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Abstract

This paper provides a new perspective on the expectations building mechanism in foreign exchange markets. We analyze the role of expectations regarding macroeconomic fundamentals for expected exchange rate changes. In doing so, we assess real-time survey data for 29 economies from 2002 to 2023 and consider expectations regarding GDP growth, inflation, interest rates, and current accounts. Our empirical findings show that fundamentals expectations are more important over longer horizons compared to shorter horizons. We find that an expected increase in GDP growth relative to the US leads to an expected appreciation of the domestic currency while higher relative inflation expectations lead to an expected depreciation, a finding consistent with purchasing power parity. Our results also indicate that the expectation building process differs systematically across pessimistic and optimistic forecasts with the former paying more attention to fundamentals expectations. Finally, we also observe that fundamentals expectations have some explanatory power for forecast errors, especially for longer horizons.

Keywords: Exchange rates, Expectations, Forecast errors, Fundamentals, Survey data
JEL: F31, F37, G17

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1 Introduction

Understanding and forecasting exchange rates remains one of the central areas of research in international economics. An enormous amount of research has focused on the exchange rate disconnect puzzle, i.e., the loose link between exchange rates and fundamentals. The latter is often found to be weak and time-varying, resulting in substantial model uncertainty (Rossi, 2013; Kouwenberg *et al.*, 2017). One potential piece of the jigsaw corresponds to the expectation building mechanism on currency markets, which is a cornerstone of several theoretical models that emphasize the role of the exchange rate as an asset price.

So far, surprisingly little is known about drivers of exchange rate expectations which have mostly been assessed from other perspectives. One strand of the literature has focused on the performance of professional exchange rate forecasts as a proxy for expectations. Early work by Blake *et al.* (1986), Dominguez (1986), and Chinn and Frankel (1994) shows that surveys are unable to provide adequate point forecasts at an aggregated level.[1] At the micro level, there is plenty of evidence that expectations are heterogeneous across market participants (Frankel and Froot, 1986, 1987) often distinguishing between fundamentalists, who rely on a fundamental model when building expectations, and chartists, who extrapolate past exchange rate behavior for forecasting.[2] There is also a consensus that some professionals pay attention to macroeconomic

[1]Theoretical explanations for the weak statistical performance of professional forecasts are provided by Lewis (1989), Engel (1996), MacDonald (2000), and Jongen *et al.* (2008), among others. Beckmann and Czudaj (2017) illustrate a potential contradiction between statistical and economic measures by evaluating a large number of currencies and focusing on the period after the global financial crises. Their results suggest that survey forecasts can still contain useful information in the case of high mean squared forecast errors. Kwas *et al.* (2024) also report sizeable excess returns based on survey-based trading strategies.

[2]A simple benchmark model for exchange rate expectations is, for instance, provided by Goldbaum and Zwinkels (2014) and incorporates both groups of market participants. Various studies have adopted such models for analyzing different characteristics of expectation building among exchange rate forecasters (de Jong *et al.*, 2010; ter Ellen *et al.*, 2013). One group potentially dominates the resulting exchange rate dynamics at the aggregated level, with fundamentalists, for example, driving

fundamentals. Recent work by Dick *et al.* (2015) suggests that a proper understanding of fundamentals improves exchange rate forecasts. The scapegoat approach introduced by Bacchetta and Van Wincoop (2004) also derives aggregated effects from heterogeneous expectations at the micro level. It is based on the assumption that investors are not completely informed but tend to blame a certain macro indicator for unexpected exchange rate changes. In the same spirit, imperfect knowledge models emphasize that market participants have limited knowledge of fundamental determinants in financial markets (Frydman and Goldberg, 2007; Frydman and Stillwagon, 2018). Further evidence based on survey data has confirmed that forecasters frequently switch between different models (Goldbaum and Zwinkels, 2014), a pattern which is in line with the observation that the relationship between exchange rates and macroeconomic fundamentals is strongly time-varying (Sarno and Valente, 2009; Beckmann *et al.*, 2011). Despite this rich literature, the question of whether exchange rate forecasters explicitly account for expectations regarding fundamentals has not been answered yet.

This paper contributes to the literature by assessing the key question of whether economic forecasters have a coherent macroeconomic model relying on fundamentals expectations behind their exchange rate forecasts. Despite the fact that many theoretical models correspond to the link between expected exchange rates and expected fundamentals (Bacchetta and Van Wincoop, 2004; Engel *et al.*, 2007), most empirical studies focus on the link between observed exchange rates and observed fundamentals (Sarno, 2005), implicitly assuming that exchange rate expectations provide adequate estimates of future realized exchange rates. However, evaluating the expectation linkage between exchange rates and fundamentals is an essential step towards understanding the transmission channels between changes in fundamentals such as the stance of monetary policy and exchange rate fluctuations. A direct advantage of using expectations

exchange rate dynamics in times of uncertainty.

is that there is no need to ensure that information on macroeconomic fundamentals has actually been available in real time at the time of the survey. Our analysis is based on a setting where expectations regarding exchange rates and fundamentals are surveyed at the same point in time.

Our empirical analysis relies on a novel data set provided by FX4casts, which includes exchange rate expectations over different horizons as well as forecasts related to GDP growth, inflation, interest rates, and the current account to GDP ratio. Our monthly data set runs from 2002 to 2023 and includes 29 countries/currencies and enables us to provide the first study that compares drivers of exchange rate expectations for Advanced and Emerging Market Economies. While previous research by Beckmann and Czudaj (2017) has focused on drivers of exchange rate expectations after the global financial crisis at a country level, relying on observed fundamentals, we are interested in common patterns in the cross-section by focusing on expectations regarding macro fundamentals instead of actual observations. The first question we address is whether expected exchange rate changes are driven by fundamentals expectations. This includes the question of whether such effects differ between optimistic and pessimistic forecasts with regard to the domestic currency against the US dollar. In addition, we evaluate whether the importance of fundamentals expectations differs over time.[3]

When analyzing expectation building mechanisms, recent research has emphasized the importance of information rigidity as an explanation for forecast errors (Coibion and Gorodnichenko, 2015). Even if participants use all available information, they can be unable to provide adequate forecasts due to imperfect information. The existence

[3]There is also some evidence that points to time-variation in expectations. At the micro level, studies dealing with decision making among forecasters suggest that professionals rely on different models at different points in time with fundamentals deemed more important in times of uncertainty (Jongen *et al.*, 2012). Changing forecasting strategies can also be derived from imperfect knowledge models (Frydman and Goldberg, 2007), learning models, or approaches that emphasize the importance of heterogeneous agents (de Grauwe and Grimaldi, 2006).

of such rigidities has been established for various macroeconomic variables (Coibion and Gorodnichenko, 2012, 2015; Beckmann and Reitz, 2020; Czudaj, 2022). In the context of exchange rates, expectation errors are well established and do not contradict rationality given the unpredictability of financial markets (Bacchetta and van Wincoop, 2006). Against this background, it seems important to analyze the drivers of both expectations and expectation errors. Therefore, we also study the potential effects of expected fundamentals on expected excess returns and forecast errors.

The main findings of the present study are as follows. First, we find that expectations regarding macro fundamentals are able to explain expected exchange rate changes. The corresponding effects are much stronger over a 12-month horizon compared to 3 months. We show that an expected increase in GDP growth relative to the US leads to an expected appreciation of the domestic currency while higher relative inflation expectations result in an expected depreciation, a finding consistent with purchasing power parity. We also find that more pessimistic forecasters with regard to the domestic currency pay more attention to expectations regarding macro fundamentals compared to optimistic forecasters. Finally, we find that fundamentals expectations also have some explanatory power for forecast errors, especially for longer horizons.

The remainder of this paper is organized as follows. The next section summarizes conventional fundamental exchange rate models to motivate our empirical approach. Section 3 introduces our data set and in Section 4 we report and discuss our empirical findings. In doing so, we focus on expected exchange rate changes, optimistic and pessimistic forecasts, expected excess returns, and forecast errors. Extensions reported in Section 5 also show that our results align with the existing literature and display evidence for the changing effects of expected fundamentals, a finding in line with the scapegoat approach mentioned above. The corresponding findings also demonstrate the robustness of our results. Section 6 concludes.

2 Theoretical Exchange Rate Models

To motivate the selection of expected macroeconomic fundamentals potentially affecting expected exchange rate behavior, this section briefly recapitulates conventional models for explaining the nominal exchange rate. As a result, our empirical framework will include expectations regarding fundamentals such as short-term interest rates, GDP growth, inflation, and the current account relative to GDP.

The next subsection (Section 2.1) begins with a general representation of the exchange rate based on the present value approach which links the exchange rate to expected future fundamentals. The models that we present afterwards propose specific macroeconomic fundamentals as drivers of the realized exchange rate. The early literature following Frankel and Froot (1987) argues that fundamentalists believe that the exchange rate mean reverts to a fundamental value based on the following specification

$$E_t(\Delta s_{t+h}) = F_t - s_t, \tag{1}$$

where $E_t(.)$ represents the expectation operator based on information available in t, s_t denotes the current spot rate, and F_t gives a fundamental value of the exchange rate which is calculate based on one or several specific fundamentals f_t.

Purchasing power parity introduced in Section 2.3 and monetary fundamentals discussed in Section 2.4 provide fundamentals for calculating the level of F_t while the Taylor rule outlined in Section 2.5 gives a direct estimate for the exchange rate change instead of a fundamental exchange rate level. Moreover, uncovered interest rate parity discussed in Section 2.2 links the expected exchange rate to the interest rate differential.

If market participants take into account macroeconomic fundamentals, these specific models link the expected exchange rate to current macroeconomic fundamentals. Based on the idea of forward-looking agents and the present value approach of Engel and West (2004, 2005), we argue that expectations regarding the corresponding fundamentals should also affect exchange rate expectations. Linking expected exchange rate changes to expectations regarding fundamentals based on survey data enables us to directly assess the question whether forecaster act in line with theory.

2.1 Present Value Approach and General Representation

Taking into account the character of the exchange rate as a forward-looking asset price leads to the general proposition that the exchange rate represents a discounted value of expectations regarding future fundamentals (Engel and West, 2004, 2005). The current exchange rate can then be expressed as follows:

$$s_t = (1-b)\sum_{j=0}^{\infty} b^j E_t(f_{t+j} + u_{t+j}), \tag{2}$$

where b is a discount factor with $0 < b < 1$ and $E_t(.)$ again represents the expectation operator based on information available in t. This general representation shows that the exchange rate s_t, defined as the natural logarithm of the home currency price of the US dollar, is driven by expectations regarding systematic and unsystematic components. The systematic component f_{t+j} reflects observable macroeconomic fundamentals, such as interest rates or inflation, that we include in our empirical investigation. The unsystematic components u_{t+j} include factors unobservable to the econometrician. If true fundamentals are measured with error, u_{t+j} reflects the measurement error, otherwise it denominates unobserved shocks (Engel and West, 2005). A higher value of the discount factor b reflects a stronger relevance of expected future fundamentals compared to fundamentals realized in the current period.

To link these considerations to exchange rate expectations, we can also decompose the actual exchange rate change $s_{t+j} - s_t$ into an unexpected and an expected component:

$$s_{t+j} - s_t = [s_{t+j} - E_t(s_{t+j})] + [E_t(s_{t+j}) - s_t]. \tag{3}$$

The first bracket term reflects the forecast error while the second one gives the expected exchange rate change. Market participants who consider the exchange rate to be a forward-looking asset price will therefore take their expectations regarding f_{t+j} into account when forming their expectations about the future exchange rate $E_t(s_{t+j})$. However, forecasters who consider the exchange rate to be a random walk will expect $E_t(s_{t+j}) = s_t$, making an analysis of exchange rate expectations redundant.

2.2 Uncovered Interest Rate Parity and Excess Returns

According to the uncovered interest rate parity (UIP), the difference in interest rates between two countries should equal the expected change in the exchange rate between the countries' currencies (Engel, 2016):

$$E_t(\Delta s_{t+h}) = ir_t - ir_t^*, \tag{4}$$

where $\Delta s_{t+h} \equiv s_{t+h} - s_t$. $E_t(\Delta s_{t+h})$ gives the expected change (at time t for $t+h$) of the log exchange rate, again denominated as domestic currency per US dollar. ir_t (ir_t^*) is the domestic (US) h-period nominal interest rate. The following forecasting equation arises under the assumption that $E_t(\Delta s_{t+h})$ equals Δs_{t+h}:

$$\Delta s_{t+h} = ir_t - ir_t^*. \tag{5}$$

This specification which links the realized exchange rate to the current interest rate differential reflects the most common empirical specification when it comes to tests of UIP. It implies that a higher interest rate of the domestic economy compared to the US (i.e., $ir_t > ir_t^*$) should increase the exchange rate, which means that the domestic currency should depreciate relative to the US dollar. However, there is plenty of evidence that countries with higher interest rates also appreciate rather than depreciate (Sarno, 2005; Engel, 2016), a finding which is also referred to as the forward premium puzzle (since the interest rate differential is equal to the difference between the forward and the spot rate due to the covered interest rate parity).

This suggests that forecasters can believe either in an appreciation or a depreciation of the domestic currency in case of higher interest rates compared to the US. It is also important to keep in mind that the current interest rate differential should already be a determinant of expected exchange rate changes. However, we use expected interest rates to account for expectation effects regarding the future stance of monetary policy, which is also necessary given that we focus on expectations over different horizons.

Unsurprisingly, early empirical tests rejected UIP based on linear regressions among the lines of Eq. (5), identifying excess returns and finding that countries with higher interest rates often appreciate instead of depreciate (Engel, 2016). Early explanations for this so-called forward premium puzzle include speculative bubbles and the peso problem. Excess returns are also often considered to stem from risk premia and are often assumed in early studies to be equal to the residual of the equation above (Froot and Thaler, 1990). However, the equivalence of excess returns and risk premia is based on the unrealistic assumption that rational expectations hold, i.e., $E_t(\Delta s_{t+h}) = \Delta s_{t+h}$. Blake *et al.* (1986), Dominguez (1986), Chinn and Frankel (1994), and Beckmann and Czudaj (2017) all reject this assumption based on survey data.

The analysis can therefore be further extended if we distinguish between expected and unexpected excess returns resulting from UIP regressions. The overall excess return is given by the residual, that is, the difference between the actual exchange rate change and the interest rate differential:

$$\text{Realized Excess Return}_t = \Delta s_{t+h} - (ir_t - ir_t^*) \tag{6}$$

while the expected excess return is obtained by using the expected exchange rate change instead of the actual change:

$$\text{Expected Excess Return}_t = E_t(\Delta s_{t+h}) - (ir_t - ir_t^*). \tag{7}$$

As a result, the unexpected excess return simply reflects the forecast error among professionals. Our empirical strategy will therefore also address the question of whether the impact of expected fundamentals differs between expected and unexpected excess returns (i.e., forecast errors).

