Five Facts about the UIP Premium

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Abstract

We document five novel facts on the Uncovered Interest Parity (UIP) wedge—difference between interest rate differentials and expected exchange rate changes—across countries and over time. 1) In emerging markets (EM), UIP wedge fluctuates but stays always positive, implying persistent expected currency excess returns. 2) Global time-varying risk premia—proxied by VIX, liquidity and convenience yields in the U.S.—and country-specific policy risk premium—measured by news-based uncertainty—together explain more than 40% of the time-variation in the EM-UIP wedge. 3) The interest rate differential component can account most of the time-variation in EM-UIP wedge, whereas for advanced economies (AE), exchange rate changes matter more. 4) Foreign investors expect EM currencies to depreciate most of the time, pricing-in an ex-ante risk premium in the interest rate differentials to hold these currencies. 5) The UIP wedge comoves negatively with capital inflows in EMs but not in AEs, and this correlation disappears once country policy risk premium is accounted for. Although facts (1) to (3) can be explained by finance/macro models with limited arbitrage due to risk averse investors or financial frictions, facts (4) and (5) are harder to explain with those models as the correlation of the UIP wedge with capital flows goes through interest rate differentials that reflect endogenous pricing of policy risk premium.

JEL: F21, F32, F41.

Keywords: Excess currency returns, risk premia, expectations, policy credibility.

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Interest rate volatility helps FX trading business
—James Gorman, Morgan Stanley, CEO

1. Introduction

A central concept in international macroeconomics and finance is the Uncovered Interest Parity (UIP) condition that equates currency returns. Yet, starting with the seminal works of Hansen and Hodrick (1980) and Fama (1984), a long literature has shown that this prediction fails in the data, and that high interest rate currencies tend to appreciate –instead of depreciate as implied by the UIP–, paying excess returns. On the traditional finance view, under frictionless trade in currencies, this excess return or risk premium arises from the covariance of currency returns with a stochastic discount factor whose variation reflects changes in investors' marginal utilities across states. This literature focuses on global risk factors to account for the variation in stochastic discount factor and shows that currencies that depreciate in bad states of the world pay a risk premium (e.g. Lustig and Verdelhan 2007, Verdelhan 2010).

Another branch of the literature highlights that UIP violations can endogenously arise as a compensation for bearing currency risk under imperfect capital markets. Under this view, uncertainty in countries' policies, in particular the monetary policy, can lead to deviations from the UIP condition. Alvarez, Atkeson and Kehoe (2009) develop a general equilibrium model with segmented capital markets and show that the UIP premium mostly reflects changes in the interest rate differential that result from a country's uncertain monetary policy. Itskhoki and Mukhin (2023)'s model highlights the role of global financial intermediaries with limits to arbitrage, and shows that a country's monetary regime is crucial to explain currency risk and the dynamics of the exchange rate, highlighting the importance of financial shocks in segmented markets. Although these models show that uncertainty around a country's monetary regime can account for a significant part of the UIP premium, there is so far no systematic empirical evidence assessing the importance of a country's general economic policy uncertainty and how country-specific risk factors interact with global risk factors to explain the dynamics of the endogenous UIP violations. This paper fills this gap and creates a bridge between the finance and macro literatures.[1]

We undertake a systematic empirical analysis of endogenous UIP violations in both

[1]In this sense our paper shares a common goal with Hassan and Mano (2019), who argued that the disconnect between finance and macro literatures is because conventional estimates of the forward (UIP) premium are not informative about expected returns as they do not correct for uncertainty about future interest rates. Our paper's novel contribution is to directly measure such uncertainty and connect it to expected excess returns (UIP premium).

emerging markets (EM) and advanced countries (AE), by focusing on global and local risk factors underlying time-varying currency risk premia. We consider the common global factors used in the literature –the VIX, convenience and liquidity yields (e.g. Rey 2013, Kalemli-Özcan 2019, Jiang, Krishnamurthy and Lustig 2021*a*, Obstfeld and Zhou 2023*a*)– and extend country-specific factors beyond monetary policy to a full set of economic policies that can create exchange rate and interest rate uncertainty. In particular, we measure policy risk premium linked to economic policy uncertainty based on a new hand-collected data set of news from each country's own newspapers together with global English newspapers following the seminal work of Baker, Bloom and Davis (2016). Our measure covers –but it is not limited to– uncertainty around monetary policy, taxation, fiscal deficit, central bank independence, labor regulations, competition law, capital controls, nationalization, corruption, etc. Combining our news based policy risk premium with both investor- and aggregate-level data on exchange rate expectations, we show that both factors reflecting global market conditions and country-specific policy uncertainty can explain the dynamics of the UIP premium in emerging markets. For advanced economies, global risk factors are more important than local risk factors, a result that is consistent with the advanced country literature highlighting the importance of global risk factors for exchange rates (e.g Jiang, Krishnamurthy and Lustig 2023).

To fix ideas, let us first write the UIP premium (excess return to local currency asset) in logs as

$$\lambda^e_{t+h} = \underbrace{(i_t - i_t^{US})}_{\text{IR Differential}} - \underbrace{(s^e_{t+h} - s_t)}_{\text{ER Adjustment}}, \tag{1}$$

where i_t and i_t^{US} are the local and the U.S. short-term (12 month) deposit and/or money market interest rates,[2] and h is a 12-month horizon, s is the exchange rate in units of local currency per USD, and s^e is the expected exchange rate over the same horizon, measured with survey data. A $\lambda^e_{t+h} > 0$, implies positive expected excess returns from investing in the EM currency for the U.S. investor. We compute λ^e_{t+h} for a panel of 22 emerging markets

[2]One can also use short-term local currency government bond rates for each country. Using bond rates makes our results even stronger since the default risk in local currency short-term EM bonds is higher than the default risk in short-term U.S. government bonds in USD. Our results are also robust to using money market rates. We opt for using the closest rate possible to a "risk-free rate" on local currency borrowing/return to saving one can obtain in EM that is deposit/money market rates. This is consistent with the textbook UIP condition that is based on deposit rates to highlight the indifference between saving in local currency vs saving in foreign currency once expected changes in the exchange rate is taken into account. It is important to use short-term rates as UIP holds in long-term bonds (e.g. Chinn 2006 and Lustig, Stathopoulos and Verdelhan 2019). Focusing on rates for less than 1 year maturity assets also helps us to separate UIP premia from term premia which can be high due to high inflation in EMs.

and 12 advanced economies (as a control group) over 1996m11-2018m12.

We document five novel facts carrying this condition to the data. First, in EMs, the UIP wedge denoted in equation (1), fluctuates over time but stays always positive, reflecting an *expected* and persistent positive risk premium for investing in these currencies. The mean unconditional UIP wedge is 4.1 percentage points higher in EMs than AEs, which is consistent in magnitude with the risk premium observed using ex-post realizations of exchange rates in previous studies (e.g. Gilmore and Hayashi 2011 for EMs and Lustig and Verdelhan 2007 for AE). The conditional test of UIP also shows that excess returns are predictable by interest rate differentials both using ex-ante forecast and ex-post realizations of exchange rates. These properties differ for advanced economies, as documented by a large literature, as the UIP wedge switches from positive to negative and vice versa over time, its unconditional mean is close to zero, and predictability is only there when expectations from survey data is employed. A key factor here for EMs is the ability of exchange rate expectations to predict exchange rates even in short horizons at 12-months.

Second, global risk factors – proxied by the VIX, liquidity and convenience yields in the U.S.– and country-specific policy risk premium –measured by economic policy uncertainty– explain more than 40% of the time-variation in the UIP wedge in EMs. We show that, on average, both higher VIX and country-specific economic policy uncertainty associate with increases in the UIP premium in these economies. In particular, allowing for country-specific loadings on the VIX increases the adjusted R^2 by 125%, whilst allowing country-specific slopes for economic policy uncertainty raises the adjusted R^2 marginally more, by 130%. Notably, the individual-country coefficients remain statistically significant and the adjusted R^2 increases even more– by 150%– when both global and country-specific local risk factors are included in the analysis. Global and local risk factors do not overpower each other, as their correlation is low—correlation between country-specific policy uncertainty and VIX is only 22%. There is large variation in this correlation that is not-systematic, where countries like Turkey has VIX and country's policy risk correlation of 2%, whereas Chile's correlation is 47% and that of Brazil is 18%. Our analysis then shows that country-risk factors are crucial to explain the dynamics of the UIP premium, and their impact goes beyond heterogeneous loadings on global risk highlighted in previous studies (Lustig, Roussanov and Verdelhan 2011). Interestingly, in AEs the UIP premium only correlates with the global risk factors and country-specific risk is not statistically significant.

Third, most of the time-variation in EMs' UIP wedge can be accounted by the fluctuations in the interest rate differential component. Going back to equation (1), the average correlation between UIP premium and the interest rate differential in EMs is 70%, whist the correlation with the exchange rate adjustment term is -21%. The negative sign shows that UIP premium is higher due to an expected appreciation (ER terms go down) but the strength of this relation is only 21 percent. In line with a mechanism where the currency risk is priced ex-ante in the interest rate differential, our regressions show that the increase in the UIP premium arising from higher global and country-specific risk is channeled by the interest rate differential. In contrast, in AEs, the dynamics of the UIP premium is only driven by global risk factors that are mostly channeled by exchange rate changes. The correlation between the UIP wedge and the ER term in equation (1) is 93 percent in advanced economies, whereas the correlation between interest rate differentials and the UIP wedge is low and insignificant. We find these results informative in the sense that researchers who want to understand endogenous UIP violations in emerging markets should first and foremost understand the fluctuations in interest rate differentials, whereas the same issue for AEs requires an understanding of the time-variation in exchange rates.

Fourth, foreign investors respond to expected currency risk in a way that their behavior predicts the exchange rate. Consistent with the above three facts, foreign investors expect depreciation for EM currencies most of the time and, hence price-in an ex-ante risk premium in the interest rate differentials to hold these currencies whose value will likely to fall in the future according to their expectations. Using individual investors' expectations, such as J.P. Morgan, a large investor in EM asset class, we create two measures to proxy for exchange rate uncertainty based on disagreement: (1) the difference between the high and low exchange rate forecast for each particular currency and time, and (2) the standard deviation of the expected exchange rate across investors for each currency and time. In a two-stage regression, we first show that higher lagged global and country-specific risks raise the dispersion in exchange rate forecasts, reflecting an increase in exchange rate uncertainty among forecasters. We then employ the predicted value of this increased uncertainty — driven by global and country risks– to show that it correlates with increases in the interest rate differentials in EMs. This points that investors price-in the currency risk created by global and country-specific shocks and, thus, the interest rate differential is endogenous to expected currency risk faced by global financial intermediaries in EMs. Interestingly, only currency risk arising from global shocks are priced-in for AEs' currencies and the estimated coefficient for AEs is less than half of the coefficient observed in EMs.

Fifth, the UIP wedge comoves negatively with capital inflows in EMs. This within correlation shows that quantity and price of currency risk are connected through global and local financial intermediaries operations in currency markets. Such a comovement is absent for AE currencies. Importantly, local and global risk factors that are shown to be important in explaining the time-variation in the UIP wedge of EMs above, mute the country-time correlation of the UIP wedge with capital inflows. Hence these two facts imply that global and local risk factors were omitted variables in the correlation between quantity and price of currency risk. These results thus point that UIP wedge relates to a risk premium compensating financial investors for bearing global and country-specific time-varying risks by investing in EMs.

Our results are consistent with affine models of exchange rate determination (as in Backus, Foresi and Telmer 2001, Lustig, Roussanov and Verdelhan 2011) and macro models with segmented capital markets (as in Itskhoki and Mukhin 2021, Itskhoki and Mukhin 2023, Alvarez, Atkeson and Kehoe 2009). But none of these models can account for our finding that global and country-specific risk factors mute the correlation of capital inflows with the UIP premium and foreign investors endogenously price the risk of investing (capital flow) in the interest rate differential.[3] Overall, there is no model of currency markets that delivers the endogenous pricing of global and country-specific risks in the interest rate differential for emerging market currencies. Although this endogenous pricing of risk has been widely employed to model financial frictions as in the international finance literature (Salomao and Varela 2022; Akinci, Kalemli-Özcan and Queralto 2022) and sovereign debt literature (Arellano 2008; Aguiar and Amador 2023), it has not been applied to pricing currency risk specifically.

Related Literature. Our paper contributes to three strands of the literature. First and foremost, we show the detrimental effect of policy uncertainty on real outcomes through capital flows and foreign investors' pricing of currency risk as they attach a higher risk premium to policy uncertainty in EMs. Since the pioneering work of Baker, Bloom and Davis (2016), who show that economic policy uncertainty reduces investment and output in the U.S., research has shown that policy uncertainty leads to inefficiencies through market pricing. For example, Cieslak, Hansen, McMahon and Xiao (2023) show that Fed-driven policy uncertainty reduces the impact of monetary policy on real outcomes due to market volatility. Focusing on inflation policy uncertainty, Du, Pflueger and Schreger (2020) show that lack of government commitment and risk averse lenders can encourage foreign currency borrowing by sovereigns. We are the first paper show that economic policy uncertainty goes beyond monetary policy uncertainty and affects global investors' risk sentiments, cross-border capital flows, and cost of borrowing for EMs.[4]

[3] Alvarez, Atkeson and Kehoe (2009) is the only model where inflation risk is endogenously priced in the interest rate differential component of UIP. Our paper shows that the result is much more general applying to risk/uncertainty in all the economic policies.

[4] Our findings might be confused with the classical "peso problem" but they are quite different. The peso problem is about the credibility of a fixed exchange regime. For example, during 1970s, investors expected a depreciation of Mexican peso that did not materialize and, hence, created a gap between the U.S. and the Mexican interest rates. Our results are not based on comparing different regimes, on the contrary, all about floating exchange rate regimes and how uncertainty surrounding non-exchange rate monetary, fiscal

Our second contribution is to show that EM currencies always pay a UIP premium but not due to appreciation as in the Fama (forward premium) puzzle but rather due to "not enough" depreciation. Both realized and expected exchange rate do not depreciate enough with high interest rate differential. Put differently, UIP premium might be 'inefficient' given the high short-term interest rate differential. The AE country literature shows that UIP does not hold with realized exchange rates, but it holds when survey data for expectations is used. We show for EMs, UIP does not hold and there are always expected and actual excess returns, regardless of using realized exchange rates or survey data. The AE literature has three groups of explanations for the UIP puzzle: (1) Distorted beliefs or information frictions (e.g Ito 1990, Chinn and Frankel 1994, Gourinchas and Tornell 2002, Bacchetta and Wincoop 2006, Burnside, Eichenbaum and Rebelo 2007, Bacchetta, Mertens and van Wincoop 2009, Stavrakeva and Tang 2018, Bussiere, Chinn, Ferrara and Heipertz 2022, and Candian and De Leo 2023). (2) Risk-averse investors since excess returns are predictable (e.g Backus, Foresi and Telmer 2001, Lustig and Verdelhan 2007, Lustig, Roussanov and Verdelhan 2011, Burnside, Eichenbaum, Kleshchelski and Rebelo 2011, Sarno, Schneider and Wagner 2012, Colacito and Croce 2013, Hassan and Mano 2019, Kremens and Martin 2019, Salomao and Varela 2022). (3) Financial frictions limiting the arbitrage (e.g. Gabaix and Maggiori 2015, Gopinath and Stein 2021, Akinci and Queralto 2018, Basu, Boz, Gopinath, Roch and Unsal 2020, Itskhoki and Mukhin 2021, and Bianchi and Lorenzoni 2021). Our results suggest that, for emerging markets, both groups of explanations (2) and (3) matter. Since we get same results with realized exchange rates and expected exchange rates, we investigate investors' exchange rate expectation responses to policy uncertainty shocks and find that policy uncertainty affects the expectations of exchange rate and realized exchange rates in a similar way. We also show that, hedging such policy risks are costly given larger than AE CIP deviations in EM implying shallower hedging markets for EM currencies.

Our third contribution is to overshooting literature (e.g. Dornbusch 1976, Eichenbaum and Evans 1995), as we document the underlying determinants of time-varying country-specific risk premium. This literature shows that exchange rate overshoots its equilibrium level after the initial interest rate shock. None of the puzzles associated with this literature that are shown for AEs, such as delayed overshooting and predictability reversal puzzles, are present for EMs. On the contrary, exchange rates actually depreciate after interest rate shocks and expected to depreciate further with no delay, no overshooting and no reversal in EMs. They go back to original level very slowly, given the persistence in exchange rate expectations underlined by persistent policy risk premium.

The paper is structured as follows. Section 2 presents our data and measurement. Section

and regulatory policies lead to a UIP premium.

3 summarizes the narrative with famous cases of Argentina and U.K. Section 4 undertakes the benchmark analysis. Section 5 undertakes the robustness analysis and rules out alternative stories. Section 6 concludes.

2. Data and Measurement

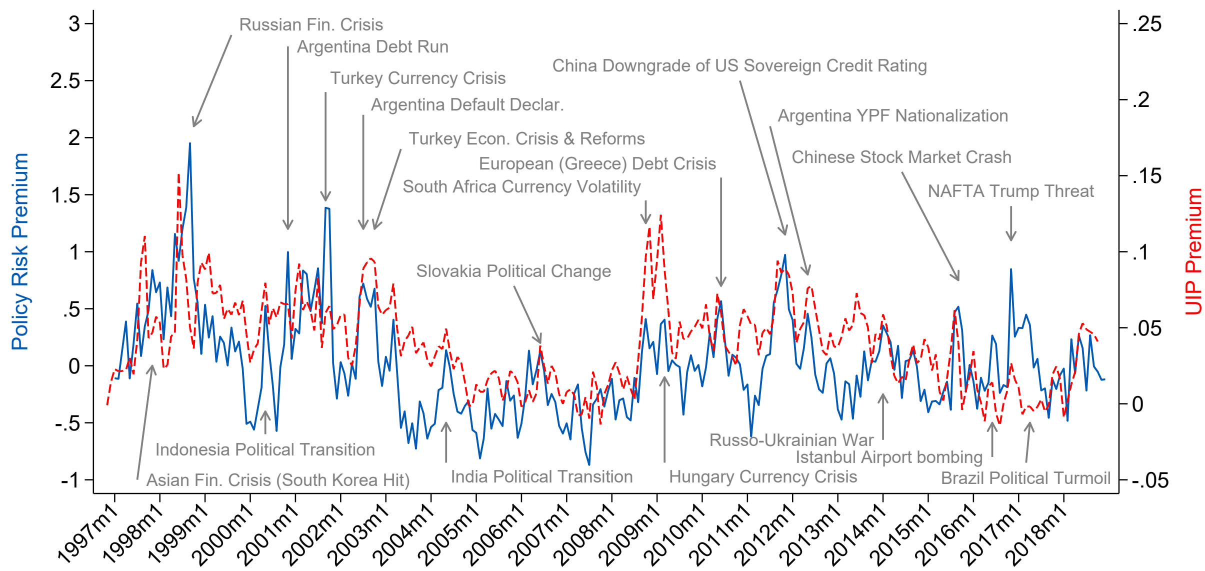


Figure 1. Policy Risk Premium and UIP Premium For Emerging Markets, 1997–2018

To proxy for domestic policy risk premium (PRP) for each country, we employ different methodologies. We first compute the PRP index for our sample following Baker, Bloom and Davis (2016). This index is constructed by counting the number of journal articles containing words reflecting policy uncertainty and, as such, is a good proxy for foreign investors' risk sentiment on government and central bank policies. Figure 1 plots this measure for policy risk premium together with the UIP risk premium. We plot the averages for EMs. The tight connection between the two series is remarkable. All the important EM events and crises are picked up by spikes in both premia, as expected, but more importantly, important global events such as Trump-era, also reflected in policy and UIP premia for EMs, both country-specific measures.

To narrow down the factors relevant creating policy uncertainty, we then complement our analysis with the indicators from International Country Risk Guide (ICRG), which reports detailed information of the components of policy risk for each country over time. Political risk contributes 50% to the composite policy risk index, and financial and economic risks contribute to the remaining 50%. To pin down the main elements entailing policy risk, we focus on two key elements of the political risk component that capture investors' sentiments: *government policy risk* and *confidence risk*. Government policy risk captures expropriation risk, risk of not being able to repatriate profits and government accountability, where this later evaluates different types of democratic systems and the degree of freedom that a government has to impose policies to its own advantage. For example, Azzimonti and Mitra (2023) relate government accountability with a country's default probability. Confidence risk assesses consumer confidence and unemployment (see Appendix A.4 for more details).[5] As a side, we also investigate monetary policy uncertainty since this is what the literature has focused on, by studying inflation forecast errors.

We employ all the possible global risk factors from the Federal Reserve Economic Data (FRED). We use standard capital flows data from IMF, IFS. Following Miranda-Agrippino and Rey (2020), we interpolate all capital flow series to monthly frequency (see Appendix A.1 for details). We employ monthly data from International Monetary Fund (IMF), Bloomberg and Consensus Economics to construct the UIP. We obtain the deposit interest rates, money market rates and government bond rates from Bloomberg, the spot exchange rate from International Financial Statistics (IFS) from the IMF, and the exchange rate forecasts data comes from Consensus Economics. This survey provides information on expected exchange rate at 12-month horizon that we use to construct the UIP at this maturity. We additionally conduct robustness tests for UIP at 3 months maturity. For the Euro Area, we employ individual series for countries before they join the Euro and, after they join, we use Euro level series. We measure actual inflation with CPI and for expected inflation we use survey data from Consensus Economics. We further use CDS data for default risk from Bloomberg and default episodes from Reinhart, Rogoff, Trebesch and Reinhart (2021).

Our panel is for 34 currencies, 12 AEs and 22 EMs, over the period 1996m11–2018m12, for which we have information for all variables to construct the UIP condition and information about our policy risk variables. Our sample excludes country-month observations when there is a fixed exchange rate regime based on the classification of Ilzetzki, Reinhart and Rogoff (2017), as in these cases the exchange rate does not move or covary with the interest rate by construction. Appendix A discusses in detail the construction of the series and samples.

[5]These two indexes come directly from the ICRG data. Our measure of government policy risk is the average of the variables investment profile and democratic accountability, and our measure of confidence risk is the socioeconomic risk variable. We pool investment profile and democratic accountability together as, despite both variables capture different types of risk, they are highly correlated in data.

2.1. Exchange Rate Expectations and Policy Risk Premium: A Deeper Look

Consensus Forecast conducts a monthly survey about expectations on future exchange rates at 1, 3, 12 and 24 months horizons of major participants in the foreign exchange rate market. Appendix A.2 discusses thoroughly the details of this dataset. The coverage is extensive and includes 55 forecasters on average for AEs' currencies. Some currencies –as the Euro, Japanese Yen and UK Pound– include more than a hundred of forecasters in several periods. Albeit with a lower number of forecasters, the survey is also comprehensive in EMs and includes on average 17 forecasters per currency. Using this data we measure the UIP premium as we stated in the introduction, equation (1). The base currency is always the USD.

The forecasters interviewed are typically global banks and investors that actively participate in the FX market. Notably, these global agents are present in both AEs and EMs and, hence, provide together their forecasts for both sets of economies. Having the same set of agents surveyed for both set of economies is important because it implies that different results between AEs and EMs should not arise from heterogeneity in the type of forecasters among these economies. To provide an example of the forecasters surveyed, in September 2012, for the Japanese Yen (96 forecasters) these included: Goldman Sachs, HSBC, JP Morgan, Citigroup, Bank of Tokio Mitsubishi, IHS Global Insight, General Motors, ING Financial Markets, Barclays Capital, and Morgan Stanley. These ten forecasters were also surveyed for the Euro and the UK pound, which included a total of 103 and 81 forecasters that month. Forecasters of EM currencies also included these group of global banks. For example, the main forecasters of the Korean Won (22 forecasters) were: Goldman Sachs, HSBC, JP Morgan, Citigroup, Bank of Tokio Mitsubishi, IHS Global Insight, General Motors, ING Financial Markets. Similarly, the Turkish Lira (28 forecasters) included the same list of forecasters. Other EM currencies (as the Argentinean Peso, Brazilian Real, Chilean Peso, Colombian Peso, Hungarian Forint, Indian Rupee, Malaysian Ringgit, Mexican Peso, Polish Zloty and Russian Rouble) also included these forecasters, as well as other global investors like Barclays Capital, BNP, ABN Amro, Allianz, Royal Bank of Canada, UBS and Royal Bank of Scotland.

We construct our policy risk premium index following the methodology of Baker, Bloom and Davis (2016) for their economic policy uncertainly (EPU) index. In particular, we use the online platform Factiva, which reports journal articles of main international newspapers. Our list of words follows Baker, Bloom and Davis (2016) to which we add four new words to capture additional policy uncertainty characteristic of emerging markers (i.e. capital controls, expropriation, nationalization and corruption). Because we are interested in the perspective of the U.S. international investor, we focus both domestic news and the news reported in international newspapers (such as Financial Times, Reuters and the Wall Street

Journal, among others).

We construct the policy risk premium (PRP) index for each currency and month as follows, $PRP_{it} = X_{it} / \frac{1}{12} \sum_{j=1}^{12} Y_{t-j}$, where X_{it} is the number of articles referring to episodes in country i at month t, $Y_t = \sum_i Y_{it}$ is the total number of articles written at month t (i.e. the sum of articles across countries), and Y_{it} is total number of articles referring to country i at month t. We then normalize the index to 100 by estimating $PRP^N_{it} = \frac{PRP_{it}}{\overline{PRP}_i} \times 100$, where $\overline{PRP}_i = \frac{1}{T} \sum_{t=1}^{T} PRP_{it}$ is the average of news for each country across time. Appendix A.3 reports a detailed description of the methodology to create this index.[6]

2.2. Other Variables

Since we calculate the UIP always vis-a-vis the U.S. dollar, we also construct variables that aim to capture the predominant role of the U.S. dollar in financial markets. It is important to separate our story from stories that center on the special role of the U.S. as a country and currency. We describe each of these variables and how they are related to the UIP premium in detail in our empirical analysis in subsequent sections. We now briefly outline how we construct them from the data.

