Exchange Rate and Interest Rate Disconnect: The Role of Capital Flows, Currency Risk and Default Risk

Sebnem Kalemli-Ozcan   Liliana Varela*

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Abstract

Using survey based measures of exchange rate expectations from a large set of advanced countries and emerging markets during 1996–2015, we document new facts on international arbitrage and exchange rate determination. We find that positive interest rate differentials imply expected depreciation as predicted by the no-arbitrage condition, however the expected depreciation is not enough to offset the interest rate differentials, leading to UIP deviations. To understand why there is not a full offset, we evaluate the response of each component of the UIP relation—that is the interest rate differential term and and exchange rate adjustment term—to changes in global risk and country fundamentals. This exercise reveals that, in short horizons (1-3 month), expected depreciation as a response to a given shock is large enough to offset most of the interest rate differentials, narrowing down the UIP deviations in general, and vanishing them in the advanced economies. In long horizons (12 month), this is not the case due to a combination of different factors in different countries. In advance countries, currency risk plays a key role, where in bad times (high global risk), currency depreciates more than the expectations, leading to larger deviations. In emerging markets, there is not enough movement in the exchange rate adjustment term. Capital outflows from emerging markets as a result of both higher global risk and worsening country fundamentals lead to larger interest rate differentials. Although there is an expected and actual depreciation as a result of such outflows, these are not enough to offset the interest rate differentials as the role played by the default risk is more important.

JEL: F21, F32, F41

[**PRELIMINARY**]

*Sebnem Kalemli-Ozcan: University of Maryland, NBER and CEPR . Liliana Varela: University of Warwick and CEPR. We are grateful to Jun Hee Kwak for excellent research assistance.

1 Introduction

The uncovered interest rate parity (UIP) is a no-arbitrage condition that describes an equilibrium in which risk-neutral investors are indifferent between the returns on unhedged interest-bearing bank deposits in two currencies. Under the UIP, there should not be any arbitrage, that is home currency is expected to depreciate if the home interest rate is higher than the foreign rate, offsetting this interest rate differential. The UIP condition is a central concept in international finance incorporated into almost all of the theoretical models. Finding evidence for this condition has been elusive and the reasons for the lack-of-evidence are still debated.

Starting with the influential work of Fama (1984), a large literature documents that high interest rate currencies do not depreciate but appreciate in the future, the Fama puzzle. The puzzle also known as the forward premium puzzle when the interest rate differential is replaced with the difference between the forward rate and the spot exchange rate and this difference shows a negative association with the exchange rate changes. Since the equivalence of interest rate differential to the difference between the forward rate and the spot rate requires for the covered interest parity (CIP) to hold, this puzzle reflects the failure of assumptions of rational expectations and efficient markets (unbiasedness). A negative relation shows not only forward premium's inability to predict exchange rate depreciations but rather this premium being associated with appreciations and hence a failure of no-arbitrage since there are large excess returns for currencies that offer higher interest rates.

We argue that global investors' risk appetite that is correlated with currency risk and default risk combined with changes in country fundamentals are key to understanding the UIP puzzle. Capital flows in and out of the countries serve as a proxy for these relationships. Once we consider low global risk as a push factor for capital flows and low country risk—due to better fundamentals– as a pull factor, then we can connect capital flows to interest rates and exchange rates and those to the UIP deviations. Using survey data on exchange rate expectations and a large sample composed of both advanced and emerging countries is important for this conclusion. Our sample consists of 44 countries – 21 advanced economies and 23 Emerging markets – over the period 1996q2–2014q4. We follow Stavrakeva and Tang (2018) in using survey forecast data on exchange rates, drawing parallels with the macro literature who mostly rely on such survey data for inflation and consumer expectations.[1]

We start by constructing a measure of UIP deviations at quarterly frequency at 12 month horizon and then do 3 and 1 month horizons. The measure is based on the following decomposition:

[1]First papers that argued for the use of expectations from survey data are Dominguez (1986), Frankel and Froot (1987), Froot and Frankel (1989), and Ito (1990). Chinn and Frankel (1999) and Chinn and Frankel (2016) also use survey data on expectations and find that although UIP still fails, UIP based on expectations do much better than the one based on actual exchange rate changes, implying a failure of rational expectations. Sarno, Valente, and Leon (2006) using survey data on expectations of exchange rates argue that there is a failure in the forward market due to limits to speculation, and Bussiere, Chinn, Ferrara, and Heipertz (2018) who also uses exchange rate expectations, argue that UIP condition does not hold due to errors in the expectations but starts holding after 2008 since these errors become small.

Starting with the UIP equation,

$$(1+i)^{\frac{n}{12}} = (1+i^*)^{\frac{n}{12}} \frac{E_t(S_{t,n})}{S_t},$$

where i is the interest rate in a given economy and i^* is the US interest rate. E denotes expectations over n-horizon and S is the spot exchange rate of a given economy vis-a-vis the USD. We define the UIP deviation as $\theta > 1$, where θ is:

$$\theta_{t,n} = \underbrace{\frac{S_t}{E_t(S_{t,n})}}_{\text{ER Adjustment}} \underbrace{\left[\frac{(1+i_{t,n})}{(1+i^*_{t,n})}\right]^{\frac{n}{12}}}_{\text{IR Differential}}.$$

This simple decomposition breaks the UIP deviation into two terms: an interest rate differential term (IR Differential) that accounts for the difference between the domestic and the foreign rates, and an exchange rate adjustment term (ER Adjustment) that captures the difference between the spot and the expected exchange rates. For there to be no deviation ($\theta = 1$), if one term moves, the other term has to move in the opposite direction by the same amount.[2]

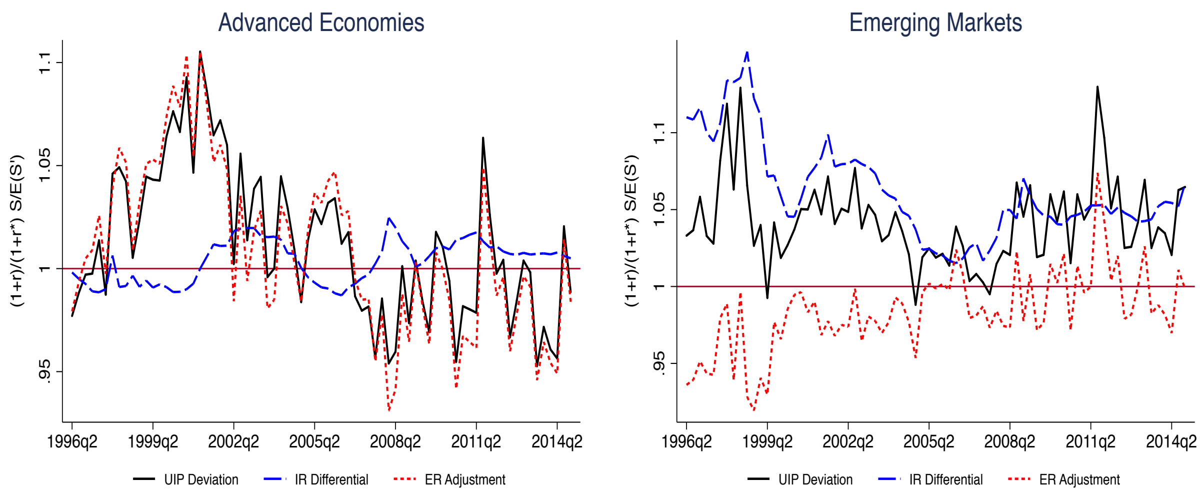
We plot these terms together with the deviation, θ in Figure 1 between 1996q2 and 2014q4. The left panel shows that in advanced economies the UIP deviation (continuous back line) and the exchange rate adjustment (red dotted line) overlap most of the time period, while interest rate differentials are very small. In contrast, as shown in the right panel, it is clear that in emerging markets interest rate differentials significantly explain the UIP deviations. These differentials are systematic and are highly correlated with the UIP deviations, specially on periods of high financial instability as the late 1990s and early 2000s or the during the Global financial crisis.