2.3 Purchasing Power Parity

According to the purchasing power parity (PPP), the price differential between two countries explains the fundamental nominal exchange rate:

$$F_t^{PPP} = p_t - p_t^*, \tag{8}$$

where p_t (p_t^*) gives the domestic (US) price level. This implies that an increase (decrease) in the domestic (US) price level results in a depreciation of the domestic currency to ensure that the real exchange rate is constant and that real goods prices are equal across countries. Against the background of the existing evidence and the higher fluctuations of nominal exchange rates, PPP should be more important for long-run expectations (Sarno, 2005). Deviations of the current exchange rate from F_t^{PPP} reflect a predictor for the nominal exchange rate change Δs_{t+h} based on the idea that PPP deviations are corrected via nominal exchange rate adjustments. Thus, if PPP holds, we also expect that $\Delta s_{t+h} = F_t^{PPP} - s_t$. Assuming that forward-looking market participants take PPP into account, the following equation arises:

$$E_t(\Delta s_{t+h}) = E_t(F_{t+h}^{PPP}) - s_t. \tag{9}$$

2.4 Monetary Fundamentals

The simplest version of the monetary exchange rate approach postulates that the exchange rate between two countries is driven by the relative development of money supply and industrial production (Dornbusch, 1976; Bilson, 1978). Combining both equilibrium conditions with PPP and UIP leads to the finding that a relative increase in money supply depreciates the domestic currency, while a relative increase in industrial production appreciates the domestic currency. This is reflected in the following equation:

$$F_t^{MON} = (m_t - m_t^*) - (ip_t - ip_t^*), \tag{10}$$

where $m_t - m_t^*$ and $ip_t - ip_t^*$ refer to differentials regarding (log) money supply and (log) industrial production between the domestic and the US economy, respectively.[4] Exchange rate changes are then determined as $\Delta s_{t+h} = F_t^{MON} - s_t$. Similar to PPP, the following equation arises if forward-looking market participants take monetary fundamentals into account

$$E_t(\Delta s_{t+h}) = E_t(F_{t+h}^{MON}) - s_t. \tag{11}$$

Several extensions of the monetary model are discussed in the literature. Hooper and Morton (1982) suggest the inclusion of the current account as an useful determinant of the exchange rate and argue that real exchange rate changes (PPP deviations) are related to movements in the current account through changes in expectations about the long-run equilibrium real exchange rate and the risk premium. The idea is that an increase in the accumulated current account surplus appreciates the equilibrium real exchange rate, which also results in an expected appreciation of the nominal exchange

[4] It should be noted that our empirical model does not include a measure of money supply due to the lack of expectation data regarding money supply. As a measure of expectations related to the stance of monetary policy we rely on interest rate expectations. Expectations regarding industrial production are proxied by GDP growth expectations.

rate. Therefore, we also consider expectations regarding the current account in our empirical model.

2.5 Taylor Rule Fundamentals

The Taylor rule states that a central bank adjusts the short-run nominal interest rate in order to respond to inflation (π_t) and the output gap ($\hat{y}_t$). The idea of this approach can be exploited to two central banks, which both follow a Taylor rule model and respond to inflation and the output gap. In such a case, the interest rate differential that drives the exchange rate as outlined in Section 2.2 can be explained by the inflation and output gap differentials between both countries:[5]

$$\Delta s_{t+h} = w_\pi(\pi_t - \pi_t^*) + w_{\hat{y}}(\hat{y}_t - \hat{y}_t^*). \tag{12}$$

Established ad-hoc weights in the exchange rate literature based on previous empirical findings for inflation and output gap are, for example, $w_\pi = 1.5$ and $w_{\hat{y}} = 0.1$ (Della Corte *et al.*, 2009), respectively.

Assuming forward-looking agents which take Taylor rule fundamentals into account results in the following specification:

$$E_t(\Delta s_{t+h}) = w_\pi E_t(\pi_{t+h} - \pi_{t+h}^*) + w_{\hat{y}} E_t(\hat{y}_{t+h} - \hat{y}_{t+h}^*). \tag{13}$$

It is worth mentioning that we do not harbor any expectations for the output gap and therefore use GDP growth expectations instead. The Taylor rule also provides another motivation for using interest rate and inflation expectations, which are directly linked to expectations about monetary policy. The following section provides details on our data and on our empirical approach.

[5]See also Molodtsova *et al.* (2008), Molodtsova and Papell (2013), and Ince *et al.* (2016) for a discussion on the predictability of the Taylor rule for exchange rates.

3 Data and Preliminary Analysis

3.1 Data

Survey data on exchange rate expectations over three different horizons (3-, 6-, and 12-month) is obtained from FX4casts, formerly known as The Financial Times Currency Forecaster (see `https://fx4casts.com/`), on a monthly basis. The consensus is based on individual responses of 48 professionals, mostly banks,[6] and follows standard procedures in the literature to aggregate exchange rate expectations (Jongen *et al.*, 2008). Spot rates s_t and their expectations are measured in units of domestic currency per one unit of the US dollar (i.e., a decrease corresponds to an appreciation of the domestic currency) and are provided for 29 currencies according to the FX4casts classification. Expectations are proxied by the individual forecasts of 48 professionals, which are aggregated to a single composite forecast for each currency by taking the geometric mean across forecasters.[7]

Our overall empirical approach can be seen as a "Kitchen Sink" regression. In the following, we adopt expectations regarding all macroeconomic fundamentals based on the discussed theoretical models, for which data is available. This includes expectations regarding GDP growth, inflation, short-term interest rates, and the current account to GDP ratio. In line with the theoretical models, for macro fundamentals we rely on

[6] The contributors include: Allied Irish Bank, ANZ Bank, Bank of America/Merrill Lynch, Bank of New York Mellon, Barclays Capital, Bayerische Landesbank, BNP Paribas, Canadian Imperial Bank of Commerce, Credit-Agricola, Citigroup, Commerzbank, Credit Suisse - First Boston, Danske Bank, Deka Bank, Deutsche Bank, DnBNOR, The Economist - Intelligence Unit, Goldman Sachs, Handelsbanken, HSBC, IHS Global Insight, ING Bank, Intesa Sanpaolo, JP Morgan Chase, Julius Baer, Lloyds TSB, Macquarie Capital Securities, Moody's Economy.com, Morgan Stanley, National Australia Bank, Nomura, Nordea, Rabobank, Royal Bank of Canada, Royal Bank of Scotland, Scotiabank, SEB, Societe Generale, Standard Chartered, Suntrust, Swedbank, Bank of Tokyo-Mitsubishi UFJ, Toronto Dominion, UBS Warburg, UniCredit, Vontobel, Wachovia, and Westpac.

[7] Another widely used database for exchange rate expectations is published by Consensus Economics. However, their data also does not provide individual forecasts throughout the sample for all currencies and the monthly data coverage in terms of expected exchange rates and expected fundamentals is less comprehensive.

expectation differentials relative to the US economy as exchange rate expectations are also measured in units of domestic currency per one unit of the US dollar. Our empirical model can therefore also be seen as an empirical test for the belief of professional forecasters in these models. We simultaneously include all variables in the model to also control for effects potentially stemming from other models.

For our empirical analysis we use different kinds of endogenous variables to examine the research questions outlined in the Introduction. First, we compute the expected percentage exchange rate change as the relative difference between the expected exchange rate defined as the mean forecast across forecasters $\overline{E}_t(s_{i,t+h})$ and its current spot rate for horizon h with $h = 3, 6, 12$:

$$\%\Delta \mathrm{FX}^h_{i,t} = 100 \frac{\overline{E}_t(s_{i,t+h}) - s_{i,t}}{s_{i,t}}, \tag{14}$$

where $i = 1, \ldots, 29$ stands for the corresponding currency as the cross-section unit and $s_{i,t}$ is the spot rate at the time t the expectations are made. The entire data sample covers a time period running from 2002M01 to 2023M02 and 29 countries/currencies including Argentina, Australia, Brazil, Canada, Chile, China, Colombia, the Czech Republic, Denmark, the Euro Area, Hungary, India, Indonesia, Japan, Korea, Mexico, New Zealand, Norway, Philippines, Poland, Russia, Singapore, South Africa, Sweden, Switzerland, Taiwan, Thailand, Turkey, and the UK.[8] Therefore, our (nearly) balanced panel includes 7353 observations ($n = 29$ and $T = 254$).[9] Second, we also use the 2.5% and the 97.5% quantiles of the forecasts in the consensus as optimistic and pessimistic forecasts with regard to the domestic currency in order to study differences across the distribution of forecasts. In this case the two quantiles replace mean forecasts $\overline{E}_t(s_{i,t+h})$

[8]We have excluded Venezuela from our analysis as it constitutes a clear outlier.

[9]Solely, for the Philippine Peso the data starts in 2003M02. Therefore, 13 observations are missing to a fully balanced panel.

in Eq. (14).[10] Third, we compute expected excess returns:

$$\%\mathrm{ER}_{i,t}^{h} = 100\frac{\overline{E}_t(s_{i,t+h}) - s_{i,t}}{s_{i,t}} - (ir_{i,t} - ir_{US,t}), \tag{15}$$

where $ir_{i,t} - ir_{US,t}$ stands for the realized interest rate differential of the domestic economy compared to the US at the time t expectations are made. Finally, we compute relative forecast percentage errors as

$$\%\mathrm{FE}_{i,t}^{h} = 100\frac{s_{i,t+h} - \overline{E}_t(s_{i,t+h})}{s_{i,t+h}}, \tag{16}$$

where $s_{i,t+h}$ in this case represents the actual end-of-month exchange rate that has been forecasted by the professionals h-periods ago. In this case the sample size is adjusted for the forecast horizon h and therefore T is reduced by $h = 3, 6, 12$ months.

As explanatory variables, we rely on survey data also provided by FX4casts for expectations regarding short-term (i.e., 3-month) interest rates, which are again available over 3-, 6-, and 12-month horizons, GDP growth, inflation, and the current account relative to GDP. The forecasts on GDP growth, inflation, and the current account provided by FX4casts are fixed event forecasts; that is, expectations are provided for the current and the next year at each point in time. This implies that disagreement about the current year naturally decreases over time, meaning that the uncertainty about this year's GDP growth, inflation, or current account is, for example, much lower in November than in January. We therefore adopt the approach suggested by Patton and Timmermann (2011), which has also been applied by Dovern *et al.* (2012) to transform fixed event into fixed horizon forecasts via weighted averaging.[11] The intuitive idea is to use the weighted average of fixed event forecasts for the current and the next year with the weight of the former (latter) linearly decreasing (increasing) as time evolves

[10] For this setting, the sample is slightly reduced as data for the Chinese Renminbi starts in 2004M11.

[11] See Knüppel and Vladu (2016) for an alternative way of transforming fixed event into fixed horizon forecasts by choosing a different weighting w.

based on the following formula:

$$\hat{g}_{t,t-12} = w\hat{g}_{1,0} + (1-w)\hat{g}_{2,1}, \tag{17}$$

where $\hat{g}_{t,t-12}$ denotes the approximated fixed horizon forecast while $\hat{g}_{1,0}$ and $\hat{g}_{2,1}$ give the fixed event forecasts for the current and the next year and w represents the ad-hoc weight $(24-t)/12$ for $t = 12, 13, \ldots, 23$. This approach has been applied to compute fixed horizon forecasts for GDP growth, inflation, and the current account.

3.2 Preliminary Analysis

Table 1 reports conventional descriptive statistics which are computed for each variable pooled across countries for the total panel and two sub-panels including either only Advanced Economies or Emerging Market Economies following the latest definitions by the IMF.[12] Unsurprisingly, expected exchange rate changes and their variations according to the standard deviation (SD) increase with the forecast horizon h. In addition, expectations for Emerging Market Economies display much higher variation compared to Advanced Economies. When considering expected exchange rate changes, it is important to keep in mind that professionals often take the random walk behavior of exchange rates into account and only expect minor changes compared to the current spot rate over shorter horizons. Therefore, 12-month expectations display higher variation for essentially all currencies. See also Tables A.1 and A.2 in the Appendix for a forecast evaluation of survey mean forecasts for each individual currency, which are provided in absolute terms (Table A.1) and also relative to the random walk benchmark (Table A.2). The results show that forecast errors unsurprisingly increase by increasing the forecast horizon (see Table A.1) but survey forecasts tend to outperform the random walk benchmark for higher compared to lower horizons (see Table A.2).

[12] Australia, Canada, the Czech Republic, Denmark, the Euro Area, Japan, Korea, New Zealand, Norway, Singapore, Sweden, Switzerland, Taiwan, and the UK are classified as Advanced Economies in our panel. All remaining countries are classified as Emerging Market Economies.

*** Insert Table 1 about here ***

In a preliminary step, we have conducted several panel unit root tests to ensure that our data set includes stationary time series and our regression estimates are not spurious. As can be seen in Table 2, in nearly all cases the null of a unit root is rejected.[13] To ensure that these results are not driven by cross-sectional dependence often existent in macroeconomic data, we have also applied the Demetrescu *et al.* (2006) test, which accounts for cross-sectional dependence. This test rejects the unit root null for all variables at least at the 10% level (see the last column in Table 2).

*** Insert Table 2 about here ***

Table 3 shows that our regressors (pooled across countries) do not exhibit a strong correlation. Table 3 also provides first insights into the behavior of professionals by displaying correlation coefficients for the whole sample as well as separately for Advanced and Emerging Market Economies. The findings indicate some differences between Advanced and Emerging Market Economies. For example, interest rate and GDP growth expectations display low but positive correlations for Advanced Economies yet turn out to be negative for Emerging Market Economies. The latter might demonstrate the contrary demand effect of higher interest rates or flight-to-safety away from emerging markets while the former is in line with a Taylor rule reaction function of monetary policy with expectations of lower interest rates in case of a recession.

[13] Solely the Levin *et al.* (2002) test casts some doubt about the stationarity of interest rate expectations.

*** Insert Table 3 about here ***

4 Empirical Results

Our empirical analysis is based on estimating the following regression:

$$\%\Delta \mathrm{FX}^h_{i,t} = \beta_1 \mathrm{IR}^h_{i,t} + \beta_2 \mathrm{GDP}_{i,t} + \beta_3 \mathrm{Inflation}_{i,t} + \beta_4 \mathrm{CA}_{i,t} + u_{i,t}, \tag{18}$$

where $\%\Delta \mathrm{FX}^h_{i,t}$ represents the expected percentage exchange rate change at t for horizon $t+h$ with $h = 3, 6, 12$ as defined in Eq. (14),[14] $\mathrm{IR}^h_{i,t}$ gives the expected 3-month interest rate at t for horizon $t+h$ with $h = 3, 6, 12$ relative to the US, $\mathrm{GDP}_{i,t}$ stands for expected GDP growth relative to the US, $\mathrm{Inflation}_{i,t}$ gives the expected inflation rate relative to the US, and $\mathrm{CA}_{i,t}$ represents the expected current account to GDP ratio relative to the US. The term 'relative to the US' refers to the difference of expectations between the domestic economy and the US in line with traditional exchange rate models presented in Section 2 and is computed as follows in case of GDP growth expectations

$$\mathrm{GDP}_{i,t} = \overline{E}_t(y_{i,t+h}) - \overline{E}_t(y_{US,t+h}), \tag{19}$$

where $y_{i,t+h}$ ($y_{US,t+h}$) refers to GDP growth in economy i (the US).[15] The other fundamental expectations have been constructed in the same way. Relative measures against the US have been used since our left-hand side variable refers to expected exchange rate changes of the domestic currency against the US dollar.[16] This set of expected

[14] As already mentioned, we also study the effect of fundamentals expectations on optimistic and pessimistic forecasts, expected excess returns, and forecast errors made by professionals. In doing so, the left-hand side variable in Eq. (18) is substituted by our measure of either optimistic and pessimistic forecasts, expected excess returns, or forecast errors already introduced in Section 3.1.