We start by defining the Covered Interest Parity (CIP). Omitting the country subscript for simplicity, the CIP deviation at time t for a given country relative the U.S. at horizon h, λ^{CIP}_{t+h}, is

$$\lambda^{CIP}_{t+h} = (i_t - i^{US}_t) - (f_{t+h} - s_t), \tag{2}$$

where i_t is an interest rate in the home currency, i^{US}_t is the US interest rate, f_{t+h} is a (log) forward exchange rate h periods ahead, and s_t is the (log) spot exchange rate. Higher CIP deviations mean that investors can go short in the U.S. dollar and long in the home currency, thus generating arbitrage profits, by borrowing in U.S. dollars and lending in the other currency. This is because, from the equation above under $p$ositive CIP deviations, borrowing in dollars is relatively cheap when compared to a synthetic U.S. dollar transaction, i.e: $i^{US} < (i_t + s_t - f_{t+h})$. Put differently, $p$ositive CIP deviations may also reflect the costs for the hedging the currency risk in emerging markets vis-a-vis the U.S. dollar.

[6] Our methodology to construct the index follows Barrett, Appendino, Nguyen and de Leon Miranda (2020) and is an adaptation of Baker, Bloom and Davis (2016) to include international news. In particular, the difference with Baker, Bloom and Davis (2016) is that their index includes a non-minor proportion of local newspapers, which allows them to first compute the share of news for each individual newspaper within a country and then add up the total sum for each country. Instead, Barrett, Appendino, Nguyen and de Leon Miranda (2020) methodology adds the total number of articles in a country and pools all the newspapers together for each country.

Using different interest rates — such as LIBOR, government bonds, deposit rates or money market rates — we can capture different forms of equation (2). One particularly important concept to capture is the so-called the U.S. dollar convenience yield. To that end, let the *Convenience Yield* of the U.S. dollar relative to a given country i at time t be $Convenience\ Yield_{it} = i^{L}_{i,t} - i^{US,L}_{t} - (f_{i,t+1} - s_{i,t})$, where $i^{L}_{i,t}$ is the LIBOR rate in country i, $i^{US,L}_{t}$ is the LIBOR rate in the U.S., $f_{i,t+h}$ is the (log) forward (one year ahead) exchange rate and $s_{i,t}$ is the spot exchange rate. Both exchange rates are in units of home currency per U.S. dollar. This convenience yield is no more than a LIBOR-based CIP.

Since U.S. convenience yield is always regarded as a global factor, we follow the literature and average these convenience yields across G10 countries.[7] Hence, the convenience yield for the U.S. dollar is $Convenience\ Yield_t = \sum_{i \in G10} Convenience\ Yield_{it}/9$. Defined this way, the convenience yield on the U.S. dollar (relative to G10 countries) measures how much investors are willing to forego higher returns in G10 in exchange for higher safety provided by the U.S. dollar. Additionally, we measure the *Liquidity Premium* on U.S. government bonds as the spread between 12-month government bond and the LIBOR rates in the home economy and in the U.S. Formally, $Liquidity\ Premium_{it} = i^{L}_{i,t} - i^{G}_{i,t} - (i^{US,L}_{t} - i^{US,G}_{t})$, where $i^{G}_{i,t}$ and $i^{US,G}_{t}$ are interest rates on government bonds in the home country and the U.S., respectively. As with the convenience yield, we construct a single measure of liquidity premium by averaging across G10 countries, since this premium is only about the U.S. treasuries: $Liquidity\ Premium_t = \sum_{i \in G10} Liquidity\ Premium_{it}/9$.

Finally, we define:

$$Convenience\ Yield/Liquidity\ Premium_t = Convenience\ Yield_t + Liquidity\ Premium_t,$$

which consider the role of the U.S. dollar in financial market both as a safe asset and also as a liquidity source.

2.3. Summary Statistics

We present summary statistics of the UIP premium and its components of equation (1) in Table 1. The column 1 of Panels A and B in Table 1 shows that there is a striking contrast between AEs and EMs. While in EMs there is a positive UIP premium that reaches – on average – 4 percentage points, the UIP premium in AEs is small and lower than 1 percentage point. The median values presented in column 2 confirm this finding.

[7]The G10 countries we consider are Australia, Canada, Germany, Japan, New Zealand, Norway, Sweden, Switzerland, and United Kingdom.

Table 1. Summary Statistics

	Mean	Median	Std. Dev.	p25	p75	Observations
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel (A): Emerging Markets					
UIP Premium						
UIP Premium	0.042	0.035	0.060	0.006	0.070	3,397
Interest Rate Differential	0.051	0.035	0.079	0.012	0.066	3,397
Expected Exchange Rate Adjustment	0.010	0.004	0.063	-0.026	0.034	3,397
Other variables						
Capital Inflows/GDP	0.071	0.017	0.558	-0.004	0.047	3,290
PRP	-0.001	-0.293	0.974	-0.639	0.335	3,397
Expected Inflation Differential	0.024	0.016	0.025	0.007	0.037	2,605
Sovereign Default Risk	0.018	0.013	0.018	0.008	0.020	2,297
Composite Risk	-0.394	-0.433	0.443	-0.712	-0.134	3,397
Government Policy Risk	-0.583	-0.617	0.615	-1.066	-0.267	3,397
Confidence Risk	-0.278	-0.346	0.713	-0.772	0.293	3,397
	Panel (B): Advanced Economies					
UIP Premium						
UIP Premium	0.009	0.007	0.046	-0.022	0.035	2,260
Interest Rate Differential	0.003	0.002	0.022	-0.009	0.016	2,260
Expected Exchange Rate Adjustment	-0.006	-0.003	0.050	-0.036	0.028	2,260
Other variables						
Capital Inflows/GDP	0.059	0.037	0.108	0.003	0.092	2,212
PRP	0.024	-0.174	0.859	-0.578	0.371	2,260
Expected Inflation Differential	-0.003	-0.002	0.008	-0.007	0.002	1,968
Composite Risk	-1.183	-1.179	0.400	-1.421	-0.936	2,260
Government Policy Risk	-1.283	-1.466	0.348	-1.566	-1.166	2,055
Confidence Risk	-1.448	-1.411	0.459	-1.836	-1.198	2,055
	Panel (C): Global US Specific Variables					
Convenience Yield/Liquidity Premium	0.001	0.001	0.002	-0.000	0.002	264
Convenience Yield	0.001	0.001	0.002	0.000	0.003	264
Liquidity Premium	-0.000	0.000	0.003	-0.000	0.003	264
VIX	2.945	2.953	0.352	2.655	3.175	264

Note: 34 currencies, 22 EMs, 12 AEs. Period 1996m11:2018m10. Source: Consensus Forecast, Bloomberg, FRED, IMF, ICRG. Capital Inflows/GDP is the ratio of capital flows to GDP. PRP measures economic policy uncertainty related policy risk premium based on local and international newspaper articles. Expected inflation differential compute the difference between expected inflation in the home country relative to the U.S. Sovereign default risk refers to Credit Default Swap (CDS). The Convenience Yield is an average of LIBOR-based CIP deviations among G10 countries. The Liquidity Premium measures the difference between the spread in LIBOR rates and government bond rates among G10 countries relative to the U.S. dollar. Composite, government policy and confidence are as defined in the text.

The decomposition between the interest rate differential and the exchange rate adjustment terms, second and third lines of Panel A show that, in EMs, the mean interest rate differential accounts for the bulk of the UIP premium, while the exchange rate adjustment term is negligible. Instead, in AEs (shown in Panel B), the mean interest rate differential and exchange rate adjustment terms are closed to each other, which is consistent with a UIP premium being on average close to zero in these economies. All other variables such as capital flows show quite a bit of variation. We report U.S. specific global variables in the last panel.

3. The Narrative

We summarize two famous cases in this section that illuminate our mechanism well: the nationalization of pension funds in Argentina in October 2008, and Brexit referendum in the United Kingdom in June 2016. The nationalization of pension funds in Argentina was taken as a surprise.[8] The results of the Brexit referendum in June 2016 was also unexpected. Both events are characterized by a high degree of policy uncertainty and the UIP premium has increased in both countries, as shown in Figure 2. Interestingly, while the PRP (dashed gray line) rose much more in the U.K., the UIP premium increased "only" by 2 percentage points. The increase in the UIP premium in Argentina was much higher –6 percentage points–, suggesting a higher risk premium by foreign investors for the Argentina case versus the U.K. case, even if the Brexit entailed higher policy uncertainty.

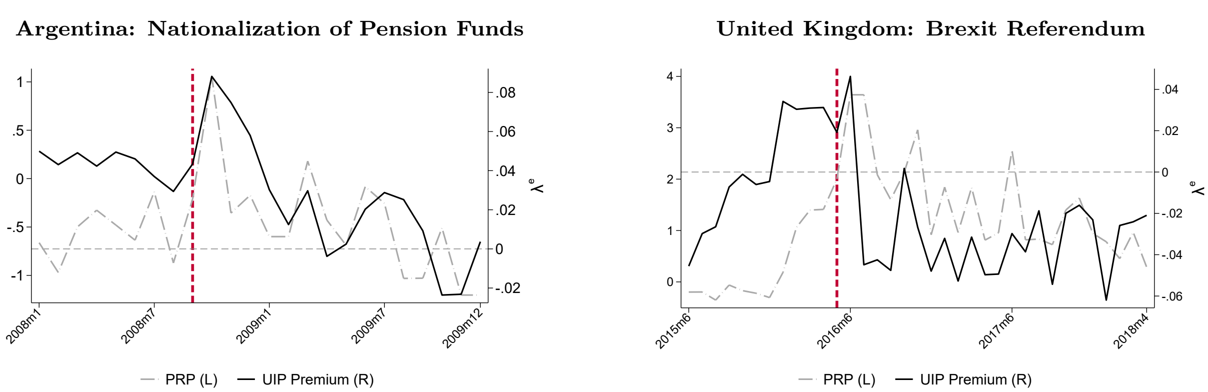


Figure 2. Policy Risk Premium and UIP Premium

Why is this the case? Figure 3 breaks down the UIP premium into its two components as shown in equation (1). In Argentina, the higher risk premium is solely captured by the higher interest differentials, leading to higher IR term and the UIP premium. It is not surprising

[8]As Webber (November 2008) in the *Financial Times* writes *"the sudden way in which the president announced the nationalisation plan, and its speedy course through Congress, have done nothing to calm fears among investors that the government will flout property rights (...).* In similar manner, senator Sanz said *"We have no doubt that here the right to private property is being violated. Not just for us but for society and the world, this is a clear confiscation".*

that there was a depreciation of peso at the time of announcement. What is interesting is that this led to further expected depreciation of peso, as opposed to expected appreciation, that increased the ER term, but less than the IR term, explaining the larger increase in the UIP premium. In the U.K., on the other hand, the interest rate differentials did not respond to heightened policy uncertainty. The higher UIP premium is instead driven by the exchange rate movement, where the original depreciation in pound led to an expected appreciation and hence a lower ER term and a higher UIP premium. In Argentina, higher policy uncertainty was priced in persistent interest rate differentials, while in the U.K. exchange rate fluctuations smoothed out the uncertainty.[9]

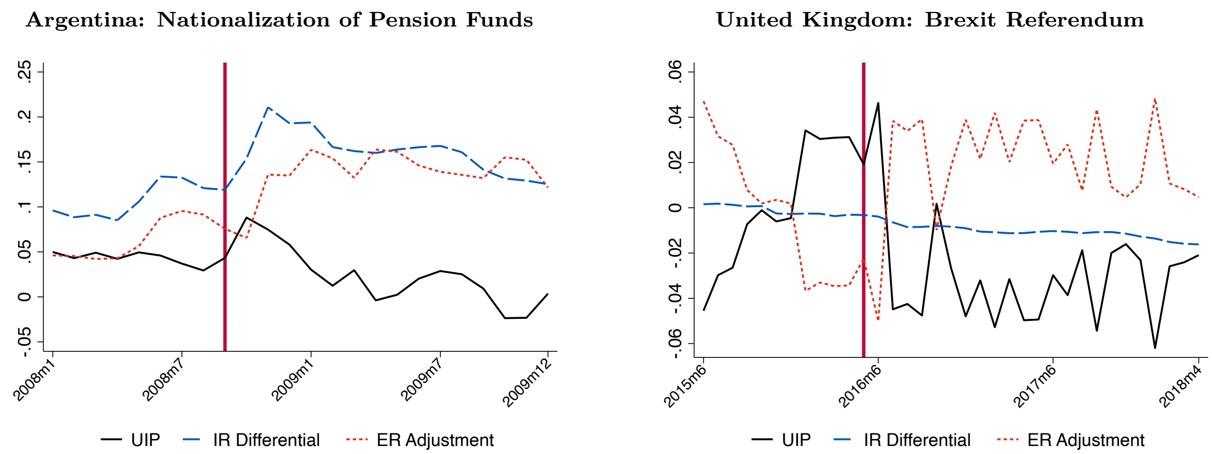


Figure 3. UIP Premium Decomposition

4. The Five Facts

4.1. The UIP Premium in Emerging Markets

Fact 1: *In emerging markets, UIP wedge fluctuates over time but stays always positive, implying persistent expected excess currency returns.*

Figure 4 shows that UIP, measured as in equation (1) with survey-based expectations of exchange rate in black solid line, is systematically positive –indicating persistent expected excess returns– in emerging markets. However, it is a mean-reverting process and holds on average in advanced economies, as λ^e_{t+h} fluctuates around zero (especially since early 2000s).

[9]The recent 2022 mini-budget episode in the U.K. bears a lot of resemblance to the Argentina case. Both policy uncertainty and UIP premium increased but this time U.K. government bond yield differentials exceed the immediate depreciation of the pound leading to expectations of further depreciations, an episode dubbed as the "moron premium" by investors due to uncertainty created by inconsistency among fiscal and monetary policies (The Economist, 2022; Ashworth, 2022; Giles and Parker, 2022).

This result is also true when using realized exchange rates as shown in Figure 5, where UIP premium based on realized exchange rates is plotted in blue. The correlation between realized UIP and UIP is around 20 percent in both set of countries and significant.

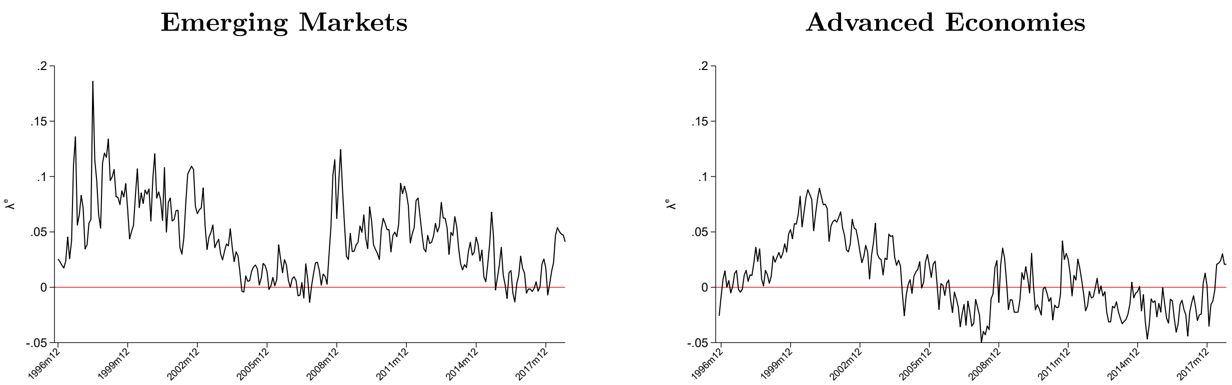


Figure 4. UIP Premium

Note: This figure shows the UIP premium at 12 month horizon for 33 currencies –21 EMs and 12 AEs– over 1996m11:2018m10. The UIP premium is measured using deposit and money market interest rates from Bloomberg and expectations of exchange rates from Consensus Forecast.

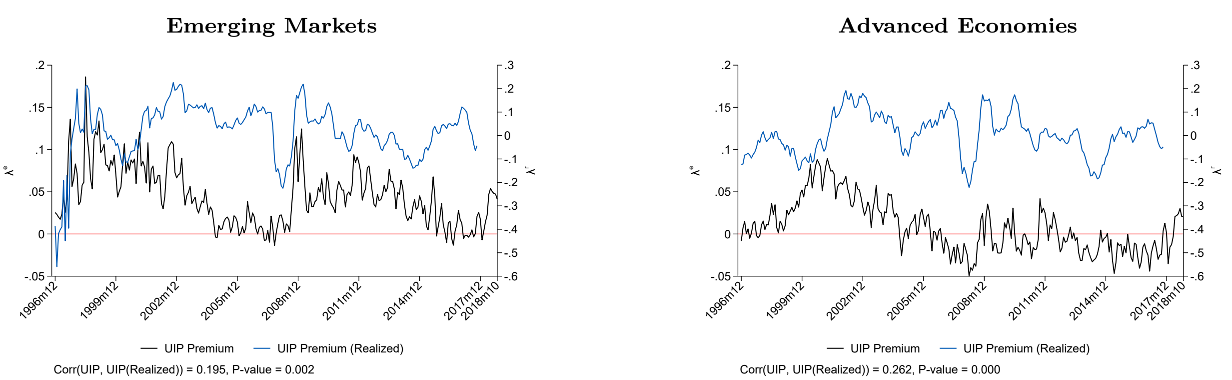


Figure 5. UIP Premium: Expected vs Realized Exchange Rates

Note: This figure shows the UIP premium at 12 month horizon for 33 currencies –21 EMs and 12 AEs– over 1996m11:2018m10. The UIP premium is measured using deposit and money market interest rates from Bloomberg and expectations of exchange rates from Consensus Forecast.

Fama Regressions. Although our fact (1) is about dynamics of the UIP premium, we also assess whether the UIP condition holds *on average* by estimating the conventional Fama and excess returns regressions using both ex-post realized and ex-ante expectational data on exchange rates. In particular, we estimate:

$$s^e_{it+h} - s_{it} = \beta(i_{it} - i^{US}_t) + \mu_i + \varepsilon_{it+h}, \tag{3}$$

where s^e_{it+h} is the expected exchange rate for country i in period $t+h$. If $\beta = 1$, interest rate differentials and expected exchange rate changes offset each other and the UIP condition holds on average. If $\beta < 1$, the expected depreciation is lower than implied by the interest rate differential and there are expected excess returns. When we use realized exchange rates, a $\beta < 1$ implies that there are ex-post excess returns since actual depreciation does not offset the interest rate differentials. These results are shown in columns (1) and (3) of Table 2. The coefficients are very similar.[10]

Table 2. Fama and Excess Returns Regressions

	Emerging Markets			
	(i) Expected Values		(ii) Realized Values	
	(1) Fama	(2) Excess Returns	(3) Fama	(4) Excess Returns
β^F	0.480***	0.520***	0.374***	0.626***
	(0.073)	(0.073)	(0.115)	(0.115)
p-value ($H_0 : \beta^F = 1$)	0.0000		0.0000	
Observations	3577	3577	3577	3577
Number of Countries	22	22	22	22
R^2	0.2749	0.3076	0.0255	0.0682
Currency FE	Yes	Yes	Yes	Yes

Notes: * p < 0.10 ** p < 0.05 *** p < 0.01. Currency-time two-way clustered standard errors in parentheses. 22 EMs currencies. Period 1996m11:2018m10.

Note: * p < 0.10 ** p < 0.05 *** p < 0.01. Columns (1)-(2) use expected exchange rates from survey data. Columns (3)-(4) use realized exchange rates. Currency-time two-way clustered standard errors in parentheses. 22 EMs. Period 1996m11:2018m12.

To visualize our results, we plot in Figure 6, the expected (left) and realized (right) rate of depreciation on the interest rate differentials EMs. The figure shows no difference in slopes, which is in stark contrast to the well-known textbook version of this figure for advanced countries, where figure on the right with realized exchange rates will be a cloud (e.g. see Feenstra-Taylor textbook).

Finally, to test whether excess returns are predictable, we estimate:

$$\lambda^e_{it+h} = \beta_1(i_{it} - i^{US}_t) + \mu_i + \varepsilon_{1it+h}, \tag{4}$$

$$\lambda_{it+h} = \beta_2(i_{it} - i^{US}_t) + \mu_i + \varepsilon_{1it+h}, \tag{5}$$

where λ^e_{it+h} denotes "expected" excess returns (UIP premium), whereas λ_{it+h} denotes ex-post excess returns. $\beta_2 = 0$ implies the absence of predictable excess returns. Note that $\beta_1 = 1 - \beta$. Table 2 reports β_1 in column (2) and β_2 in column (4). Interestingly, in EMs, there are ex-ante and ex-post excess returns from investing in these currencies, and both are predictable! As in columns (1) and (3) for the coefficients of the Fama regression estimated with realized and survey data being close to each other (depicted in Figure 6), columns (2) and (4) show that interest rate differentials can predict actual realized excess returns and

[10]In appendix C.1, we present the results for advanced economies for comparison.

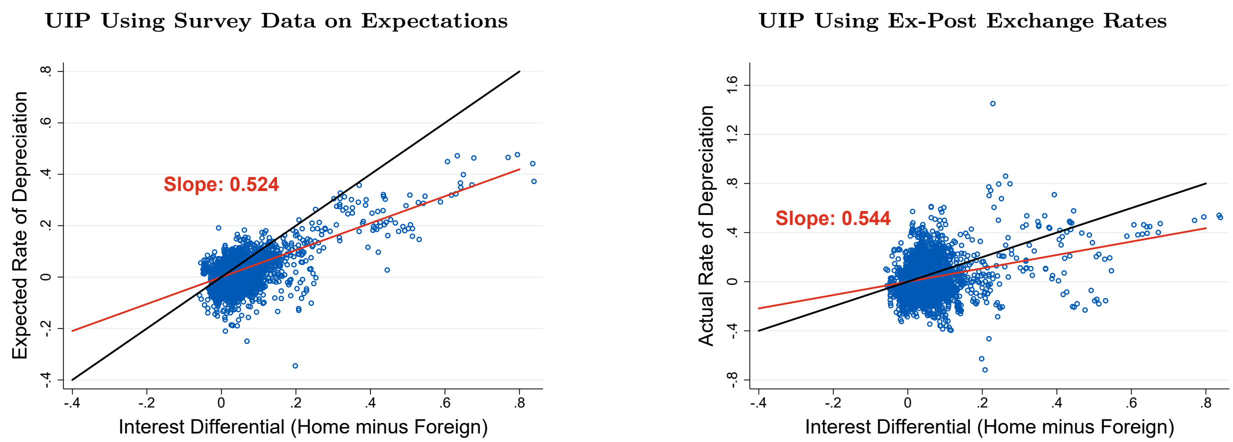


Figure 6. UIP with Realized and Expected Exchange Rates in Emerging Markets

Note: This figure shows the expected and ex-post rate of depreciation at 12 month horizon and the interest rate differential for 34 currencies –22 EMs and 12 AEs– over 1996m11:2018m10. The expected rate of depreciation is measured using Consensus Forecast.

also expected excess returns.

These results imply a tight link between ex-ante expectations of exchange rate and ex-post realizations. In fact, as shown in Table 3, a regression of the realized currency appreciation on the survey currency exchange rate appreciation shows a robust correlation. As in Kremens, Martin and Varela (2024), the slope of this regression 75% for the pooled regression, which indicates that survey expected exchange rate are highly correlated with ex-post exchange rate changes. As expected the R^2 increases when we control for time fixed effects reflecting the role of global risk factors.

Table 3. Realized and Expected Exchange Rates - EM countries

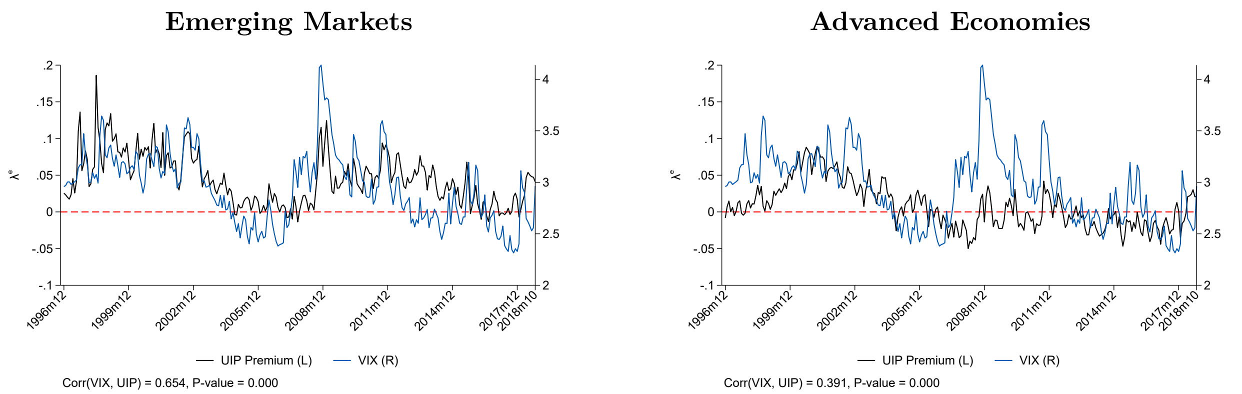
	Realized exchange rate change			
	(1)	(2)	(3)	(4)
Expected exchange rate change	0.751***	0.603***	0.734***	0.531***
	(0.132)	(0.142)	(0.096)	(0.057)
Obs.	3397	3397	3393	3393
R^2	0.1127	0.1681	0.5194	0.5613
Currency FE	No	Yes	No	Yes
Time FE	No	No	Yes	Yes

Notes: * p < 0.10 ** p < 0.05 *** p < 0.01.