This decomposition is useful in evaluating the drivers of the UIP deviations. Since under the null of "no-deviation" the IR term and the ER term should fully offset each other, we can investigate the response of each component of the UIP relation to changes in global risk and country fundamentals. This exercise reveals that, in short horizons (1-3 month), expected depreciation as a response to a given shock is large enough to offset most of the interest rate differentials, narrowing down the UIP deviations in general, and vanishing them in the advanced economies. In long horizons (12 month), this is not the case due to a combination of different factors in different countries. In advance countries, currency risk plays a key role, where in bad times (high global risk), currency depreciates more than the expectations, leading to larger deviations. This result is consistent with the new literature that argues that the reason for excess returns is that currencies of high interest rate countries depreciate in bad times (see Lustig and Verdelhan (2007); Hassan (2013); Bocola and Lorenzoni (2017); Maggiori (2017); Farhi and Gabaix (2016) and Farhi, Fraiberger, Gabaix, Ranciere, and Verdelhan (2015)).[3]

[2]This is equivalaent to testing for $\beta = 1$ in the "Fama" regression that regress expected change in exchange rate on the interest rate differential.

[3]Note that these papers show in a cross-section of currencies, on average, higher interest rate currencies appreciate.

Figure 1: UIP Deviation in advanced Economies and Emerging Markets (12-Months Horizon)



In emerging markets, there is not enough movement in the exchange rate adjustment term. Capital outflows from emerging markets as a result of both higher global risk and worsening country fundamentals lead to larger interest rate differentials. Although there is an expected and actual depreciation as a result of such outflows, these are not enough to offset the interest rate differentials as the role played by the default risk is more important. In order to obtain these results, we perform an econometric exercise. We run panel OLS regressions with country fixed effects using the three terms, that is, the UIP deviation θ and its components IR Differential and ER Adjustment as dependent variables. As regressors we use, global risk proxied by VIX, country risk proxied by growth differentials and capital inflows. For robustness, we also control for inflation differentials.

In emerging markets, at 12-month horizon, the UIP deviations are determined by the interest rate differentials as we have found in the descriptive figures above. The reason for this is as follows. Lower home country growth translates into higher country-specific risk and leads to capital outflows in emerging markets. Higher global risk measured as higher VIX has the same effect. Capital outflows result in depreciation of the spot rate and higher interest rate differentials. Since expected depreciation does not respond enough, interest rate differentials are not offset by the exchange rate adjustment term. These dynamics drive the UIP deviations in emerging markets. In these regressions, capital inflows lose its significance once we control for VIX and growth differentials, that suggests that these are the key pull and push factors for capital flows in and out of emerging markets. At 1-month horizon, the response of expected depreciation to capital outflows is much larger and hence UIP deviations are much smaller.

We have also run standard "Fama" regressions leading to same qualitative result. The benefits of using expectations data become clear in these regressions, where the sign on the interest rate

We are after dynamic relations here as in the original Fama paper as also highlighted by Engel (2016) and Valchev (2016).

differential (or forward rate minus spot rate) coefficient is correctly positive that says high interest rate currencies are expected to depreciate. The coefficient is still different than 1, which is same as saying in our decomposition exercise there is not a full offset. If we use actual exchange rate changes, then the sign on the same coefficient is negative especially in advanced economies as found by the previous literature that says high interest rate currencies are expected to appreciate. Interestingly, the coefficient stays positive for emerging markets even when we use actual exchange rate changes. Since the previous literature almost exclusively relied on advanced country data, we are not sure if this difference was pointed out before.

Overall, our preliminary results indicate that, in the long term (12-month horizon), default risk is critical to explain the UIP deviations in emerging markets, while currency risk is essential to account for the deviations in advanced economies. In the short term (1- and 3-month horizons), default risk does not play a significant role and the UIP deviations in emerging economies are explained by currency risk and less than expected exchange rate adjustments. In the shorter horizons, in advanced countries, the larger response of expected depreciation to capital flows kills the deviations on average.

We relate to the papers that emphasize a role for external imbalances and asset liquidity such as Engel (2016) and Gabaix and Maggiori (2015). Sarno, Valente, and Leon (2006) show that countries external liabilities in foreign currency explains the cross-sectional variation in currency excess returns. They show that net debtor countries offer a currency risk premium to compensate investors willing to finance negative external imbalances because their currency depreciates in bad times. Sarno, Schneider, and Wagner (2012) shows that currency excess returns are closely related to global risk aversion, the business cycle, and traditional exchange rate fundamentals. Notice that, we emphasize transitional dynamics and capital flows instead of external positions that will affect steady-state and cross-country comparisons. Our results are identified from dynamic "within-country" variation since we use country fixed effects.

The remainder of this paper is organized as follows. Section 2 describes the data. Section 3 introduces main summary statistics and a variance decomposition analysis. Section 4 presents our empirical estimations. Section 5 concludes.

2 Data

We employ quarterly data from International Monetary Fund, Bloomberg and Consensus Economics to construct our measure of UIP deviations at 1, 3 and 12 months horizons. We obtain money market interest rates from Bloomberg, the spot exchange rate from IMF International Financial Statistics (IFS) and the exchange rate forecasts survey from Consensus Economics. This survey provides information on expected exchange rate at 1-month, 3-months and 12-months horizons. We use data on forward rates from Bloomberg in some extensions.

Additionally, we obtain data on capital inflows from Avdjiev, Hardy, Kalemli-Özcan, and Servén

(2018), who provide disaggregated data on flows per country and sector (banking, government, and corporate). As a measure of global risk, we employ the VIX index, which is obtained from Federal Reserve Economic Data (FRED). To proxy for country idiosyncratic risk, we create a variable –GDP growth differential– indicating the growth rate differential with respect to the U.S. in the previous two quarters. We control for inflation by measuring the difference in inflation rate with U.S., inflation differential. The GDP and CIP date are downloaded from IMF-IFS at quarterly frequency. Data availability limit our sample to 43 countries – 21 advanced economies and 22 emerging markets – over the period 1996q2–2014q4. Table A.1 in Appendix A presents the list of countries considered in this paper.

The UIP condition that we have stated in the introduction can be expressed for multiple currencies/countries as follows:

$$E_t(S_{ct,n})(1+i^*_{t,n})^{\frac{n}{12}} = S_{ct}(1+i_{ct,n})^{\frac{n}{12}}, \tag{1}$$

where c, t and n denote currency, time and n month-horizon. S_{ct} and $E_t(S_{ct,n})$ are the spot exchange rate and forecasts of n-month-ahead spot exchange rate of currency c. The exchange rate is denominated in units of local currency per U.S. dollar, such that an increase in the exchange rate implies a currency depreciation. $i_{t,n}$ and $i^*_{t,n}$ are the domestic and foreign annualized interest rates of maturity n months, and the foreign rate is the money market U.S. rate. Using equation (4), we write the UIP deviation for each currency as

$$\theta_{ct,n} = \frac{S_{ct}}{E_t(S_{ct,n})}\left(\frac{1+i_{ct,n}}{1+i^*_{t,n}}\right)^{\frac{n}{12}},$$

where $\theta_{ct,n}$ denotes the UIP deviation of currency c with respect to the U.S. dollar. Under this specification, $\theta_{t,n}$ equal to one implies that the UIP condition holds and interest rate differentials and expected exchange rate movements offset each other. Otherwise, there are UIP deviations. $\theta_{t,n} > 1$ implies excess returns on the domestic currency, as the domestic money market rate is higher than the US money rate once expected changes in the exchange rate are taken into account.