[15] It is also worth mentioning that the forecasts, which we use as proxies for expectations, are made by the same institutions for all countries and are therefore comparable enough to compute differences.

[16] As a robustness check we have also carried out estimations for the raw expectations as regressors instead of their relative counterparts. These mainly confirm our findings discussed in this section and are available upon request.

fundamentals captures major dynamics of the fundamental exchange rate models introduced in Section 2 and therefore gives an indication whether forecasters believe in any of these models. Adopting the expected exchange rate as the left-hand side variable is a standard proceeding in the literature referring to the presented models. However, our estimation strategy also accounts for the potential of reversed causality, which stems from the fact that expectations regarding macroeconomic fundamentals and the exchange rate are possibly jointly determined (Engel and West, 2005).

Therefore, we estimate Eq. (18) with a fixed effects (FE) model including either country fixed effects (i.e., $u_{i,t} = \mu_i + \varepsilon_{i,t}$) or country and time fixed effects (i.e., $u_{i,t} = \mu_i + \lambda_t + \varepsilon_{i,t}$) to account for the possibility of endogeneity arising from unobserved heterogeneity across countries and/or time and we also allow for the potential of simultaneous causality mentioned above, by relying on a fixed effects instrumental variable (FE-IV) estimator. In doing so, we apply one-period lags of all regressors as instruments. These instruments are relevant since each regressor is affected by its own first lag and are also exogenous for our regression model since they are at most able to affect our left-hand side variable indirectly through the corresponding regressor.

The main findings discussed in the following are, therefore, carried out based on the FE-IV estimator with either country fixed effects or country and time fixed effects. Due to the significance of both types of fixed effects, the latter specification seems to be the most reasonable one. However, to show the robustness of our main findings, we report both. In addition, as further sensitivity checks we have also considered the FE estimator without instruments and the common correlated effects mean group (CCEMG) estimator following Pesaran (2006), which accounts for potential cross-correlation among the different economies. The corresponding results generally confirm the robustness of our main findings but are reported in the Appendix (see Tables A.3 to A.7).

4.1 Total Panel Results

The estimation results for both fixed effects IV regressions are reported in Table 4 for each forecast horizons together with various specification tests. Estimation results using other estimators showing the robustness of our findings are reported in the Appendix (see Table A.3). The explanatory power of expectations regarding macroeconomic fundamentals indicated by the (incremental) R^2 ranges between low and mild (i.e., between 0.1 and 0.25) but clearly shows an increasing pattern with the forecast horizon.[17]

We have also conducted various specification tests. The F test shows the importance of both country and time fixed effects.[18] Including fixed effects ensures that our estimation results are not driven by unobserved country-specific heterogeneity or time-varying global factors. Unsurprisingly, the Hausman test favors both fixed effects models compared to a random effects specification since the null is rejected at the 1% level. The fact that the Breusch-Godfrey-Wooldridge tests indicate serial correlation in the residuals is also not surprising. To account for this issue, we use robust standard errors with respect to heteroskedasticity and serial correlation according to Driscoll and Kraay (1998).[19] The cross-sectional dependence test by Pesaran (2004) also rejects the null of cross-sectional independence. Therefore, in the Appendix we also report estimates based on the common correlated effects mean group (CCEMG) estimator following Pesaran (2006), which also confirm our findings.

[17]The term 'incremental' means in this case that the R^2 measures only the explanatory power of the regressors for the variation of the left-hand side variable but not the explanatory power of the country and time fixed effects, we otherwise get a much higher R^2. However, because we are focusing on expectations regarding macro fundamentals, we decided not to report these findings in the main tables.

[18]This has been confirmed by the LM test proposed by Honda (1985). These results are available upon request.

[19]We have also considered robust standard errors following Arellano (1987), which do not change our findings qualitatively. These results are also available upon request.

*** Insert Table 4 about here ***

Generally, most of the estimated coefficients are relatively robust across forecast horizons and across the different specifications. In the following we focus on the estimation results for each individual fundamental factor.

Interest rate expectations are shown to be positive but insignificant (except of one specification for the longest horizon). However, the sign of the coefficient is plausible. It would indicate that professionals expect the domestic currency to depreciate against the US dollar when their interest rate expectations for the domestic economy exceed those for the US. This makes sense since investors expecting a lower interest rate in the US compared to the domestic economy would expand investment within the US. This in turn would result in an increased demand for the US dollar compared to the domestic currency and would therefore force the domestic currency to depreciate. This also reflects the underlying idea of the UIP condition. However, the magnitude of coefficients is rather small, especially for the 3-month horizon, and indicates that professionals seem not to believe in UIP in the strict sense. Another explanation is that higher interest rates indicate risk premia required by investors. This finding also relates to the explanation of expected risk premia to which we turn in Section 4.3.

The coefficient estimates for GDP growth expectations are significantly negative at a 1% level in all cases, which implies that professional forecasters expect an appreciation of the domestic currency when their GDP growth expectations are larger for the domestic economy than for the US. There are essentially two explanations for this finding. First, a stronger expected growth path reflects a belief in the strength of the domestic economy and stabilizes the domestic economy. The second explanation stems from the monetary exchange rate approach, which postulates that higher economic growth increases money demand and leads to a domestic appreciation due to the interest rate change necessary to restore money market equilibrium as outlined in Section 2.4. The negative relationship between expected exchange rate changes and GDP growth expectations becomes stronger with the forecast horizon.

The effect stemming from inflation expectations displays a positive and highly significant coefficient (at the 1% level), which is in line with PPP since it implies that professional forecasters expect the domestic currency to depreciate against the US dollar when their inflation expectations for the domestic economy exceed US inflation expectations. The effect size again grows with the forecast horizon. In this context it should be kept in mind that PPP is a long-run concept and that professionals often follow a random walk when forming their expectations over the very short run and only expect minor changes compared to the current spot rate.[20] Therefore, the main takeaway is that the directional effect is in line with PPP.

Coefficient estimates for current account expectations are significantly negative at the 1% level when not accounting for time fixed effects. This result would imply that a worsening in the current account coincides with an expected depreciation, which is line with the theoretical prediction that a decrease in the accumulated current account surplus leads to an expected depreciation of the nominal exchange rate. However, when also allowing for time fixed effects this finding disappears and the coefficient is insignificant.

A comparison across the three forecast horizons shows that the main findings are robust and especially, highlights a stronger connection for higher forecast horizons. As can be seen, the signs of coefficient estimates are the same across forecast horizons but they grow in magnitude for all expected macro fundamentals. Especially, the

[20]This is in line with our forecast evaluation results when comparing survey mean forecasts with the random walk benchmark (see Table A.2 in the Appendix).

magnitude of the coefficients for GDP growth and inflation expectations have increased substantially when comparing the 3-month horizon with the 12-month horizon. The R^2 has more than doubled. This implies that exchange rate expectations over longer horizons are much more strongly affected by expectations regarding macroeconomic fundamentals, although a large fraction of the variation in expected exchange rate changes still remains unexplained by the fundamentals expectations. This pattern is fully plausible since it reflects the fact that fundamentals are considered to be a long-run anchor while forecasters are aware of unpredictability of the exchange rate in the short run.[21] In this vein, previous findings suggest that professionals predominantly rely on chartist rules in the short run but attach greater weight to fundamentals for higher horizons (Kouwenberg *et al.*, 2017). Interestingly, our previous results indicated that survey exchange rate forecasts tend to outperform the random walk benchmark for higher compared to lower horizons (see Table A.2 in the Appendix). Overall this suggests that forecasters are more effective in predicting exchange rates if they take into account expected fundamentals.

Extensions of our empirical approach discussed in Section 5 will also consider time-varying and single-country parameters as robustness tests. In relation to this, Figure 1 illustrates the heterogeneity of the parameter estimates across countries (Panel (a)) and across time (Panel (b)). Both graphs show that the mean estimates are not far away from zero in terms of magnitude, a finding which is not surprising given the fact that expected exchange rates are often of small magnitude. We identify some heterogeneity across countries, particularly for inflation expectations when considering the 3-month horizon and for GDP growth expectations in case of the 12-month horizon.

[21] It should be noted that we are comparing forecast horizons within a year. Therefore, from a macroeconomic perspective all three horizons can be considered as short-run horizons but we observe the tendency of a stronger connection when the forecast horizon grows.

*** Insert Figure 1 about here ***

4.2 Distribution of Forecasts: Optimistic and Pessimistic Forecasts

We now add another dimension to our analysis by taking potential differences across forecasters into account. The whole distribution of individual forecasts is unavailable for all currency pairs but the data set includes the strongest and weakest forecasts proxied by the 2.5% and the 97.5% quantiles, which provides a useful reference point and allows us to assess whether expectation building differs between optimists and pessimists.[22] It is important to keep in mind that optimists might still expect a domestic appreciation which is, however, less pronounced compared to other market participants. Tables 5 and 6 provide results for the 2.5 percent quantile forecasts (optimists with regard to the domestic currency) and 97.5 percent quantile forecasts (pessimists with regard to the domestic currency) for each of the three forecast horizons.

*** Insert Tables 5 and 6 about here ***

Generally, the findings provided in Tables 5 and 6 confirm our previous result that expected fundamentals turn out to be more important over longer horizons. The R^2 and in many cases also the significance and magnitude of the coefficients tend to increase for both groups. At the same time, we also find that expectation building differs across

[22] We have also considered the effect of expectations regarding macro fundamentals on exchange rate disagreement among forecasters proxied by the difference of the 97.5 and the 2.5 percent quantile. The corresponding findings are available upon request. However, we believe that considering both quantile forecasts separately allows a better comparison with our previous findings and is easier to interpret.

both groups. Overall, optimistic forecasts seem to be less driven by expected fundamentals compared to the geometric mean and also compared to pessimistic forecasts. Pessimists pay much greater attention to expected fundamentals with a much higher R^2 for all horizons. This finding is especially supported by the higher magnitudes of the coefficients for GDP growth and inflation expectations across all horizons. These seem to be of greater importance for pessimistic compared to optimistic forecasters. In addition, this finding is also driven by the effect of interest rate expectations, which seems to play a greater role for pessimistic forecasters. Optimistic forecasters seem not to pay much attention to interest rate forecasts over all horizons.

The existing literature has only addressed the distinction between optimistic and pessimistic forecasts with regard to systematic over- and underestimation of a fundamental value (de Grauwe and Kaltwasser, 2007). Our results provide a different perspective by showing that forecasters who pay more attention to expected interest rates systematically tend to be more pessimistic about the domestic exchange rate against the US dollar. This might relate to the perception of a global financial cycle driven by monetary policy in the United States, which implies that there is little trust in domestic monetary policy when it comes to stabilizing the domestic exchange rate. At the same time, this pattern is in line with the fact that the sustained period of unconventional monetary policy in the US has not resulted in a significant deterioration of the US dollar.

4.3 Expected Excess Returns and Forecast Errors

Next, we examine the effect of expected fundamentals on expected excess returns and realized forecast errors by professionals. The rationale for this is the fact that if fundamentals expectations do not affect the expected exchange rate but forecast errors, there must be an unexpected effect on the realized exchange rate stemming from expectations regarding macro fundamentals (see also Eq. (3)). As outlined in Section 2.2, a comparison of expected excess returns from UIP regressions and forecast errors also sheds some light on the role of expectations for UIP deviations. Table 7 reports results for regressions of expected excess returns, computed as the difference between expected exchange rate changes and interest rate differentials, on expected macro fundamentals.

*** Insert Table 7 about here ***

The results show that the connection between expected excess returns and expectations regarding macro fundamentals is much larger over a 3-month horizon compared to a 12-month horizon as is indicated by the R^2. R^2s generally decrease with the forecast horizon. Expected excess returns are not solely driven by GDP growth and inflation expectations as has been shown for expected exchange rate changes, but are also significantly driven by interest rate forecasts.

As a next step, we regress forecast errors computed as the relative percentage difference between the forecast in period t for period $t+h$ and the realized end-of-month spot rate in period $t+h$ on expected fundamentals. The results are reported in Table 8.

*** Insert Table 8 about here ***

Generally speaking, any information available in t should be unable to explain forecast errors in $t+h$ under rational expectations. Current information or expectations related to fundamentals should not affect realized expectation errors. A positive coefficient estimate implies that higher (lower) expected fundamentals relative to the US increase (decrease) forecast errors. This indicates that professionals are more successful in processing their fundamental expectations if they expect stronger movements, which in turn implies that there is no systematic misjudgement of professionals with regard to forecast errors.

In line with our main findings reported in Table 4, we find that the R^2 increases with the forecast horizon, although a large fraction of forecast errors remains unexplained by expectations regarding macro fundamentals. When looking at the significance of each expected macro fundamental in Table 8, it turns out that expectations regarding the interest rate, GDP growth, and inflation do not explain forecast errors at shorter forecast horizons (i.e., 3- and 6-months-ahead). Solely, current account expectations turn out to be a significant driver of forecast errors at shorter forecast horizons. In contrast, for the 12-month-ahead horizon we provide weak evidence that interest rate and GDP growth expectations might play a role for exchange rate forecast errors. But in particular inflation expectations seem to be an important determinant of forecast errors at the 12-month horizon. It seems that inflation expectation for the domestic economy going beyond US inflation expectations are about to increase forecast errors at the longer horizon and therefore violate the rationality assumption mentioned above. Overall, findings over the 12-month horizon tend to display the opposite pattern for other macro variables with expectations having a negative effect on forecast errors.

Our previous results indicated that survey forecasts are subject to higher forecast errors but perform better compared to a random walk over longer horizons. At the same time, participants also pay more attention to expected fundamentals over longer horizons. The negative effect on forecast errors is in line with this result while the positive effect of inflation expectations suggests that forecasters might either over- or underestimate the effect of fundamentals on the realized exchange rate.

5 Robustness Tests and Extensions

The rich amount of empirical findings already includes a large set of robustness tests in terms of estimation methods and forecast horizons (see also the Appendix). In addition, to ensure that our results are not solely driven by US expectations, we have re-estimated all models only including expectations regarding the domestic economy instead of expectation differentials. The findings also confirm the presented results and are available upon request. The following subsections summarize additional results that extend the perspective of our analysis and confirm our main findings.

5.1 Time-Varying Coefficients

Previous studies have illustrated the time-varying nature of exchange rate expectations and it is common wisdom that events such as the global financial crisis have affected foreign exchange rate markets (ter Ellen *et al.*, 2013). There is also evidence that forecasters' behavior often varies across the business cycle (Dovern and Jannsen, 2017). Therefore, to shed some light on time-variation in expected exchange rates, we consider parameter estimates that are achieved by a rolling window IV regression with country fixed effects and a window size of 30 months. The corresponding estimates are provided for forecasting horizons of 3, 6, and 12 months in Figure 2. Time-varying parameter estimates are given by the solid line, its significance at least at the 10%-level is highlighted in red, and full sample period parameter estimates discussed in Section 4.1 are indicated by the dotted line for comparison. The findings appear to be broadly robust across the three different horizons.