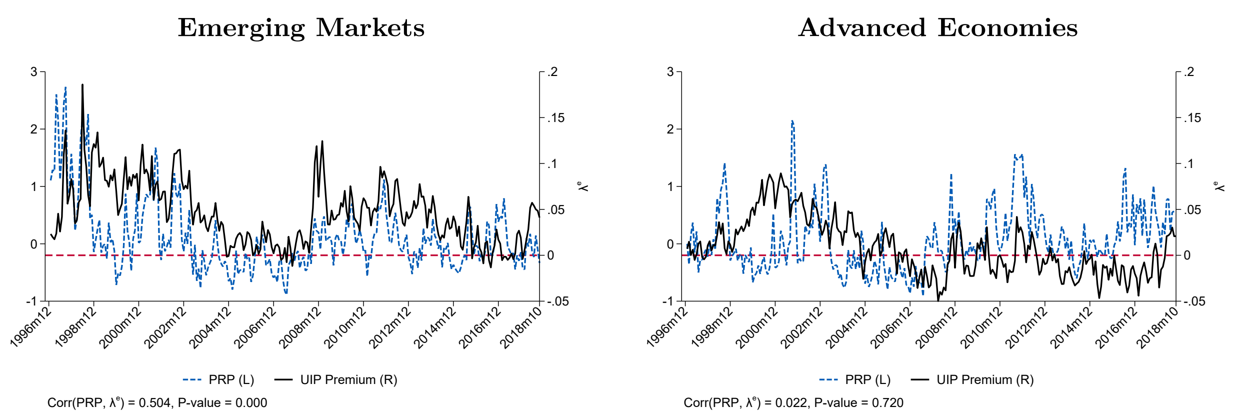
4.2. The UIP Premium, Global and Local Risk Factors

Fact 2: *Global and local time-varying risk premia explain more than 40% of the time-variation in the UIP premium of emerging markets.*

As shown in Figure 7, UIP wedge in EM is highly correlated with VIX (global risk factor) and PRP (local risk factor) and these are statistically significant correlations. VIX is correlated over 60% with the EM-UIP wedge and 40% with the AE-UIP wedge. For the local policy risk premium, there is also an equally strong correlation of 50% for the EM-UIP wedge, however, the correlation of the AE-UIP premium wedge and their policy risk premium is practically zero. To dig deeper, we turn to econometric modeling of the UIP wedge next.



a) UIP Premium and VIX



b) UIP Premium and Policy Risk Premium

Figure 7. Global and Local Risk Premia and the UIP Premium

Note: This figure shows the VIX, PRP and the UIP premium at 12 month horizon for 33 currencies –21 EMs and 12 AEs– over 1996m11:2018m10. The UIP premium is measured using deposit and money market interest rates from Bloomberg and expectations of exchange rates from Consensus Forecast.

4.2.1. Modelling the UIP Premium

If the UIP condition does not hold, for a given country relative to the U.S., there will be a UIP wedge that is different from zero:

$$\lambda^e_{t+h} = (i_t - i^{US}_t) - (s^e_{t+h} - s_t) \neq 0$$

To assess the drivers of this UIP wedge, we follow Obstfeld and Zhou (2023*b*) and break it down into two main components:

$$\lambda^e_{t+h} = \underbrace{\tilde{\gamma}^{US}_t}_{\text{convenience yield/liquidity premium}} + \underbrace{\tilde{\rho}_t,}_{\text{excess returns}} \tag{6}$$

where $\tilde{\gamma}^{US}_t$ is a convenience yield or liquidity premium of a dollar-denominated asset, which arises from the unique role of USD in the world economy. As we calculate each of our country's/currency's UIP premium vis-à-vis the USD, this is relevant for us if there is a common factor in each UIP premium due to specific role of USD. $\tilde{\rho}_t$ is a term that captures "excess returns" due to risk averse global investors and/or financial frictions. This term can be driven by both global and local factors. Obstfeld and Zhou (2023*b*) call this $\tilde{\rho}_t$ term the "dark matter" and highlight the empirical challenge of finding counterparts in the data to measure each factor underlying excess returns, a task we undertake in our paper.

The literature models $\tilde{\gamma}^{US}_t$ as composed of two forces that relate to safety of USD assets and liquidity of USD assets: $\tilde{\gamma}^{US}_t = \gamma^{\text{US}}_t + \gamma^{\text{US,GOV}}_t$. The first force, γ^{US}_t, is the convenience yield of a USD asset arising from the U.S. dollar's unique position as the reserve currency in the world economy (Krishnamurthy and Lustig 2019, and Jiang, Krishnamurthy and Lustig 2021*b*). The second force, $\gamma^{\text{US, GOV}}_t$, arises from the liquidity advantage of issuing safer government bonds, due to very low default risk of U.S. government, compared to USD corporate bonds with default and credit risk and hence lower liquidity (Du, Im and Schreger 2018, and Engel and Wu 2023).

On the excess returns, $\tilde{\rho}_t$, the literature models this wedge as arising from either financial frictions limiting risk-neutral financial intermediaries' arbitrage (Gabaix and Maggiori 2015), or risk averse investors (Kouri, Macedo, Salant and Whitman 1978, Farhi and Gabaix 2016, Verdelhan 2010), or a combination of both risk averse investors and financial frictions (Itskhoki and Mukhin 2021, Akinci, Kalemli-Özcan and Queralto 2022). It is worth remarking that, in these models, excess returns stemming from financial frictions, risk aversion or both always refer to global financial intermediaries. Most of this literature treats both financial frictions and risk-aversion from the global investor side as a global factor, and in the absence of any risk-sharing friction, local risk factors will be perfectly diversified away by international capital markets.

Yet this approach leaves the question on the "primitives" behind the global investors' changing across time and heterogenous across country risk sentiments unexplained. Why do we see different effects of risk-on and risk-off episodes on different countries? If global shocks were the only source of risk –for example, when US monetary policy tightens, the USD appreciates and global financial conditions tighten– why global financial intermediaries would tighten their investments heterogeneously across countries? If a global financial intermediary's balance sheet gets constrained, why would the same intermediary price Mexico vs Canada assets differently and change their portfolio holdings heterogeneously?

We argue that, using data on EMs, we can further decompose the excess returns term into global and local factors, and disentangle country-idiosyncratic financial risks, which in principle can be diversified in the absence if any risk-sharing friction with perfect capital mobility. Common global financial shocks on the global financial intermediary cannot be diversified. In particular, excess returns –$\tilde{\rho}_t$– can be decomposed into two terms:

$$\tilde{\rho}_t = \rho_t^{\mathrm{US}} + \rho_t^{\mathrm{COUNTRY}}. \tag{7}$$

The global factor, ρ_t^{US}, captures risk sentiment of global investors on the global economy (Miranda-Agrippino and Rey 2020). This can also relate to financial frictions on global intermediaries. The local factor $\rho_t^{\mathrm{COUNTRY}}$ captures country-specific frictions that can arise from economic policy uncertainty, leading to a policy risk premium, affecting global investors' expected returns. By this means, the local factor shapes the risk sentiment of global investors towards a given country (Kalemli-Özcan 2019). More precisely,

$$\rho_t^{\mathrm{COUNTRY}} = f(\rho_t^{\mathrm{PRP}}). \tag{8}$$

We can then re-write the UIP premium in equation (6) as

$$\begin{aligned}\lambda_{t+h}^{e} = {} & \underbrace{\gamma_t^{US}}_{\text{US convenience yield}} + \underbrace{\gamma_t^{US,GOV}}_{\text{US liquidity premium}} + \underbrace{\rho_t^{US}}_{\text{risk averse/limited absorption investor}} \\ & + \underbrace{\rho_t^{PRP}}_{\text{local frictions/country-risk sentiment}}.\end{aligned} \tag{9}$$

The local factor ρ_t^{PRP} captures uncertainty about global investors' returns over unexpected government policies. These policies are broad and can cover a wide range of measures from capital controls to sovereign default and expropriation risk. To characterize ρ_t^{PRP}, we can break it down into two broad categories that cover different types of risks that global investors face when investing in EMs: credit risk ($\rho_t^{\text{credit risk}}$) and policy risk ($\rho_t^{\text{policy risk}}$).

$$\rho_t^{PRP} = \rho_t^{\text{credit/default risk}} + \rho_t^{\text{policy risk}}. \tag{10}$$

We think of credit risk as arising from sovereign, bank or firm default risk, expropriation of foreign assets, nationalization of deposits, etc., all sorts of events affecting the *repayment probability* of foreigners. Policy risk could be thought as arising from uncertain regulations and policies that leads to large fluctuations in the value of currency such as inconsistent fiscal and monetary policies, central bank credibility and so on. Thus, policy risk premium is a premium demanded by foreigners for the possible *return fluctuations*.

After these considerations, equation (9) could be extended to

$$\lambda_{t+h}^e = \gamma_t^{US} + \gamma_t^{US,GOV} + \rho_t^{US} + \rho_t^{\text{credit/default risk}} + \rho_t^{\text{policy risk}}. \tag{11}$$

The first two terms of equation (11) could arise in efficient markets in which risk-neutral agents arbitrage between currencies and instruments that are imperfect substitutes where there is some preference for USD assets. The third term can be due to risk-averse global agents who prefer USD safety above all and/or some other regulatory friction on global risk-neutral USD investors. The last two terms of equation (11) arise from country-specific frictions and country-specific risk sentiments.

4.2.2. Determinants of the UIP Premium

To estimate equation (11), we follow the existing literature and proxy γ_t^{US}, convenience yield, with USD basis, which is nothing but log deviations from the covered interest rate parity (Du and Schreger 2021). $\gamma_t^{US,GOV}$ is a similar convinience/safety yield but only focusing on US government bonds (not all USD assets) and hence dubbed as the liquidity premium of US treasuries. As discussed by Obstfeld and Zhou (2023*b*), γ_t^{US} and $\gamma_t^{US,GOV}$ can be highly correlated and, hence, be difficult to disentangle one from another. In fact, these authors show that when both variables are included together only γ_t^{US} is significant in the short and medium terms.[11] Given the insignificance of $\gamma_t^{US,GOV}$ in the short term and our short-term focus that is necessary to study the UIP premium, we focus on the sum of these variables as described above.

As discussed above, ρ_t^{US} can arise from either global risk sentiment or the financial constraints of global intermediaries, or both. We then use two variables to proxy for it. To capture global risk sentiment, we employ the VIX, as in Rey (2013), di Giovanni, Kalemli-

[11] Obstfeld and Zhou (2023*b*) find that $\gamma_t^{US,GOV}$ is only significant for 10 year treasury bonds.

Özcan, Ulu and Baskaya (2021) and Miranda-Agrippino and Rey (2020), among others. To capture the financial constraints of global intermediaries that limits full capital mobility, we use capital inflows over GDP. Since capital flows are at the country-month level, they will also capture country-specific financial frictions. We use our PRP index to proxy ρ_t^{PRP} for country-specific policy risk premium that picks up the differential risk sentiment of global investors for each country. We estimate panel regressions with currency/country-fixed effects, where we introduce the covariates sequentially to understand the effect of each factor.[12]

We start by taking our key equation and estimate it in a linear-regression as follows:

$$\begin{aligned} Y_{it} = {} & \gamma_1 \text{Convenience Yield/Liquidity Premium}_{t-1} + \gamma_2 \log(\text{Capital Inflows/GDP}_{it-1}) \\ & + \gamma_3 \log(VIX_{t-1}) + \gamma_4 \, \text{PRP}_{it-1} + \mu_i + \varepsilon_{it}, \end{aligned} \tag{12}$$

where i is currency/country, t is month, Y_{it} is the UIP premium, the interest rate differential term or the exchange rate adjustment term, i.e. $Y_{it} = \{\lambda^e_{it+h}, \text{IR Diff}_{it}, \text{ER Adj}_{it+h}\}$, and the independent variables are lagged one month. μ_i are currency fixed effects that allow assessing the UIP condition 'within' currencies/countries across time. We double cluster the standard errors across at month and country/currency level. To assess whether our results change when using *ex ante expectations* from survey data or *ex-post realizations* to compute exchange rate changes, we present the results for (expected) and realized UIP premium in parallel, where we called the former just UIP Premium and latter Realized UIP Premium.[13]

(i) Drivers of the UIP Premium in EMs. Column 1 shows that higher capital inflows associate with a decrease in the UIP premium. In fact this negative relation constitutes our fact (5), as explained in introduction, though as we will show below it proxies for the omitted variable PRP. The estimated coefficient implies that one percentage point increase in capital inflows over GDP leads to a 0.5 percentage points decrease in the UIP premium, for the average EM. By the same token, a decrease in capital inflows (or capital outflows by foreign investors) will lead to an increase in UIP premium. As the average UIP premium is 4 percent in EMs, a change of 0.5 percentage points is an economically significant effect.

Columns 2 adds one of the main global factors used in the literature, convenience yield/liquidity premium as a control. This comes in positive, as expected, since it indicates cheaper USD borrowing means more expensive borrowing in other currency and hence the positive coefficient. Note that this variable can be capturing both risk averse global financial intermediaries and/or liquid and safe dollar assets. To separate the risk story, we

[12]Note that currency and country is the same as we treat Euro area countries as a group.
[13]We have to drop Colombia, going down to 21 EM as PRP index is not available for Colombia.

Table 4. UIP Premium in Emerging Markets

	Panel A: Emerging Markets							
	(i) UIP Premium				(ii) Realized UIP Premium			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inflows/GDP$_{it-1}$	-0.005***	-0.005***	-0.002***	-0.001*	-0.023***	-0.023***	-0.021***	-0.020***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.003)	(0.003)	(0.003)
Convenience Yield/Liquidity Premium$_{t-1}$		3.917***	0.168	0.163		7.269**	4.154	4.147
		(1.238)	(1.065)	(1.014)		(3.126)	(3.894)	(3.845)
$\log(VIX_{t-1})$			0.058***	0.053***			0.049*	0.041
			(0.008)	(0.008)			(0.026)	(0.026)
PRP_{it-1}				0.010***				0.012**
				(0.003)				(0.006)
Obs.	3288	3288	3288	3288	3288	3288	3288	3288
Number of Countries	21	21	21	21	21	21	21	21
R^2	0.0016	0.0280	0.1497	0.1764	0.0057	0.0202	0.0336	0.0405
Currency FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Panel B: Advanced Economies							
	(i) UIP Premium				(ii) Realized UIP Premium			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inflows/GDP$_{it-1}$	0.019	0.024	0.035	0.034	-0.045	-0.044	-0.017	-0.017
	(0.032)	(0.028)	(0.025)	(0.025)	(0.049)	(0.048)	(0.046)	(0.046)
Convenience Yield/Liquidity Premium$_{t-1}$		3.704***	1.810	1.687		0.569	-4.009	-3.998
		(1.356)	(1.270)	(1.266)		(3.065)	(3.196)	(3.214)
$\log(VIX_{t-1})$			0.030**	0.032**			0.073***	0.073***
			(0.013)	(0.013)			(0.022)	(0.024)
PRP_{it-1}				-0.002				0.000
				(0.002)				(0.005)
Obs.	2209	2209	2209	2209	2209	2209	2209	2209
Number of Countries	12	12	12	12	12	12	12	12
R^2	0.0020	0.0418	0.0916	0.0938	0.0016	0.0017	0.0458	0.0458
Currency FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: * p < 0.10 ** p < 0.05 *** p < 0.01. Currency-time two-way clustered standard errors in parentheses. 21 EMs currencies. Period 1996m11:2018m10. Capital inflows are measured as changes in gross debt liabilities. The UIP premium and the exchange rate adjustment term are measured using expected exchange rate changes from Consensus Forecast. Inflows/GDP$_{it-1}$ are capital inflows into the country as a fraction of GDP. VIX is a proxy for global risk perception. Convenience yield/Liquidity Premium is the sum of USD convenience yield and its liquidity premium averaged across G10 countries. PRP_{it} is the policy risk premium attached to economic policy uncertainty. Both Inflows/GDP$_{it-1}$ and PRP vary at the country-time level. VIX and Convenience yield/Liquidity premium vary at the time level.

next include VIX, the common risk aversion and volatile measure for the global financial markets.

In column 3, when we include the VIX to assess the role of risk sentiment of global investors, the continence yield/liquidity premium term becomes non-significant. This means that safety of the US dollar and risk aversion of the global intermediaries are the two sides of the same coin. The coefficient on the VIX is positive and highly statistically significant, suggesting that higher global risk associates with higher UIP premia in EMs. In particular, an increase in the VIX from p25 to p75 leads to 3 percentage points higher UIP premium.

Another way to look at this coefficient is considering the increase during the Global Financial Crisis. If the VIX increases as it did after the collapse of Lehman Brothers (2008m8-2008m12) by 150%, the UIP premium in EMs would increase by 9 percentage points. It is worth remarking that global uncertainty substantially increases the explanatory power of the regression, by raising the R^2 by 12 percentage points.

Column 4 assesses local risk factors by adding the PRP. The coefficient is positive and highly statistically significant indicating that increases in a country's policy uncertainty associate with higher a UIP premium. The effect is also economically important. The coefficient implies that if PRP increases from the p25 to p75 (for example, from China to South Korea in 2016m10), the UIP premium raises by one percentage point. Importantly, once we include the PRP into the regression, the coefficient for capital inflows drops substantially in size, indicating that policy uncertainty captures part of the effect of capital inflows. Idiosyncratic policy uncertainty affects the UIP premium *directly* and might be the reason for low absorption capacity of the global intermediaries of EM capital.

To check that our results are not an artefact of the survey data on exchange rate expectations, we re-estimate our regressions using realized exchange rates to compute the UIP premium. Columns 5-8 report the estimated coefficients and show that all our results hold. In particular, local risk factors captured by country-level policy uncertainty associates with higher realized UIP premium, or ex-post excess currency returns, even after controlling for all the other variables. It is interesting to notice that, once realized exchange rates instead of exchange rate expectations are used, VIX is no longer significant and capital inflow effect is stronger. This means realized exchange rates do not have the same power in the data in accounting for the currency risk expectations of foreign investors, a theme we will come back below.

(ii) Comparison with AEs. For comparison, we also present the results for advanced countries in Panel B of Table 4 using both expected and ex-post changes in the exchange rate to compute the UIP premium. Differently from EMs, capital inflows do not affect the UIP premium in AEs, as the coefficients are not statistically significant (column 1-8). We then include the convenience yield, VIX and PRP. While the VIX is statistically significant, the results on PRP show a sharp contrast with those of EMs. Economic policy uncertainty does not lead to a policy risk premium and hence does not affect the UIP premium in AEs. This is a generalized version of the difference between Argentina and the U.K. cases that we have presented before. The coefficient on the VIX shows that increases in global risk perception correlate with higher UIP premium in these economies. In particular, going from p25 to p75 associates with a 2.4 percentage points increase in the premium in AEs. Columns

5-8 presents the results using realized exchange rates. Once all variables are included in the analysis, only VIX remains statistically significant to explain the realized UIP premium in AEs.

Is 17 percent the maximum R^2 that can be obtained? We report below an additional specification that we show global and local risk factors can explain more than 40 percent of the UIP in emerging markets where we report the full table 5 in the appendix (Table B.2). What we add (shown in full tables) is heterogenous slopes, that is we interact VIX with country specific dummies and also allow country-specific effects of PRP instead of average. Not only we have over 40 percent explanatory power, the country-specific loadings of global variable VIX and the country specific impact of PRP are capturing different risk premia since they both survive in the same regression.

Table 5. R^2 for Heterogeneity in Global Risk Loadings and Country-Specific Risk in EMs

	UIP Premium			
	(1)	(2)	(3)	(4)
Adjusted R^2	0.1701	0.3836	0.3912	0.4214
Inflows/GDP$_{it-1}$	Yes	Yes	Yes	Yes
Convenience Yield/Liquidity Premium$_{t-1}$	Yes	Yes	Yes	Yes
$\log(VIX_{t-1})$	Yes		Yes	
PRP_{it-1}	Yes	Yes		
$\log(VIX_{t-1}) \times$ country dummy		Yes		Yes
$PRP_{it-1} \times$ country dummy			Yes	Yes

4.3. Endogenous Pricing of Risk in Interest Rate Differentials

Fact 3*: Fluctuations in the interest rate differential component can account most of the time-variation in emerging markets' UIP wedge.*

To illustrate this fact, we present the generalized version of the UIP decomposition that we did for the specific cases of Argentina and the U.K. before. Figure 8 plots the UIP premium decomposition from equation (1) for the average AE and EM. In AEs, the UIP premium and the exchange rate adjustment term overlap most of the time, with a correlation over 90%, while movements in the interest rate differential term are negligible. In contrast, in EMs, interest rate differentials almost perfectly co-move with the UIP premium, a 70% correlation, whereas the exchange rate adjustment term barely correlates with the UIP premium. These interest rate differentials are systematic and highly correlated with the expected excess returns, specially during periods of high uncertainty, related to EMs' crises as in 1990s or to global shocks, as in late 2000s. As we show in the robustness section, high inflation in EMs (and hence the inflation differentials) cannot explain the high correlation between the UIP and interest rate differentials.

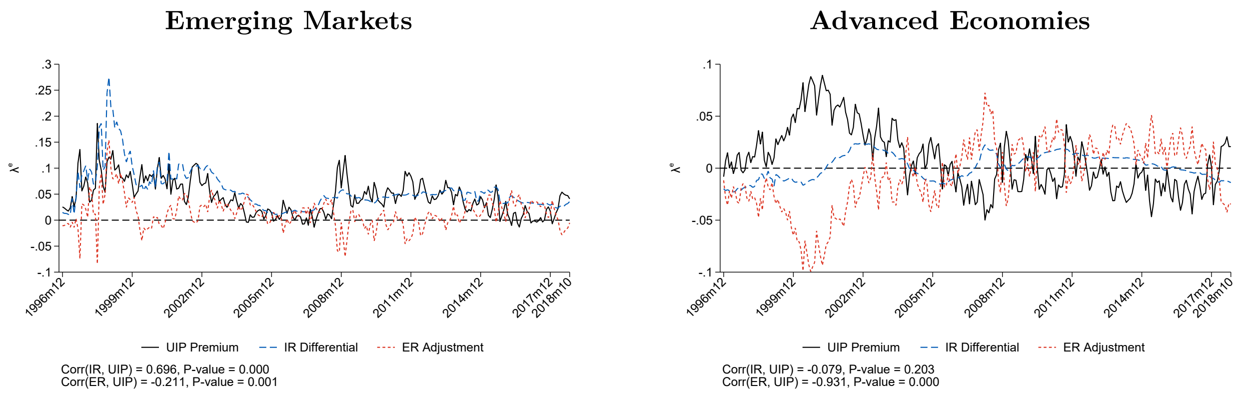


Figure 8. Interest Rate Differential and Exchange Rate Adjustment Terms in AEs and EMs

Note: This figure shows the UIP premium decomposition into the interest rate differential and exchange rate adjustment terms at 12 month horizon for 33 currencies –21 EMs and 12 AEs– over 1996m11:2018m10. The UIP premium is measured using deposit and money market interest rates from Bloomberg and expectations of exchange rates from Consensus Forecast.

To assess the channels driving each of the components of the UIP premium econometrically, we re-estimate our key equation using the two components of the UIP premium –interest rate differential and exchange rate adjustment– as dependent variables. Table 6 presents the results. For expositional simplicity, column 1 reproduces our result on the UIP premium of column 4 in Table 4. As shown in columns 2 and 3, both capital inflows and policy risk, country-specific risk and friction factors, affect the UIP premium via IR term, whereas the VIX, the global risk factor, affects UIP via both terms. With higher VIX, there is an expected appreciation of the given country's currency in the future, since higher VIX is associated with USD appreciations contemporaneously. Conditional on this global risk factor, uncertainty about local economic policies still makes global investors' returns risky and, hence, a higher ex-ante compensation is required to invest in these currencies. This risk is priced in the interest rate differential and leads to a higher UIP premium. A natural question to ask is whether this is specific of deposit rates or a general characteristic of EMs. To assess this, we re-estimate our equations using government bond rates and money market rates. Results presented in columns 4-9 of Table 6 confirm our previous findings. Policy risk premium (PRP) is priced in the interest rate differential and, through it, is the main channel increasing the UIP premium, independently of the interest rate used to measure it.

Why is the interest rate differential channel the dominant channel? For advanced countries when there are excess returns to currency, such returns comes from appreciations (or expected appreciations). For EMs, excess currency returns are associated with currency

Table 6. UIP Premium in EMs: Decomposition and Robustness with Interest Rates

	(A) Deposit Rates			(B) Government Bonds			(C) Money Market Rates		
	(1) UIP Premium	(2) IR Diff.	(3) ER Adj.	(4) UIP Premium	(5) IR Diff.	(6) ER Adj.	(7) UIP Premium	(8) IR Diff.	(9) ER Adj.
Inflows/GDP$_{it-1}$	-0.001*	-0.002**	-0.001	-0.009***	-0.005***	0.005	-0.001	-0.002***	-0.001
	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.000)	(0.001)
$\log(VIX_{t-1})$	0.053***	0.034***	-0.018**	0.049***	0.018***	-0.031***	0.045***	0.024***	-0.021***
	(0.008)	(0.011)	(0.008)	(0.009)	(0.005)	(0.009)	(0.007)	(0.005)	(0.007)
Convenience Yield/Liquidity Premium$_{t-1}$	0.163	-0.117	-0.279	-1.034	-0.627	0.407	-0.166	-0.900*	-0.734
	(1.014)	(1.156)	(1.119)	(1.102)	(0.451)	(0.872)	(1.030)	(0.525)	(0.988)
PRP_{it-1}	0.010***	0.006***	-0.004	0.007**	0.003**	-0.003	0.010**	0.006***	-0.004
	(0.003)	(0.002)	(0.002)	(0.003)	(0.001)	(0.004)	(0.004)	(0.002)	(0.003)
Obs.	3288	3288	3288	1761	1761	1761	2665	2665	2665
Number of Countries	21	21	21	19	19	19	18	18	18
R^2	0.1764	0.0615	0.0239	0.1807	0.1388	0.0825	0.1668	0.1313	0.0533
Currency FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Two-way currency-time clustered standard errors in parenthesis. $^{*}, ^{**}, ^{***}$ denotes statistical significance at the 10, 5, and 1 percent respectively. Capital inflows are measured as changes in gross debt liabilities. The UIP premium and the exchange rate adjustment term are measured using expected exchange rate changes from Consensus Forecast. Inflows/GDP$_{it-1}$ are capital inflows into the country as a fraction of GDP. VIX is a proxy for global risk perception. Convenience yield/Liquidity Premium is the sum of USD convenience yield and its liquidity premium averaged across G10 countries. PRP_{it} is the policy risk premium related to economic policy uncertainty. Both Inflows/GDP$_{it-1}$ and PRP vary at the country-time level. VIX and Convenience yield/Liquidity premium vary at the time level.

depreciations and expected deprecations. The only way for this to be possible is if interest rate differential term is higher than these depreciations and this is not possible without a risk premium in those interest rate differentials. The figure below shows that the data distributions are consistent with this narrative. Panel (a) plots the distribution of interest rate differentials for EMs and AEs and panel (b) plots the distribution of exchange rate changes, where panel (c) plots the distribution of the UIP premium. In each figure the dotted line denote the AEs. Panel (a) shows a long right tail for interest rate differentials (vis-a-vis the U.S.) for EMs, so they are positive for most, where they are basically zero for most AEs. This is interesting since the mean interest rate differentials is similar on both countries and most countries are clustered around the mean. Panel (b) shows that there are more expected depreciations in EMs, whereas this is not a characteristic of the data for AEs at all. Panel (c) shows the distribution of the UIP premium is tilted to right in EMs compared to AEs due to higher interest rate differentials from panel (a) in spite of the expected depreciations shown in panel (b).