Table 1 presents summary statistics of the main variables employed in this paper. Our measure of UIP deviations for 12-months horizons – $\theta_{t,12}$ – is on average higher than one, suggesting that the domestic interest rate is higher than the foreign rate once expected changes in the exchange rate are taken into account. In particular, the mean and median UIP deviations are 1.034 and 1.027 and the standard deviation is high at 6.8%. The UIP deviations decrease substantially when considering lower frequencies. These deviations are on average 1.006 at 3-months horizons and nil at one month frequency. The mean log capital inflows is 3.278, which is mainly explained by capital inflows into the banking sector. The quarterly average growth rate differential of GDP with the U.S. is 0.14% (median 0.19%) and the average inflation differential is 0.52% (median 0.16%).

These patterns in data are revealing and suggest that, at 12-month horizons, there are non-negligible UIP violations. In the next section, we follow an accounting decomposition excercise to

Table 1: Summary Statistics: All Countries

	All Countries				
	Mean (1)	Median (2)	Std Dev (3)	p25 (4)	p75 (5)
UIP Deviation (12 months horizon)	1.034	1.027	0.068	0.992	1.067
UIP Deviation (3 months horizon)	1.006	1.006	0.038	0.985	1.024
UIP Deviation (1 month horizon)	1.001	1.001	0.033	0.984	1.017
Capital Inflows (in logs)	3.276	3.265	0.696	3.180	3.462
Sovereign Inflows (in logs)	2.360	2.341	0.478	2.279	2.479
Bank Inflows (in logs)	3.082	3.099	0.666	3.055	3.255
Corporate Inflows (in logs)	2.494	2.479	0.523	2.412	2.628
GDP Growth Differential*	0.145	0.198	1.23	-0.391	0.769
Inflation Differential*	0.522	0.157	1.460	-0.329	0.907
N of Observations:	2187				

Notes: period 1996q2-2014q4, 43 countries. * in percentage. Source: Avdjiev, Hardy, Kalemli-Özcan, and Servén (2018), Consensus Forecast, IMF, Bloomberg.

assess the sources of UIP deviations across countries.

3 UIP Deviations: Exchange Rate Adjustments and Interest Rate Differentials

Generally speaking, the UIP deviations reported above could arise from misalignments between two components: exchange rates adjustments or interest rate interest rate differentials. For example, a UIP deviation higher than one –$\theta > 1$– could be the result of an expected exchange rate appreciation not compensated by a lower domestic interest rate. To understand the source of these UIP deviations, we break them down between exchange rate adjustment and interest rate differentials as argued before. That is,

$$\theta_{t,n} = \underbrace{\frac{S_t}{E_t(S_{t,n})}}_{\text{ER Adjustment}} \underbrace{\left[\frac{(1+i_{t,n})}{(1+i^*_{t,n})}\right]^{\frac{n}{12}}}_{\text{IR Differential}}. \quad (2)$$

Table 2 reports the summary statistics of each of the components of the UIP deviations for advanced economies and emerging markets separately (columns 1-5 and 6-10, respectively). Columns 1 and 6 in Panel A show that, at 12-months horizons, the average UIP deviation is 1.046 in emerging markets and 1.012 in advanced economies, which implies that emerging market have a 3.4 percentage points higher UIP violations. Importantly, this higher violation is not driven by extreme values, as the median UIP violation in emerging markets is 4 percentage points (1.04). Interestingly, the interest rate differential is a key component when accounting for UIP deviations in emerging markets. The mean interest rate differential is 1.064, implying a 6.4 percentage points difference in the money rate in these economies. As expected, this figure contrasts substantially with that of advanced economies, as the interest rate differential is only 0.2 percentage points (1.002). The exchange rate adjustment term is closer to one both in advanced economies and emerging markets.

Table 2: Summary Statistics: UIP Deviation

	Emerging Markets					**Advanced Economies**				
	Mean (1)	Median (2)	Std Dev (3)	p25 (4)	p75 (5)	Mean (6)	Median (7)	Std Dev (8)	p25 (9)	p75 (10)
	Panel A: 12-Months Horizon									
UIP Deviation	1.046	1.040	0.072	1.005	1.078	1.012	1.010	0.053	0.979	1.040
IR Differential	1.064	1.043	0.085	1.018	1.080	1.002	1.000	0.027	0.987	1.015
ER Adjustment	0.986	0.994	0.066	0.952	1.029	1.010	1.007	0.052	0.975	1.045
	Panel B: 3-Months Horizon									
UIP Deviation	1.009	1.007	0.040	0.989	1.027	1.001	1.002	0.033	0.979	1.020
IR Differential	1.015	1.011	0.018	1.005	1.020	1.001	1.000	0.005	0.997	1.004
ER Adjustment	0.994	0.996	0.041	0.974	1.015	1.001	1.002	0.034	0.978	1.022
	Panel C: 1 Month Horizon									
UIP Deviation	1.002	1.001	0.035	0.986	1.017	0.999	1.000	0.029	0.981	1.017
IR Differential	1.005	1.003	0.006	1.001	1.007	1.000	1.000	0.002	0.999	1.001
ER Adjustment	0.998	0.997	0.035	0.981	1.012	0.999	1.000	0.029	0.980	1.018
N of Observations:	1364					823				

Notes: 43 countries, 22 emerging Markets, 21 advanced Economies. Period 1996q2: 2014q4.

Panel B presents the summary statistics for the 3-months horizon and shows that –on average– UIP deviations decline substantially for shorter periods. The mean UIP violation is 1.009 in emerging markets and 1.001 for advanced economies. Critically, the reduction in emerging markets is explained by the decline in the interest rate differential, which lowers to 1.015 (1.5 percentage points). This decline in the UIP deviations and interest rate differentials is also noticeable at 1 month horizon (Panel C). At this low frequency, both the UIP deviations and interest rate differentials are close to zero in both advanced economies and emerging markets.

These figures indicate that emerging markets experience, on average, significant UIP deviations at longer horizons (12 months). The level of these deviations is explained by interest rate differentials, and contrasts notably with advanced economies where both UIP deviations and interest rate differentials are close to zero in levels.

To provide data on the figures we have plotted in the introduction we do the following exercise. Panel A in Table 3 presents correlations for advanced economies and emerging markets. Column 1 shows that in advanced economies, the correlation between the UIP deviations and exchange rate adjustment is 91%, while this correlation with the interest rate differential is only 10.6%. In emerging markets the correlation with the exchange rate adjustment drops to 64% and that with the interest rate differential raises to 31% (column 2). As above, interest rate differentials decrease their weight at lower frequencies and exchange rate adjustments become the major sources of UIP deviations. Columns 3 and 4 show that the correlation between the UIP deviations and exchange rate adjustments is 98.8% and 94.3% for advanced economies and emerging markets at 3-months horizons, and more than 99% for both economies at 1-month horizon.[4]

Table 3: UIP Violations: Exchange Rate Adjustments and Interest Rate Differentials

	Advanced Economies	Emerging Markets	Advanced Economies	Emerging Markets	Advanced Economies	Emerging Markets
	12-Months Horizon		3-Months Horizon		1-Month Horizon	
	(1)	(2)	(3)	(4)	(5)	(6)
Corr(ln(UIP Dev), ln(IR Diff))	0.106***	0.3114***	-0.0245	0.0360	-0.0748**	0.0075
	(0.0023)	(0.0000)	(0.4824)	(0.1841)	(0.0320)	(0.7822)
Corr(ln(UIP Dev), ln(ER Adj))	0.9145***	0.6463***	0.9886***	0.9434***	0.9983***	0.9913***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

Notes: *, **, *** are 10, 5, and 1 percent significance level. Standard errors are in parenthesis.