*** Insert Figure 2 about here ***

The financial crisis period around 2008 results in substantial changes in estimated coefficients but most changes in significance are not driven by this period. The overall pattern is in line with the rich evidence on the time-varying relationship between realized exchange rates and realized fundamentals and also reflects the main theoretical implications of the scapegoat approach: market participants pay attention to different fundamentals at different points in time when forming their expectations. We are the first to link expected exchange rates to expected fundamentals but our findings align with the existing evidence focusing on the relevance of realized macroeconomic fundamentals for expected exchange rate movements. The empirical results provided by Fratzscher *et al.* (2015) already confirm time-varying scapegoats based on survey data from Consensus Economics where participants are asked to rank the relevance of different fundamentals.[23]

Reconciling the estimation results with our theoretical models is a difficult task since not only the significance but also the magnitude of the parameter estimates vary over time. Nevertheless, we identify some theory-conforming patterns in case of significance which are in line with our previous findings. For instance, we find that higher expected GDP growth compared to the US mostly leads to an expected domestic appreciation and is particularly relevant between 2013 and 2018. This finding is in line with the monetary model of exchange rate determination, which postulates that an appreciation occurs due to higher money demand resulting from an increase in income. It also confirms the

[23] Our findings are also in line with survey-based evidence by Cheung and Chinn (2001), which shows that the importance of individual macroeconomic variables in determining exchange rate expectations changes over time. Furthermore, there is rich evidence for the pattern that different fundamentals matter at different points in time (Beckmann *et al.*, 2011; Rossi, 2013). Figure 2 indicates that each of the expected fundamentals (interest rate, GDP growth, inflation, current account) matters at some point in time but none emerges as dominant.

intuitive idea that higher growth expectations lead to an expected appreciation since they reflect an expected positive path of the domestic economy.

Both expected higher interest rates and expected higher inflation relative to the US lead to an expected depreciation of the domestic currency in most cases, which is a pattern that supports our previous findings as well as PPP and UIP. An opposite effect for inflation expectations is observed around 2006 and between 2017 and 2018. A possible explanation for the latter period is that an expected increase in inflation can also ease deflation fears and therefore result in an expected appreciation. A negative coefficient for inflation expectations might be traced back to the changing role of monetary policy over the last decade. Although inflation remained low after the implementation of quantitative easing, recent evidence suggests a significant deterioration of the anchoring of long-term inflation expectations after 2008 (Ciccarelli *et al.*, 2017). Higher expected interest rates also result in an expected appreciation between 2015 and 2017, reflecting the forward premium puzzle. Current account estimates are scarcely significant and display different signs while being particularly negative for the 12-month horizon during the global financial crisis and the COVID-19 pandemic.

The scapegoat approach argues that fundamentals should become a scapegoat for unexpected exchange rate movements when they deviate from their long-term trend. An in-depth analysis of this issue is beyond the scope of this paper since it would require time-varying country-by-country regressions, but the frequent changes in coefficients certainly suggest that this explanation has its merits. Another common explanation for the exchange rate disconnect puzzle is that different groups of market participants dominate at different points in time, which would imply that significance indicates that fundamentalists dominate chartists in terms of the expected exchange rate.

5.2 Country-Specific Effects

We have also extended our analysis by conducting single-country regressions as a next step for assessing the link between expected exchange rate changes and expected fundamentals. The countries under investigation display some heterogeneity as already shown in Figure 1, which raises the question of whether the observed insignificance of some coefficients for some models might be due to the aggregation across countries. The findings provided in Tables A.8 and A.9 in the Appendix suggest that this might be true since the expectations regarding at least one macro fundamental affect expected exchange rate changes for roughly 80 (86) percent of the countries under investigation in case of the 3-(12-)month horizon.

The explanatory power tends to be higher for Emerging Market Economies compared to currencies of Advanced Economies. This is intuitive given the evidence that fundamentals tend to be more important in case of large deviations from fundamentals models, a situation which is more present in emerging countries. Argentina and Turkey display an R^2 of roughly 0.57 for 12-month expectations while such an explanatory power is not observed for the 3-month horizon. In line with our panel data estimates, we find that the R^2 is generally much higher over 12 months compared to the 3-month horizon. Overall, we identify 16 currencies where the R^2 exceeds 0.25 over the 12-month horizon, although this is only the case for 4 currencies over the 3-month horizon. This confirms that exchange rate expectations over longer horizons are much more strongly affected by expected fundamentals.

Significant coefficient estimates for interest rate expectations solely display positive coefficients. This pattern is in line with the theoretical prediction of the UIP outlined in Section 2.2. GDP growth expectations show a mostly negative effect, as already observed at the aggregated level. The coefficient estimates for inflation and current account expectations also turn out to be positive and negative in several cases.

The overall pattern of the single-country regression results is in line with our panel data findings since expected fundamentals drive expectations regarding the future exchange rate. However, we also observe some country-specific differences, which might blur expectation effects in the cross-section.

6 Summary and Concluding Remarks

This paper has analyzed the importance of expected fundamentals for expected exchange rates, expected excess returns, and forecast errors at an aggregated as well as at a single-country level. Our real-time sample including 29 countries/currencies for the period between 2002 and 2023 has enabled us to conduct various sensitivity checks in terms of sample period, country selection, and estimation method.

Our findings provide several important insights into the decision making of professional forecasters, the determinants of exchange rate expectations, and the exchange rate disconnect puzzle. Our empirical findings identify an impact of expected fundamentals, which is consistent with traditional fundamentals models. We also find that expected fundamentals are overall more important over the longer horizon compared to the shorter horizon, a result which is in line with the root idea of fundamental exchange rate models. We find that an expected increase in GDP growth relative to the US leads to an expected appreciation of the domestic currency while higher relative inflation expectations lead to an expected depreciation, which is consistent with the purchasing power parity.

We have also assessed the expectation building between optimistic and pessimistic forecasters and show that the latter systematically put more weight on expected fundamentals. Optimistic forecasts seem to be less driven by expected fundamentals. Finally, we also observe that the superior forecasting performance of exchange rate expectations over longer horizons can be partly traced back to expected fundamentals. Our additional results align with established findings in the literature. Expectation building can differ over time, a finding which is in line with the scapegoat approach.

Potential issues for further research include a more detailed disaggregated view on individual expectations. Another interesting extension corresponds to the importance of exchange rate policy within the impossible trinity restrictions given the fact that interest rate increases under fixed and flexible exchange rates bear different macroeconomic implications.

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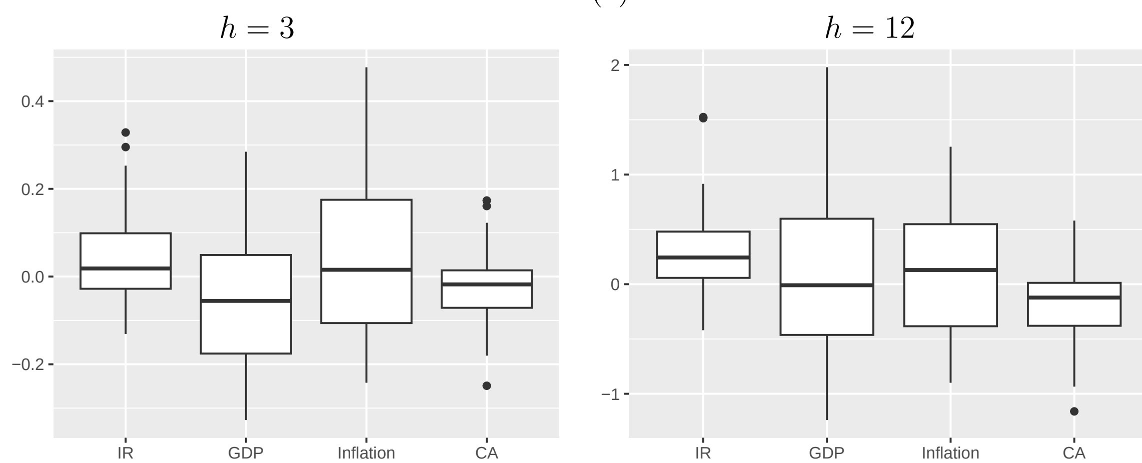
Figures and Tables

Figure 1: **Panel data estimation heterogeneity**

The plots shows the heterogeneity of the parameter estimations across countries (Panel (a)) and across time (Panel (b)) for a regression of expected percentage exchange rate changes on interest rate expectations relative to the US (IR), GDP growth expectations relative to the US (GDP), inflation expectations relative to the US (Inflation), and current account to GDP ratio expectations relative to the US (CA) for two forecast horizons (i.e., $h = 3, 12$). Panel (a) reports time series OLS estimates for each economy and Panel (b) provides cross-sectional OLS estimates for each point in time.

Panel (a)



Panel (b)

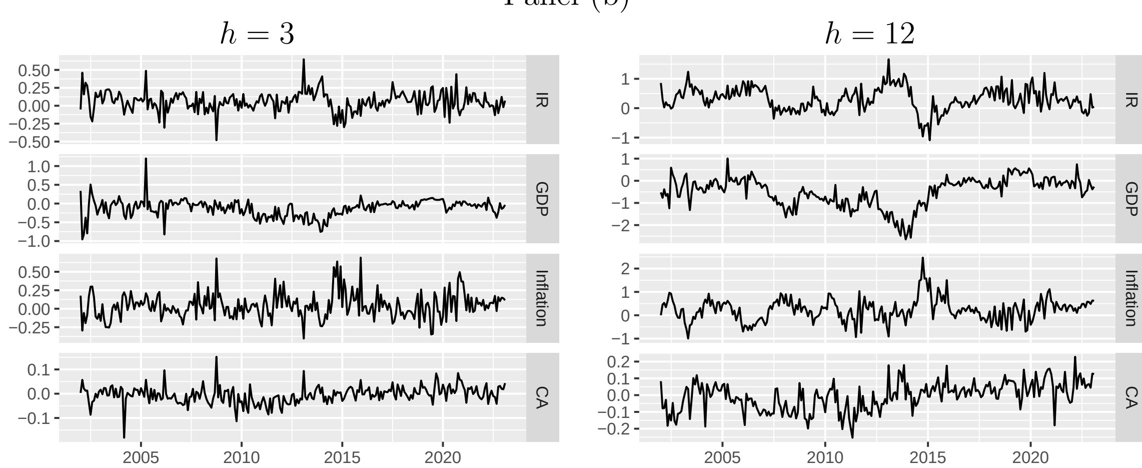


Figure 2: **Time-varying parameter estimation**

The plots shows the variation of the parameter estimations over time for a regression of expected percentage exchange rate changes on interest rate expectations (IR), GDP growth expectations (GDP), inflation expectations (INF) and current account to GDP ratio expectations (CA) for three different forecast horizons h. The parameter estimates are achieved by a rolling window fixed effects IV regression with country fixed effects and a window size of 30 months. Time-varying parameter estimates are given by the solid line, its significance at least at the 10%-level is highlighted in red, full sample parameter estimates are given by the dotted line and a zero effect is illustrated by the dashed line. The pink rectangle visualizes the US recession periods between December 2007 and June 2009 and in 2020 defined by the NBER.

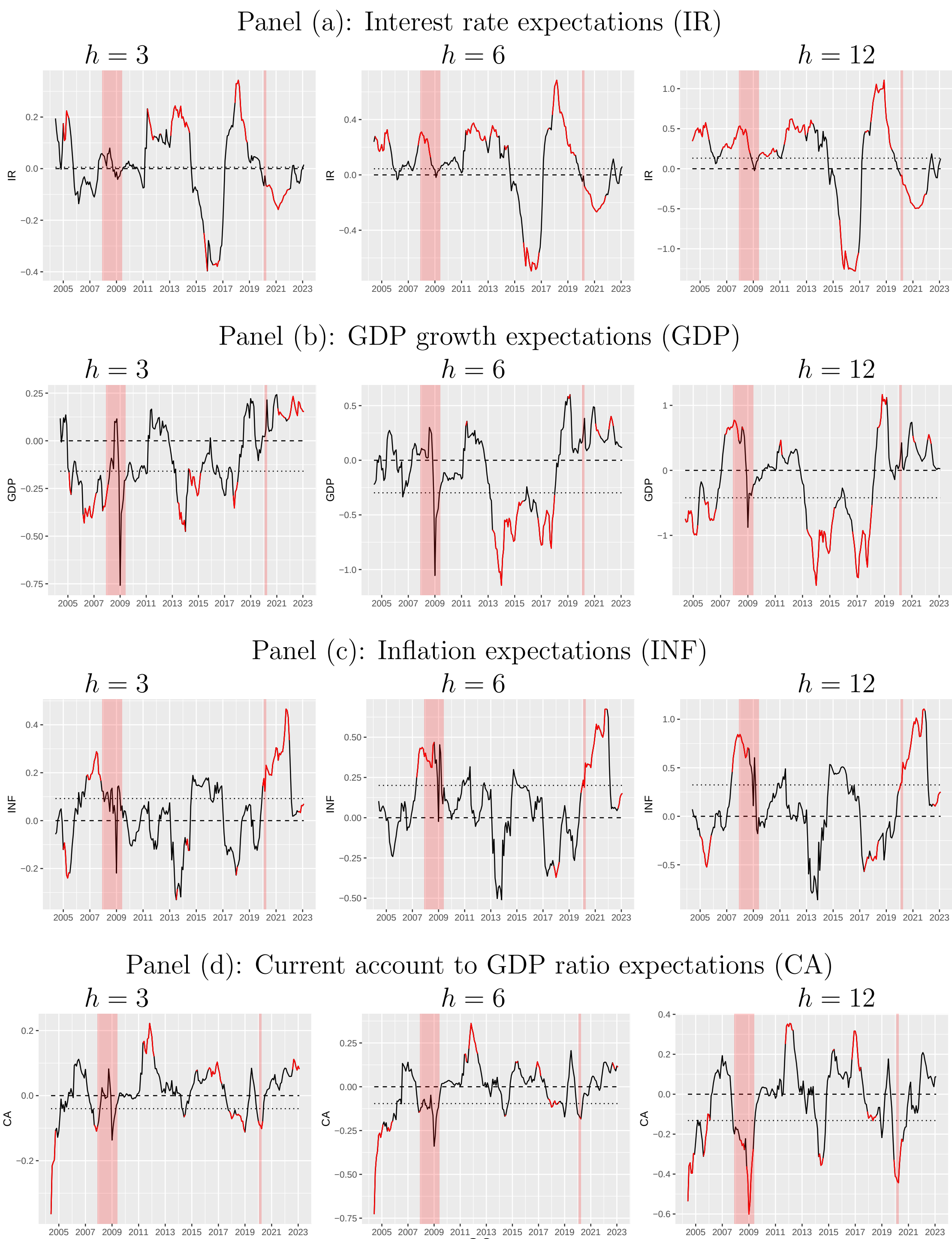


Table 1: **Descriptive statistics**

	Mean	**SD**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**
%ΔFX-3m	0.2371	1.5675	0.1996	-12.3633	23.6967	2.3885	30.7414
%ΔFX-6m	0.4103	3.0310	0.0000	-32.5342	42.1571	3.0730	30.3882
%ΔFX-12m	0.6316	4.9213	-0.9868	-14.7183	73.8881	3.1012	23.5042
IR-3m	4.9704	6.5536	3.5000	-0.8700	81.8000	4.5334	32.7390
IR-6m	4.9332	6.2943	3.5000	-0.8900	77.3000	4.4105	32.0154
IR-12m	4.8656	5.8708	3.5700	-0.8900	77.3000	4.2806	31.3562
GDP	3.1205	2.1132	2.9458	-24.9000	10.5000	-0.2857	5.5047
Inflation	4.0442	5.8174	2.7083	-1.6000	92.5667	6.7131	64.4587
CA	1.6132	6.0844	0.4667	-70.3833	71.8917	1.2933	7.1447
			Advanced Economies				
%ΔFX-3m	0.0083	1.2680	-0.2438	-12.3633	8.0737	-0.5430	9.0394
%ΔFX-6m	-0.2151	2.1588	-0.7424	-13.5408	11.5497	0.0776	0.9301
%ΔFX-12m	-0.5278	3.3594	-1.5778	-14.7183	10.1968	0.2587	-0.6044
IR-3m	1.7656	1.8808	1.2500	-0.8700	8.9000	1.1134	0.8159
IR-6m	1.8056	1.8825	1.2500	-0.8900	8.7500	1.0853	0.7258
IR-12m	1.8757	1.8460	1.3750	-0.8900	8.4500	0.9779	0.4157
GDP	2.3361	1.4632	2.3167	-5.3250	10.0000	-0.3049	2.3266
Inflation	1.8368	1.1255	1.8167	-1.6000	10.3000	1.4678	7.6380
CA	3.9072	7.2189	2.7500	-70.3833	34.0000	0.5558	3.4860
			Emerging Market Economies				
%ΔFX-3m	0.4515	1.7771	0.4208	-11.3604	23.6967	3.1816	31.8652
%ΔFX-6m	0.9960	3.5664	0.8584	-32.5342	42.1571	3.3255	27.8384
%ΔFX-12m	1.7173	5.8223	1.6678	-11.4486	73.8881	3.2079	20.3078
IR-3m	7.9615	7.8236	6.2500	0.0000	81.8000	4.0653	23.8380
IR-6m	7.8523	7.4593	6.2500	0.0000	77.3000	4.0167	24.0125
IR-12m	7.6562	6.8795	6.2500	0.0000	77.3000	4.0065	24.6168
GDP	3.8527	2.3507	3.8000	-24.9000	10.5000	-0.9004	7.1782
Inflation	6.1043	7.4472	4.2500	-0.9000	92.5667	5.3741	39.1326
CA	-0.5279	3.6668	-1.2000	-11.1000	71.8917	2.4001	39.6519