4.4. Expectations Channel

Fact 4: *Foreign investors react to expected currency risk; most of the time expecting depreciation, endogenously pricing-in an ex-ante risk premium in the interest rate differentials for emerging markets.*

To illustrate this fact we create two measures for exchange rate uncertainty that links to exchange rate volatility. The first one is the standard measure in expectations, that is, the standard deviation of the expected nominal exchange rate. The second measure is

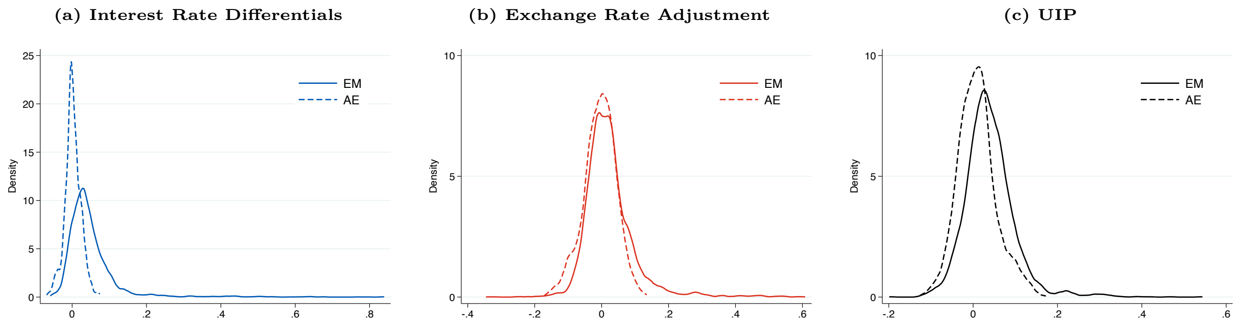


Figure 9. IR Differential, ER Adjustment, and UIP Distribution

Note: This figure shows the distribution of interest rate differentials (panel (a)), exchange rate adjustment ($s^e_{t+1} - s_t$, panel (b)), and UIP (panel (c)). Each point in these plots represents a country-date observation. Dashed lines correspond to Advanced Economies (AE) and solid lines correspond to Emerging Markets (EM).

the difference between lowest and highest value for expected exchange rate. We kept the horizon constant at 12-months for both of these measures. Both measures captures the disagreement among foreign investors' in terms of their expectations. As shown before in terms of high predictive power of expectations for realized exchange rates for EMs, these measures we construct on the volatility of exchange rates expectations, also links well with the volatility of the nominal exchange rate. Both measures are correlated over 96 percent with the volatility of the nominal exchange rate.

Once we have these measures, we run a two-stage IV regressions as shown below. In the first stage, we regressed the newly constructed measures of volatility in exchange rate expectations on our local and global risk factors, namely, the VIX and the PRP. As clear, when we use both VIX and PRP, we have a very strong first stage, satisfying the tests for strong instruments and overidentifying restrictions, that is both relevance and exclusion criteria for IV are satisfied. The VIX alone is not enough to pass the weak instrument test (columns (1) and (4)). This confirms the strong idiosyncratic component for the country-specific currency risk. In the second stage, we regress interest rate differentials on both of these measures of exchange rate expectations volatility and show a robust causal relation between the currency risk expectations and higher interest rate differentials (and hence higher UIP premia). When uncertainty about the future value of the currency vis-a-vis the USD is high, the interest rate differential vis-a-vis the USD is also high. We employ the VIX and PRP as the exogenous shifters for such uncertainty, that is our global and local risk factors. It is easier to justify the exogenous VIX for the emerging markets but of course local policies are not exogenous. We argue that our PRP captures the exogenous part of the policies as it is based on the volatility of the news.[14] Interestingly, when we undertake the

[14]This is standard practice in closed-econ macro, that is to take the news-based sentiments as exogenous part of the policy volatility. See for example Boehm et all XX.

same exercise in AEs, PRP (local risk) has no power in predicting the volatility of exchange rate expectations, where VIX is much more powerful. We show these results in Appendix.

Table 7. Expectations Channel in Emerging Markets

	Second Stage: Interest Rate Differential					
	(1)	(2)	(3)	(4)	(5)	(6)
$s^e_{i^{high},t+1} - s^e_{i^{low},t+1}$	0.141*	0.075***	0.101***			
	(0.077)	(0.015)	(0.029)			
Std Dev s^e_{it+1}				0.073	0.050***	0.057***
				(0.045)	(0.015)	(0.015)
RHS variable in First Stage	VIX	PRP	VIX&PRP	VIX	PRP	VIX&PRP
N	3279	3279	3279	2155	2155	2155
	First stage: Dispersion in ER Expectations					
	$s^e_{i^{high},t+1} - s^e_{i^{low},t+1}$			Std Dev s^e_{it+1}		
$\log(VIX_{t-1})$	0.267***		0.205**	0.215**		0.170*
	(0.080)		(0.084)	(0.096)		(0.094)
PRP_{it-1}		0.119***	0.101***		0.136***	0.124***
		(0.024)	(0.028)		(0.028)	(0.031)
Cragg-Donald Wald F statistic	137.75	197.70	141.16	58.72	120.99	80.29
Kleibergen-Paap Wald rk F statistic	11.06	24.46	20.89	5.01	23.57	10.71

Since now we have established the causal link from local and global risk factors to ex-ante pricing of currency risk in the interest rate differentials, we can move to our last but not least fact that will help us connecting the price of currency risk to the quantity of such risk via capital flows.

Fact 5: *The UIP wedge comoves negatively with capital inflows in emerging markets but not in advanced economies, and this correlation disappears once country-specific time-varying risk premium is accounted for.*

To illustrate our final fact, we run a local projections for the response of expected exchange rate changes to interest rate differential shocks at time t in currency c, conditional on lagged values, that is we estimate:

$$s^e_{c,t+h} - s_{c,t} = \beta_k(i_{c,t} - i^{US}_t) + \mu_c + \epsilon_{c,t+h}, \tag{13}$$

where the coefficient of interest is β_k and reports the response of expected exchange rate change for the next 12-month to interest rate differential shocks for each month h, conditional on currency fixed effects (μ_c). We control for lagged values of dependent and independent variables and also run a similar local projections for the UIP wedge.

Figure 10 plots the response of expected change in the exchange rate (for the next 12 month from the given month) to one percentage point interest rate differential shock on the left panel, and the response of the UIP premium to the same shock on the right panel. Interestingly, we do not observe a U-shaped dynamic as the overshooting literature documented for AEs, where an interest rate differentials shock leads to an initial appreciation and then a delayed depreciation (see Dornbusch 1976, Eichenbaum and Evans 1995, and Bacchetta and van Wincoop 2010 among others). In contrast, Figure 10 shows an inverted U-shaped, where the exchange rate is expected to initially depreciate. Since the extent of expected depreciation is less than the one percentage point shock to IR, UIP fails, leading to expected excess returns as shown in top right panel. Interestingly, expected excess returns is persistently positive during the entire time, being still significant at month 20. Hence, even if the shock is transitory, UIP deviations are persistent in EMs, and they are not overshooting and reverting.

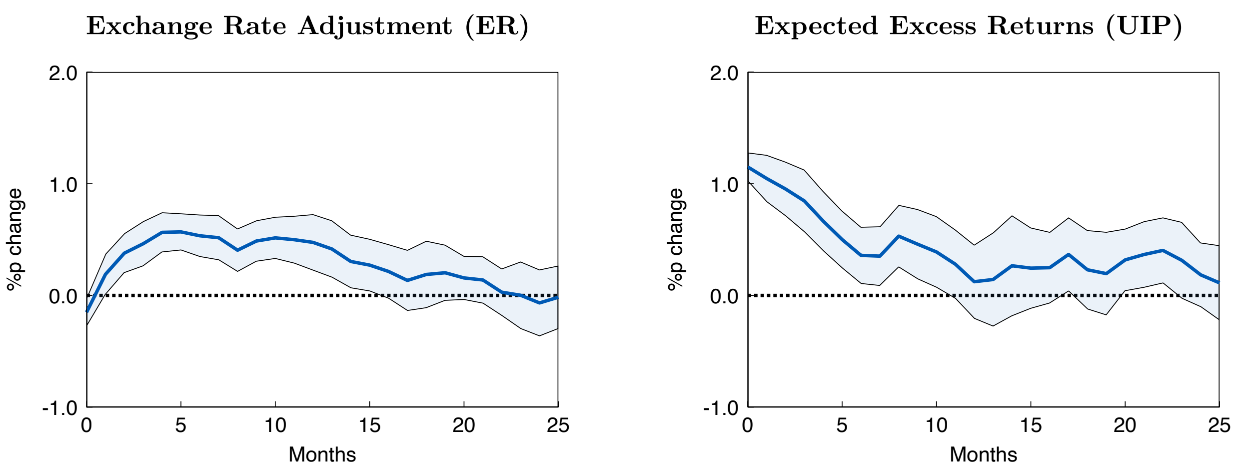


Figure 10. Emerging Markets: Response of ER and UIP Premium to an IR Shock (OLS)

Note: This figure shows the response of exchange rate adjustment and the UIP premium to an interest rate differential shock at 12 month horizon for 22 EMs over 1996m11:2018m12. Exchange rate adjustment and expected returns are measured using expected exchange rate changes from Consensus Forecast. The shaded area shows 95 percent confidence intervals, calculated using Driskoll-Kraay standard errors with a bandwidth lag $h + 1$ for horizon h.

Why is there an inverted-U shaped response of expected change in the exchange rate leading to persistent UIP deviations in EMs? Figure 11 shows that the reason for this is the fact that, when there is an IR shock, investors expect depreciation to last in EMs. This implies that the expectations increases on impact relative to current spot rate, as shown in the first panel of the figure. As actual exchange rate depreciates with a lag, the ER term in the first panel has an inverted-U shape dynamics, leading to persistent UIP deviations that only decrease much later.

Combined with fact (4), this mechanism illustrates the sensitivity of the IR shock to PRP. Hence the second panel, regresses the IR on PRP, which constitutes the first stage of instrumented version of the local projection shown in equation (13). The IV results are

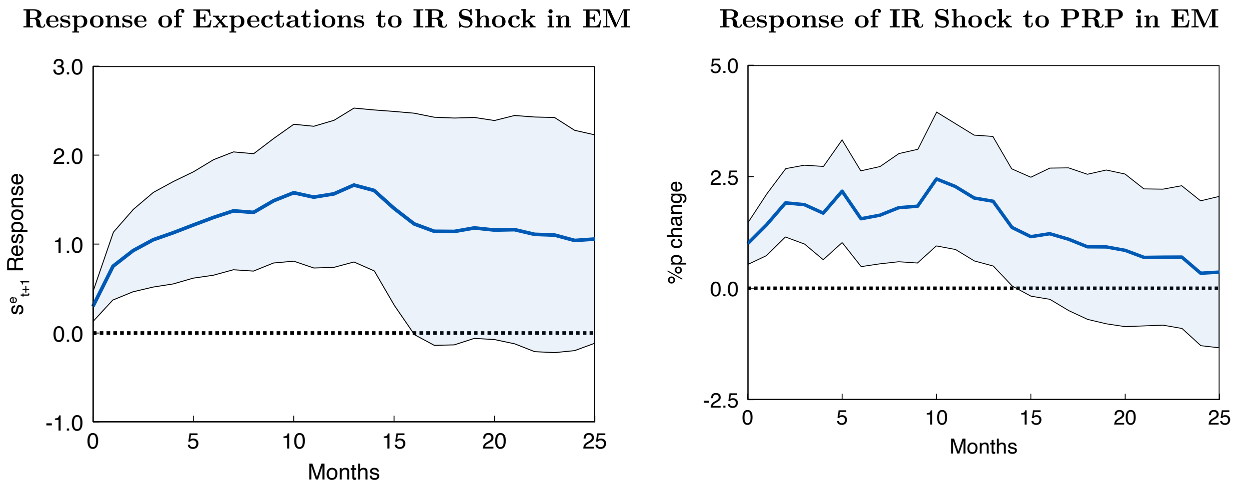


Figure 11. Emerging Market Investors' Expectations, IR and PRP Shocks

Note: The first panel shows the response of expected exchange rate to an interest rate differential shock at 12 month horizon for 22 EMs' currencies over 1996m11:2018m12. Expected exchange rate is measured using Consensus Forecast. The shaded area shows 95 percent confidence intervals, calculated using Driskoll-Kraay standard errors with a bandwidth lag $h+1$ for horizon h. The second panel shows the response of interest rate differentials at 12 month horizon to an EPU shock at 12 month horizon for 21 EMs over 1996m11:2018m12. The shaded area shows 95 percent confidence intervals, calculated using Driskoll-Kraay standard errors with a bandwidth lag $h+1$ for horizon h.

shown in Figure 12. As a result of higher policy uncertainty that we calibrate to leading to one percentage point IR shock, there is an inverted-U shape response of expected changes in the exchange rate and positive and persistent UIP premium, as shown above in the OLS. We run the version of this exercise in Appendix E using realized exchange rates, obtaining similar results, that should be no surprise given the strong predictive power of exchange rate expectations that we have shown before on the realized exchange rates. We also show in the same appendix all the results conditional on the VIX. In the same appendix, for comparison, Figure E.1 plots the impulse responses of expected exchange rate changes and the UIP premium to interest rate differential shocks in AEs. As the figures show, interest rate differential shocks do not lead to increases in the UIP premium in AEs, as the expected depreciation increases by the same amount of the interest rate differential shock.

To check the internal consistency of our results and come to full circle with our earlier results on the power of expectations on predicting the exchange rates, we run the conventional predictability regressions in the literature, that is, regressing forecast errors for the exchange rate on interest rate differentials. Based on the recent developments as in the work of Coibion and Gorodnichenko (2015) and Bordalo, Gennaioli, Ma and Shleifer (2020), we run the forecast error predictability regressions using data on individual forecasts. As Table 8 shows, we obtain similar results to the literature both for advanced economies and emerging markets, where forecast errors are systematically and negatively correlated with interest rate differentials.

Based our narrative, for EMs, the expectations of currency risk is an ex-ante risk premium

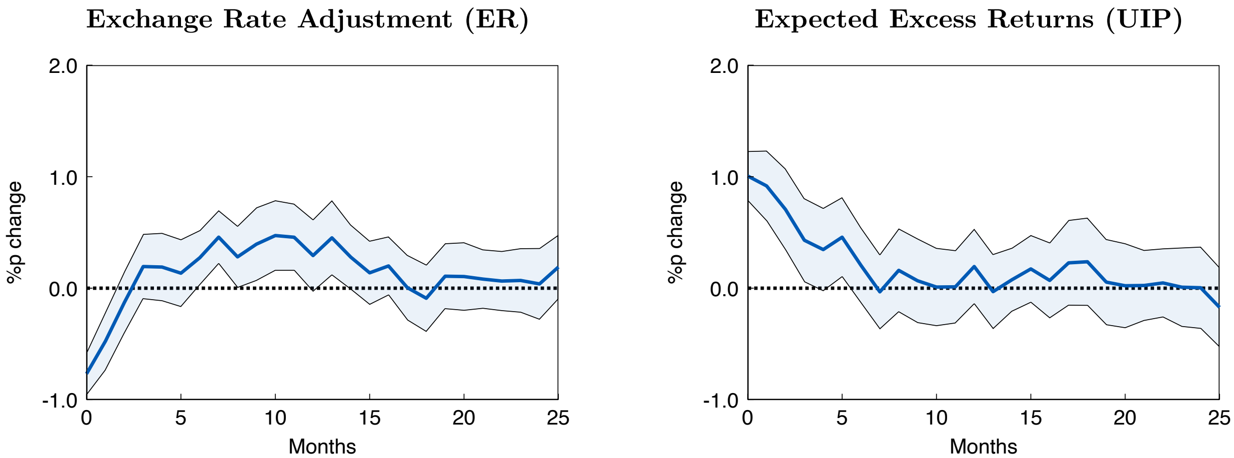


Figure 12. Emerging Markets: Response of ER and UIP Premium to an IR Shock (IV)

Note: This figure shows the exchange rate adjustment and excess returns responses to an interest rate differential shock instrumented by PRP at 12 month horizon for 21 EMs currencies' over 1996m11:2018m12. Expected exchange rate changes and expected returns are measured using expected exchange rate changes from Consensus Forecast. The shaded area shows 95 percent confidence intervals, calculated using Driskoll-Kraay standard errors with a bandwidth lag $h+1$ for horizon h.

that shows up in the interest rate differential. This narrative implies that if instead of using forecast errors on the left hand side, which is the difference between realized exchange rates and expected exchange rates, we regress realized exchange rate on expected exchange rates and interest rate differentials, interest rate differentials will have no predictability power. Table 9 shows exactly this result only for EMs.

Table 8. Forecast Error Regression: Individual Forecast Data

	Advanced Economies		Emerging Markets	
	(1)	(2)	(3)	(4)
$(i_t - i_t^{US})$	-0.796*	-0.780*	-0.434**	-0.394**
	(0.438)	(0.438)	(0.177)	(0.165)
R^2	0.007	0.007	0.027	0.022
Observations	11,985	11,985	5,185	5,185
Number of Forecasters	48	48	67	67
Number of Currencies	9	9	20	20
Currency FE	Yes	Yes	Yes	Yes
Forecaster FE		Yes		Yes

Notes: * p < 0.10 ** p < 0.05 *** p < 0.01. Currency-time two-way clustered standard errors in parentheses. 29 currencies, 20 emerging markets, 9 advanced economies. Forecast errors are measured using Consensus Forecast survey.

5. Robustness Analysis

Table 9. Realized/Expected Exchange Regressions

	Panel B: Advanced Economies				Panel A: Emerging Markets			
	Log Realized Exchange Rate							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log Expected Exchange Rate	0.995***	0.838***	0.997***	0.743***	1.000***	0.852***	1.001***	0.866***
	(0.006)	(0.052)	(0.005)	(0.093)	(0.003)	(0.047)	(0.003)	(0.041)
Log Interest Differential	-1.076***	-1.840**	-0.561	-1.274**	0.024	-0.121	-0.019	-0.329
	(0.297)	(0.691)	(0.314)	(0.496)	(0.095)	(0.283)	(0.046)	(0.209)
Obs.	2260	2260	2260	2260	3397	3397	3393	3393
R^2	0.9944	0.9949	0.9976	0.9980	0.9969	0.9973	0.9983	0.9986
Within R^2	0.9944	0.5611	0.9976	0.4251	0.9969	0.6961	0.9983	0.7461
Currency FE	No	Yes	No	Yes	No	Yes	No	Yes
Time FE	No	No	Yes	Yes	No	No	Yes	Yes

Notes: * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$.

5.1. Can Investor Heterogenetiy Explain the Results?

To check that our results are not driven by different set of forecasters between AEs and EMs, we employ data of individual forecasters that are common across countries. In particular, we select the five major forecasters in our sample – HSBC, JP Morgan, Morgan Stanley, UBS and Citigroup– reporting exchange rate forecasts for 20 EMs and 10 AEs between 2001m2 and 2018m10, and check how they correlate with the UIP premium.[15]

Figure B.2 in Appendix B shows the correlation of the UIP premium computed for these five forecasters and for the average forecaster reported by Consensus Forecast. Importantly, the correlation with our UIP premium variable is high, reaching 76% for AEs and 62% for EMs. In Figure B.3, in Appendix B, we break down the components of the UIP premium between the interest rate differential and the exchange rate adjustment terms, and confirm our earlier finding that in AEs the UIP premium mainly associates with exchange rate adjustments, whilst in EMs it associates with interest rate differential. Overall, individual forecaster data shows that our results cannot be attributed to differences in the sample of forecasters between AEs and EMs.

5.2. Monetary Policy Uncertainty and Sovereign Default

To zoom-in on the most important policy uncertainty in EMs, we adopt a basic measure of monetary policy uncertainty, that is inflation expectations. We created an expected inflation differential variable using survey data. Since limited commitment to inflation and high

[15] Unfortunately, the data about individual forecasters is only reported since February 2001.

default risk is tightly linked in EMs, we also control for default risk. It is worth noting that both EMBI and CDS only capture default risk on foreign currency bonds of government and, hence, both are limited measures of broad credit risk as they do not capture local currency borrowing of both corporate and governments, which is essential for the UIP wedge. In Section 5.5, we use subjective measures for credit risks coming from the ICRG to overcome this issue.

Table 10 presents the results. In column 1, we present a highly stringent test by only keeping countries that never defaulted since World War II and, thus, removing countries that investors could perceive as risky. In column 2, we employ data from Reinhart, Rogoff, Trebesch and Reinhart (2021) on monthly episodes of sovereign debt crises and control for them. Table 10 shows that none of these controls overpower the PRP. Our results then are robust to controlling default episodes, default risk and monetary policy uncertainty linked to expected inflation.

Table 10. UIP Premium: Panel Regressions: Controlling for Sovereign Default Risk

	UIP Premium	
	(1)	(2)
Inflows/GDP$_{it-1}$	0.001	-0.005
	(0.029)	(0.044)
$\log(VIX_{t-1})$	0.024**	0.036***
	(0.011)	(0.009)
Convenience Yield/Liquidity Premium$_{t-1}$	-0.433	-0.555
	(1.321)	(0.920)
PRP_{it-1}	0.009***	0.012***
	(0.002)	(0.003)
Expected Inflation Differential$_{it-1}$	1.737***	1.423***
	(0.310)	(0.177)
No Sovereign Default		0.003
		(0.015)
Observations	797	2224
Number of Countries	6	16
R^2	0.2730	0.2845
Currency FE	Yes	Yes

Note: Two-way currency-time clustered standard errors in parenthesis. *,**,*** denotes statistical significance at the 10, 5, and 1 percent respectively. Column 1 removes countries in which the sovereign defaulted since WWII. Capital inflows are measured as changes in gross debt liabilities. The UIP premium and the exchange rate adjustment term are measured using expected exchange rate changes from Consensus Forecast. Inflows/GDP$_{it-1}$ are capital inflows into the country as a fraction of GDP. VIX is a proxy for global risk perception. Convenience yield/Liquidity Premium is the sum of USD convenience yield and its liquidity premium averaged across G10 countries. PRP_{it} is the policy risk premium related to economic policy uncertainty. Expected inflation differential are the difference between expected inflation 1 year ahead in the home economy relative to the US. Both Inflows/GDP$_{it-1}$ and PRP vary at the country-time level, while VIX and Convenience yield/Liquidity premium vary at the time level.

These results are not surprising given the low dynamic correlation between CDS spreads and policy risk premium (PRP) as shown in Figure 13.

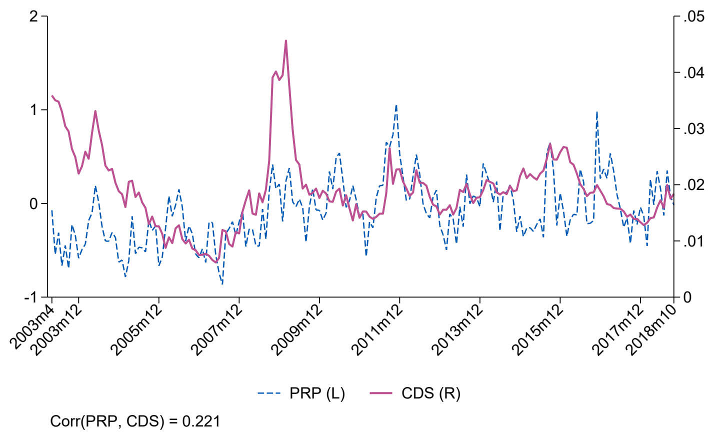


Figure 13. Policy Risk Premium and Default Risk in Emerging Markets

Note: This figure shows the Credit Default Swaps (CDS) and PRP for 18 EMs over 2003m4:2018m10.

5.3. Can High Inflation Explain the Results?

A potential concern of the analysis is that high interest rate currencies might correlate with high inflation rates and, thus, the UIP premium observed in nominal term might vanished in real terms. To assess this, we re-estimate our panel regressions in equation (12) and add inflation differentials as a control. As Table B.3 shows, all our results hold true when including inflation differential as a control. Importantly, the size of the estimated coefficients is very similar to our main estimation, indicating that inflation differentials do not significantly affect the importance of the broad policy risk driving the UIP premium.

5.4. Can CIP Deviations Explain the Results?

An influential recent literature, focusing on advanced countries, documented a link between country-specific CIP deviations, global risk perception, financial or regulatory frictions and USD exchange rates (e.g Du, Tepper and Verdelhan 2018, Jiang, Krishnamurthy and Lustig 2021*c* and Avdjiev, Du, Koch and Shin 2019). Thus, we check if our results can be driven by such CIP deviations.