The results presented in this section suggest that the sources of UIP deviations differ substantially between advanced economies and emerging markets and between short and longer horizon. At longer horizons (12 months), the source of UIP deviations differs substantially between advanced economies and emerging markets. While in the former exchange rate adjustments are key to understand UIP deviations, in the later interest rate differentials play a major role. Interest rate differential not only explain the systematic of UIP violations (in levels) in emerging market currencies, but they also account for their time series evolution. At shorter horizons, exchange rate adjustments explains almost the totality of UIP deviations both in advanced economies and emerging markets.

These results point to the presence of a risk premium in emerging markets independent of exchange rate movements. That is, at short horizons, exchange rate risk seems to explain the bulk of the UIP deviations, as the exchange rate adjustment term moves one-to-one with the UIP deviations. This is true in both advanced economies and emerging markets. However, at longer horizons, interest rate differentials start to matter in the latter and become to explain a significant part of UIP deviations. The difference between the short and long terms and between advanced economies and emerging market is the presence of an additional source of risk, which is the risk of default. In the next section, we test this hypothesis econometrically.

[4]Figures A.1 and A.2 in Appendix A plot the evolution of the UIP deviations, interest rate differentials and exchange rate adjustments at 3-month and 1-month horizons. These figures show clearly that, at shorter horizons, exchange rate adjustments are key drivers of UIP violations in both advanced economies and emerging markets.

4 Empirical Analysis

In this section, we evaluate econometrically the sources of UIP deviations and assess whether local and global risk factors, through their effects on capital flows, can determine these deviations. Since the sources of these deviations differ significantly between short and long time horizons (as shown in Section 3), we analyze them separately. Section 4.1 studies UIP deviations at 12-month horizons and Section 4.2 contrasts them with 1-month horizon.[5]

To understand how global and local factors can create UIP deviations, we analyze how they affect each of the components of the UIP separately. With this end, we evaluate how they affect the interest rate differential, exchange rate adjustment, spot exchange rate and expected exchange rate, separately.

We analyze the drivers of UIP deviations by estimating the following OLS regression:

$$\ln(\theta_{ct,n}) = \beta_1 \ln(\text{Inflows}_{ct-1}) + \beta_2 \ln(VIX_{t-1}) + \beta_3 \,\text{GDP Diff}_{ct-1} + \beta_4 \,\text{Infl Diff}_{ct-1} + \mu_c + \varepsilon_{ct}, \quad (3)$$

where $\theta_{ct,n}$ is the UIP deviation in country c at quarter t and n month horizon. Inflows_{ct-1} are net total inflows, reported by Avdjiev, Hardy, Kalemli-Özcan, and Servén (2018), VIX_{t-1} is the VIX index, GDP Diff_{ct-1} is the growth rate differential with respect to the U.S., Infl Diff_{ct-1} is the inflation differential with the respect to the U.S., and μ_c are country fixed effects. β_1 captures the impact of capital inflows, β_2 the effect of global risk, and β_3 the idiosyncratic risk of each country on UIP deviations. Since we measure UIP deviations in nominal terms, we control for interest rate differentials. We add country fixed effects in all specifications.

4.1 Long-Term UIP Violations (12 months)

We start by analyzing the local and global drivers of UIP deviations at 12-months horizons. Table 4 reports the results for emerging markets (columns 1-4) and advanced economies (5-8). To asses the impact each factor, we add the variables in equation (3) in turn. Columns 1 and 5 present the estimated coefficients for emerging markets and advanced economies when only the capital inflows is included in the regression and show that this variable per se is not statistically significant. Columns 2 and 6 add the VIX in the analysis. The estimated coefficients for the VIX are positive and statistically significant at one percentage point, indicating that global risk increases UIP deviations in both emerging markets and advanced economies. In particular, a 10% increase in the VIX leads to a 0.21% and 0.24% rise in the UIP violation in emerging markets and advanced economies, respectively.

Columns 3 and 7 include the GDP growth rate differential in the estimation. Interestingly, the coefficient is negative and significant in emerging markets, and non-statistically significant in advanced economies. In emerging markets, a 10% decrease in GDP growth differential raises the

[5]For expositional simplicity, we focus on the comparison between 12 months and 1 month, and exclude 3-months horizon. Results at 3 month horizon are similar to those of 1-month horizon and are available upon request.

Table 4: Determinants of UIP Deviations

Dependent Variable: 12-month UIP Deviation ($ln[\frac{S_t}{E_t(S_{t,12})}\frac{(1+i_{t,12})}{(1+i^*_{t,12})}]$)								
	EMs				AEs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ln(Total Inflows)(t-1)	-0.0019	0.0019	0.0044	0.0059	0.0017	0.0024*	0.0024*	0.0024*
	(0.0037)	(0.0039)	(0.0036)	(0.0037)	(0.0012)	(0.0013)	(0.0013)	(0.0013)
ln(VIX)(t-1)		0.0216***	0.0205***	0.0187***		0.0243***	0.0245***	0.0247***
		(0.0048)	(0.0049)	(0.0049)		(0.0050)	(0.0050)	(0.0051)
Growth Diff(t-1)			-0.6932***	-0.6278***			-0.2057	-0.2045
			(0.1810)	(0.1794)			(0.2572)	(0.2569)
Inflation Diff(t-1)				0.3356**				-0.0766
				(0.1657)				(0.2565)
Adjusted R^2	0.3346	0.3431	0.3564	0.3600	0.1201	0.1443	0.1436	0.1426
N	1442	1442	1441	1441	823	823	822	822
Country FE	yes	yes	yes	yes	yes	yes	yes	yes

Notes: *, **, *** are 10, 5, and 1 percent significance level. Robust standard errors are in parentheses.

UIP violation by 6.9%. The asymmetry between emerging markets and advanced economies is revealing as it suggests the presence of an idiosyncratic country risk on UIP deviations in the former. This indicates that, additionally to the global risk factors, emerging markets currencies offer additional source of UIP violations due to idiosyncratic risk. Columns 4 and 8 control for the inflation rate differential and show that results are robust to this control.

It is worth remarking on the estimated coefficient for capital inflows in columns 4 and 8, once all controls are included in the regressions. The estimated coefficient indicates that, while in emerging markets capital inflows do not significantly affect UIP deviations, in advanced economies capital inflows raise UIP deviations. In particular, a one percentage point increase in total inflows leads to a 0.024% increase in the excess returns in advanced economies. As we show below, this result arises from the differential effect that capital inflows have on the spot and expected exchange rates.

To understand the channels driving the UIP deviations, we turn now to decompose them between interest rate differential and exchange rate adjustments.