Note: The table reports descriptive statistics for expected percentage exchange rate changes (%ΔFX) over 3-, 6- and 12-months, interest rate expectations (IR), GDP growth expectations (GDP), inflation expectations (Inflation) and current account relative to GDP expectations (CA) all pooled across countries. The upper part of the table reports statistics for the entire panel of countries, the middle part for Advanced Economies and the bottom part for Emerging Market Economies. SD denotes standard deviation.

Table 2: **Panel unit root tests**

	Levin *et al.* (2002)	**Im *et al.* (2003)**	**Maddala and Wu (1999)**	**Demetrescu *et al.* (2006)**
%ΔFX-3m	-33.1911	-37.3219	1522.2778	-24.9843
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]
%ΔFX-6m	-12.1594	-18.2437	569.5463	-13.7094
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]
%ΔFX-12m	-9.7489	-14.3772	401.9269	-11.2104
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]
IR-3m	-1.1079	-3.3898	100.9602	-2.9054
p-value	[0.1339]	[0.0003]	[0.0002]	[0.0018]
IR-6m	0.1458	-3.1473	102.9002	-1.5051
p-value	[0.5580]	[0.0008]	[0.0001]	[0.0662]
IR-12m	-0.8685	-3.9967	114.5256	-2.4444
p-value	[0.1926]	[0.0000]	[0.0000]	[0.0073]
GDP	-5.7982	-10.6116	249.3829	-6.7786
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]
Inflation	-1.8731	-7.5581	188.5182	-5.6954
p-value	[0.0305]	[0.0000]	[0.0000]	[0.0000]
CA	-4.4835	-10.0700	386.4201	-6.3725
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]

Note: The table reports test statistics and p-values for five different panel unit root tests checking the null of a unit root for expected percentage exchange rate changes (%ΔFX) over 3-, 6- and 12-months, interest rate expectations (IR), GDP growth expectations (GDP), inflation expectations (Inflation) and current account relative to GDP expectations (CA). The test equations include lags determined by the BIC and an intercept but not a trend since the individual time series do not exhibit trending behavior.

Table 3: **Correlation between regressors**

3-month interest rate expectations

	Total panel				Advanced Economies				Emerging Market Economies			
	IR	GDP	Inflation	CA	IR	GDP	Inflation	CA	IR	GDP	Inflation	CA
IR	1.0000				1.0000				1.0000			
GDP	-0.0090	1.0000			0.1228***	1.0000			-0.2850***	1.0000		
Inflation	0.8630***	-0.0163	1.0000		0.4890***	0.2750***	1.0000		0.8540***	-0.2287***	1.0000	
CA	-0.2433***	-0.0110	-0.1812***	1.0000	-0.2447***	0.1794***	-0.3118***	1.0000	-0.0925***	0.1737***	-0.0412***	1.0000

6-month interest rate expectations

	Total panel				Advanced Economies				Emerging Market Economies			
	IR	GDP	Inflation	CA	IR	GDP	Inflation	CA	IR	GDP	Inflation	CA
IR	1.0000				1.0000				1.0000			
GDP	0.0038	1.0000			0.1331***	1.0000			-0.2750***	1.0000		
Inflation	0.8686***	-0.0163	1.0000		0.5000***	0.2750***	1.0000		0.8626***	-0.2287***	1.0000	
CA	-0.2491***	-0.0110	-0.1812***	1.0000	-0.2446***	0.1794***	-0.3118***	1.0000	-0.0972***	0.1737***	-0.0412***	1.0000

12-month interest rate expectations

	Total panel				Advanced Economies				Emerging Market Economies			
	IR	GDP	Inflation	CA	IR	GDP	Inflation	CA	IR	GDP	Inflation	CA
IR	1.0000				1.0000				1.0000			
GDP	0.0198*	1.0000			0.1336***	1.0000			-0.2624***	1.0000		
Inflation	0.8701***	-0.0163	1.0000		0.5098***	0.2750***	1.0000		0.8667***	-0.2287***	1.0000	
CA	-0.2607***	-0.0110	-0.1812***	1.0000	-0.2515***	0.1794***	-0.3118***	1.0000	-0.1101***	0.1737***	-0.0412***	1.0000

Note: The table reports the correlation coefficient between interest rate expectations (IR), GDP growth expectations (GDP), inflation expectations (INF) and current account relative to GDP expectations (CA) all pooled across countries for the entire panel (left), Advanced Economies (middle) and Emerging Market Economies (right). The table is separated into three parts since interest rate expectations are available over 3-, 6- and 12-months. All fundamental expectations have been computed as differences compared to the US in line with our regression models presented in Section 4. *, **, and *** represent correlation coefficients significantly different from zero at the 10%, 5%, and 1% level, respectively.

Table 4: **Regression results for expected exchange rate changes**

	3-month		**6-month**		**12-month**	
IR	0.0054	0.0061	0.0442	0.0315	0.1322	0.0796
se	(0.0173)	(0.0181)	(0.0318)	(0.0359)	(0.0681)	(0.0722)
p-value	[0.7539]	[0.7377]	[0.1647]	[0.3802]	[0.0522]	[0.2703]
GDP	-0.1594	-0.1444	-0.2977	-0.3759	-0.4217	-0.6081
se	(0.0435)	(0.0474)	(0.0774)	(0.0926)	(0.1055)	(0.1147)
p-value	[0.0003]	[0.0023]	[0.0001]	[0.0000]	[0.0001]	[0.0000]
Inflation	0.0921	0.0905	0.2007	0.2111	0.3233	0.3637
se	(0.0219)	(0.0255)	(0.0400)	(0.0475)	(0.0641)	(0.0740)
p-value	[0.0000]	[0.0004]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
CA	-0.0400	0.0016	-0.0959	0.0165	-0.1319	0.0429
se	(0.0108)	(0.0100)	(0.0209)	(0.0191)	(0.0319)	(0.0328)
p-value	[0.0002]	[0.8734]	[0.0000]	[0.3872]	[0.0000]	[0.1900]
Country effects	yes	yes	yes	yes	yes	yes
Time effects	no	yes	no	yes	no	yes
N	7325	7325	7325	7325	7325	7325
R^2	0.0959	0.1010	0.1676	0.1985	0.2065	0.2524
F-stat	4.5482	8.7418	11.6607	10.8970	13.0043	11.7715
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
Hausman stat	35.5448	66.0795	78.1888	263.8390	50.7971	415.7660
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
CD-stat	86.4012	-7.8924	90.5871	-6.4549	87.8564	-7.1132
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
χ^2-stat	1825.3711	1602.3865	3386.5403	3008.3739	4728.5238	4453.5224
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]

Note: The table reports coefficient estimates, robust standard errors (se) with respect to heteroskedasticity and serial correlation according to Driscoll and Kraay (1998), p-values, the (incremental) R^2 and the number of observations (N) for a regression of expected percentage exchange rate changes on interest rate expectations relative to the US (IR), GDP growth expectations relative to the US (GDP), inflation expectations relative to the US (Inflation) and current account to GDP ratio expectations relative to the US (CA). Estimations are carried out with a fixed effects instrumental variable (FE-IV) estimator including either only country fixed effects or country and time fixed effects. We use one-period lags of all regressors as instruments. The table also provides several specification tests: F-stat gives the F test statistic for testing for country and time fixed effects, Hausman stat gives the Hausman χ^2 test statistic, CD-stat reports the test statistic of the Pesaran (2004) cross-sectional dependence test, and χ^2-stat gives the Breusch-Godfrey-Wooldridge test statistic for serial correlation.

Table 5: **Regression results for 2.5% quantile forecasts**

	3-month		**6-month**		**12-month**	
IR	-0.0473	0.0025	0.0050	0.0395	0.0954	0.1028
se	(0.0285)	(0.0210)	(0.0347)	(0.0353)	(0.0600)	(0.0651)
p-value	[0.0978]	[0.9049]	[0.8867]	[0.2635]	[0.1119]	[0.1146]
GDP	-0.2343	0.0312	-0.2075	-0.0732	-0.1635	-0.1896
se	(0.0786)	(0.0487)	(0.0738)	(0.0667)	(0.0752)	(0.0657)
p-value	[0.0029]	[0.5214]	[0.0049]	[0.2728]	[0.0298]	[0.0039]
Inflation	0.0434	0.0132	0.1026	0.0811	0.1373	0.1306
se	(0.0392)	(0.0339)	(0.0470)	(0.0447)	(0.0604)	(0.0614)
p-value	[0.2678]	[0.6964]	[0.0289]	[0.0698]	[0.0231]	[0.0335]
CA	-0.0611	-0.0018	-0.0620	0.0125	-0.0096	0.0305
se	(0.0170)	(0.0137)	(0.0186)	(0.0196)	(0.0226)	(0.0300)
p-value	[0.0003]	[0.8964]	[0.0008]	[0.5215]	[0.6723]	[0.3099]
Country effects	yes	yes	yes	yes	yes	yes
Time effects	no	yes	no	yes	no	yes
N	7292	7292	7292	7292	7292	7292
R^2	0.0217	0.0007	0.0433	0.0377	0.0781	0.0883
F-stat	11.5123	9.6766	16.0250	8.3218	16.0877	8.5352
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
Hausman stat	75.8235	49.5619	67.9460	4.4398	44.7431	19.6865
p-value	[0.0000]	[0.0000]	[0.0000]	[0.3497]	[0.0000]	[0.0006]
CD-stat	65.6358	-9.5671	56.5840	-8.1474	64.5260	-5.6424
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
χ^2-stat	1498.3653	884.2000	2023.3185	1772.7780	3263.6173	3146.0077
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]

Note: The table reports coefficient estimates, robust standard errors (se) with respect to heteroskedasticity and serial correlation according to Driscoll and Kraay (1998), p-values, the (incremental) R^2 and the number of observations (N) for a regression of optimistic expected percentage exchange rate changes (proxied by the 2.5% quantile of forecasts) on interest rate expectations relative to the US (IR), GDP growth expectations relative to the US (GDP), inflation expectations relative to the US (Inflation) and current account to GDP ratio expectations relative to the US (CA). Estimations are carried out with a fixed effects instrumental variable (FE-IV) estimator including either only country fixed effects or country and time fixed effects. We use one-period lags of all regressors as instruments. The table also provides several specification tests: F-stat gives the F test statistic for testing for country and time fixed effects, Hausman stat gives the Hausman χ^2 test statistic, CD-stat reports the test statistic of the Pesaran (2004) cross-sectional dependence test, and χ^2-stat gives the Breusch-Godfrey-Wooldridge test statistic for serial correlation.

Table 6: **Regression results for 97.5% quantile forecasts**

	3-month		**6-month**		**12-month**	
IR	0.0863	0.0432	0.1101	0.0756	0.1660	0.1254
se	(0.0282)	(0.0289)	(0.0483)	(0.0504)	(0.0850)	(0.0887)
p-value	[0.0023]	[0.1347]	[0.0228]	[0.1336]	[0.0509]	[0.1574]
GDP	-0.0923	-0.3350	-0.2457	-0.5400	-0.3866	-0.7125
se	(0.0698)	(0.0759)	(0.0946)	(0.1177)	(0.1113)	(0.1413)
p-value	[0.1861]	[0.0000]	[0.0094]	[0.0000]	[0.0005]	[0.0000]
Inflation	0.1475	0.1687	0.3136	0.3310	0.5253	0.5547
se	(0.0337)	(0.0397)	(0.0649)	(0.0736)	(0.1119)	(0.1203)
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
CA	-0.0456	-0.0258	-0.1450	-0.0334	-0.2507	-0.0063
se	(0.0222)	(0.0221)	(0.0294)	(0.0267)	(0.0402)	(0.0346)
p-value	[0.0400]	[0.2432]	[0.0000]	[0.2113]	[0.0000]	[0.8555]
Country effects	yes	yes	yes	yes	yes	yes
Time effects	no	yes	no	yes	no	yes
N	7292	7292	7292	7292	7292	7292
R^2	0.1227	0.1408	0.2072	0.2317	0.2934	0.3361
F-stat	8.5111	7.1993	10.2097	7.2488	11.3600	9.7977
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
Hausman stat	7.1983	133.0602	40.9724	177.0914	54.0154	119.3701
p-value	[0.1258]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
CD-stat	64.0703	-7.5557	66.0251	-6.2473	71.5584	-6.1155
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
χ^2-stat	1690.7630	1499.3978	2327.5719	1966.5239	3818.8038	3423.7184
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]

Note: The table reports coefficient estimates, robust standard errors (se) with respect to heteroskedasticity and serial correlation according to Driscoll and Kraay (1998), p-values, the (incremental) R^2 and the number of observations (N) for a regression of pessimistic expected percentage exchange rate changes (proxied by the 97.5% quantile of forecasts) on interest rate expectations relative to the US (IR), GDP growth expectations relative to the US (GDP), inflation expectations relative to the US (Inflation) and current account to GDP ratio expectations relative to the US (CA). Estimations are carried out with a fixed effects instrumental variable (FE-IV) estimator including either only country fixed effects or country and time fixed effects. We use one-period lags of all regressors as instruments. The table also provides several specification tests: F-stat gives the F test statistic for testing for country and time fixed effects, Hausman stat gives the Hausman χ^2 test statistic, CD-stat reports the test statistic of the Pesaran (2004) cross-sectional dependence test, and χ^2-stat gives the Breusch-Godfrey-Wooldridge test statistic for serial correlation.