We plot CIP and UIP deviations in our sample in Figure D.2 in Appendix D, using interbank rates, and here in Figure 14, using deposit rates. These figures show that, regardless of the interest rates used, UIP and CIP deviations have a very low correlation with each other, both in EMs and AEs. They are opposite sign to each other when interbank rates used and same sign when deposit rates are used. This is because they have the common component, credit/default risk, captured better by the deposit rates in the latter. The larger size of the UIP is due to fact that, forward rates and expected exchange rates are much different.

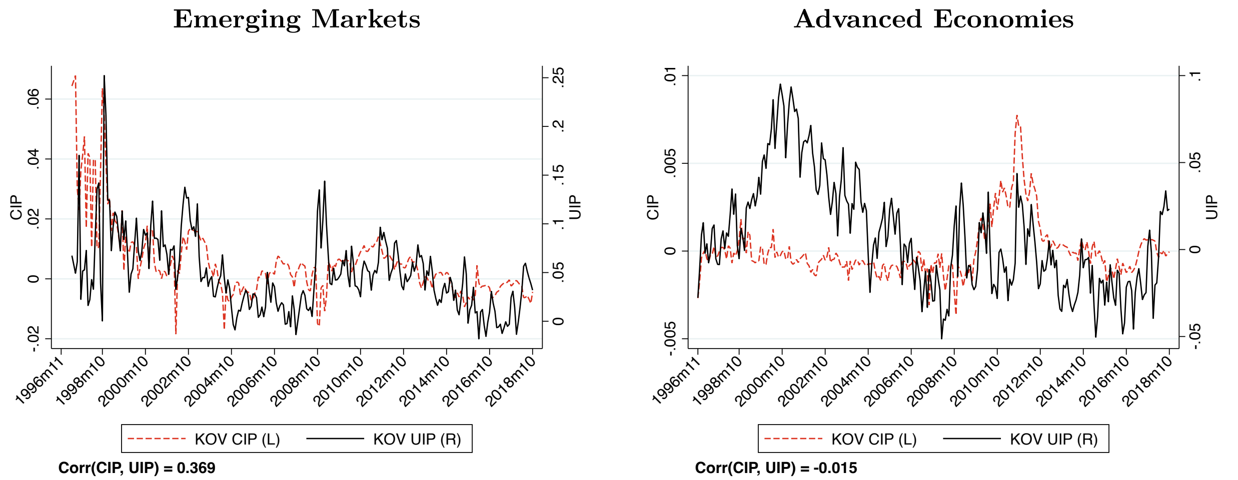


Figure 14. UIP and CIP (12 Months)

Note: This figure shows UIP and CIP deviations using our sample. Both series use deposit rates. UIP deviations is measured using Consensus Forecast.

Regardless of how we measure the CIP deviations, with forward rates or currency basis,[16] there is not a one-to-one mapping between UIP and CIP deviations both in EMs and in AEs as shown in Figure 15.

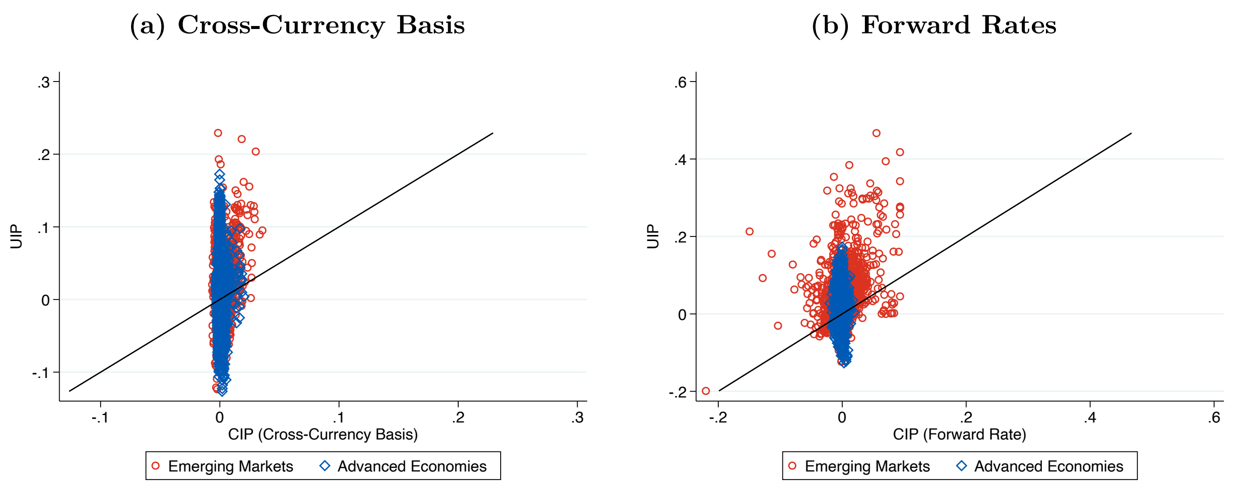


Figure 15. Cross-Sectional UIP and CIP (12 Months)

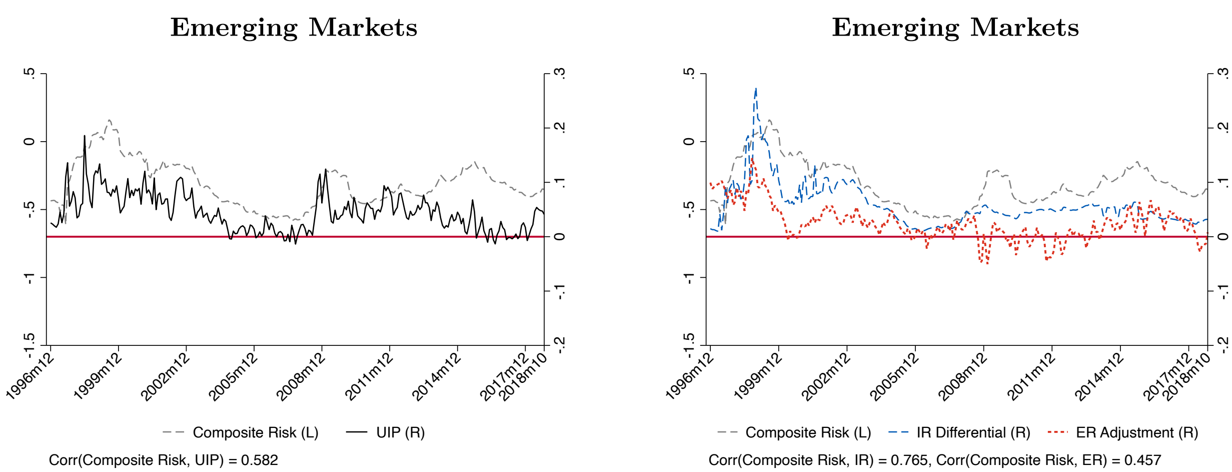
Note: This figure shows UIP and CIP deviations where each point represent a different date. At each date, we take the average across countries in each classification (Emerging and Advanced). Panel (a) constructs CIP using Du and Schreger (2021) cross-currency basis. Panel (b) constructs CIP using forward rates. Both panels compute UIP using expectations from Consensus Forecast. Both UIP and CIP deviations use 12 months deposit rates.

[16]See Appendix D for a comparison with DS currency-basis.

5.5. Other Measures of Policy Uncertainty: A Granular Look

Results in the previous sections indicate that the failure of the UIP condition for EM currencies relates to the presence of a time-varying risk premium that associates with global risk perception and country-specific policy uncertainty. In this section, we go deeper in our analysis of local policy uncertainty and ask about its main determinants. With this end, we employ three additional variables reflecting policy uncertainty: *composite country risk*, *government policy risk* and *confidence risk*.[17]

The left graph of Panel A in Figure 16 plots the average composite risk index (gray-dashed line) and UIP premium (black line) for EMs. Notably, these two lines track each other very closely and their comovement reaches 58%. In the right graph of Panel A, we plot the correlation of the composite risk index with the two components of the UIP premium. Confirming our previous findings, in EMs, the composite risk highly correlates with the interest rate differential (76%, blue line) and this correlation is much higher than the negative correlation with the exchange rate adjustment (-45%, red dashed line).



a) Composite Risk and UIP Premium in Emerging Markets

Figure 16. Composite Risk and the UIP Decomposition in EMs

Note: This figure shows the correlation of composite risk with the UIP premium and UIP decomposition at 12 month horizon for 34 currencies –22 EMs and 12 AEs– over 1996m11:2018m10. The UIP premium and expected exchange rate changes are measured using Consensus Forecast.

For comparison, in Figure B.1 in Appendix B, we plot the correlations for AEs in Panel B. Interestingly, the correlation of the composite risk index with the UIP premium is much

[17] See Section 2 and Appendix A.4 for further details. The ICRG further decompose political risk into other sub-components, such as corruption, law and order, bureaucracy quality, internal and external conflicts, among others. These sub-components capture elements of political risk that are not significantly related to foreign investors' risk sentiments about unexpected changes in government policies that can affect their investment returns. In Appendix A.4, we detail thoroughly all these sub-components and show that the correlation with the UIP premium in EMs has usually the wrong (negative) sign and is low (likely due to their low time-series variation).

smaller and has the opposite sign for AEs (-24%) (left graph). The UIP premium decomposition is also revealing (right graph), as it shows that the comovement of the composite risk and the two components of the UIP premium offset each other.

To unpack the elements implied in the composite risk and affecting foreign investors' sentiments on EM currencies, we revisit our previous panel regressions in Table 11. The coefficient for the composite risk index is positive and highly statistically significant indicating that increases in a country-specific risk associates with a higher UIP premium on its currency (column 1). The size of the coefficient is economically important: if composite risk increases from the p25 to p75 (from Chile to Russia in the 2016m6), the UIP premium increases by 4 percentage points. As above, the channel of transmission of a composite risk shock is the increase in the interest rate differential (columns 2 and 3). It is worth noting that the composite risk does not overpower the VIX coefficient – which remains similar in magnitude and highly statistically significant –, but it overpowers capital inflows.

Table 11. UIP Deviations in EMs: A Granular View

	Panel (A): Composite Risk			**Panel (B): Unpacking Composite Risk**		
	(1)	(2)	(3)	(4)	(5)	(6)
	UIP Premium	IR Diff.	ER Adj.	UIP Premium	UIP Premium	UIP Premium
Inflows/GDP$_{it-1}$	-0.001	-0.001**	-0.000	-0.001	-0.002*	-0.001
	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
log(VIX_{t-1})	0.052***	0.029***	-0.023***	0.058***	0.054***	0.055***
	(0.005)	(0.003)	(0.005)	(0.005)	(0.005)	(0.005)
Convenience Yield/Liquidity Premium$_{t-1}$	-0.328	-0.750	-0.422	-0.203	-0.273	-0.388
	(0.749)	(0.587)	(0.719)	(0.757)	(0.727)	(0.712)
Composite Risk$_{it-1}$	0.052***	0.089***	0.037***			
	(0.006)	(0.006)	(0.006)			
Government Policy Risk$_{it-1}$				0.020***		0.014***
				(0.005)		(0.005)
Confidence Risk$_{it-1}$					0.023***	0.020***
					(0.004)	(0.004)
Obs.	3427	3427	3427	3427	3427	3427
Number of Currencies	245	245	245	22	22	22
R^2	0.1949	0.1879	0.0471	0.1541	0.1642	0.1693
Currency FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: * p < 0.10 ** p < 0.05 *** p < 0.01. Time clustered standard errors in parentheses. Note that given low clusters due to data availability, we cannot double cluster in this regression. 22 EMs currencies. Period 1996m11:2018m10. Capital inflows are measured as changes in gross debt liabilities. The UIP premium and the exchange rate adjustment term are measured using expected exchange rate changes from Consensus Forecast. Inflows/GDP$_{it-1}$ are capital inflows into the country as a fraction of GDP. VIX is a proxy for global risk perception. Convenience yield/Liquidity Premium is the sum of USD convenience yield and its liquidity premium averaged across G10 countries. PRP_{it} is the economic policy uncertainty index. Composite risk measures political, economic and financial risks. Government policy risk captures expropiation risk. Confidence risk measures consumer confidence, and unemployment.Inflows/GDP$_{it-1}$, PRP_{it}, composite risk, government policy risk, and confidence risk vary at the country-time level, while VIX and Convenience yield/Liquidity premium vary at the time level.

Columns 4-6 presents the results for the two components. Column 4 shows that increases in government policy risk associates higher UIP premium and column 5 confirms a similar correlation for confidence risk. Importantly, column 6 includes both variables together and shows that both variables remain positive and highly statistically significant. Furthermore, both coefficients remain similar in size as those estimated in columns 4 and 5, which indicates that both variables are capturing different policy risks. Finally, it is worth remarking on the R^2 of these regressions, which reaches more than 17% and is close in size to the 20% observed for the composite index (column 1) and 19% captured in the PRP measure (column 4, Panel A in Table 4). This similar value of the R^2 indicates that the policy uncertainty captured by the PRP and the composite indexes is highly related to these two narrowly-defined measures of policy risk that capture the confidence on in EMs' government policies.

6. Conclusion

We document five novel facts on the Uncovered Interest Parity (UIP) wedge, using an extensive cross-country panel data set since late 1990s. The key takeaway from our paper is that if one wants to answer the question of why are there UIP deviations in emerging markets (EM), then he/she needs to focus on the determinants of interest rate differentials. These determinants will encompass a wide range of shocks, including financial shocks, but also uncertainty surrounding economic policies. On the other hand, understanding advanced country (AE) UIP deviations require an understanding of exchange rate determination. Thus, while AE-UIP deviations across countries and time can be solely driven by global shocks, EM-UIP deviations are also going to have an important local idiosyncratic component that cannot be arbitraged away in international financial markets.

Our five facts make this case. The first fact shows a key difference between EMs and AEs in terms of dynamics of the UIP wedge: While EM-UIP wedge stays always positive, implying persistent expected currency excess returns, AE-UIP wedge averages to zero. The dynamics of the UIP wedge is also much less volatile and persistent in AE compared to EM. Our second fact is about the correlation between proxies of global time-varying risk premia, such as the VIX and convenience yield of the USD, and the UIP wedge. While both EM and AE UIP wedges are highly correlated with these global factors, the EM-UIP wedge is also highly correlated with local idiosyncratic risk premia, measured by policy risk premium, a new measure that we have constructed. Together, global and local risk factors can explain over 40 percent of the time variation in the EM-UIP wedge. Our third fact stems from decomposing the UIP wedge into its interest rate differential and exchange rate change components. We show that the interest rate differential component can account most of the time-variation in EM-UIP wedge, whereas for AEs, exchange rate changes matter more. Then, as our fourth fact, we show that foreign investors expect EM currencies to depreciate most of the time, pricing-in an ex-ante risk premium in the interest rate differentials to hold these currencies. This is not the case for AEs. Last but not least, our fifth fact shows that the UIP wedge comoves negatively with capital inflows in EMs but not in AEs, and this correlation disappears once country policy risk premium is accounted for.

Our results shed light on old and new theoretical models that aim to explain endogenous UIP deviations. The first three facts can be explained by no arbitrage finance models focusing on risk averse agents, and also macro models with financial frictions limiting capital flows and segmenting the asset markets. However, to the best of our knowledge, there are not any model that can explain our last two facts where expectations of currency risk is priced-in as an ex-ante risk premium having a meaningful quantitative impact on capital flows.

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FOR ONLINE PUBLICATION: APPENDIX

A. Data

In this section, we first present in detail the source of the data used in this paper and the construction of the individual series. We then provide further details about the Consensus Forecast data on exchange rate expectations.

A.1. Source of Data and Construction of Individual Series

Table A1 lists variables that we employ in this paper. We obtain spot exchange rate from IMF International Financial Statistics (IFS). IFS provides both period end and period average of daily exchange rates for monthly, quarterly, and yearly frequency.

We collect market interest rates (treasury bill, money market, and deposit rate) from the Bloomberg terminal. We choose interbank offered rate as a money market rate. For a given country and an interest rate, there are various tickers in Bloomberg. We choose the most reliable and long-spanning ticker after checking whether interest rates are in annual percentage rate with the same maturity and denominated in local currency. Interest rates are with maturities of 1, 3, and 12 months in the dataset. As Bloomberg provides daily values for most series, we can get both period end and period average for monthly, quarterly, and yearly frequency. When interest rates are missing from Bloomberg, we obtain data from IMF IFS. Though IFS usually gives interest rates with mixed maturities, some series are with fixed maturity. We refer to country notes of IFS database to check whether the interest rate is of the same maturity, denominated in local currency and calculated as period end or average of daily values. If the series has the same characteristics in all these criteria, we add that series to our database. For some interest rate series, only period end of period average data is available. Aggregate variables including GDP are downloaded from IMF IFS.

Exchange rate forecasts are available only at the end of period. Consensus forecast (mean average) at 1 month, 3 months, 12 months, and 24 months from the survey date. More precisely, the survey form which is usually received on the Survey Date (often the second Monday of the survey month), requests forecasts at the end of the month at 1 month, 3 months, 12 months and 24 months. Thus the forecast periods may be slightly longer than these monthly horizons.

Forward rates come from Bloomberg. After downloading forward rates, we convert data into unit of local currency per US dollar. Daily forward rates are available. We download monthly, quarterly, and yearly data for both period end and average of daily values . We get exchange rate forecasts from Consensus Economics. We convert forecasts into local currency per US dollar forecasts using appropriate currency forecasts. We get Emerging Markets Bond Index (EMBI global) from J.P. Morgan. We employ the exchange rate regime classification by Ilzetzki, Reinhart and Rogoff (2017) to exclude countries with fixed exchange rate regimes.

We proxy global risk with the VIX, which is obtained from Federal Reserve Economic Data (FRED). We obtain detailed information about policy risk from the International Country Risk Guide (ICRG). The International Country Risk Guide (ICRG) rating comprises 22 variables in three subcategories of risk: political, financial, and economic. We normalize these risk indices x using the following formula: $-(x - \mu_x)/\sigma_x$ where μ_x is the mean and σ_x is the standard deviation of a variable x in a full sample. We add the minus sign so that higher normalized indices mean higher risk.

Our sample consists of 12 currencies of AEs and 22 of EMs over the period 1996m11 and 2018m12. Table A2 presents the sample of countries.

Table A1. List of Variables

Variable	Description	Frequency	Source
Spot exchange rate	local currency/US dollar, period end and average	month / quarter / year	IMF IFS
Interest rates:			
Treasury bill rate	annual percentage rate, denominated in local currency,		
		month / quarter / year	Bloomberg, IMF IFS
Money market rate	maturity: 1, 3, 12 month, period end and average		
Deposit rate			
Capital inflows	capital inflows by sector	quarter / year	Avdjiev, Hardy, Kalemli-Özcan and Servén (forthcoming)
Aggregate variables:			
GDP	local currency (million), real and nominal, non-seasonally-adjusted and seasonally-adjusted series	quarter / year	
Industrial production	index 2010=100, non- and seasonally-adjusted series	month / quarter / year	IMF IFS
Consumer price index	2010=100	month / quarter / year	
Producer price index	2010=100	month / quarter / year	
GDP deflator	2010=100, non- and seasonally-adjusted series	quarter / year	
Current account	million US dollars	quarter / year	
Capital account	million US dollars	quarter / year	
Forward Rates	local currency/US dollar, maturity: 1, 3, 12 month, period end and average	month / quarter / year	Bloomberg
Exchange rate forecasts	local currency/US dollar, period end, forecast horizon: 1, 3, 12, 24 month	month / quarter / year	Consensus Economics
VIX	Chicago Board Options Exchange volatility index	month / quarter / year	FRED
EMBI	Emerging Markets Bond Index (EMBI global)	month	J.P. Morgan
Country Risk	22 variables in three subcategories of risk: political, financial, and economic.	month / year	ICRG
Exchange Rate Regime	Exchange Rate Regime Coarse Classification (1–6)	month / year	Ilzetzki, Reinhart and Rogoff (2017)

Table A2. List of Currencies

Advanced Economies (1)	Emerging Markets (2)
Australia	Argentina
Canada	Brazil
Denmark	Chile
Euro	China, P.R.: Mainland
Germany	Colombia
Israel	Czech Republic
Japan	Hungary
New Zealand	India
Norway	Indonesia
Sweden	Republic of Korea
Switzerland	Malaysia
United Kingdom	Mexico
	Peru
	Philippines
	Poland
	Romania
	Russian Federation
	Slovak Republic
	South Africa
	Thailand
	Turkey
	Ukraine

Note: 34 currencies, 12 AEs and 22 EMs. Period 1996m11-2018m10.

Interest Rates for UIP Calculation

We obtain interest rates to calculate the UIP deviations as follows. First, we replace deposit rates with money market rates of the same maturity if the data coverage for deposit rates is shorter than 5 years in a given country. If the data coverage for market rates is shorter than 5 years in a given country, we replace deposit rates with government bond rates of the same maturity in a given country. Table A3 shows country-year observations of deposit rates that are replaced with money market rates or government bond rates.

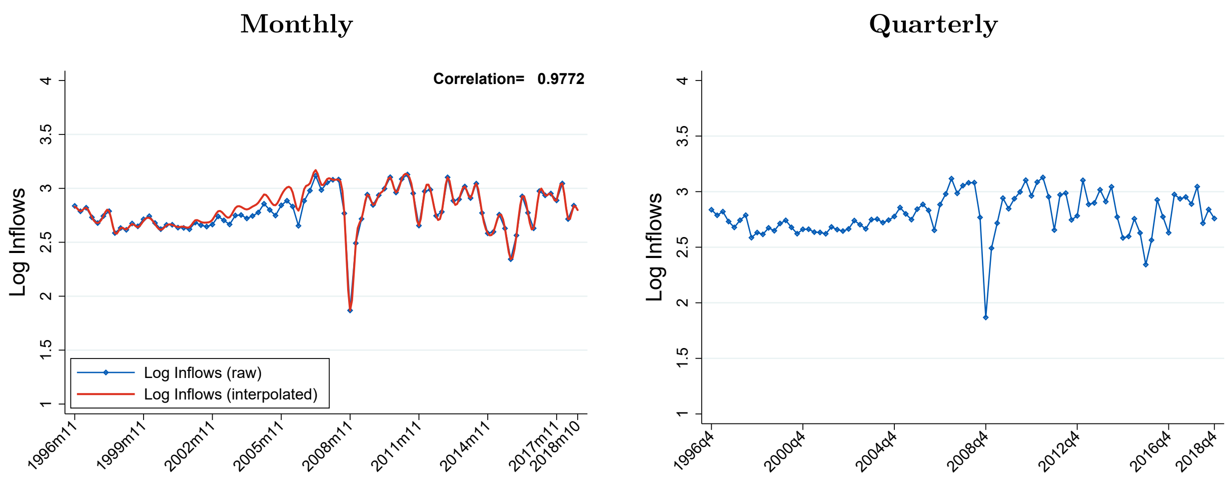
Table A3. Replaced Deposit Rates: Country-year Observations (1996-2018)

Country	Year	Country	Year
Austria	2008-14	Ireland	1999-2016
Canada	1996-2005, 2007-18	Italy	1996, 2014-16
Chile	2001-18	South Korea	2004-18
Colombia	2001-18	Netherlands	2001-14
Finland	1999, 2005-14	Portugal	2002-16
France	1996, 2000-16	Spain	1996-2015
Germany	1996, 2000-14		

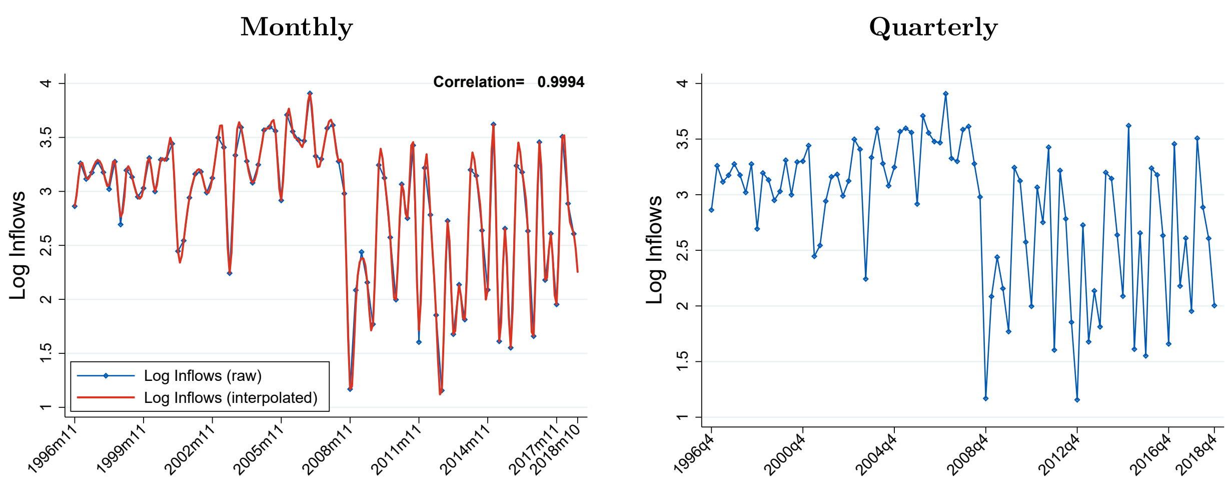
Interpolation of Quarterly Capital Flows

We interpolate quarterly capital flows to get monthly flows using a cubic spline built in Stata. More precisely, we use the following Stata command: `by id: mipolate ‘var’ date , gen(‘var’i) spline`, where `id` is country group, `‘var’` is flows data, and `date` is a variable denoting months. The interpolated flows are generated with a variable name `‘var’i`. This Stata module can be installed by using the command `ssc install mipolate`. Before running this command, quarterly flows are imported into the median month of each quarter. For example, the first quarter flows are imported into February, which is the median month of the first quarter. Then, the command fills remaining empty months with a cubic spline interpolation.

