0.224	0.002	4	0	7
Nepal	0.130***	0.126 ***	0.007		0.361**	0.033	-0.011*	4	0	6
Sierra Leone	-0.010***	0.010***	0.002		-0.005	0.005	0.000	4	0	7
Tanzania	0.220	0.319*	0.283*		0.839*	0.536*	-0.033*	4	0	7
Uganda	-0.002	-0.002	0.000		-0.011*	0.000	0.000	4	0	7
Zambia	-0.007*	-0.008*	0.007		-0.022	-0.011	0.001	4	0	7

Column (1) refers to the regression's coefficient in equation 1; Column (2) refers to the regression's coefficients in equation 1 with the addition of the VIX (β_4); and Column (3) refers to the regression's coefficients in equation 2. "Income class" refers to the World Bank income classification, while "Income group" refers to the income group dummy used in the panel estimations. "Region code" is the World Bank regional classification. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

B.2 Macroeconomic uncertainty indicators

Table B.3 shows results *macroeconomic uncertainty indicators* like the US Business Cycle (USREC), Trade Policy Uncertainty (TPU), Monetary Policy Uncertainty (MPU), Macroeconomic Uncertainty (MU), Real Uncertainty (RU).

Table B.3: Main regression using macroeconomic uncertainty indicators

	USREC	**TPU**	**MPU**	**MU**	**RU**
$idiff$	0.030	0.060**	0.030	-0.092	-0.200
	(0.019)	(0.026)	(0.025)	(0.102)	(0.158)
$idiff$ **x** $uncert$	-0.007	-0.000*	-0.000	0.200	0.398
	(0.041)	(0.000)	(0.000)	(0.164)	(0.269)
$idiff$ **x** $uncert$ **x** ι	0.045	0.001	0.000	-0.018	-0.131
	(0.062)	(0.000)	(0.000)	(0.224)	(0.360)
$idiff$ **x** ι	-0.026	-0.059	-0.0354	-0.010	0.052
	(0.026)	(0.038)	(0.036)	(0.139)	(0.212)
$uncert$ **x** ι	-0.090	0.001	-0.000	-2.186	-5.128
	(0.627)	(0.004)	(0.000)	(2.176)	(3.39)
No. Obs.	15,001	15,001	15,001	15,001	15,001
Adjusted R^2	0.0939	0.0943	0.0939	0.0943	0.0947
Fixed effects	c, rq, t	c, rq, t	c, rq, t	c, rq, t	c, rq, t
Other Controls	Yes	Yes	Yes	Yes	Yes

In all regressions, control variables include inflation differentials, exchange rate regimes, capital controls. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

B.3 Long-run UIP

Table B.4 shows the results for long-run UIP using the 10-year sovereign bond yields as an explanatory variable and, as explained variable either i) the 3months exchange rate differential as in the baseline (column "3m - 10y")[5]; and ii) the 10-year exchange rates' difference (column "10y - 10y") as done in Chinn and Meredith (2004).

[5]This procedure is coherent with the study of Albagli et al. (2024) which compares returns to short horizon investments in long-term bonds.

Table B.4: Long-run UIP regressions

	3m - 10y	10y - 10y
$idiff$	0.088	5.682***
	(0.134)	(2.170)
$idiff$ **x** VIX	-0.002	-0.119
	(0.006)	(0.089)
$idiff$ **x** VIX **x** ι	0.002	0.537***
	(0.009)	(0.127)
$idiff$ **x** ι	0.208	-29.128***
	(0.255)	(3.634)
VIX **x** ι	-0.092	-3.094***
	(0.082)	(1.125)
No. Obs.	7,360	4,935
Adjusted R^2	0.1460	0.5803
Fixed effects	c, rq, t	c, rq, t
Other Controls	Yes	Yes

In all regressions, control variables include inflation differentials, exchange rate regimes, capital controls. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.