Table 7: **Regression results for expected excess returns**

	3-month		**6-month**		**12-month**	
IR	-1.0080	-1.0139	-1.0257	-1.0531	-0.9814	-1.0469
se	(0.0153)	(0.0157)	(0.0397)	(0.0410)	(0.0780)	(0.0864)
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
GDP	-0.1200	-0.1237	-0.1853	-0.2992	-0.2190	-0.4148
se	(0.0396)	(0.0453)	(0.0763)	(0.0859)	(0.1198)	(0.1430)
p-value	[0.0025]	[0.0064]	[0.0152]	[0.0005]	[0.0675]	[0.0037]
Inflation	0.0830	0.0881	0.2050	0.2295	0.2941	0.3528
se	(0.0211)	(0.0251)	(0.0443)	(0.0518)	(0.0753)	(0.0880)
p-value	[0.0001]	[0.0005]	[0.0000]	[0.0000]	[0.0001]	[0.0001]
CA	-0.0510	-0.0056	-0.1198	-0.0029	-0.1863	0.0085
se	(0.0121)	(0.0100)	(0.0256)	(0.0194)	(0.0410)	(0.0321)
p-value	[0.0000]	[0.5766]	[0.0000]	[0.8806]	[0.0000]	[0.7912]
Country effects	yes	yes	yes	yes	yes	yes
Time effects	no	yes	no	yes	no	yes
N	7325	7325	7325	7325	7325	7325
R^2	0.8877	0.9043	0.6565	0.7050	0.3155	0.3751
F-stat	9.7378	10.0404	14.9589	12.8808	14.1125	12.6660
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
Hausman stat	49.9589	92.4497	152.4305	753.0285	108.2820	650.6287
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
CD-stat	86.2070	-7.8870	97.9317	-6.5180	93.6815	-6.7020
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
χ^2-stat	1772.4914	1450.1285	3446.5331	2906.4466	4764.4241	4433.3285
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]

Note: The table reports coefficient estimates, robust standard errors (se) with respect to heteroskedasticity and serial correlation according to Driscoll and Kraay (1998), p-values, the (incremental) R^2 and the number of observations (N) for a regression of expected excess returns (i.e. $\%\text{ER}_{i,t}^h = 100\frac{\overline{E}_t(s_{i,t+h})-s_{i,t}}{s_{i,t}} - (ir_{i,t} - ir_{US,t})$) on interest rate expectations relative to the US (IR), GDP growth expectations relative to the US (GDP), inflation expectations relative to the US (Inflation) and current account to GDP ratio expectations relative to the US (CA). Estimations are carried out with a fixed effects instrumental variable (FE-IV) estimator including either only country fixed effects or country and time fixed effects. We use one-period lags of all regressors as instruments. The table also provides several specification tests: F-stat gives the F test statistic for testing for country and time fixed effects, Hausman stat gives the Hausman χ^2 test statistic, CD-stat reports the test statistic of the Pesaran (2004) cross-sectional dependence test, and χ^2-stat gives the Breusch-Godfrey-Wooldridge test statistic for serial correlation.

Table 8: **Regression results for forecast errors**

	3-month		**6-month**		**12-month**	
IR	0.1386	0.1027	0.0609	0.1348	-0.5291	-0.1501
se	(0.1088)	(0.0789)	(0.1728)	(0.1505)	(0.3144)	(0.3221)
p-value	[0.2028]	[0.1930]	[0.7243]	[0.3705]	[0.0924]	[0.6414]
GDP	0.2087	0.2231	0.0787	0.0834	-0.6654	-0.6770
se	(0.3040)	(0.1964)	(0.4860)	(0.2893)	(0.5794)	(0.3737)
p-value	[0.4923]	[0.2559]	[0.8714]	[0.7731]	[0.2508]	[0.0701]
Inflation	-0.0863	-0.0219	0.0637	0.0097	1.0512	0.6969
se	(0.0856)	(0.0650)	(0.1444)	(0.1392)	(0.2267)	(0.2309)
p-value	[0.3137]	[0.7363]	[0.6591]	[0.9446]	[0.0000]	[0.0026]
CA	-0.1671	-0.1428	-0.4336	-0.3492	-1.1059	-0.7259
se	(0.0858)	(0.0549)	(0.1338)	(0.0940)	(0.1819)	(0.1317)
p-value	[0.0515]	[0.0093]	[0.0012]	[0.0002]	[0.0000]	[0.0000]
Country effects	yes	yes	yes	yes	yes	yes
Time effects	no	yes	no	yes	no	yes
N	7238	7238	7151	7151	6977	6977
R^2	0.0084	0.0080	0.0208	0.0171	0.1015	0.0785
F-stat	3.2318	16.8055	5.1116	18.3959	7.5475	16.1983
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
Hausman stat	53.2575	40.1593	95.6979	114.1655	154.3041	258.4284
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
CD-stat	145.1108	-6.6617	148.5387	-6.4404	129.0857	-5.9281
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
χ^2-stat	4446.6213	3902.1123	5422.5326	4994.0543	5741.4598	5631.6586
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]

Note: The table reports coefficient estimates, robust standard errors (se) with respect to heteroskedasticity and serial correlation according to Driscoll and Kraay (1998), p-values, the (incremental) R^2 and the number of observations (N) for a regression of relative exchange rate forecast percentage errors on interest rate expectations relative to the US (IR), GDP growth expectations relative to the US (GDP), inflation expectations relative to the US (Inflation) and current account to GDP ratio expectations relative to the US (CA). Estimations are carried out with a fixed effects instrumental variable (FE-IV) estimator including either only country fixed effects or country and time fixed effects. We use one-period lags of all regressors as instruments. The table also provides several specification tests: F-stat gives the F test statistic for testing for country and time fixed effects, Hausman stat gives the Hausman χ^2 test statistic, CD-stat reports the test statistic of the Pesaran (2004) cross-sectional dependence test, and χ^2-stat gives the Breusch-Godfrey-Wooldridge test statistic for serial correlation.

Appendix

In the following, we provide additional findings, which include:

A Forecast evaluation of survey mean exchange rate forecasts for each individual currency, which are provided in absolute terms (see Table A.1) and also relative to the random walk benchmark (see Table A.2). Such a forecast evaluation is not provided for macro fundamentals forecasts due to different data availability issues. For example, actual GDP growth is usually provided on a quarterly and not a monthly frequency and is also revised several times. Therefore, we do not have the necessary real time data, which was available to the professional forecasters at the time the forecasts are made.

B Additional estimations carried out using fixed effects without instruments and also using the common correlated effects mean group (CCEMG) estimator proposed by Pesaran (2006) (see Tables A.3 to A.7).

C Single-country regressions for forecast horizons of $h = 3, 12$ (see Tables A.8 and A.9).

The Appendix is provided for the reviewing process but does not necessarily need to be published. Additional estimations carried out using the raw expectations as regressors instead of their relative counterparts with respect to the US are not reported to save space but are also available upon request.

Table A.1: **Survey forecasts evaluation**

	$h = 3$			$h = 6$			$h = 12$		
	RMSE	**MAE**	**MAPE**	**RMSE**	**MAE**	**MAPE**	**RMSE**	**MAE**	**MAPE**
UK	0.0334	0.0246	3.6757	0.0468	0.0347	5.1954	0.0606	0.0467	6.9351
CZ	1.4562	1.1209	5.0851	1.9362	1.5214	7.0258	2.4154	1.9152	8.9250
DK	0.3089	0.2459	4.0150	0.4298	0.3549	5.8637	0.5707	0.4723	7.7532
EU	0.0415	0.0331	4.0213	0.0577	0.0475	5.8522	0.0761	0.0626	7.6633
HU	16.5372	12.8745	5.3277	22.8994	17.9304	7.5309	30.1496	23.7166	9.7303
NO	0.4699	0.3480	4.7583	0.6214	0.4858	6.6797	0.8590	0.6546	8.8733
PL	0.2343	0.1762	5.1697	0.3157	0.2337	7.0342	0.3957	0.3067	9.2932
RU	5.9021	2.9257	5.7524	6.9522	3.8309	7.6839	7.9598	5.2126	10.4872
SE	0.4895	0.3722	4.6414	0.6934	0.5396	6.7354	0.9332	0.7326	9.0082
CH	0.0535	0.0403	3.7426	0.0698	0.0525	4.9285	0.0904	0.0648	6.2208
TR	0.6458	0.2936	7.0512	0.9553	0.4303	9.8469	1.7285	0.7572	15.4462
AU	0.0836	0.0615	4.7531	0.1202	0.0895	6.9595	0.1541	0.1192	9.4297
CN	0.1316	0.0853	1.2559	0.1916	0.1278	1.8810	0.2878	0.2087	3.0917
IN	2.1738	1.5271	2.7293	3.1929	2.3973	4.2499	4.8827	3.8448	6.8455
ID	563.4718	382.6339	3.3754	803.2184	574.9205	5.1609	1073.5831	820.5103	7.3720
JP	5.6021	4.3062	4.0166	8.0470	6.2910	5.9180	11.8321	9.6671	9.0959
NZ	0.1005	0.0765	5.1284	0.1436	0.1064	7.1127	0.1925	0.1487	10.0134
PH	1.5017	1.1660	2.3885	2.1758	1.6985	3.4763	3.4035	2.7654	5.6099
SG	0.0386	0.0310	2.1832	0.0527	0.0418	2.9362	0.0688	0.0553	3.9612
KR	60.7322	41.1500	3.5343	87.4414	59.7769	5.1040	124.9408	82.8184	7.0324
TW	0.8778	0.6673	2.1196	1.3046	1.0248	3.2583	1.7143	1.4108	4.5350
TH	1.2997	1.0385	3.0039	1.7542	1.4654	4.2112	2.3524	2.0166	5.8746
AR	4.3583	1.6866	5.6458	6.8492	2.8299	9.1090	10.7728	4.9363	14.4557
BR	0.3081	0.2163	6.9146	0.4340	0.3147	10.4906	0.6003	0.4694	15.7831
CA	0.0551	0.0405	3.3401	0.0753	0.0572	4.7418	0.0970	0.0750	6.2712
CL	39.7045	29.6712	4.6532	55.6016	43.1522	6.7689	75.2792	59.3153	9.3066
CO	189.5772	137.1810	5.0579	263.2789	194.6934	7.1549	378.1874	289.5104	10.5466
MX	0.9627	0.6411	4.0908	1.2440	0.8306	5.3095	1.6322	1.1817	7.5681
ZA	0.9665	0.7007	6.5937	1.3669	1.0198	9.8486	1.9969	1.4882	14.9959

Note: The table reports three forecast accuracy diagnostics: the root mean squared error (RMSE), the mean absolute error (MAE) and the mean absolute percentage error (MAPE) given in %. These measures are provided for three forecast horizons of h months and for 29 currencies against the US dollar of the following economies: Argentina (AR), Australia (AU), Brazil (BR), Canada (CA), Chile (CL), China (CN), Colombia (CO), the Czech Republic (CZ), Denmark (DK), the Euro Area (EU), Hungary (HU), India (IN), Indonesia (ID), Japan (JP), Korea (KR), Mexico (MX), New Zealand (NZ), Norway (NO), Philippines (PH), Poland (PL), Russia (RU), Singapore (SG), South Africa (ZA), Sweden (SE), Switzerland (CH), Taiwan (TW), Thailand (TH), Turkey (TR), and the UK.

Table A.2: **Survey forecasts evaluation relative to random walk forecasts**

	$h = 3$					$h = 6$					$h = 12$				
	RMSE	**MAE**	**MAPE**	**DM**	**p-value**	**RMSE**	**MAE**	**MAPE**	**DM**	**p-value**	**RMSE**	**MAE**	**MAPE**	**DM**	**p-value**
UK	1.0553	1.0329	1.0314	2.0835	0.0382	1.0016	0.9847	0.9799	0.0509	0.9594	0.9640	0.9522	0.9380	-0.7262	0.4684
CZ	1.0584	1.0579	1.0584	3.2458	0.0013	0.9849	1.0035	1.0158	-0.3246	0.7457	0.9214	0.9201	0.9346	-1.1640	0.2456
DK	1.0461	1.0836	1.0872	2.2236	0.0271	0.9930	1.0107	1.0200	-0.1498	0.8810	0.9164	0.9392	0.9399	-1.0894	0.2770
EU	1.0449	1.0796	1.0836	1.9212	0.0558	0.9925	1.0084	1.0172	-0.1600	0.8730	0.9106	0.9299	0.9304	-1.1310	0.2592
HU	0.9980	1.0202	1.0191	-0.0651	0.9481	0.9819	1.0174	1.0273	-0.4694	0.6392	0.9597	0.9573	0.9482	-0.9403	0.3480
NO	1.0516	1.0396	1.0344	1.7589	0.0798	1.0115	1.0297	1.0182	0.3445	0.7308	1.0054	0.9855	0.9639	0.0959	0.9237
PL	1.0387	1.0154	1.0143	1.7673	0.0784	0.9983	1.0035	1.0067	-0.0651	0.9481	0.9479	0.9323	0.9353	-1.0318	0.3032
RU	1.1752	1.0601	1.0510	1.1639	0.2455	1.1092	1.0460	1.0411	0.9739	0.3311	1.0177	1.0266	1.0264	0.2315	0.8171
SE	1.0678	1.0643	1.0559	2.9836	0.0031	1.0106	1.0198	1.0112	0.3384	0.7354	0.9543	0.9224	0.9047	-0.7398	0.4602
CH	1.0711	1.0910	1.0897	2.2193	0.0274	0.9950	1.0022	1.0156	-0.0719	0.9428	0.9376	0.9297	0.9548	-0.5445	0.5866
TR	0.9725	0.9945	1.0881	-0.5178	0.6051	0.8663	0.8819	1.0357	-1.3216	0.1875	0.8851	0.8806	1.0390	-1.1305	0.2594
AU	1.0295	1.0536	1.0577	0.9876	0.3243	0.9945	1.0221	1.0314	-0.1643	0.8696	0.9263	0.9267	0.9356	-0.9160	0.3605
CN	0.9687	0.9780	0.9805	-0.8423	0.4004	0.9132	0.8970	0.9006	-1.2527	0.2115	0.9188	0.8871	0.8943	-0.7104	0.4781
IN	1.0460	1.0257	1.0237	1.8185	0.0702	1.0763	1.0835	1.0813	2.0877	0.0378	1.1221	1.1307	1.1310	2.3497	0.0196
ID	1.0325	1.0611	1.0646	1.3831	0.1679	1.0549	1.0582	1.0605	2.0693	0.0395	1.0767	1.0658	1.0618	2.3403	0.0201
JP	1.0449	1.0847	1.0865	2.6957	0.0075	1.0682	1.0993	1.1060	1.5767	0.1161	1.1006	1.1635	1.1752	1.2674	0.2062
NZ	1.0240	1.0396	1.0504	0.6857	0.4935	0.9742	1.0069	1.0225	-0.6528	0.5145	0.9229	0.9551	0.9667	-0.8935	0.3725
PH	1.0449	1.0407	1.0375	1.5565	0.1208	1.0385	1.0469	1.0396	0.7061	0.4808	1.0882	1.0661	1.0482	1.0129	0.3121
SG	1.0518	1.0634	1.0624	1.6514	0.0999	1.0023	0.9681	0.9674	0.0391	0.9689	0.9670	0.9721	0.9824	-0.3604	0.7189
KR	1.0204	1.0218	1.0222	1.3438	0.1802	1.0382	1.0445	1.0369	0.9287	0.3539	1.0549	1.0082	0.9947	1.0026	0.3170
TW	1.0610	1.0493	1.0452	2.1473	0.0327	1.1184	1.1330	1.1259	2.3000	0.0223	1.1265	1.1462	1.1398	1.5168	0.1306
TH	1.1072	1.1137	1.1113	2.1831	0.0299	1.0762	1.0774	1.0739	1.5231	0.1290	1.0980	1.1650	1.1579	1.2816	0.2012
AR	0.7732	0.7365	0.8559	-1.8565	0.0645	0.7000	0.6853	0.8247	-1.3660	0.1732	0.7036	0.6878	0.7884	-1.3902	0.1657
BR	1.0595	1.0663	1.0618	3.2975	0.0011	1.0426	1.0685	1.0845	1.5162	0.1307	1.0501	1.0942	1.1051	1.4444	0.1499
CA	1.0487	1.0328	1.0304	1.6482	0.1006	1.0088	0.9968	0.9928	0.2973	0.7665	0.9396	0.9302	0.9281	-1.2189	0.2240
CL	1.0353	1.0382	1.0332	1.7723	0.0776	1.0513	1.0384	1.0317	2.0917	0.0375	1.0641	1.0303	1.0121	1.4287	0.1544
CO	1.0146	1.0363	1.0284	0.6723	0.5020	1.0167	1.0190	1.0063	0.7093	0.4788	1.0366	1.0416	1.0259	0.8571	0.3922
MX	1.0142	1.0265	1.0208	0.6484	0.5173	1.0146	1.0129	1.0090	0.6230	0.5339	1.0229	0.9971	0.9896	0.5419	0.5884
ZA	1.0721	1.0824	1.0910	2.2393	0.0260	1.1182	1.0714	1.0939	1.3452	0.1798	1.1749	1.0954	1.1404	0.9982	0.3192