We plot averages of raw data and interpolated data across AEs and EMs in Figure A1. We plot both raw quarterly flows (blue solid line with diamond labels) and monthly flows interpolated using raw quarterly flows (red solid line). We find that interpolated monthly flows closely track raw quarterly flows with small deviations (the correlation between these two series is 0.99).



(a) Emerging Markets



(b) Advanced Economies

Figure A1. Average Capital Inflows: Raw vs. Interpolated Data

Note: This figure present the interpolation of capital inflows at monthly frequency for AEs and EMs.

A.2. Consensus Forecasts

This section provides additional descriptive statistics about the Consensus Forecasts database. Table A4 presents the average number of forecasters per year for currencies of AEs and EMs, separately. As shown in this table, the number of forecasters surveyed is vast in both set of economies, albeit it is smaller in EMs. Table A5 reports the average number of forecasters for each country across time.

Table A6 presents examples of the main forecasters for the Euro, Yen, UK Pound, Korean Won, Turkish Lira and other emerging markets in September 2012. This table shows that the forecasters surveyed for EMs' currencies were also top forecasters in AEs. It is worth

Table A4. Number of Forecasters in Consensus Forecasts (all years)

	Advanced Economies (1)	**Emerging Markets** (2)
1996	62	26
1997	63	21
1998	54	14
1999	58	13
2000	57	15
2001	53	14
2002	55	13
2003	58	15
2004	59	16
2005	62	16
2006	61	16
2007	58	15
2008	57	16
2009	50	15
2010	50	17
2011	52	17
2012	56	17
2013	54	16
2014	53	16
2015	54	17
2016	43	19
2017	43	18
Mean	55	17

Note: 34 currencies, 22 EMs, 12 AEs. Source: Consensus Forecast.

mentioning that our database does not provide information on individual forecast series and does not indicate which forecasters were surveyed. We collect this information from printed monthly reports created by Consensus Forecasts. These reports provide some examples of forecasters for main currencies, but they do not provide a complete list of forecasters for each currency. As such, the information about individual foresters in Table A6 is only illustrative. For this reason, the empty cells in Table A6 indicate the absence of information about whether the forecaster was surveyed for that currency and, hence, they do *not* indicate that the forecaster was *not* surveyed for that currency. It could easily be the case that the forecaster was also surveyed, but we do not know it.

Table A5. Number of Forecasters By Currency

Average Number of Forecasters			
Advanced Economies		**Emerging Markets**	
Australia	37	Argentina	11
Canada	77	Brazil	13
Denmark	25	Chile	12
Euro Area	101	China, P.R.: Mainland	26
Germany	107	Colombia	10
Israel	11	Czech Republic	12
Japan	98	Hungary	11
New Zealand	31	India	20
Norway	24	Indonesia	23
Sweden	30	Republic of Korea	23
Switzerland	27	Malaysia	24
United Kingdom	84	Mexico	12
		Peru	9
		Philippines	17
		Poland	11
		Romania	8
		Russian Federation	11
		Slovak Republic	9
		South Africa	22
		Thailand	24
		Turkey	23
		Ukraine	4
Average 1996-2018	55		17

Note: 34 currencies, 22 EMs, 12 AEs. Source: Consensus Forecast.

Table A6. Example: Main Forecasters in Advanced Economies and Emerging Markets, September 2012

Advanced Economies			Emerging Markets		
Euro (1)	**Yen** (2)	**UK Pound** (3)	**Korean Won** (4)	**Turkish Lira** (5)	**Other EMs*** (6)
Goldman Sachs	Goldman Sachs	Goldman Sachs	Goldman Sachs	Goldman Sachs	Goldman Sachs
HSBC	HSBC	HSBC	HSBC	HSBC	HSBC
General Motors	General Motors	General Motors	General Motors	General Motors	General Motors
ING Financial Markets	ING Financial Markets	ING Financial Markets	ING Financial Markets		ING Financial Markets
BNP Paribas	BNP Paribas	BNP Paribas		BNP Paribas	BNP Paribas
JP Morgan	JP Morgan	JP Morgan	JP Morgan	JP Morgan	JP Morgan
Allianz	Allianz	Allianz			Allianz
Oxford Economics	Oxford Economics	Oxford Economics		Oxford Economics	Oxford Economics
Morgan Stanley	Morgan Stanley	Morgan Stanley		Morgan Stanley	Morgan Stanley
Bank of Tokio Mitsubishi	Bank of Tokio Mitsubishi	Bank of Tokio Mitsubishi	Bank of Tokio Mitsubishi	Bank of Tokio Mitsubishi	Bank of Tokio Mitsubishi
Credit Suisse	Credit Suisse	Credit Suisse		Credit Suisse	
Citigroup	Citigroup	Citigroup	Citigroup	Citigroup	Citigroup
Societe Generale	Societe Generale	Societe Generale		Societe Generale	Societe Generale
Royal Bank of Canada	Royal Bank of Canada	Royal Bank of Canada			Royal Bank of Canada
Royal Bank of Scotland	Royal Bank of Scotland	Royal Bank of Scotland			Royal Bank of Scotland
ABN Amro	ABN Amro	ABN Amro			ABN Amro
Barclays Capital	Barclays Capital	Barclays Capital		Barclays Capital	Barclays Capital
Commerzbank	Commerzbank	Commerzbank			Commerzbank
UBS	UBS	UBS	UBS	UBS	UBS
IHS Global Insight	IHS Global Insight	IHS Global Insight	IHS Global Insight	IHS Global Insight	IHS Global Insight
Nomura Securities	Nomura Securities	Nomura Securities	Nomura Economics	Nomura Securities	Nomura Securities
			Macquarie Capital		Macquarie Capital
			ANZ Bank		ANZ Bank

Note: *Other EM currencies' include: Argentinean Peso, Brazilian Real, Chilean Peso, Chinese Renminbi, Colombian Peso, Czech Koruna, Hungarian Forint, Indian Rupee, Indonesian Rupiah, Malaysian Ringgit, Mexican Peso, Peruvian Sol, Polish Zloty, Romanian Leu, Russian Rouble, South African Rand, Ukrainian HRYVNIA. Note that non-filled cells indicate the absence of information about whether the forecaster was surveyed for that currency (i.e. they do *not* indicate that the forecaster was not surveyed for that currency). Source: Consensus Forecast.

A.3. Policy Risk Premium Measure

We construct the PRP measure following the methodology of Baker, Bloom and Davis (2016). In particular, we use the online platform Factiva, which reports journal articles of main international newspapers. We employ the same search procedure as Baker, Bloom and Davis (2016). Our list of words contains 218 words and follows closely theirs. Since Baker, Bloom and Davis (2016) list of words is mostly conceived for AEs, we include four additional words to better capture policy uncertainty characteristics in emerging markers (i.e. capital controls, expropriation, nationalization and corruption). We report below the list of words used in this paper.

Because we are interested in the perspective of the U.S. international investor, we focus on news reported in international newspapers (see below the complete list of newspapers). Given the lower availability of international newspapers, we follow the methodology of Barrett, Appendino, Nguyen and de Leon Miranda (2020) to construct our PRP measure. This methodology adds total number of articles in a country and pools all the newspapers together for each country.[18] More precisely, define X_{it} the number of articles referring to policy risk episodes in country i at time t, Y_{it} total number of articles referring to country i at time t, and $Y_t = \sum_i Y_{it}$ the total number of articles written at each time t (i.e. the sum of articles across countries). We replicate Barrett, Appendino, Nguyen and de Leon Miranda (2020) index as follows

$$PRP_{it} = \frac{X_{it}}{\frac{1}{12}\sum\limits_{j=1}^{12} Y_{t-j}}$$

where $X_i = \frac{1}{T}\sum\limits_{t=1}^{T} X_{it}$ and $Y = \frac{1}{T}\sum\limits_{t=1}^{T} Y_t$. We normalize the index to 100 by estimating

$$PRP_{it}^{N} = \frac{PRP_{it}}{\overline{PRP}_i} \times 100,$$

where $\overline{PRP}_i = \frac{1}{T}\sum\limits_{t=1}^{T} PRP_{it}$ is the average of policy risk news for each country across time. We construct the monthly PRP for the Euro area as follows. We use real GDP data for France, Germany, Greece, Italy and Spain. This real GDP is expressed in local cur-

[18] The difference with Baker, Bloom and Davis (2016) is that their index includes a non minor proportion of local newspapers. Higher heterogeneity across newspapers allows them to first compute the share of news for each individual newspaper within a country and then add up the total sum for each country. In other words, they do not pool all articles within a country together.

rency and it is reported at a quarterly frequency. Prior to 2000, we transform this real GDP measures to US dollars using the observed average exchange rate in the quarter. From 2000 onward, we assume that all countries use the euro as the relevant currency, so that there is no need for us to convert them to a common currency. We linearly interpolate the real GDP of each country to get GDP at a monthly frequency. As a result, we can aggregate GDP across countries in the eurozone to construct a GDP measure for the entire eurozone. We then construct the Euro Area PRP measure as $PRP_t = \sum_{i=1}^{N} \omega_{it} PRP_{it}$, where $\omega_{it} = RGDP_{it} / \sum_{i=1}^{N} RGDP_{it}$ is the share of the eurozone GDP accounted for by country i, PRP_{it} is the PRP measure for country i at time t, and N is the number of countries in the eurozone for which we observe a value for PRP_{it} and their GDP.

List of Words

Our list of words from comes from Baker, Bloom and Davis (2016). In particular, we use the following list of words from their list: tax, taxation, taxes, policy, government spending, federal budget, budget battle, balanced budget, defense spending, defence spending, military spending, entitlement spending, fiscal stimulus, budget deficit, federal debt, national debt, debt ceiling, fiscal footing, government deficit, fiscal policy, federal reserve, the fed, money supply, open market operations, quantitative easing, monetary policy, fed funds rate, overnight lending rate, the fed, Bernanke, Volker, Greenspan, central bank, interest rates, fed chairman, fed chair, lender of last resort, discount window, central bank, monetary policy, health care, health insurance, prescription drugs, drug policy, medical insurance reform, medical liability, , national security, war, military conflict, terrorism, terror, 9/11, armed forces, base closure, military procurement, military embargo, no-fly zone, military invasion, terrorist attack, banking (or bank) supervision, thrift supervision, financial reform, basel, capital requirement, bank stress test, deposit insurance, union rights, card check, collective bargaining law, minimum wage, closed shop, workers compensation, advance notice requirement, affirmative action, overtime requirements, antitrust, competition policy, merger policy, monopoly, patent, copyright, unfair business practice, cartel, competition law, price fixing, healthcare lawsuit, tort reform, tort policy, punitive damages, medical malpractice, energy policy, energy tax, carbon tax, drilling restrictions, offshore drilling, pollution controls, environmental restrictions, immigration policy, illegal immigration, sovereign debt, currency crisis, currency crises, currency crash, crisis, crises, reserves, tariff, trade, devaluation, capital controls, expropriation, nationalization, corruption.

The list of words used in Baker, Bloom and Davis (2016) is mostly conceived for AEs.

To better capture that policy uncertainty characteristics of emerging markers, we include five additional words: capital controls, expropriation, nationalization and corruption.

List of Newspapers

We include the following newspapers: ABC Network, Agence France Presse, BBC, The Boston Globe, CBS Network, Chicago Tribune, Financial Times, The Globe and Mail, Houston Chronicle, Los Angeles Times, NBC Network, The New York Times, The San Francisco Chronicle, The Telegraph (U.K), The Wall Street Journal, The Times (U.K), USA Today, Washington Post, Reuters, The Dallas Morning News, The Miami Herald, The Guardian (U.K), and The Economist.

A.4. ICRG: Composite and Political Risks

Our measures of composite and policy risks come from the International Country Risk Guide (ICRG) dataset which provides data on country's political, economic and financial risks for more than than 140 countries at monthly frequency. We describe below the definition of each variable used in the paper and then present the correlation of the sub-components of political risk with the UIP premium.

A.4.1 Definition of Variables

In our analysis, we employ the composite risk variable to proxy for overall country risk – political, economic and financial risks–, and socioeconomic conditions to capture confidence risk. We pool investment profile and democratic accountability together to measure government policy risk (i.e. the average of both variables). Additionally, we use separately investment profile to proxy for expropriation risk and democratic accountability to capture anti-democratic risk. We describe below all the variables in detail.

-*Composite risk*. It is a composite of political, financial and economic risk. Political risk contributes 50% of the composite rating, while financial and economic risk ratings each contribute 25%. Political risk has 12 components and the assessment is made on the basis of subjective analysis of the available information. Financial and economic risk each have five components and their assessments are made solely on the basis of objective data. The components of political, economic and financial risks are:

-<u>Political risk</u>: government stability*, socioeconomic conditions*, investment profile*, internal conflict*, external conflict*, democratic accountability$^+$, corruption$^+$, military in politics$^+$, religious tensions$^+$, law and order$^+$, ethnic tensions$^+$, and bureaucracy quality. The components with $*$ are given up to 12 points and, hence, have a higher weight, the components with $^+$ are given up to 6 points, and the last component (bureaucracy quality) is given only 4 points.

- Government stability: this index assesses both of the government's ability to carry out its declared programs, and its ability to stay in office. It has three subcomponents that describe government unity, legislative strength and popular support.
- Socioeconomic conditions: this index assesses the socioeconomic pressures at work in society that could constrain government action or fuel social dissatisfaction. It has three subcomponents: unemployment, consumer confidence and poverty.

- Investment profile: this index assesses factors affecting the risk to investment that are not covered by other political, economic and financial risk components. It has three components: contract viability/expropriation, profits repatriation and payment delays.

- Internal conflict: assesses political violence in the country and its actual or potential impact on governance. The subcomponents are: civil war/coup threat, terrorism/political violence and civil disorder.

- External conflict: this index is 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 war). 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 subcomponents are: war, cross-border conflict and foreign pressures.

- Democratic accountability: it is a measure of how responsive and accountable government is to its people. As such, it captures the degree of freedom that a government has to impose policies to its own advantage. It evaluates several types of government from more to less democratic, considering whether it is alternating democracy, dominated democracy, de facto one-party state, de jure one-party state, and autarchy.

- Corruption: assessment of corruption within the political system. Such 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 measure considers 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. It also considers 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.

- Military in politics: considers involvement of militaries in politics,

- Religious tensions: measures the relevance of 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.

- Law and order: this refers to the strength and impartiality of the legal system and the popular observance of the law.
- Ethnic tensions: refers to the degree of tension within a country attributable to racial, nationality, or language divisions.
- Bureaucracy quality: measures the strength and quality of the bureaucracy. 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.

-Economic risk: it includes GDP per capita, real GDP growth, inflation rate, budget balance over GDP, current account over GDP.

-Financial risk: it includes foreign debt over GDP, foreign debt service over exports of goods and services, current account over exports of goods and services, net international liquidity as months of import cover, exchange rate stability.

Eurozone ICRG Risk Variable Construction. We construct a monthly eurozone ICRG risk indexes as follows. We use real GDP data for the 19 countries that compose the eurozone. This real GDP is expressed in local currency and it is reported at a quarterly frequency. Prior to 2000, we transform this real GDP measures to US dollars using the observed average exchange rate in the quarter. From 2000 onward, we assume that all countries in the Eurozone use the Euro as the relevant currency, so that there is no need for us to convert them to a common currency. We linearly interpolate the real GDP of each country to get GDP at a monthly frequency. As a result, we can aggregate GDP across countries in the eurozone to construct a GDP measure for the entire Eurozone. We then construct the Eurozone Composite Risk Index as

$$ECR_t = \sum_{i=1}^{N_t} \omega_{it} CR_{it},$$

where $\omega_{it} = RGDP_{it} / \sum_{i=1}^{N_t} RGDP_{it}$ is the share of the Eurozone GDP accounted for by country i, CR_{it} is the ICRG risk index for country i at time t, and N_t is the number of countries in the eurozone for which we observe a value for CR_{it} and their GDP. This latter number can change over time due to reporting issues. However, starting in 1999 all 19 countries in the eurozone have information on both their GDP and the composite risk index.

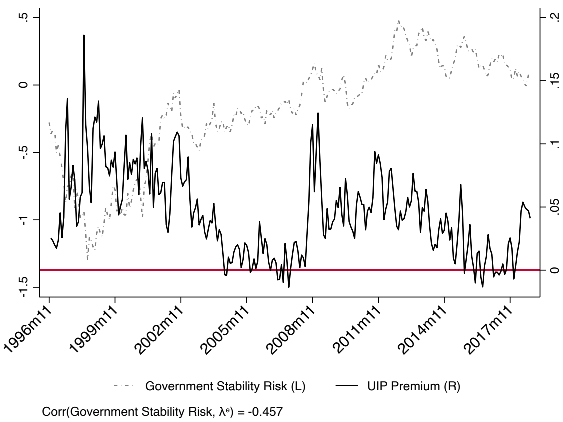
A.4.2 Correlation of Sub-Components of Political Risk and UIP Premium in EMs

Section 5.5 focused on two main determinants of political risk correlated with the UIP premium in EMs, namely government policy risk (composed by anti-democratic and expropriation risks) and confidence risk. In this section, we present the correlation of other sub-components of political risk with the UIP premium (for EMs) not directly employed in this paper, and show that these correlations have usually the wrong (negative) sign and are typically small.[19]

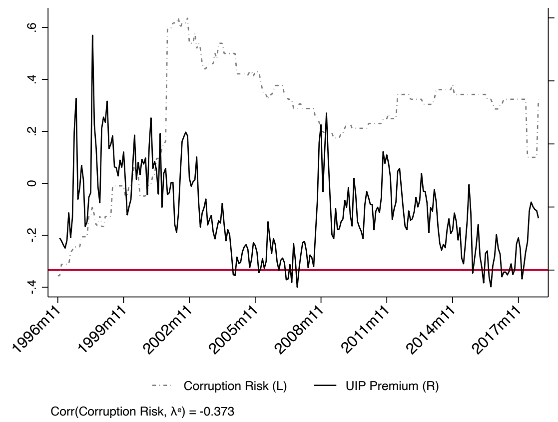
As detailed above, the other sub-components of political risk reported in the ICRG data and not directly used in the paper are: government stability, corruption, external conflict, internal conflict, military in politics, religious tensions, law and order, ethnic tensions and bureaucracy quality. Figure A2 presents the correlation of the UIP premium with each of this components. The correlation with these other subcomponents is usually small and sometimes has the opposite sign. For example, it is interesting to note on the correlation with government stability risk (panel a), which has the wrong sign (negative). This sub-component captures government unity and legislative strength and, hence, is quite different from from our government policy risk variable (which captures expropriation risk). Other examples are sub-components of political risk are: corruption, law and order, religious tensions, bureaucracy quality and ethnic tensions (panels b, c, d, e and f), which have less time-series variation and are negatively correlated with the UIP premium.

Therefore, these figures indicate that these sub-components capture elements of political risk that are not significantly related to foreign investors' risk sentiments, and thus do not significantly correlate with the UIP premium in EMs.

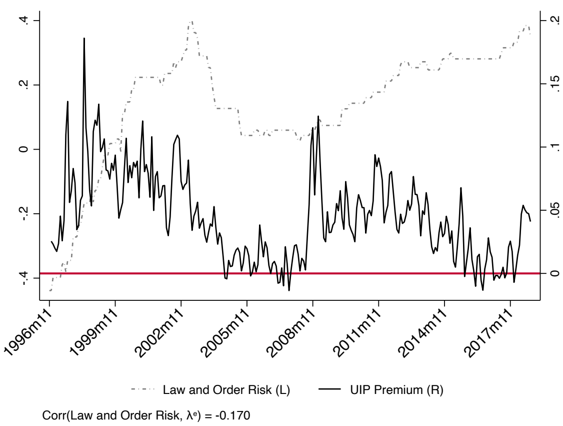
[19] The correlation of the UIP premium with government policy and confidence risk is presented in Figure B.4, and the its correlation with anti-democratic and expropriation risks is reported in Figure B.5.



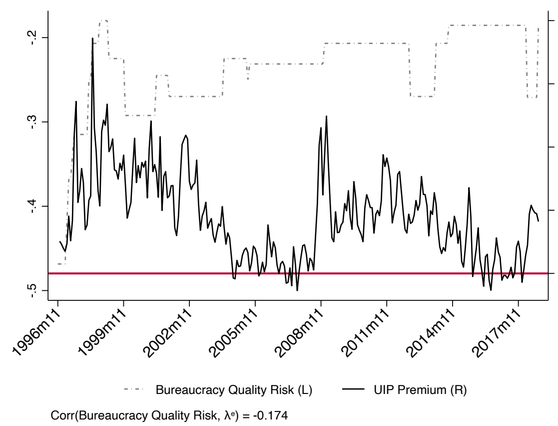
a) Government Stability Risk



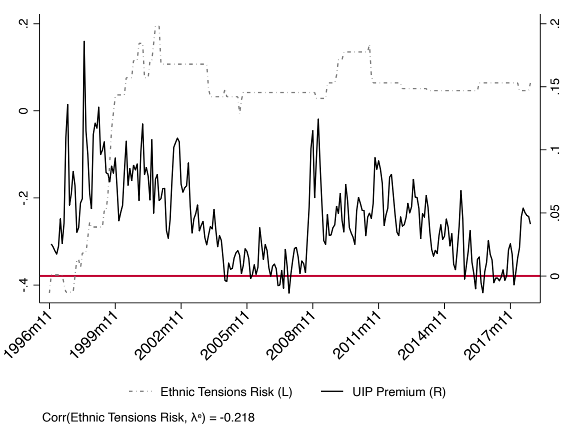
b) Corruption Risk



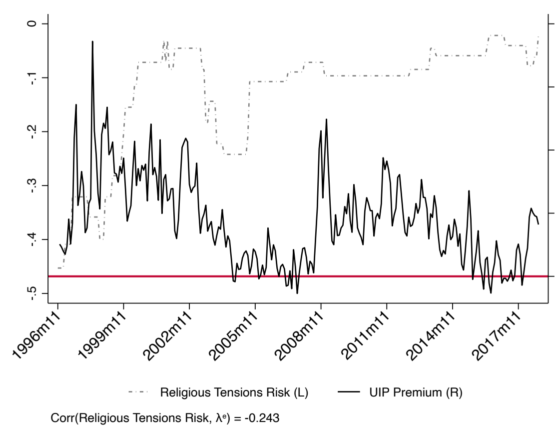
c) Law and Order Risk



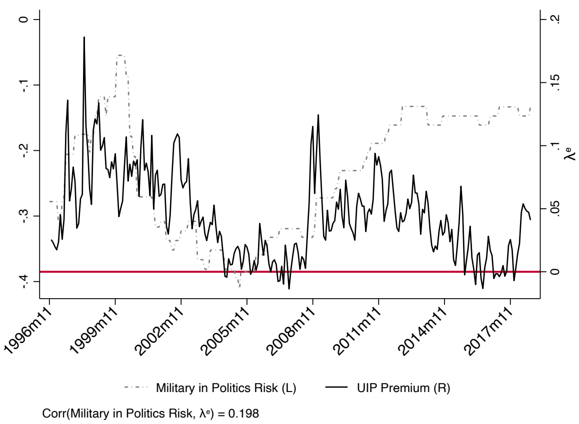
d) Bureaucracy Quality Risk



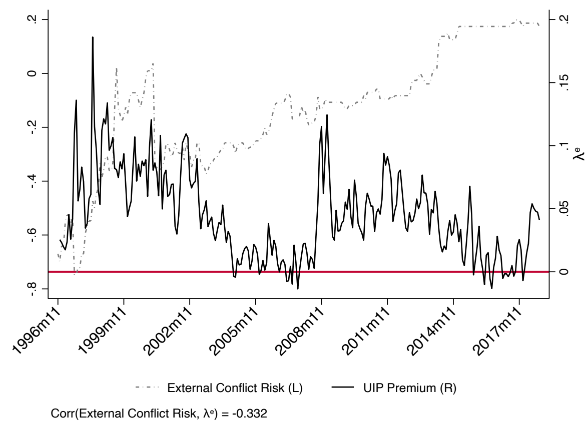
e) Ethnic Tensions Risk



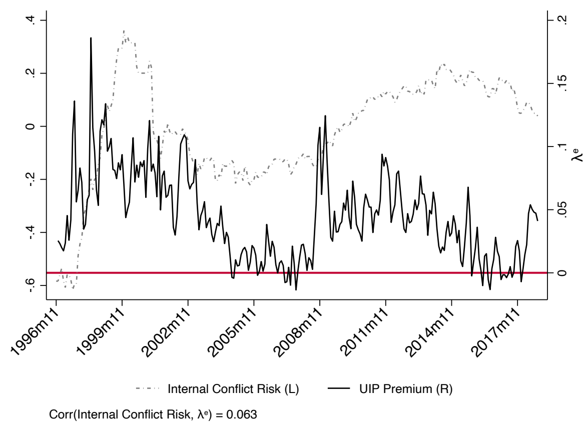
f) Religious Tensions Risk



g) Military in Politics Risk



h) External Conflict Risk



i) Internal Conflict Risk

Figure A2. Correlation of Sub-Components of Political Risk and UIP Premium in Emerging Markets

Note: This figure shows the correlation of other sub-components of political risk (not used in the paper) with the UIP Premium in EMs. The UIP premium is measured using Consensus Forecast.