4.1.1 Interest Rate Differentials

In this section, we re-estimate equation (3) by using the log of the interest rate differential as dependent variable. Column 1 in Table 5 reports the coefficient of a regression where only capital inflows are included in the regression. Interestingly, the estimated coefficient is negative and highly statistically significant, suggesting that higher capital inflows from emerging markets associate with lower interest rate differentials. In contrast, the estimated coefficient for advanced economies is not statistically significant.

Columns 2 and 5 add the VIX and show that increase in global risk raises the interest rate differential, both in emerging markets and advanced economies. It is interesting to remark on the size of the estimated coefficients, as the elasticity of the interest rate differential to VIX changes are higher in the former. In particular, a 10% increase in the VIX leads to a 0.35% increase in the interest rate differential in emerging markets, and a 0.06% in advanced economies. Hence, interest rates in emerging markets respond six-times more strongly to changes in global risk.

Table 5: DETERMINANTS OF INTEREST RATE DIFFERENTIALS

Dependent Variable: 12-month IR Differential ($ln[\frac{1+i_{t,12}}{1+i^*_{t,12}}]$)								
	EMs				AEs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ln(Total Inflows)(t-1)	-0.0141***	-0.0076*	-0.0028	0.0051	0.0004	0.0006	0.0006	0.0007*
	(0.0041)	(0.0040)	(0.0031)	(0.0038)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
ln(VIX)(t-1)		0.0372***	0.0353***	0.0257***		0.0065***	0.0065***	0.0056***
		(0.0041)	(0.0040)	(0.0039)		(0.0014)	(0.0014)	(0.0014)
Growth Diff(t-1)			-1.3260***	-0.9844***			0.0052	0.0004
			(0.1885)	(0.1667)			(0.0894)	(0.0897)
Inflation Diff(t-1)				1.7515***				0.3068**
				(0.1423)				(0.1262)
Adjusted R^2	0.3315	0.3621	0.4247	0.5507	0.3523	0.3590	0.3573	0.3627
N	1442	1442	1441	1441	823	823	822	822
Country FE	yes	yes	yes	yes	yes	yes	yes	yes

Notes: *, **, *** are 10, 5, and 1 percent significance level. Robust standard errors are in parentheses.

Columns 3 add 6 include the GDP growth rate differential. As above, the coefficient is negative and only statistically significant in emerging markets. Interesting, the inclusion of the GDP growth differential variable together with VIX in emerging markets makes the estimated coefficient for capital inflows non-statistically, which indicates that – once global and idiosyncratic risk is controlled for – higher capital inflows do not affect interest rate differentials in these economies. This is simply because VIX acts as a push factor for capital flows and GDP growth acts as a pull factor for capital flows in emerging markets as shown before by Avdjiev, Hardy, Kalemli-Özcan, and Servén (2018). Miranda-Agrippino and Rey (2018) also shows the effect of VIX on capital flows. As Table A.3 in Appendix A shows, this is not true for advanced economies for home GDP growth, though VIX still acts as a push factor for capital flows for advanced economies.

These results indicate that, in emerging markets, global and idiosyncratic risk factors lead to interest rate differentials that translate into UIP deviations. The higher the global and country risks, the higher the interest rate differential and the UIP violations in emerging markets. In contrast, only the global risk factor creates UIP violations in advanced economies, and idiosyncratic risk does not affect them. The main reason for these dynamics is capital flows' sensitivity to VIX for all countries and additional affect of growth differentials on capital flows in emerging markets.

4.1.2 Exchange Rate Adjustment

We now turn to assess the exchange rate adjustment component of the UIP deviations and re-estimate equation (3) by using the log of exchange rate adjustment as a dependent variable. Since the movements in the exchange rate adjustment can be driven by either changes in the spot exchange rate or the expected exchange rate or both, we estimate separately regressions for these variables as well. Tables 6 presents the result for the exchange rate adjustment term in panel A and in panel B presents result for spot exchange rate and the expected exchange rate, respectively.

Column 1 in Table 6 shows that capital inflows into emerging markets lead to increases in the term exchange rate adjustment term, as the coefficient is positive and statistically significant. This increase is the result of large movements in the expected exchange rate. In particular, as shown in panel B both the spot and the expected exchange rate appreciate following capital inflows. However, since expected exchange rate reacts more strongly than the spot rate, the spot-to-expected exchange rate ratio increases. Column 1 in panel B shows that a 10% increase in capital inflows leads to a 0.6% decrease in the spot rate and a 0.7% decrease in the expected rate one year ahead. Remarkably, once the decrease in inflation is taken into account, the spot and the expected rate adjust in a similar magnitude and capital inflows do not significantly affect the exchange rate adjustment term in emerging markets (column 4).

It is interesting to remark on the role of capital inflows in advanced economies. Table 4 in Section 4.1 showed that capital inflows increased UIP deviations on advanced economies' currencies. The comparison between the size of the coefficients in Tables 5 and 6 suggests that this violation arises from the exchange rate adjustment term. Although the estimated coefficient is not significant, it is similar in size to that of the UIP violation. As in emerging markets, both the spot and the expected exchange rate appreciate upon capital inflows, but the expected rate appreciate more. This higher response of the expected rate seems to account for the excess return of advanced economies' currencies following capital inflows.

Importantly, the exchange rate adjustment term positively correlates with the global risk in advanced economies. The estimated coefficient for the VIX term is positive and highly statistically significant, as shown in columns 5-8 in Table 6. Panel B shows that both the spot and the expected exchange rate depreciate following increases in global risk. Yet, since the spot exchange rate depreciates more than the expected rate, the exchange rate adjustment term increases. More precisely, a 10% increase in the VIX index depreciate advanced economies' currencies by 1.3% after the inclusion of all controls in column 2 (Panel B). In turn, the expected rate increases 1.1%, column 4 (Panel B). The difference in the adjustment between the spot and expected rates increases the exchange rate adjustment term and leads to UIP deviations upon changes in global risk. This result is in line with a long literature in international finance that, focusing on advanced economies, shows that currencies that depreciate during bad times of the world economy pay on average excess returns (Lustig and Verdelhan 2007, Hassan 2013, Maggiori 2017, Farhi and Gabaix 2016, among others).

Table 6: Determinants of Exchange Rate Adjustments

	Panel A.							
Dependent Variable:	12-month ER Differential ($ln[\frac{S_t}{E_t(S_{t,12})}]$)							
	EMs				AEs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ln(Total Inflows)(t-1)	0.0122***	0.0095**	0.0072*	0.0008	0.0013	0.0019	0.0019	0.0017
	(0.0043)	(0.0042)	(0.0041)	(0.0044)	(0.0014)	(0.0014)	(0.0014)	(0.0015)
ln(VIX)(t-1)		-0.0156***	-0.0147***	-0.0070		0.0178***	0.0179***	0.0191***
		(0.0049)	(0.0049)	(0.0047)		(0.0054)	(0.0054)	(0.0055)
Growth Diff(t-1)			0.6327***	0.3566**			-0.2109	-0.2049
			(0.1582)	(0.1463)			(0.2782)	(0.2780)
Inflation Diff(t-1)				-1.4158***				-0.3833
				(0.1406)				(0.2750)
Adjusted R^2	0.3812	0.3855	0.3970	0.4671	0.0450	0.0570	0.0566	0.0577
N	1442	1442	1441	1441	823	823	822	822
Country FE	yes	yes	yes	yes	yes	yes	yes	yes

	Panel B.			
Dependent Variable:	Spot Exchange Rate ($ln[S_t]$)		12-month Expected Exchange Rate ($ln[E_t(S_{t,12})]$)	
	EMs	AEs	EMs	AEs
	(1)	(2)	(3)	(4)
ln(Total Inflows)(t-1)	-0.0779***	-0.0011	-0.0785***	-0.0028
	(0.0181)	(0.0046)	(0.0182)	(0.0037)
ln(VIX)(t-1)	-0.0321	0.1297***	-0.0276	0.1099***
	(0.0212)	(0.0159)	(0.0211)	(0.0130)
Growth Diff(t-1)	-0.0074	-3.3061***	-0.3618	-3.1066***
	(0.6880)	(0.8317)	(0.6707)	(0.6971)
Inflation Diff(t-1)	-0.9206	0.5169	0.5121	0.9098
	(0.8457)	(0.8186)	(0.8383)	(0.6479)
Adjusted R^2	0.9853	0.9931	0.9855	0.9957
N	1441	822	1441	822
country FE	yes	yes	yes	yes

Notes: *, **, *** are 10, 5, and 1 percent significance level. Robust standard errors are in parentheses.