Note: The table reports five forecast accuracy diagnostics: the root mean squared error (RMSE), the mean absolute error (MAE) and the mean absolute percentage error (MAPE) given in %, the modified Diebold-Mariano test statistic (DM) following Harvey *et al.* (1997) and its p-value. The first three measures are computed for survey forecasts relative to random walk forecasts and imply that a value below (above) unity indicates superiority of survey (random walk) forecasts. The Diebold-Mariano test checks the null of equal forecast accuracy. These measures are provided for three forecast horizons of h months and for 29 currencies against the US dollar of the following economies: Argentina (AR), Australia (AU), Brazil (BR), Canada (CA), Chile (CL), China (CN), Colombia (CO), the Czech Republic (CZ), Denmark (DK), the Euro Area (EU), Hungary (HU), India (IN), Indonesia (ID), Japan (JP), Korea (KR), Mexico (MX), New Zealand (NZ), Norway (NO), Philippines (PH), Poland (PL), Russia (RU), Singapore (SG), South Africa (ZA), Sweden (SE), Switzerland (CH), Taiwan (TW), Thailand (TH), Turkey (TR), and the UK.

Table A.3: **Robustness checks for expected exchange rate changes**

	3-month			6-month			12-month		
	FE	**FE**	**CCEMG**	**FE**	**FE**	**CCEMG**	**FE**	**FE**	**CCEMG**
IR	0.0160	0.0199	0.0463	0.0824	0.0731	0.0793	0.1893	0.1412	0.1473
se	(0.0177)	(0.0189)	(0.0216)	(0.0324)	(0.0373)	(0.0357)	(0.0651)	(0.0698)	(0.0497)
p-value	[0.3645]	[0.2930]	[0.0320]	[0.0111]	[0.0500]	[0.0264]	[0.0037]	[0.0429]	[0.0030]
GDP	-0.1220	-0.1236	-0.1205	-0.2329	-0.3131	-0.2434	-0.3408	-0.5023	-0.3532
se	(0.0362)	(0.0413)	(0.0242)	(0.0662)	(0.0830)	(0.0507)	(0.0921)	(0.1043)	(0.0591)
p-value	[0.0008]	[0.0028]	[0.0000]	[0.0004]	[0.0002]	[0.0000]	[0.0002]	[0.0000]	[0.0000]
Inflation	0.0841	0.0761	0.0527	0.1712	0.1740	0.1398	0.2828	0.3157	0.2192
se	(0.0209)	(0.0246)	(0.0308)	(0.0379)	(0.0452)	(0.0488)	(0.0580)	(0.0675)	(0.0550)
p-value	[0.0001]	[0.0020]	[0.0876]	[0.0000]	[0.0001]	[0.0042]	[0.0000]	[0.0000]	[0.0001]
CA	-0.0298	0.0064	-0.0088	-0.0698	0.0243	-0.0178	-0.0981	0.0482	-0.0368
se	(0.0099)	(0.0074)	(0.0080)	(0.0191)	(0.0147)	(0.0132)	(0.0293)	(0.0250)	(0.0168)
p-value	[0.0027]	[0.3935]	[0.2667]	[0.0003]	[0.0966]	[0.1778]	[0.0008]	[0.0536]	[0.0287]
Country effects	yes	yes	no	yes	yes	no	yes	yes	no
Time effects	no	yes	no	no	yes	no	no	yes	no
N	7353	7353	7353	7353	7353	7353	7353	7353	7353
R^2	0.0968	0.1016	0.4288	0.1681	0.1967	0.5343	0.2102	0.2550	0.6475
F-stat	7.0005	9.2197		15.1438	10.5775		21.8725	12.2550	
p-value	[0.0000]	[0.0000]		[0.0000]	[0.0000]		[0.0000]	[0.0000]	
Hausman stat	16.3715	51.2731		17.8260	453.0821		17.2227	1273.8542	
p-value	[0.0026]	[0.0000]		[0.0013]	[0.0000]		[0.0017]	[0.0000]	
CD-stat	87.4236	-7.8221	-6.1451	90.9125	-6.1869	-4.0528	88.5553	-6.9797	-4.3174
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0001]	[0.0000]	[0.0000]	[0.0000]
χ^2-stat	1777.1277	1539.8709	2088.3727	3263.1971	2889.7081	3700.8863	4745.3652	4480.6965	5046.0239
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]

Note: The table reports coefficient estimates, robust standard errors (se) with respect to heteroskedasticity and serial correlation according to Driscoll and Kraay (1998), p-values, the (incremental) R^2 and the number of observations (N) for a regression of expected percentage exchange rate changes on interest rate expectations relative to the US (IR), GDP growth expectations relative to the US (GDP), inflation expectations relative to the US (Inflation) and current account to GDP ratio expectations relative to the US (CA). Estimations are carried out by fixed effects (FE) including country fixed effects, FE including both country and time fixed effects, and the common correlated effects mean group (CCEMG) estimator following Pesaran (2006). The table also provides several specification tests: F-stat gives the F test statistic for testing for country and time fixed effects, Hausman stat gives the Hausman χ^2 test statistic, CD-stat reports the test statistic of the Pesaran (2004) cross-sectional dependence test, and χ^2-stat gives the Breusch-Godfrey-Wooldridge test statistic for serial correlation.

Table A.4: **Robustness checks for 2.5% quantile forecasts**

	3-month			**6-month**			**12-month**		
	FE	**FE**	**CCEMG**	**FE**	**FE**	**CCEMG**	**FE**	**FE**	**CCEMG**
IR	-0.0353	0.0075	0.0215	0.0326	0.0611	0.0345	0.1223	0.1248	0.0980
se	(0.0249)	(0.0185)	(0.0157)	(0.0345)	(0.0354)	(0.0267)	(0.0588)	(0.0617)	(0.0356)
p-value	[0.1560]	[0.6871]	[0.1719]	[0.3446]	[0.0849]	[0.1961]	[0.0378]	[0.0431]	[0.0059]
GDP	-0.1766	0.0287	0.0070	-0.1468	-0.0446	0.0090	-0.1249	-0.1644	-0.0386
se	(0.0630)	(0.0385)	(0.0270)	(0.0571)	(0.0558)	(0.0420)	(0.0619)	(0.0581)	(0.0599)
p-value	[0.0051]	[0.4556]	[0.7942]	[0.0101]	[0.4234]	[0.8303]	[0.0437]	[0.0046]	[0.5191]
Inflation	0.0367	0.0079	-0.0325	0.0832	0.0621	0.0248	0.1230	0.1149	0.1001
se	(0.0354)	(0.0304)	(0.0257)	(0.0439)	(0.0409)	(0.0394)	(0.0576)	(0.0570)	(0.0352)
p-value	[0.2997]	[0.7947]	[0.2053]	[0.0580]	[0.1291]	[0.5280]	[0.0329]	[0.0440]	[0.0045]
CA	-0.0472	0.0027	-0.0085	-0.0474	0.0171	-0.0042	-0.0071	0.0362	-0.0183
se	(0.0137)	(0.0097)	(0.0083)	(0.0150)	(0.0151)	(0.0130)	(0.0185)	(0.0235)	(0.0159)
p-value	[0.0006]	[0.7816]	[0.3058]	[0.0016]	[0.2582]	[0.7474]	[0.7017]	[0.1236]	[0.2496]
Country effects	yes	yes	no	yes	yes	no	yes	yes	no
Time effects	no	yes	no	no	yes	no	no	yes	no
N	7319	7319	7319	7319	7319	7319	7319	7319	7319
R^2	0.0208	0.0011	0.3392	0.0446	0.0388	0.3655	0.0826	0.0917	0.4972
F-stat	20.2141	10.1681		21.4439	7.7728		22.1293	8.2597	
p-value	[0.0000]	[0.0000]		[0.0000]	[0.0000]		[0.0000]	[0.0000]	
Hausman stat	60.4399	188.5246		21.5294	163.5794		13.2116	90.3712	
p-value	[0.0000]	[0.0000]		[0.0002]	[0.0000]		[0.0103]	[0.0000]	
CD-stat	69.3546	-9.5596	-9.2057	58.5976	-7.8208	-7.8528	65.1510	-5.4405	-5.3204
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
χ^2-stat	1490.0295	889.2636	1646.6687	1984.2924	1757.9151	2183.3898	3303.8467	3184.9734	3498.8714
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]

Note: The table reports coefficient estimates, robust standard errors (se) with respect to heteroskedasticity and serial correlation according to Driscoll and Kraay (1998), p-values, the (incremental) R^2 and the number of observations (N) for a regression of optimistic expected percentage exchange rate changes (proxied by the 2.5% quantile of forecasts) on interest rate expectations relative to the US (IR), GDP growth expectations relative to the US (GDP), inflation expectations relative to the US (Inflation) and current account to GDP ratio expectations relative to the US (CA). Estimations are carried out by fixed effects (FE) including country fixed effects, FE including both country and time fixed effects, and the common correlated effects mean group (CCEMG) estimator following Pesaran (2006). The table also provides several specification tests: F-stat gives the F test statistic for testing for country and time fixed effects, Hausman stat gives the Hausman χ^2 test statistic, CD-stat reports the test statistic of the Pesaran (2004) cross-sectional dependence test, and χ^2-stat gives the Breusch-Godfrey-Wooldridge test statistic for serial correlation.

Table A.5: **Robustness checks for 97.5% quantile forecasts**

	3-month			**6-month**			**12-month**		
	FE	**FE**	**CCEMG**	**FE**	**FE**	**CCEMG**	**FE**	**FE**	**CCEMG**
IR	0.0992	0.0668	0.0412	0.1547	0.1329	0.1138	0.2421	0.2097	0.1592
se	(0.0284)	(0.0285)	(0.0331)	(0.0469)	(0.0497)	(0.0517)	(0.0805)	(0.0842)	(0.0704)
p-value	[0.0005]	[0.0190]	[0.2139]	[0.0010]	[0.0075]	[0.0277]	[0.0026]	[0.0128]	[0.0238]
GDP	-0.0751	-0.2847	-0.2074	-0.2097	-0.4633	-0.3148	-0.3343	-0.6007	-0.3371
se	(0.0659)	(0.0674)	(0.0403)	(0.0871)	(0.1044)	(0.0670)	(0.0999)	(0.1226)	(0.0837)
p-value	[0.2543]	[0.0000]	[0.0000]	[0.0161]	[0.0000]	[0.0000]	[0.0008]	[0.0000]	[0.0001]
Inflation	0.1364	0.1464	0.0912	0.2789	0.2820	0.1632	0.4694	0.4884	0.3148
se	(0.0323)	(0.0388)	(0.0399)	(0.0623)	(0.0715)	(0.0610)	(0.1036)	(0.1114)	(0.0782)
p-value	[0.0000]	[0.0002]	[0.0221]	[0.0000]	[0.0001]	[0.0074]	[0.0000]	[0.0000]	[0.0001]
CA	-0.0345	-0.0117	0.0008	-0.1063	-0.0067	-0.0408	-0.1930	0.0098	-0.0560
se	(0.0190)	(0.0153)	(0.0114)	(0.0278)	(0.0196)	(0.0181)	(0.0410)	(0.0261)	(0.0175)
p-value	[0.0687]	[0.4423]	[0.9420]	[0.0001]	[0.7348]	[0.0244]	[0.0000]	[0.7072]	[0.0014]
Country effects	yes	yes	no	yes	yes	no	yes	yes	no
Time effects	no	yes	no	no	yes	no	no	yes	no
N	7319	7319	7319	7319	7319	7319	7319	7319	7319
R^2	0.1224	0.1407	0.4009	0.2072	0.2309	0.4734	0.2960	0.3380	0.6355
F-stat	15.6362	7.7514		15.7060	7.3399		19.7825	10.3071	
p-value	[0.0000]	[0.0000]		[0.0000]	[0.0000]		[0.0000]	[0.0000]	
Hausman stat	38.6397	222.9517		38.6105	348.9087		64.4904	2645.0622	
p-value	[0.0000]	[0.0000]		[0.0000]	[0.0000]		[0.0000]	[0.0000]	
CD-stat	63.4478	-7.4950	-7.2723	66.3868	-6.1819	-5.5153	73.9853	-6.0212	-4.4649
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
χ^2-stat	1672.9030	1482.0432	1967.3545	2259.6673	1911.8333	2799.6562	3827.4450	3436.7773	4367.5510
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]

Note: The table reports coefficient estimates, robust standard errors (se) with respect to heteroskedasticity and serial correlation according to Driscoll and Kraay (1998), p-values, the (incremental) R^2 and the number of observations (N) for a regression of pessimistic expected percentage exchange rate changes (proxied by the 97.5% quantile of forecasts) on interest rate expectations relative to the US (IR), GDP growth expectations relative to the US (GDP), inflation expectations relative to the US (Inflation) and current account to GDP ratio expectations relative to the US (CA). Estimations are carried out by fixed effects (FE) including country fixed effects, FE including both country and time fixed effects, and the common correlated effects mean group (CCEMG) estimator following Pesaran (2006). The table also provides several specification tests: F-stat gives the F test statistic for testing for country and time fixed effects, Hausman stat gives the Hausman χ^2 test statistic, CD-stat reports the test statistic of the Pesaran (2004) cross-sectional dependence test, and χ^2-stat gives the Breusch-Godfrey-Wooldridge test statistic for serial correlation.