B. Additional Figures and Tables

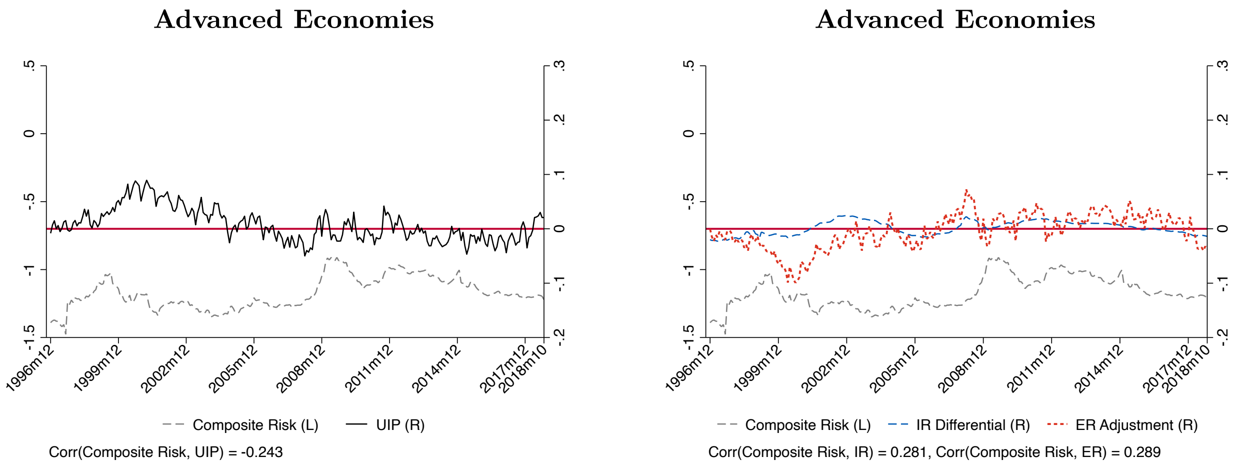


Figure B.1. Composite Risk and the UIP Decomposition n Advanced Economies

Note: This figure shows the correlation of composite risk with the UIP premium and UIP decomposition at 12 month horizon for 34 currencies –22 EMs and 12 AEs– over 1996m11:2018m10. The UIP premium and expected exchange rate changes are measured using Consensus Forecast.

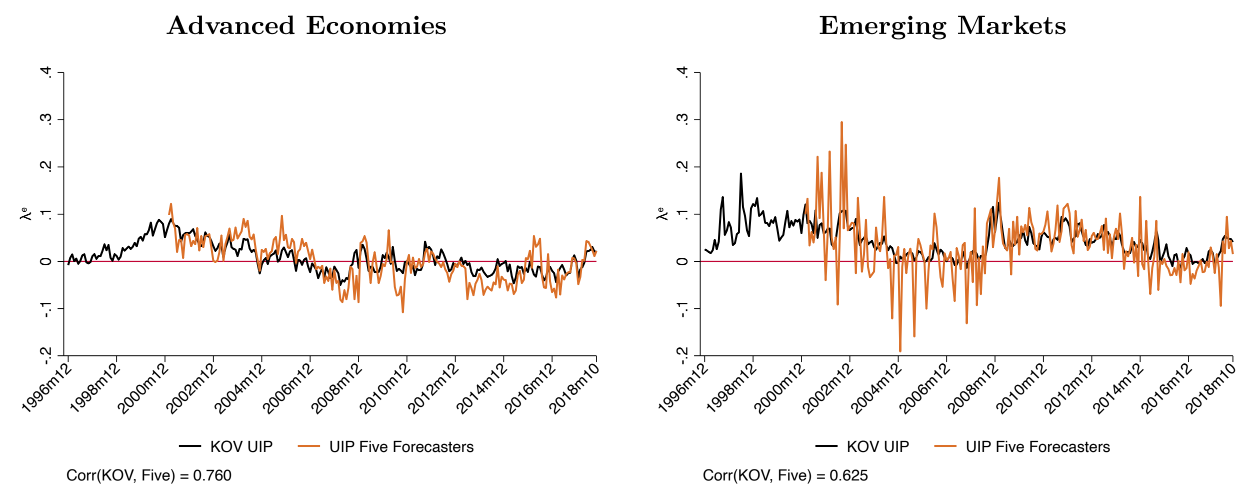


Figure B.2. Five Forecasters UIP versus Average Forecast UIP

Note: This figure shows the average UIP premium of all sample and the average UIP premium of five mayor forcasters. UIP deviations is measured using Consensus Forecast.

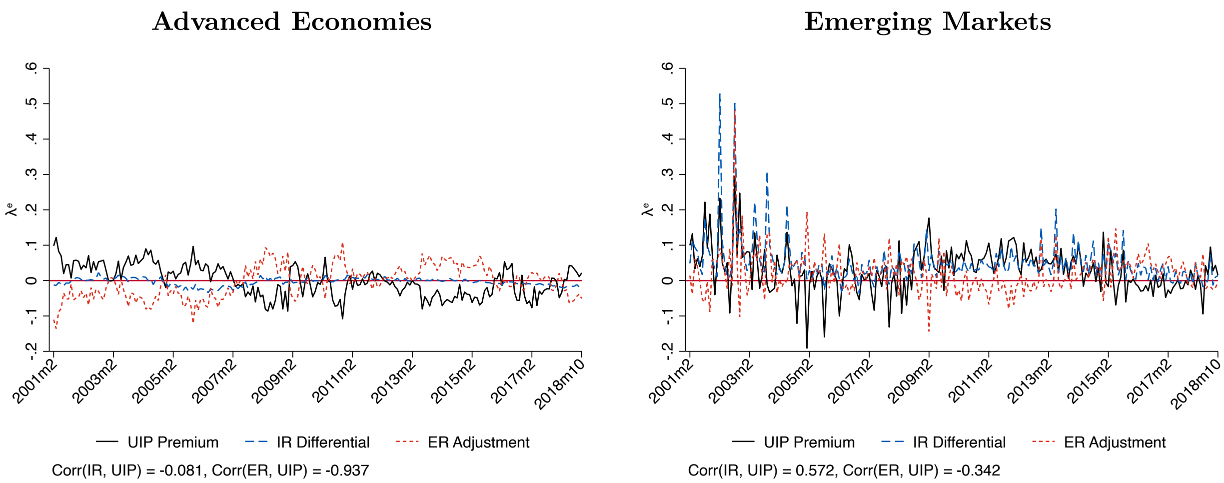


Figure B.3. Five Forecasters UIP versus Average Forecast UIP: UIP Decomposition

Note: This figure shows the average UIP premium and its decomposition of all sample and the average UIP premium of five mayor forecasters. UIP deviations is measured using Consensus Forecast.

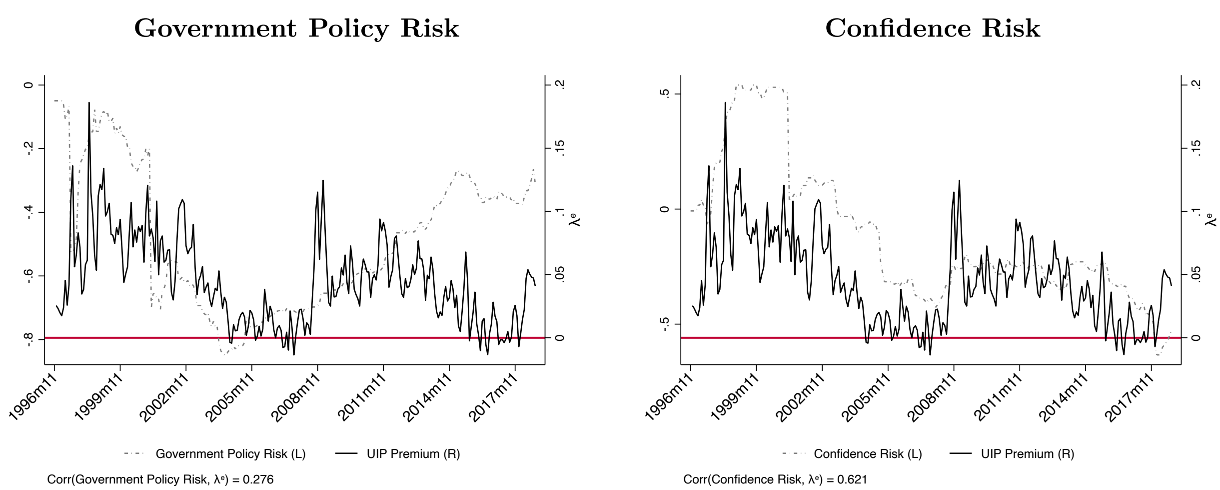
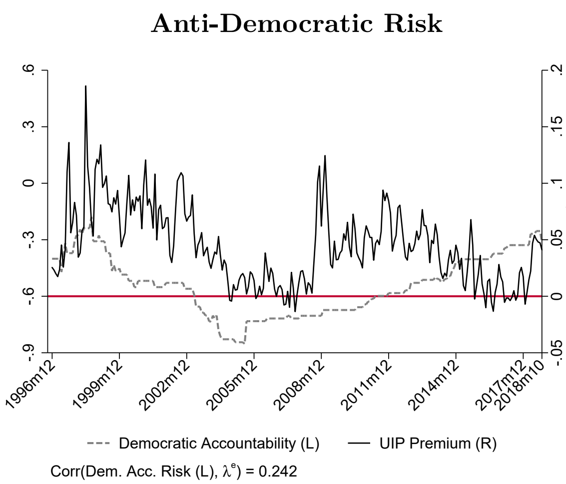


Figure B.4. Government Policy and Confidence Risks in Emerging Markets

Note: This figure shows the correlation of between the Government Policy and Confidence Risks with the UIP premium at 12 month horizon for 22 emerging markets' currencies over the period 1996m11:2018m12. The UIP premium is measured using Consensus Forecast surveys.



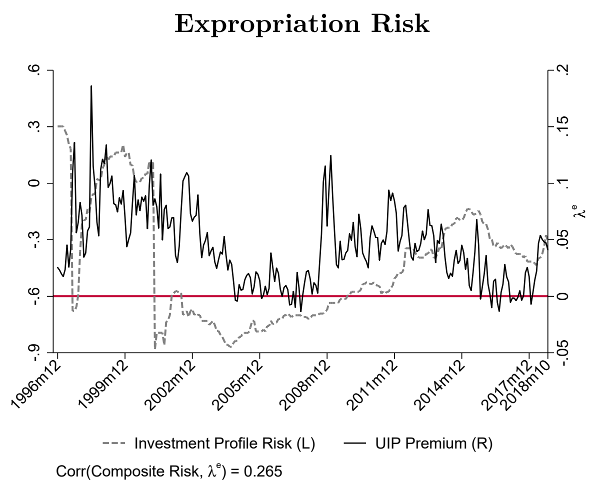


Figure B.5. Decomposing Government Policy Risk in Emerging Markets

Note: This figure shows the correlation of anti-democratic and expropriation risks and the UIP premium 12 month horizon. The UIP premium is measured using Consensus Forecast.

Table B.1. Mechanism: Advanced Economies

	Second Stage: Interest Rate Differential					
	(1)	(2)	(3)	(4)	(5)	(6)
$s^e_{i^{high},t+1} - s^e_{i^{low},t+1}$	0.030**	0.062	0.030**			
	(0.013)	(0.045)	(0.013)			
Std Dev s^e_{it+1}				0.031**	0.051	0.031*
				(0.013)	(0.058)	(0.013)
RHS variable in First Stage	VIX	PRP	VIX&PRP	VIX	PRP	VIX&PRP
N	2116	2116	2116	1259	1259	1259
	First stage: Dispersion in ER Expectations					
	$s^e_{i^{high},t+1} - s^e_{i^{low},t+1}$			Std Dev s^e_{it+1}		
$\log(VIX_{t-1})$	0.288***		0.285***	0.258***		0.262***
	(0.042)		(0.048)	(0.041)		(0.047)
PRP_{it-1}		0.039**	0.005		0.031	-0.005
		(0.019)	(0.023)		(0.020)	(0.024)
Cragg-Donald Wald F statistic	277.96	28.36	139.16	195.75	13.38	98.03
Kleibergen-Paap Wald rk F statistic	48.04	4.11	25.78	38.69	2.41	98.03

Table B.2. R^2 for Heterogeneity in Global Risk Loadings and Country-Specific Risk in EMs

	UIP Premium			
	(1)	(2)	(3)	(4)
Inflows/GDP$_{it-1}$	-0.001*	-0.001	-0.001**	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)
Convenience Yield/Liquidity Premium$_{t-1}$	0.163	0.135	0.071	0.057
	(1.014)	(1.126)	(0.995)	(1.082)
$\log(VIX_{t-1})$	0.053***		0.053***	
	(0.008)		(0.008)	
EPU_{it-1}	0.010***	0.011***		
	(0.003)	(0.004)		
Argentina × $\log(VIX_{t-1})$		-0.014		0.000
		(0.011)		(0.011)
Brazil × $\log(VIX_{t-1})$		0.092***		0.056***
		(0.009)		(0.007)
Chile × $\log(VIX_{t-1})$		0.005		0.000
		(0.009)		(0.008)
China, P.R.: Mainland × $\log(VIX_{t-1})$		0.027***		0.040***
		(0.007)		(0.008)
Czech Republic × $\log(VIX_{t-1})$		0.039***		0.051***
		(0.007)		(0.007)
Hungary × $\log(VIX_{t-1})$		0.079***		0.082***
		(0.008)		(0.008)
India × $\log(VIX_{t-1})$		0.015*		0.010
		(0.007)		(0.006)
Indonesia × $\log(VIX_{t-1})$		0.063***		0.047***
		(0.006)		(0.006)
Korea, Republic of × $\log(VIX_{t-1})$		0.100***		0.102***
		(0.006)		(0.006)
Malaysia × $\log(VIX_{t-1})$		0.006		0.014*
		(0.006)		(0.007)
Mexico × $\log(VIX_{t-1})$		0.053***		0.055***
		(0.007)		(0.007)
Peru × $\log(VIX_{t-1})$		0.012**		0.022***
		(0.005)		(0.004)
Philippines × $\log(VIX_{t-1})$		0.056***		0.046***
		(0.007)		(0.006)
Poland × $\log(VIX_{t-1})$		0.062***		0.060***
		(0.007)		(0.007)
Romania × $\log(VIX_{t-1})$		0.056***		0.061***
		(0.009)		(0.009)
Russian Federation × $\log(VIX_{t-1})$		0.057***		0.059***
		(0.008)		(0.008)
Slovak Republic × $\log(VIX_{t-1})$		0.047***		0.046***
		(0.004)		(0.005)
South Africa × $\log(VIX_{t-1})$		0.039***		0.035***
		(0.006)		(0.006)
Thailand × $\log(VIX_{t-1})$		0.040***		0.033***
		(0.006)		(0.005)
Turkey × $\log(VIX_{t-1})$		0.129***		0.129***
		(0.009)		(0.008)
Ukraine × $\log(VIX_{t-1})$		0.181***		0.182***
		(0.017)		(0.020)

	UIP Premium			
	(1)	(2)	(3)	(4)
Argentina × PRP_{it-1}			-0.016***	-0.012*
			(0.005)	(0.007)
Brazil × PRP_{it-1}			0.047***	0.047***
			(0.003)	(0.005)
Chile × PRP_{it-1}			0.006*	0.015***
			(0.003)	(0.003)
China, P.R.: Mainland × PRP_{it-1}			-0.021***	-0.020***
			(0.002)	(0.004)
Czech Republic × PRP_{it-1}			-0.004*	-0.004*
			(0.002)	(0.002)
Hungary × PRP_{it-1}			0.010***	0.007**
			(0.002)	(0.003)
India × PRP_{it-1}			0.007***	0.015***
			(0.002)	(0.004)
Indonesia × PRP_{it-1}			0.032***	0.033***
			(0.003)	(0.003)
Korea, Republic of × PRP_{it-1}			0.010***	0.003
			(0.003)	(0.004)
Malaysia × PRP_{it-1}			-0.012***	-0.004
			(0.003)	(0.003)
Mexico × PRP_{it-1}			0.005***	0.005**
			(0.002)	(0.002)
Peru × PRP_{it-1}			-0.002	0.001
			(0.001)	(0.001)
Philippines × PRP_{it-1}			0.016***	0.016***
			(0.002)	(0.002)
Poland × PRP_{it-1}			0.017***	0.017***
			(0.002)	(0.003)
Romania × PRP_{it-1}			0.004***	0.003*
			(0.001)	(0.002)
Russian Federation × PRP_{it-1}			0.014***	0.014***
			(0.001)	(0.002)
Slovak Republic × PRP_{it-1}			0.007***	0.006***
			(0.002)	(0.002)
South Africa × PRP_{it-1}			0.023***	0.024***
			(0.002)	(0.004)
Thailand × PRP_{it-1}			0.013***	0.016***
			(0.002)	(0.002)
Turkey × PRP_{it-1}			0.014***	0.013***
			(0.002)	(0.003)
Ukraine × PRP_{it-1}			0.013	0.007
			(0.008)	(0.010)
Obs.	3288	3288	3288	3288
Number of Countries	21	21	21	21
R^2	0.1764	0.3918	0.3994	0.4327
Adjusted R^2	0.1701	0.3836	0.3912	0.4214
Partial R^2		0.0551	0.0668	0.1131
Currency FE	Yes	Yes	Yes	Yes

Table B.3. Inflation Differential

	Panel (A): Emerging Markets			Panel (B): Advanced Economies		
	(1) UIP Premium	(2) IR Diff.	(3) ER Adj.	(4) UIP Premium	(5) IR Diff.	(6) ER Adj.
Inflows/GDP$_{it-1}$	-0.001	-0.002**	-0.001	0.038	-0.007	-0.045
	(0.001)	(0.001)	(0.001)	(0.026)	(0.006)	(0.030)
$\log(VIX_{t-1})$	0.048***	0.028***	-0.020***	0.017	0.020***	0.002
	(0.007)	(0.007)	(0.007)	(0.012)	(0.004)	(0.011)
Convenience Yield/Liquidity Premium$_{t-1}$	-0.126	-0.352	-0.226	2.125*	-2.663***	-4.788***
	(0.962)	(0.998)	(1.073)	(1.264)	(0.407)	(1.426)
PRP_{it-1}	0.009***	0.005***	-0.004	-0.001	0.001	0.002
	(0.003)	(0.002)	(0.003)	(0.002)	(0.001)	(0.002)
Inflation Differential$_{it-1}$	1.840***	2.517	0.677	0.015	0.030	0.014
	(0.445)	(1.550)	(1.183)	(0.357)	(0.130)	(0.404)
Obs.	3203	3203	3203	1751	1751	1751
Number of Countries	20	20	20	10	10	10
R^2	0.2363	0.1503	0.0328	0.0644	0.2299	0.0823
Currency FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: * p < 0.10 ** p < 0.05 *** p < 0.01. Currency-time two-way clustered standard errors in parentheses. Capital inflows are measured as changes in gross debt liabilities. 30 countries, 20 EMs, 10 AEs. Period 1996m11:2018m10. The UIP premium is measured using Consensus Forecast. Inflows/GDP$_{it-1}$ are capital inflows into the country as a fraction of GDP. VIX is a proxy for global risk perception. Convenience yield/Liquidity Premium is the sum of USD convenience yield and its liquidity premium averaged across G10 countries. PRP_{it} is the economic policy uncertainty index. Inflation differential are the difference between inflation in the home economy relative to the US. Both Inflows/GDP$_{it-1}$, PRP , and inflation differentials vary at the country-time level, while VIX and Convenience yield/Liquidity premium vary at the time level.

C. Connection to Fama Puzzle

C.1. Fama and Predictabillity in Advanced Economies

For comparison, we present in this section the Fama regression for advanced economies using both ex-post realized and ex-ante expectational data on exchange rates. Columns 3 and 4 of Table C.1 shows that the results for realized exchange rates to measure the UIP premium. The Fama coefficient in column 3 is negative –albeit non-statistically significant– indicating that high interest rate currencies tend to appreciate, instead of depreciate as implied by the UIP condition. In line with this result, realized excess returns positively and significantly associate with interest rate differentials in these economies (column 4).

These results change substantially when using expectational data. The Fama coefficient is positive and not statistically different from one, which implies that expected exchange rate changes tend to offset changes in the interest rate differential, as the UIP condition implies (column 1). Along these lines, the coefficient of the expected excess return regression is not statistically differently from zero (column 2). The failure of the UIP condition using realized exchange rates and its validity using expectational data in AEs have also been documented by Frankel and Froot (1987), Bacchetta, Mertens and van Wincoop (2009), Chinn and Frankel (1994), Stavrakeva and Tang (2018), Bussiere, Chinn, Ferrara and Heipertz (2022).

Table C.1. Fama and Excess Returns Regressions

	Advanced Economies			
	(i) Expected Values		(ii) Realized Values	
	(1) Fama	(2) Excess Returns	(3) Fama	(4) Excess Returns
β^F	1.220***	-0.220	-0.399	1.399***
	(0.269)	(0.269)	(0.361)	(0.361)
p-value ($H_0 : \beta^F = 1$)	0.4290		0.0022	
Observations	2285	2285	2285	2285
Number of Countries	12	12	12	12
R^2	0.1724	0.0068	0.0034	0.0408
Currency FE	Yes	Yes	Yes	Yes

Notes: * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$. Currency-time two-way clustered standard errors in parentheses. 22 EMs currencies. Period 1996m11:2018m10.

Note: * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$. Currency-time two-way clustered standard errors in parentheses. 22 EMs. Period 1996m11:2018m12.

C.2. Fama and Predictabillity: Robustness with Unbalanced Panel

To make sure that results are not driven by sample selection, we re-estimate the Fama and excess return regressions for an unbalanced panel of 34 advanced and emerging economies.[20] Results reported – in Table C.2– confirm the failure of the UIP condition for both advanced and emerging economies when using realized exchange rates, and its failure for EMs when using survey data.

Table C.2. Fama and Excess Return Regressions: Unbalanced Sample

	Fama Regression		Excess Return Regression	
	Advanced Economies	Emerging Markets	Advanced Economies	Emerging Markets
	(1)	(2)	(3)	(4)
	Panel A: Realized Exchange Rate			
β^F	-0.399	0.374***	1.399***	0.626***
	(0.361)	(0.115)	(0.361)	(0.115)
P-value ($H_0 : \beta^F = 1$)	0.0022	0.0000		
R^2	0.0034	0.0255	0.0408	0.0682
	Panel B: Expected Exchange Rate			
β	1.196***	0.482***	-0.196	0.518***
	(0.258)	(0.073)	(0.258)	(0.073)
P-value ($H_0 : \beta = 1$)	0.4620	0.0000		
R^2	0.1750	0.2705	0.0057	0.3007
Currency FE	yes	yes	yes	yes
Observations	2,375	3,755	2,375	3,755
Number of Currencies	12	22	12	22

Note: * p < 0.10 ** p < 0.05 *** p < 0.01. Currency-time two-way standard errors in parentheses. The UIP premium and expected exchange rate changes are measured using Consensus Forecast.

C.3. Bias on the Fama Coefficient and Policy Risk

In this section, we conduct two exercises. First, we assess whether the lower depreciation found in EMs following interest rate changes (Fama regression) correlates with policy uncertainty. Second, we conduct a decomposition exercise to assess the channels through which policy risk can create a downward bias the Fama coefficient.

[20]Recall that our balanced sample consists on countries for which we have observations for all variables to compute the Fama and excess return regressions and the composite risk. In the unbalanced panel, we still exclude fixed pegs.

C.3.1. Does the Bias on the Fama Coefficient Correlate with Policy Risk in EMs?

We start by evaluating whether the downward bias of the Fama coefficient in EMs associates with a time-varying risk premium arising from country-specific policy uncertainty. As discussed in Froot and Frankel (1989), the Fama coefficient estimated using expectational data can be written as: $plim\hat{\beta} = 1 - b_{RP}$, where b_{RP} is a time-varying risk premium.

To evaluate the impact of policy risk on the downward bias of the Fama coefficient, we need to evaluate how a country's policy risk affects Fama coefficient and the risk premium across time. This implies obtaining a currency-specific and time-varying risk premium and Fama coefficient, and assessing their correlation with a country's policy risk. With this end, we estimate the Fama regression for each currency in non-overlapping 18-months rolling windows, and obtain a currency i- and window j-specific Fama coefficient, β_{ij}. More precisely, we estimate

$$\Delta s^e_{ijt+h} = \alpha_{ij} + \beta_{ij}(i_{ijt} - i^{US}_{jt}) + \varepsilon_{ijt+h} \qquad \forall i, j, \tag{14}$$

where j denotes a non-ovelapping rolling window and t is the monthly variation within this window with a 12-month horizon expectation denoted with h. Under subjective expectations, the risk premium has a one-to-one mapping with the Fama coefficient. More precisely,

$$plim\hat{\beta}_{ij} = 1 - b_{ij,RP} \qquad \text{and} \qquad b_{ij,RP} = \frac{var(\lambda^e_{ij}) + cov(\Delta s^e_{ij}, \lambda^e_{ij})}{var(IR_{ij})}, \tag{15}$$

where $var(\lambda^e_{ij})$, $cov(\Delta s^e_{ij}, \lambda^e_{ij})$ and $var(IR_{ij})$ are calculated across months within window j for each currency i.[21,22] To assess the relationship between policy risk and the Fama coefficient, we estimate the following pooled OLS regression:

$$\hat{\beta}_{ij} = \gamma_2 + \gamma_3 \text{ policy risk}_{ij} + \varepsilon_{ij}, \tag{16}$$

where $\hat{\beta}_{ij}$ is the Fama coefficient estimated in regression (14) and policy risk$_{ij}$ is the mean of policy risk in currency i and window j for each of our policy risk variables. The coefficient γ_3 captures the change in the Fama coefficient associated with a change in the policy risk. In both regressions (14) and (16), we cluster the standard errors by country.[23]

[21]For expositional simplicity, we removed the time horizon subscript h and note that all our estimates are considered at 12-month horizon.

[22]Using survey data to estimate equation (14) eliminates the term b_{RE}, as the regression already considers subjective expectations.

[23]We only cluster the standard errors by country, because there is not enough observations across windows to cluster by time. Note that there are only 13 windows in the sample.

Table C.3 presents the results for the Fama coefficient. The coefficient for composite risk is negative and indicates that an increase in a country's composite risk associates with a contemporaneous decrease in the Fama coefficient (column 1). The estimated coefficient implies that if the composite risk increases from the p25 to p75 (from Poland to India in the window 2001m5 to 2002m10) the Fama coefficient would decrease 0.31 percentage points. In columns 2 and 3, we unpack the composite risk in its two components: government policy risk and confidence risk. Both risks are negatively correlated with the Fama coefficient, but only government policy risk is significant.