4.2 Short-term UIP Violations (1 month)

Section 3 documented first evidence that, at shorter terms, exchange rate movements accounted for a major part of the UIP deviations. In this section, we assess this econometrically by estimating equation (3) at 1-month horizon.

Table 7 presents the results. The first striking result is that capital inflows become significant to explain the excess returns in both emerging markets and advanced economies' currencies. All through columns 1-8, the estimated coefficients are positive and highly statistically significant. After the inclusion of all controls, in column 4 the coefficient implies that a 10% increase in capital inflows leads to a 0.05% increase in the UIP violation in emerging markets. Similarly, in advanced economies a 10% increase in capital inflows associates with a 0.01% in the UIP deviation (column 8). Remarkably, these excess returns stem from the impact of capital inflows on the exchange rate adjustment term. In particular, capital inflows appreciates the spot and expected exchange rate, but the expected exchange rate lowers relatively more. This expectation of future appreciation is the source of excess returns.

Table 7: Determinants of UIP Deviations (1 month)

Dependent Variable: 1-month UIP Deviation								
	EMs				AEs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ln(Total Inflows)(t-1)	0.0086***	0.0062***	0.0063***	0.0054**	0.0021**	0.0018**	0.0018**	0.0016**
	(0.0024)	(0.0023)	(0.0023)	(0.0023)	(0.0008)	(0.0008)	(0.0008)	(0.0008)
ln(VIX)(t-1)		-0.0137***	-0.0138***	-0.0127***		-0.0100***	-0.0100***	-0.0088***
		(0.0028)	(0.0028)	(0.0028)		(0.0034)	(0.0034)	(0.0034)
Growth Diff(t-1)			-0.0187	-0.0563			0.0687	0.0744
			(0.0732)	(0.0724)			(0.1839)	(0.1810)
Inflation Diff(t-1)				-0.1931***				-0.3690**
				(0.0706)				(0.1852)
Adjusted R squared	0.0832	0.0999	0.0988	0.1045	0.0017	0.0101	0.0087	0.0141
N	1442	1442	1441	1441	823	823	822	822
Country FE	yes	yes	yes	yes	yes	yes	yes	yes

Notes: *, **, *** are 10, 5, and 1 percent significance level. Robust standard errors are in parentheses.

Secondly, it is worth noticing on the estimated coefficient for the VIX, which shows that global risk lowers UIP deviations both in emerging markets and advanced economies. This result is surprising as it contrasts significant with the estimated coefficients at longer periods, where the global risk increases UIP deviations. Why does the VIX increases UIP deviations at long term and reduces them at shorter horizons? The reason is that, at long term, global risk raises both the interest rare differential and the exchange rate adjustment terms. The exchange rate adjustment increases because, despite that both the spot and expected exchange rate depreciate, the spot rate depreciates relatively more. At short term, global risk increases the interest rate differential, but decreases the exchange rate adjustment term (Tables 8 and 9). Since the decrease in the exchange rate adjustment term is larger, the global risk reduces the UIP violation. Why does exchange rate adjustment term decrease at short horizons? Similarly than at 12 months, both the spot and the expected rate depreciate, but at shorter horizons the expected depreciation is much higher than the current depreciation. This indicates that at exchange rate expectations increases more at short-term, which lowers the UIP deviation.

Lastly, at a shorter horizon, country idiosyncratic risk becomes insignificant to explain UIP deviations in emerging markets, as shown in column 4 in Table 7. It is worth noting that the coefficient for the interest rate differential is negative and statistically significant, which suggests that emerging markets pay higher interest rate due to idiosyncratic risk (column 4 in Table 8). However, this response is muted by the currency depreciation following increased risk (column 4 in Table 9). As a result, emerging markets' currencies do not pay excess returns at shorter horizons. The difference between the role of country risk at 12-month and 1 month horizon in determining the excess returns in emerging markets is clear: at shorter length the risk of default lowers significantly and, hence, these economies do not offer excess returns. It is only on the wake of uncertainty prevalent at longer periods that these currencies pay excess returns.

Table 8: Determinants of Interest Rate Differentials (1 month)

	Dependent Variable: 1-month IR Differential							
	EMs				AEs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ln(Total Inflows)(t-1)	-0.0010***	-0.0005	-0.0000	0.0006**	0.0000	0.0000	0.0000	0.0000
	(0.0003)	(0.0003)	(0.0002)	(0.0003)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ln(VIX)(t-1)		0.0033***	0.0031***	0.0023***		0.0007***	0.0007***	0.0006***
		(0.0003)	(0.0003)	(0.0003)		(0.0001)	(0.0001)	(0.0001)
Growth Diff(t-1)			-0.1192***	-0.0908***			-0.0039	-0.0042
			(0.0167)	(0.0145)			(0.0070)	(0.0070)
Inflation Diff(t-1)				0.1457***				0.0220***
				(0.0112)				(0.0073)
Adjusted R squared	0.3053	0.3418	0.4190	0.5522	0.5578	0.5729	0.5721	0.5778
N	1442	1442	1441	1441	823	823	822	822
Country FE	yes	yes	yes	yes	yes	yes	yes	yes

Notes: *, **, *** are 10, 5, and 1 percent significance level. Robust standard errors are in parentheses.

Table 9: Determinants of Exchange Rate Adjustments (1 month)

	Panel A.							
Dependent Variable:	1-month ER Differential ($ln[\frac{S_t}{E_t(S_{t,1})}]$)							
	EMs				AEs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ln(Total Inflows)(t-1)	0.0096***	0.0067***	0.0063***	0.0048**	0.0021**	0.0018**	0.0018**	0.0016*
	(0.0025)	(0.0024)	(0.0023)	(0.0022)	(0.0009)	(0.0008)	(0.0008)	(0.0008)
ln(VIX)(t-1)		-0.0170***	-0.0169***	-0.0151***		-0.0106***	-0.0106***	-0.0094***
		(0.0028)	(0.0028)	(0.0028)		(0.0034)	(0.0034)	(0.0034)
Growth Diff(t-1)			0.1005	0.0345			0.0726	0.0786
			(0.0729)	(0.0701)			(0.1856)	(0.1826)
Inflation Diff(t-1)				-0.3388***				-0.3910**
				(0.0678)				(0.1848)
Adjusted R^2	0.0840	0.1099	0.1106	0.1293	-0.0032	0.0101	0.0087	0.0148
N	1442	1442	1441	1441	823	823	822	822
Country FE	yes	yes	yes	yes	yes	yes	yes	yes

	Panel B.			
Dependent Variable:	Spot Exchange Rate ($ln[S_t]$)		1-month Expected Exchange Rate ($ln[E_t(S_{t,1})]$)	
	EMs	AEs	EMs	AEs
	(1)	(2)	(3)	(4)
ln(Total Inflows)(t-1)	-0.0779***	-0.0011	-0.0822***	-0.0027
	(0.0181)	(0.0046)	(0.0186)	(0.0045)
ln(VIX)(t-1)	-0.0321	0.1297***	-0.0187	0.1391***
	(0.0212)	(0.0159)	(0.0214)	(0.0153)
Growth Diff(t-1)	-0.0074	-3.3061***	-0.0676	-3.3853***
	(0.6880)	(0.8317)	(0.6913)	(0.8225)
Inflation Diff(t-1)	-0.9206	0.5169	-0.5381	0.9060
	(0.8457)	(0.8186)	(0.8532)	(0.8110)
Adjusted R^2	0.9853	0.9931	0.9852	0.9936
N	1441	822	1441	822
country FE	yes	yes	yes	yes

Notes: *, **, *** are 10, 5, and 1 percent significance level. Robust standard errors are in parentheses.

4.3 Fama Regressions

Until now we have analyzed the drivers of the UIP deviations relaying on our decomposition. We can do a similar exercise using the framework that is standard in the literature, that is running a "Fama" regression.

Starting from the UIP condition:

$$E_t(S_{ct,n})(1+i^*_{t,n})^{\frac{n}{12}} = S_{ct}(1+i_{ct,n})^{\frac{n}{12}}, \tag{4}$$

In logs and focusing on single currency:

$$s^e_{t+n} - s_t = i_t - i^*_t.$$

If the CIP holds, we have $f_{t,t+n} - s_t = i_{t,n} - i^*_{t,n}$. We can then rewrite the UIP as

$$s^e_{t+n} - s_t = f_{t,t+n} - s_t,$$

which is the Fama regression

$$\Delta s^e_{t,t+n} = \alpha + \beta(f_{t,t+n} - s_t) + \varepsilon_t. \tag{5}$$

We expect a $\beta = 1$, as a forward premium ($f_{t,t+n} > s_t$) should lead to a currency depreciation (or put it differently, that an interest rate differential should be related to an expected depreciation).

Below, in table 10, we report our results first using expectations data. Different than the literature that uses actual exchange rate changes and finds a negative coefficient, we find a positive coefficient as predicted by the UIP condition.[6] In spite of finding a correctly signed coefficient, we still reject the null of $\beta = 1$ when we use the difference between the forward rate and the spot exchange rate. Hence the UIP conditions does not hold. However, when we use the interest rate differential, then we cannot reject for advanced economies at 12 month frequency (panel A) and for emerging markets at 1 month frequency (panel B) that the UIP conditions holds. Table 11 uses actual changes in the exchange rate to be able to the vast literature that runs this same exact regression. And as in this literature, we find a negative coefficient or an insignificant coefficient. This says that higher interest rate differentials predict exchange rate appreciations and not depreciations. The only exceptions are the emerging markets, while we still reject the UIP conditions, the coefficient is positive. This result is again consistent with the central role played by capital flows in emerging markets leading to interest rate differentials that underlie the UIP deviations.

[6] The actual "Fama" regression is run using actual exchange rate changes: $\Delta s^e_{t,t+n} = \alpha + \beta(f_{t,t+n} - s_t) + \varepsilon_t$.

Table 10: Exchange Rate Forecast

Panel A. Dependent Variable: $\Delta s^e_{t,t+k}$ (12 months)				
	AE	EM	AE	EM
	(1)	(2)	(3)	(4)
$f_{t,t+k} - s_t$ (12 months)	1.4252***	0.3977***		
	(0.2095)	(0.0855)		
$i_t - i^*_t$ (12 months)			0.8379**	0.3640***
			(0.4021)	(0.0631)
Constant	-0.0009***	-0.0055	-0.0030***	-0.0051
	(0.0001)	(0.0038)	(0.0005)	(0.0030)
P-value ($H_0 : \beta = 1$)	0.0546*	0.0000***	0.6907	0.0000***
Adjusted R^2	0.1664	0.0574	0.0898	0.0779
Within R^2	0.1671	0.0581	0.0906	0.0786
N	1080	1334	1080	1334
country FE	yes	yes	yes	yes
Panel B. Dependent Variable: $\Delta s^e_{t,t+k}$ (1 month)				
	AE	EM	AE	EM
	(1)	(2)	(3)	(4)
$f_{t,t+k} - s_t$ (1 month)	0.2850	0.2138		
	(0.2858)	(0.1815)		
$i_t - i^*_t$ (1 month)			4.4781***	1.0840***
			(0.9179)	(0.3788)
Constant	0.0036***	0.0027***	0.0025***	-0.0005
	(0.0001)	(0.0009)	(0.0002)	(0.0015)
P-value ($H_0 : \beta = 1$)	0.0203**	0.0003***	0.0010***	0.8267
Adjusted R^2	0.0015	0.0015	0.0317	0.0100
N	1080	1334	1080	1334
country FE	yes	yes	yes	yes

Notes: *, **, *** are 10, 5, and 1 percent significance level. Robust standard errors are in parentheses. P-value is calculated for testing the null hypothesis that slope equals one.

5 Conclusion

We uncover new facts about the nature of the UIP deviations and show that these deviations and their sources differ between advanced and emerging economies and the short and long terms. We showed that the main sources of deviations in the long term (12-months) are global and country specific idiosyncratic risks. Global risk pushes capital flows in an out of both emerging markets and advanced countries so global risk creates UIP deviations for both set of economies. Yet the source of deviations varies significantly across these countries. In emerging markets, the rise in global risk translates into an increase in the interest rate differential, which drives the UIP violation. This is due to capital outflows. In contrast, in advanced economies, the global risk affects the exchange rate adjustment term relatively more. In particular, the global risk depreciates the spot rate more than the expected rate leading to the UIP deviations in the advanced countries. This asymmetry between emerging markets and advanced economies is revealing, as it indicates that the uncertainty created

Table 11: Realized Exchange Rate

Dependent Variable: $\Delta s_{t,t+k}$						
	12 Months		3 Months		1 Month	
	AE	EM	AE	EM	AE	EM
	(1)	(2)	(3)	(4)	(5)	(6)
$i_t - i_t^*$	-0.5559***	0.2140	-0.6708**	0.5113**	0.0135	0.9062**
	(0.1540)	(0.1524)	(0.2631)	(0.1864)	(0.6351)	(0.4341)
Constant	0.0081***	0.0204**	0.0030***	0.0011	0.0015***	-0.0042**
	(0.0002)	(0.0073)	(0.0002)	(0.0023)	(0.0001)	(0.0017)
P-value ($H_0 : \beta = 1$)	0.0000***	0.0000***	0.0000***	0.0159**	0.1346	0.8309
Adjusted R^2	0.0082	0.0034	0.0014	0.0058	-0.0009	0.0070
N	1080	1334	1080	1334	1080	1334
country FE	yes	yes	yes	yes	yes	yes

Notes: *, **, *** are 10, 5, and 1 percent significance level. Robust standard errors are in parentheses. P-value is calculated for testing the null hypothesis that slope equals one.

by global risk translates in higher default risk in emerging markets (i.e. interest rate differentials), but higher currency risk (i.e. exchange rate adjustment term) in advanced economies. Second, in emerging markets, there is an additional component: country specific idiosyncratic risk. Declines in GDP growth increases the risk of default, capital flows out raising the interest rate differential and creating UIP deviations.