In columns 4 and 5, we go one step further and break down government policy risk in its two sub-components: anti-democratic risk and expropriation risk. Anti-democratic risk captures the level of autocracy of the government and, thus, the degree of freedom that a government has to impose policies to its own advantage. Expropriation risk captures the risk of expropriation, the risk of limiting or banning foreign investors' profits repatriation and payment delays.[24] Interestingly, both anti-democratic risk and expropriation risk are negative and statistically significant, pointing to a downward bias in the Fama coefficient.[25]

For completeness, we replace the right hand side of equation (16) with $b_{ij,RP}$ and evaluate the correlation between risk premium term and policy risk. As we show in Panel B, the coefficients for composite, government policy, anti-democratic and expropriation risks are all positive and statistically significant, indicating that higher uncertainty on EMs' government policies associate with increases in the risk premium which –in turn– downward bias the Fama coefficient.

Finally, to assess whether our analysis on the channel creating a downward bias in the Fama coefficient is not driven by the length of the window with which we estimate the β coefficient and b_{RP} term, we re-compute these variables for 12-months and 24-months rolling windows and show in Tables C.4 and C.5 that our results hold true for these different windows.

[24]More precisely, the anti-democratic risk corresponds to the "democratic accountability" variable and expropriation risk corresponds to the "investment profile" in the ICRG dataset.

[25]In Figure B.5 in Appendix B, we show that anti-democratic risk and expropriation risk are substantially correlated with the UIP in EMs.

Table C.3. The Fama Coefficient in Emerging Markets: Composite and Government Policy Risks

	Bias of Fama Coefficien: Risk Premium				
	Composite Risk	Unpacking Composite Risk		Decomposing Government Policy Risk	
		Government Policy Risk	Confidence Risk	Anti-Democratic Risk	Expropriation Risk
	(1)	(2)	(3)	(4)	(5)
	Panel A. Fama Coefficient $\hat{\beta}_{ij}$				
Policy risk$_{i,j}$	-0.592*	-0.764***	-0.139	-0.624***	-0.489*
	(0.328)	(0.253)	(0.186)	(0.180)	(0.256)
R^2	0.0134	0.0414	0.0020	0.0415	0.0205
	Panel B. Risk Premium: $b_{ij,RP}$				
Policy risk$_{i,j}$	0.592*	0.764***	0.139	0.624***	0.489*
	(0.328)	(0.253)	(0.186)	(0.180)	(0.256)
R^2	0.0134	0.0414	0.0020	0.0415	0.0205
Observations	180	180	180	180	180

Note: * p < 0.10 ** p < 0.05 *** p < 0.01. Currency-clustered standard errors in parentheses. Expected exchange rate changes are measured using Consensus Forecast. All regressions include a constant term.

Table C.4. The Fama Coefficient in EMs: Composite and Government Policy Risks (12-Months)

	Panel A. Fama Coefficient: $\hat{\beta}_{ij}$				
	Composite Risk	Unpacking Composite Risk		Decomposing Government Policy Risk	
		Government Policy Risk	Confidence Risk	Anti-Democratic Risk	Expropriation Risk
	(1)	(2)	(3)	(4)	(5)
Policy risk$_{i,j}$	-0.555^d	-0.952***	-0.111	-0.686***	-0.729**
	(0.356)	(0.329)	(0.197)	(0.258)	(0.290)
R^2	0.0086	0.0481	0.0009	0.0377	0.0335
	Panel B. Risk Premium: $b_{ij,RP}$				
Policy risk$_{i,j}$	0.555^d	0.952***	0.111	0.686***	0.729**
	(0.356)	(0.329)	(0.197)	(0.258)	(0.290)
R^2	0.0086	0.0481	0.0009	0.0377	0.0335
Observations	275	275	275	275	275

Note: ^{d}p<0.15 * p < 0.10 ** p < 0.05 *** p < 0.01. Currency-clustered standard errors in parentheses. All regressions include a constant term. Expected exchange rate changes are measured using Consensus Forecast.

Table C.5. The Fama Coefficient in EMs: Composite and Government Policy Risks (24-Months)

	Panel A. Fama Coefficient: $\hat{\beta}_{ij}$				
	Composite Risk	Unpacking Composite Risk		Decomposing Government Policy Risk	
		Government Policy Risk	Confidence Risk	Anti-Democratic Risk	Expropriation Risk
	(1)	(2)	(3)	(4)	(5)
Policy risk$_{i,j}$	-0.527**	-0.864***	-0.182	-0.669***	-0.612***
	(0.260)	(0.131)	(0.168)	(0.121)	(0.188)
R^2	0.0202	0.1009	0.0066	0.0902	0.0604
	Panel B. Risk Premium: $b_{ij,RP}$				
Policy risk$_{i,j}$	0.527**	0.864***	0.182	0.669***	0.612***
	(0.260)	(0.131)	(0.168)	(0.121)	(0.188)
R^2	0.0202	0.1009	0.0066	0.0902	0.0604
Observations	132	132	132	132	132

Note: * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$. Currency-clustered standard errors in parentheses. All regressions include a constant term. Expected exchange rate changes are measured using Consensus Forecast.

C.3.2. Bias on the Fama Coefficient and Policy Risk: A Decomposition Analysis

We now conduct a decomposition analysis to unpack the channels through which policy risk affects the risk premium and downwards bias the Fama coefficient. Recall that the Fama coefficient for country i in window j can be expressed as $plim\hat{\beta}_{ij} = 1 - b_{ij,RP} = 1 - \frac{var(\lambda^e_{ij})+cov(\Delta s^e_{ij},\lambda^e_{ij})}{var(IR_{ij})}$ (equation (15)).

Mathematically, one could evaluate how an increase in policy risk in window j in country i affects its Fama coefficient by taking derivatives of this expression with respect to risk. After some algebra, the change in the Fama coefficient would be

$$\frac{\partial\hat{\beta}_{ij}}{\partial \text{policy risk}_{ij}} = \underbrace{-\frac{1}{var(IR_{ij})}\frac{\partial var(\lambda^e_{ij})}{\partial \text{policy risk}_{ij}}}_{\text{UIP Premium Volatility}} \underbrace{-\frac{1}{var(IR_{ij})}\frac{\partial cov(\Delta s^e_{ij},\lambda^e_{ij})}{\partial \text{policy risk}_{ij}}}_{\text{Comovement ER \& UIP Premium}} + \underbrace{\frac{b_{ij,RP}}{var(IR_{ij})}\frac{\partial var(IR_{ij})}{\partial \text{policy risk}_{ij}}}_{\text{Interest Rate Volatility}}. \tag{17}$$

Equation (17) shows that the change in the Fama coefficient stems from three forces: (i) changes in the volatility of the UIP premium (first term), (ii) changes in the comovement between the expected exchange rate change and the UIP premium (second term), and (iii) changes in the volatility of the interest rate differential (third term). Equation (17) is a mathematical derivation for a particular country i at window j but, under the assumption that each component of the risk premium responds homogeneously across time and countries, we can estimate each of these three forces econometrically.[26] That is, we can regress $var(\lambda^e_{ij})$, $cov(\Delta s^e_{ij},\lambda^e_{ij})$ and $var(IR_{ij})$ on policy risk and obtain the *average* responses to policy risk across countries and time (i.e. $\frac{\Delta var(\lambda^e_{ij})}{\Delta \text{policy risk}_{ij}}$, $\frac{\Delta var(IR_{ij})}{\Delta \text{policy risk}_{ij}}$ and $\frac{\Delta cov(\Delta s^e_{ij},\lambda^e_{ij})}{\Delta \text{policy risk}_{ij}}$). Because these derivatives are weighted by the variance of the interest rate differential in each country i and window j and the last derivate is additionally weighted by the risk premium term $b_{ij,RP}$, we estimate them econometrically employing Weighted Least Squares.[27] More precisely, we estimate

[26] To understand this assumption, note that equation (17) captures the change in the β coefficient in a country i at time j upon an increase in policy risk in that period. Yet the econometrician is not interested in each individual response of each country at each moment of time, but on the *average* response across time and countries. To compute average responses, we can assume that each component of the risk premium in equation (17) responds homogeneously across time and countries, and employ these homogeneous responses to obtain the average response of the Fama coefficient to changes in policy risk. Hence, under this homogeneity assumption, the derivative – $\frac{\partial\beta_{ij}}{\partial \text{policy risk}_{ij}}$ – can be interpreted as the *average* response of the Fama coefficient.

[27] The WLS is a good econometric approximation of the derivatives in equation (17). More precisely, the derivatives in equation (17) refer to the response of each country i at time j and are weighted by variables at country i and time j level. So, these are individual responses for each country and time pair. Instead, the WLS weights each observation for each country and time to compute average responses. Put it differently, the WLS weights each observation to estimate individual responses, while the derivatives in equation (17) are the average responses weighted by country and time.

$$Y_{ij} = \gamma_4 + \gamma_5 \text{ policy risk}_{ij} + \varepsilon_{1ij}, \tag{18}$$

where $Y_{ij} = \{var(\lambda^e_{ij}), cov(\Delta s^e_{ij}, \lambda^e_{ij}), var(IR_{ij})\}$. The regressions for $var(\lambda^e_{ij})$ and $cov(\Delta s^e_{ij}, \lambda^e_{ij})$ are weighted by the variance of the interest rate differential in each country i window j, and that for $var(IR_{ij})$ is weighted by the ratio of the risk premium term and the variance of the interest rate differential in each country i window j.[28]

We assess the impact of the policy risk on the Fama coefficient using our composite risk variable. Panel A in Table C.6 presents the results and shows that the driver of the downward bias of the Fama coefficient is the increase in the volatility of the UIP premium. In particular, column 1 shows that the coefficient of the variance of the UIP premium is positive and highly statistically significant, while the other two coefficients – the covariance between exchange rate change and the UIP premium and the interest rate volatility– are close to zero. This result indicates that a one standard deviation in that increases in composite risk associates with a 0.49 percentage points decrease in the volatility of the UIP premium. We can then use the estimated coefficients to check how each of these three forces contribute to the bias of the Fama coefficient. As expected, the increase in the volatility of the UIP premium explains 87% of the bias of the Fama coefficient arising from changes in composite risk.[29]

We then evaluate how composite risk affects each of the component of the variance of the UIP premium. Recall that the UIP premium in country i in period j is given by $\lambda^e_{ij} = IR_{ij} - \Delta s^e_{ij}$ and, thus, its variance is equal to

$$var(\lambda^e_{ij}) = var(IR_{ij}) + var(\Delta s^e_{ij}) - 2cov(IR_{ij}, \Delta s^e_{ij}). \tag{19}$$

To assess the impact of composite risk on each term of equation (19), we regress each of these components on composite risk. Panel B in Table C.6 shows that composite risk associates with increases in both the volatility of the interest rate differential and the volatility of the exchange rate change, but the increase in the volatility of the interest rate differential is larger. As discussed above, the higher increase in the volatility of the interest rate differential suggests that a country's composite risk is priced in the interest rate differential.

[28] Alternatively, with time series long enough, one could estimate these regressions separately for each country, i.e. without imposing homogeneity across countries. That is, one could estimate regression (18) for each country and obtain individual γ_{4i}. Unfortunately, because our data spans only between 1996m11 and 2018m12, we do not have enough time series variation to estimate these coefficients consistently. As West (2012) shows, in models where the discount factor approaches one, the coefficient in the Fama regression could be inconsistent in small samples.

[29] Note that the sum of the estimated coefficients of equation (17) (0.878) and the coefficient reported in Table C.6 (0.584) are not exactly identical, due to the presence of non-linearities in this decomposition.

Table C.6. Decomposition of The Bias of Fama Coefficient in Emerging Markets

	Panel A: Decomposition of Bias of Fama Coefficient		
	UIP premium Volatility (1)	Comovement ER & UIP premium (2)	Interest Rate Volatility (3)
Composite risk$_{i,j}$	0.765***	0.115	0.002***
	(0.066)	(0.176)	(0.001)
Contribution to $\frac{\partial \beta_{ij}}{\partial \text{composite risk}_{ij}}$	87	13	0
($\frac{\partial \beta_{ij}}{\partial \text{composite risk}_{ij}}$ normalized to 100)			
R^2	0.8213	0.0433	0.0072
	Panel B: Components of the Volatility of the UIP Premium		
	$var(IR_{ij})$ (1)	$var(\Delta s^e_{ij})$ (2)	$cov(IR_{ij}, \Delta s^e_{ij})$ (3)
Composite risk$_{i,j}$	0.241*	0.153***	-0.062
	(0.138)	(0.032)	(0.053)
R^2	0.1494	0.1953	0.0626
Observations	180	180	180

Note: * p < 0.10 ** p < 0.05 *** p < 0.01. Currency-clustered standard errors in parentheses. All regressions include a constant term. The UIP premium and expected exchange rate changes are measured using Consensus Forecast.

D. CIP and Currency Basis

Du and Schreger (2021) use swaps and interbank rates instead of deposit rates and forward rates. So we first plot their CIP deviations against ours (that use forward rates as in equation (2))) in their sample of 15 EMs and 11 advanced countries.[30] Figure D.1 shows that both series are very highly correlated. It is interesting to note that CIP deviations in EMs are 10 times larger than the ones in advanced countries.

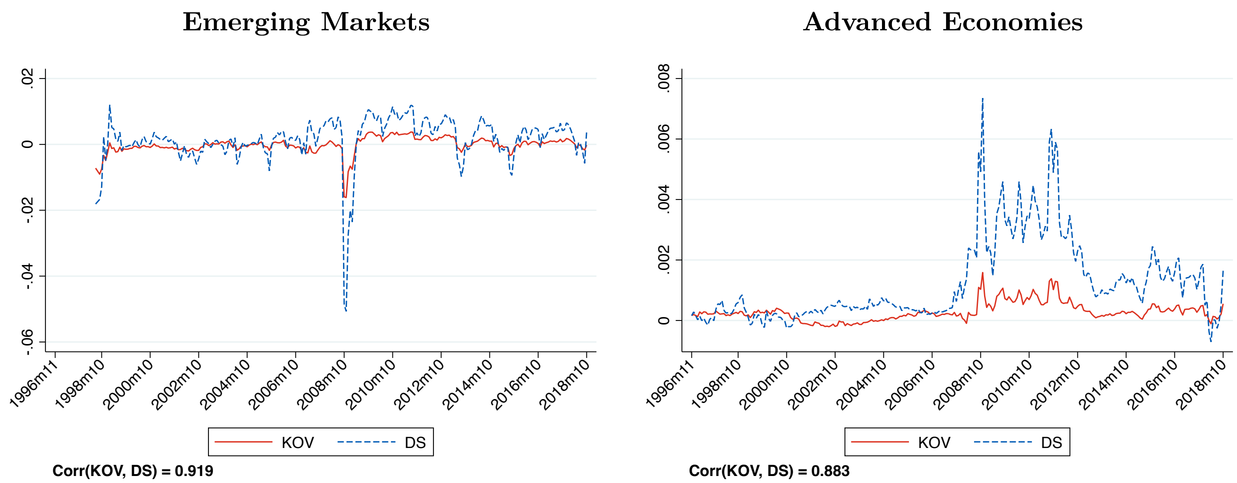


Figure D.1. CIP Comparison: Kalemli-Ozcan and Varela (KOV) vs. Du and Schreger (DS)

Note: This figure shows CIP comparison in a sample that restrict observations to be the same at date-country pairs in DS and our data. Both series use money market interbank rates.

In our sample:

[30]We would like to thank Wenxin Du and Jesse Schreger for sharing their CIP deviations data.

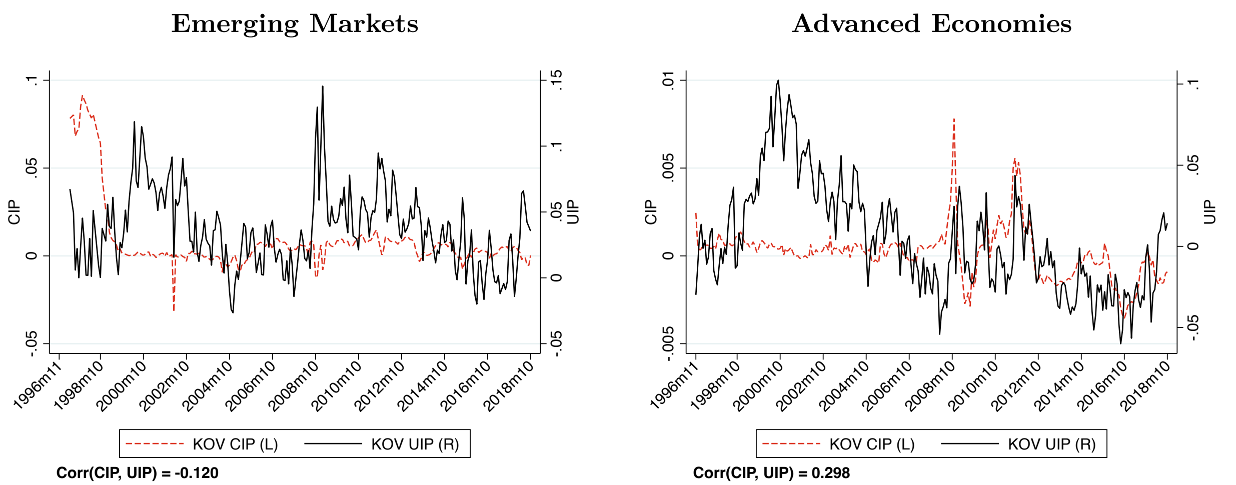


Figure D.2. UIP and CIP (12 Months Horizon)

Note: This figure shows CIP and UIP deviations using our data. We use interbank rates to construct CIP, while we use deposit rates to construct UIP.

E. Local Projections

E.1. Comparison with Advanced Economies

We now compare the responses of expected exchange rate changes and UIP Premium to interest rate differential shocks for AEs. As Figure E.1 shows, interest rate differential shocks do not lead to increases in the UIP premium in these economies, as the expected depreciation increases by the same amount of the interest rate differential shock.

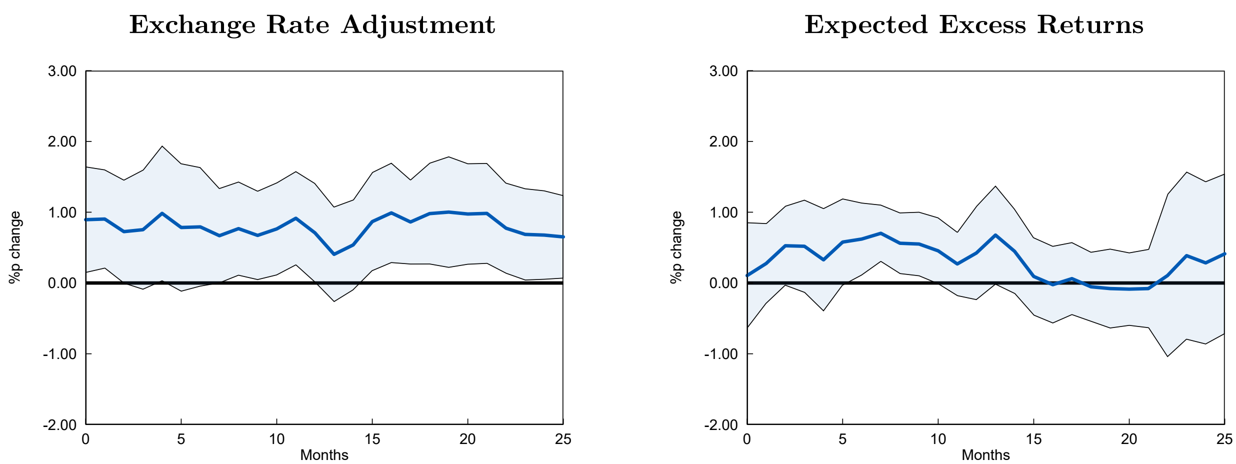


Figure E.1. Advanced Countries: Response of ER and UIP Premium to an IR Shock (OLS)

Note: This figure shows the response of expected exchange rate changes and the UIP premium to an interest rate differential shock at 12 month horizon for 12 AEs over 1996m11:2018m12. Exchange rate adjustment and expected returns are measured using expected exchange rate changes from Consensus Forecast. The shaded area shows 95 percent confidence intervals, calculated using Driskoll-Kraay standard errors with a bandwidth lag $h+1$ for horizon h.

E.2. Instrumenting Interest Rate Differential shocks with PRP Using Realized Excess Returns

The overshooting literature works with realized excess returns and shows that they turn from positive to negative for advanced countries (predictability reversal puzzle) and sum of them is negative (Engel puzzle). As we show below in Figure E.2, these puzzles are not present in EMs with realized exchange rates, similar to their non-existence with expected exchange rates as we show in the main text. Realized excess returns are always positive in EMs regardless of the econometric specification with or without lags as shown in Panels (i) and (ii).[31] Again this is due to actual depreciation that is never enough to offset the IR shock.

(i) $\lambda_{t+k} = \alpha + \beta_k(i_t - i_t^{US}) + \epsilon_{t+k}$ **(ii)** $\lambda_{t+k} = \alpha + \beta_k(i_t - i_t^{US}) + \delta_k(i_{t-1} - i_{t-1}^{US}) + \gamma_k\lambda_{t-1} + \epsilon_{t+k}$

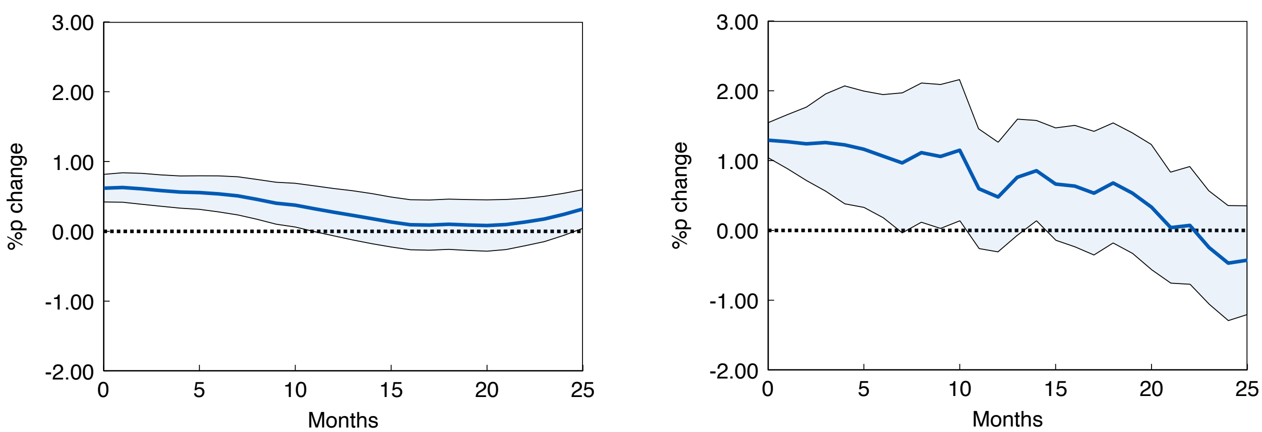
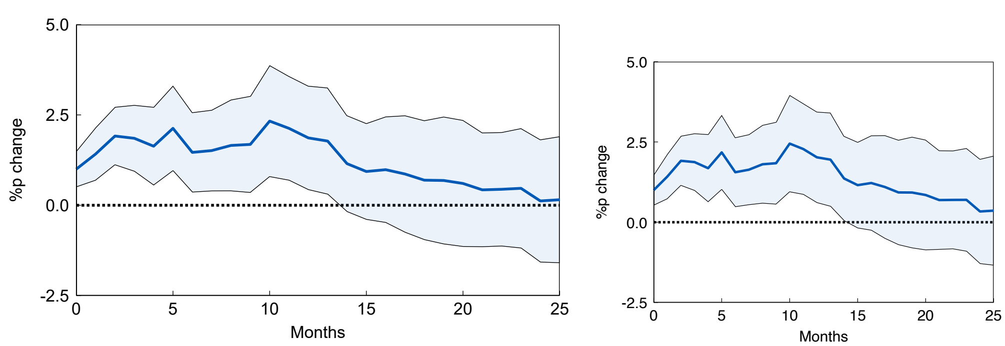


Figure E.2. Emerging Markets: Ex-Post Excess Return Responses to an IR Shock

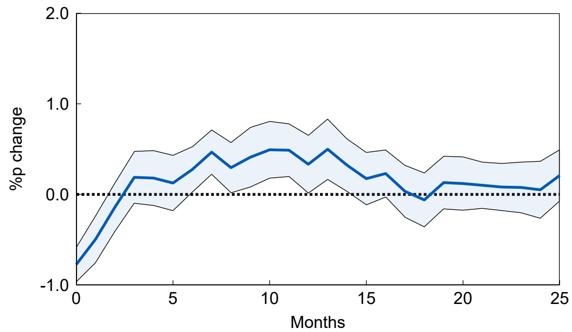
Note: This figure shows the response of ex-post excess returns to interest rate differential shocks at 12 month horizon for 21 EMs over 1996m11:2018m12. The shaded area shows 95 percent confidence intervals, calculated using Driskoll-Kraay standard errors with a bandwidth lag $h+1$ for horizon h.

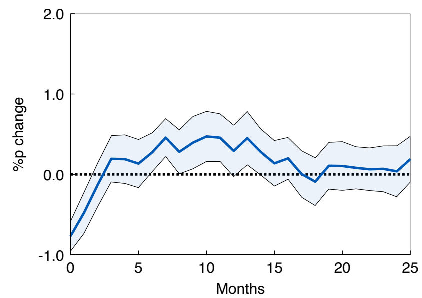
First Stage: IR Response to PRP Shocks (VIX control on the left)



[31]There are papers both using lags and not in the literature.

Exchange Rate Adjustment: Response of ER and UIP Premium to an IR Shock (VIX control on the left)





Expected Excess Returns: Response of ER and UIP Premium to an IR Shock (VIX control on the left)