In terms of short horizons, capital flows create UIP deviations through changes in the expected exchange rate. More precisely, capital inflows appreciate the spot exchange rate, but generate a larger response of the expected exchange rate both in emerging markets and advanced economies. This higher expectation of currency appreciation creates the UIP deviations and excess returns. Global risk reduces UIP deviations through affecting the exchange rate adjustment term. In particular, global risk increases expectations of depreciation, which lowers excess returns. These results indicate that, in the short-term, currency risk become predominant at explaining excess returns both in advanced and emerging economies.

Overall our results indicate that, in the long term, default risk is critical to explain UIP deviations in emerging markets, while currency risk is essential to account for the deviations observed in advanced economies. As an additional contribution, we shed light on the exchange rate disconnect puzzle as we show lagged capital flows, growth differentials, interest rate differentials and changes in global risk go along way in explain the spot exchange rates, where the former three are more important for emerging markets' exchange rates.

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Appendix A Additional Figures and Tables

Figure A.1: UIP Deviation in Advanced Economies and Emerging Markets (3-Months Horizon)

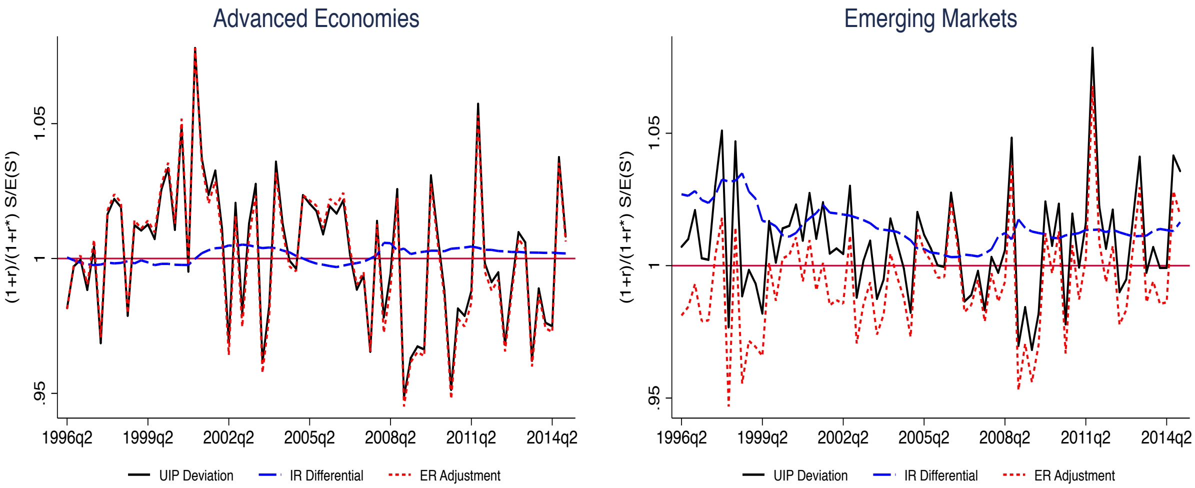

Figure A.2: UIP Deviation in Advanced Economies and Emerging Markets (1-Month Horizon)

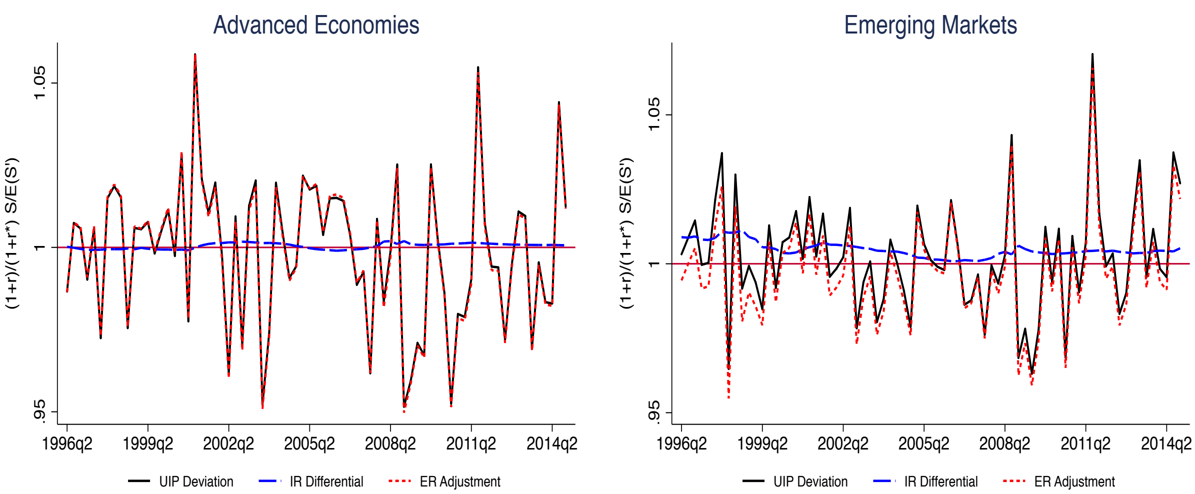

Table A.1: List of Countries

advanced Economies (1)	emerging Markets (2)
Australia	Argentina
Austria	Brazil
Belgium	Chile
Canada	China, P.R.: Mainland
Denmark	Colombia
Finland	Czech Republic
France	Hungary
Germany	India
Greece	Indonesia
Ireland	Republic of Korea
Israel	Malaysia
Italy	Mexico
Japan	Peru
Netherlands	Philippines
New Zealand	Poland
Norway	Romania
Portugal	Russian Federation
Spain	Slovak Republic
Sweden	South Africa
Switzerland	Thailand
United Kingdom	Turkey
	Ukraine

Notes: 43 countries, 21 advanced Economies and 22 emerging Markets. Period 1996q2-2014q4.

Table A.2: Summary Statistics by Country Groups

	EMs					AE				
	Mean (1)	Median (2)	Std Dev (3)	p25 (4)	p75 (5)	Mean (6)	Median (7)	Std Dev (8)	p25 (9)	p75 (10)
UIP Dev (12 months)	1.042	1.038	0.065	1.003	1.075	1.012	1.010	0.050	0.979	1.043
Capital Inflows (in logs)	3.262	3.237	0.350	3.180	3.347	3.301	3.408	1.040	3.179	3.841
Sovereign Debt Inflows (in logs)	2.360	2.336	0.236	2.295	2.440	2.360	2.362	0.717	2.207	2.653
Bank Debt Inflows (in logs)	3.099	3.087	0.289	3.060	3.142	3.055	3.213	1.020	3.021	3.600
Corporate Debt Inflows (in logs)	2.506	2.469	0.249	2.419	2.576	2.474	2.530	0.791	2.389	2.790
GDP Growth Differential*	0.303	0.462	1.622	-0.411	1.225	-0.129	-0.078	1.024	-0.586	0.407
IInflation Differential*	0.910	0.514	1.655	-0.105	1.432	-0.123	-0.168	0.680	-0.526	0.175
N of Observations:	1364					822				

Table A.3: DETERMINANTS OF CAPITAL INFLOWS

Dependent Variable: ln(Total Inflows)(t)		
	EMs	AEs
	(1)	(2)
ln(VIX)(t-1)	-0.1766***	-0.3543***
	(0.0370)	(0.1295)
Growth Diff(t-1)	2.3752***	2.1092
	(0.8605)	(6.7305)
N	1441	822
country FE	yes	yes

Notes: *, **, *** are 10, 5, and 1 percent significance level. Robust standard errors are in parentheses.