Table A.6: **Robustness checks for expected excess returns**

	3-month			**6-month**			**12-month**		
	FE	**FE**	**CCEMG**	**FE**	**FE**	**CCEMG**	**FE**	**FE**	**CCEMG**
IR	-0.9935	-0.9967	-0.9367	-0.9689	-0.9920	-0.8881	-0.8847	-0.9467	-0.8216
se	(0.0159)	(0.0170)	(0.0203)	(0.0398)	(0.0435)	(0.0398)	(0.0796)	(0.0906)	(0.0568)
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
GDP	-0.0820	-0.0973	-0.0986	-0.1212	-0.2264	-0.1723	-0.1401	-0.3049	-0.2279
se	(0.0316)	(0.0380)	(0.0247)	(0.0601)	(0.0728)	(0.0503)	(0.1021)	(0.1211)	(0.0659)
p-value	[0.0094]	[0.0106]	[0.0001]	[0.0437]	[0.0019]	[0.0006]	[0.1702]	[0.0118]	[0.0005]
Inflation	0.0703	0.0703	0.0417	0.1586	0.1765	0.1178	0.2229	0.2759	0.1672
se	(0.0212)	(0.0254)	(0.0276)	(0.0447)	(0.0530)	(0.0437)	(0.0731)	(0.0866)	(0.0531)
p-value	[0.0009]	[0.0057]	[0.1316]	[0.0004]	[0.0009]	[0.0071]	[0.0023]	[0.0015]	[0.0016]
CA	-0.0378	0.0014	-0.0059	-0.0873	0.0112	-0.0144	-0.1377	0.0234	-0.0316
se	(0.0114)	(0.0075)	(0.0086)	(0.0234)	(0.0149)	(0.0149)	(0.0376)	(0.0244)	(0.0202)
p-value	[0.0009]	[0.8581]	[0.4881]	[0.0002]	[0.4503]	[0.3350]	[0.0002]	[0.3380]	[0.1175]
Country effects	yes	yes	no	yes	yes	no	yes	yes	no
Time effects	no	yes	no	no	yes	no	no	yes	no
N	7353	7353	7353	7353	7353	7353	7353	7353	7353
R^2	0.8858	0.9010	0.9269	0.6482	0.6925	0.8106	0.3093	0.3648	0.7111
F-stat	8.4395	9.1616		16.4249	11.5864		21.9278	12.6610	
p-value	[0.0000]	[0.0000]		[0.0000]	[0.0000]		[0.0000]	[0.0000]	
Hausman stat	30.2747	84.8498		31.1177	579.8540		32.8544	1008.6499	
p-value	[0.0000]	[0.0000]		[0.0000]	[0.0000]		[0.0000]	[0.0000]	
CD-stat	87.1355	-7.3877	-5.0460	97.9162	-6.1781	-2.4333	94.4489	-6.4824	-1.5590
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0150]	[0.0000]	[0.0000]	[0.1190]
χ^2-stat	1669.5200	1361.3771	5124.8996	3237.7292	2698.3429	4407.9209	4773.6894	4447.5641	4878.6938
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]

Note: The table reports coefficient estimates, robust standard errors (se) with respect to heteroskedasticity and serial correlation according to Driscoll and Kraay (1998), p-values, the (incremental) R^2 and the number of observations (N) for a regression of expected excess returns (i.e. $\%\mathrm{ER}_{i,t}^{h} = 100\frac{\overline{E}_t(s_{i,t+h})-s_{i,t}}{s_{i,t}} - (ir_{i,t} - ir_{US,t}))$ on interest rate expectations relative to the US (IR), GDP growth expectations relative to the US (GDP), inflation expectations relative to the US (Inflation) and current account to GDP ratio expectations relative to the US (CA). Estimations are carried out by fixed effects (FE) including country fixed effects, FE including both country and time fixed effects, and the common correlated effects mean group (CCEMG) estimator following Pesaran (2006). The table also provides several specification tests: F-stat gives the F test statistic for testing for country and time fixed effects, Hausman stat gives the Hausman χ^2 test statistic, CD-stat reports the test statistic of the Pesaran (2004) cross-sectional dependence test, and χ^2-stat gives the Breusch-Godfrey-Wooldridge test statistic for serial correlation.

Table A.7: **Robustness checks for forecast errors**

	3-month			**6-month**			**12-month**		
	FE	**FE**	**CCEMG**	**FE**	**FE**	**CCEMG**	**FE**	**FE**	**CCEMG**
IR	0.1448	0.1471	-0.2744	0.0020	0.1257	-0.6099	-0.4891	-0.1027	-0.9433
se	(0.0988)	(0.0769)	(0.0991)	(0.1534)	(0.1506)	(0.1676)	(0.3219)	(0.3295)	(0.1982)
p-value	[0.1427]	[0.0559]	[0.0056]	[0.9894]	[0.4039]	[0.0003]	[0.1286]	[0.7552]	[0.0000]
GDP	0.0480	0.0022	-0.2383	-0.1463	-0.2116	-0.8894	-0.6715	-0.6737	-1.2550
se	(0.2540)	(0.1648)	(0.1431)	(0.4120)	(0.2455)	(0.2061)	(0.4841)	(0.2864)	(0.2407)
p-value	[0.8500]	[0.9893]	[0.0959]	[0.7226]	[0.3888]	[0.0000]	[0.1654]	[0.0187]	[0.0000]
Inflation	-0.0650	-0.0531	-0.2676	0.1921	0.0710	-0.2773	1.0969	0.7089	0.5665
se	(0.0778)	(0.0653)	(0.0964)	(0.1245)	(0.1346)	(0.1500)	(0.2160)	(0.2159)	(0.1744)
p-value	[0.4038]	[0.4164]	[0.0055]	[0.1230]	[0.5980]	[0.0646]	[0.0000]	[0.0010]	[0.0012]
CA	-0.1474	-0.1042	-0.2642	-0.3722	-0.2477	-0.5138	-0.8488	-0.4969	-0.8155
se	(0.0708)	(0.0457)	(0.0293)	(0.1131)	(0.0797)	(0.0418)	(0.1756)	(0.1179)	(0.0552)
p-value	[0.0374]	[0.0226]	[0.0000]	[0.0010]	[0.0019]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
Country effects	yes	yes	no	yes	yes	no	yes	yes	no
Time effects	no	yes	no	no	yes	no	no	yes	no
N	7266	7266	7266	7179	7179	7179	7005	7005	7005
R^2	0.0099	0.0113	0.5380	0.0231	0.0209	0.6005	0.1036	0.0803	0.6529
F-stat	2.2685	17.3855		5.0276	18.7700		13.2303	17.3281	
p-value	[0.0001]	[0.0000]		[0.0000]	[0.0000]		[0.0000]	[0.0000]	
Hausman stat	36.1177	17.4260		68.6955	182.1077		155.6727	209.6812	
p-value	[0.0000]	[0.0016]		[0.0000]	[0.0000]		[0.0000]	[0.0000]	
CD-stat	145.4592	-6.4412	-4.4517	148.9374	-5.8938	-2.7696	134.2814	-5.2725	-3.2019
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0056]	[0.0000]	[0.0000]	[0.0014]
χ^2-stat	4420.3990	3895.8972	4440.6377	5287.8294	4811.2352	5353.2860	5722.8349	5609.8235	5922.7074
p-value	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]

Note: The table reports coefficient estimates, robust standard errors (se) with respect to heteroskedasticity and serial correlation according to Driscoll and Kraay (1998), p-values, the (incremental) R^2 and the number of observations (N) for a regression of relative exchange rate forecast percentage errors on interest rate expectations relative to the US (IR), GDP growth expectations relative to the US (GDP), inflation expectations relative to the US (Inflation) and current account to GDP ratio expectations relative to the US (CA). Estimations are carried out by fixed effects (FE) including country fixed effects, FE including both country and time fixed effects, and the common correlated effects mean group (CCEMG) estimator following Pesaran (2006). The table also provides several specification tests: F-stat gives the F test statistic for testing for country and time fixed effects, Hausman stat gives the Hausman χ^2 test statistic, CD-stat reports the test statistic of the Pesaran (2004) cross-sectional dependence test, and χ^2-stat gives the Breusch-Godfrey-Wooldridge test statistic for serial correlation.

Table A.8: **Single-country regression results for 3-month mean forecasts**

	IR	se	p-value	GDP	se	p-value	INF	se	p-value	CA	se	p-value	Intercept	se	p-value	R^2
UK	-0.0551	(0.0846)	[0.5155]	-0.1992	(0.1540)	[0.1969]	0.1591	(0.1920)	[0.4082]	-0.1099	(0.0545)	[0.0446]	0.1205	(0.1214)	[0.3220]	0.0735
CZ	-0.0278	(0.0951)	[0.7702]	-0.2563	(0.0690)	[0.0003]	-0.0340	(0.1189)	[0.7752]	-0.0082	(0.0599)	[0.8912]	0.4001	(0.1991)	[0.0456]	0.0621
DK	0.0224	(0.0927)	[0.8089]	-0.0342	(0.1547)	[0.8254]	0.4060	(0.2189)	[0.0648]	0.1226	(0.0768)	[0.1116]	-0.5780	(0.5563)	[0.2998]	0.0327
EU	0.0045	(0.0734)	[0.9517]	-0.1172	(0.1722)	[0.4969]	0.2441	(0.2008)	[0.2254]	0.0163	(0.0121)	[0.1794]	0.1212	(0.2484)	[0.6261]	0.0143
HU	0.0798	(0.0470)	[0.0907]	-0.1742	(0.0892)	[0.0519]	-0.1533	(0.0621)	[0.0142]	0.1608	(0.0420)	[0.0002]	-0.0796	(0.2564)	[0.7564]	0.1568
NO	-0.0770	(0.0547)	[0.1605]	0.0244	(0.1102)	[0.8247]	0.1828	(0.1193)	[0.1268]	-0.0047	(0.0180)	[0.7963]	-0.2351	(0.2555)	[0.3585]	0.0274
PL	-0.0768	(0.0554)	[0.1665]	-0.2264	(0.1089)	[0.0385]	-0.0074	(0.0720)	[0.9187]	-0.1804	(0.0672)	[0.0077]	0.9038	(0.2393)	[0.0002]	0.0850
RU	0.0637	(0.0381)	[0.0964]	-0.2425	(0.0555)	[0.0000]	-0.0908	(0.0417)	[0.0305]	0.0142	(0.0418)	[0.7336]	0.6170	(0.3042)	[0.0436]	0.2892
SE	-0.0121	(0.0673)	[0.8574]	0.2826	(0.1328)	[0.0343]	-0.1726	(0.1308)	[0.1883]	-0.0706	(0.0510)	[0.1676]	0.3374	(0.4756)	[0.4788]	0.0333
CH	0.1656	(0.0909)	[0.0697]	0.0733	(0.1899)	[0.6999]	-0.0654	(0.1470)	[0.6566]	-0.0951	(0.0329)	[0.0042]	1.7151	(0.7204)	[0.0180]	0.0829
TR	0.0002	(0.0184)	[0.9894]	-0.1629	(0.1293)	[0.2089]	0.0752	(0.0136)	[0.0000]	0.0224	(0.0481)	[0.6413]	0.7673	(0.3358)	[0.0232]	0.2338
AU	-0.0629	(0.0861)	[0.4654]	0.1783	(0.1527)	[0.2440]	0.3698	(0.2478)	[0.1369]	-0.0669	(0.0738)	[0.3652]	0.0502	(0.1932)	[0.7953]	0.0595
CN	-0.0284	(0.0306)	[0.3550]	0.0205	(0.0535)	[0.7016]	-0.1219	(0.0356)	[0.0007]	-0.1057	(0.0223)	[0.0000]	0.5725	(0.2005)	[0.0047]	0.3404
IN	0.0589	(0.0581)	[0.3121]	0.0208	(0.0299)	[0.4875]	-0.1723	(0.0655)	[0.0090]	-0.0478	(0.0413)	[0.2490]	0.1971	(0.2618)	[0.4521]	0.0601
ID	0.0769	(0.0474)	[0.1061]	0.0492	(0.0225)	[0.0293]	-0.1414	(0.0698)	[0.0440]	-0.0674	(0.0380)	[0.0776]	0.0099	(0.2334)	[0.9663]	0.1250
JP	0.3285	(0.0725)	[0.0000]	0.1077	(0.1517)	[0.4785]	0.0511	(0.0948)	[0.5903]	-0.1029	(0.0585)	[0.0798]	1.6477	(0.4038)	[0.0001]	0.2510
NZ	-0.1309	(0.0814)	[0.1093]	0.2847	(0.1553)	[0.0680]	0.4773	(0.2468)	[0.0542]	-0.0713	(0.0849)	[0.4021]	0.2112	(0.2067)	[0.3080]	0.0840
PH	0.1184	(0.0690)	[0.0876]	0.0370	(0.0912)	[0.6851]	-0.1834	(0.0774)	[0.0187]	-0.0403	(0.0340)	[0.2366]	-0.0507	(0.4243)	[0.9049]	0.0782
SG	0.2953	(0.1799)	[0.1020]	-0.1756	(0.0552)	[0.0016]	-0.1061	(0.0626)	[0.0912]	-0.0086	(0.0134)	[0.5192]	0.2433	(0.3017)	[0.4208]	0.1441
KR	0.0133	(0.0763)	[0.8617]	0.1845	(0.0824)	[0.0260]	-0.2422	(0.1020)	[0.0183]	0.1734	(0.0630)	[0.0064]	-1.4729	(0.4154)	[0.0005]	0.1026
TW	0.0769	(0.0447)	[0.0863]	-0.0555	(0.0793)	[0.4848]	0.1331	(0.0931)	[0.1542]	0.1018	(0.0332)	[0.0024]	-1.3616	(0.4605)	[0.0034]	0.1441
TH	-0.0148	(0.1202)	[0.9024]	-0.0213	(0.1126)	[0.8502]	-0.0067	(0.1658)	[0.9676]	-0.0179	(0.0123)	[0.1469]	0.2248	(0.2739)	[0.4125]	0.0074
AR	-0.0524	(0.0463)	[0.2586]	-0.1829	(0.2452)	[0.4564]	0.1463	(0.0501)	[0.0038]	-0.2490	(0.1242)	[0.0461]	2.1582	(0.7760)	[0.0058]	0.3229
BR	0.0987	(0.0382)	[0.0104]	-0.2217	(0.0583)	[0.0002]	0.0155	(0.1003)	[0.8777]	-0.0043	(0.0494)	[0.9300]	-0.6322	(0.1959)	[0.0014]	0.1862
CA	-0.0133	(0.1109)	[0.9046]	0.1769	(0.1352)	[0.1919]	0.2138	(0.1962)	[0.2771]	-0.0083	(0.0225)	[0.7129]	-0.0673	(0.1194)	[0.5737]	0.0132
CL	0.0185	(0.0392)	[0.6381]	-0.0851	(0.0741)	[0.2518]	0.1883	(0.0726)	[0.0101]	-0.0352	(0.0243)	[0.1493]	0.1043	(0.1235)	[0.3992]	0.0544
CO	0.2529	(0.0671)	[0.0002]	-0.3272	(0.0893)	[0.0003]	0.0264	(0.0942)	[0.7796]	-0.0733	(0.0413)	[0.0769]	-0.6122	(0.2006)	[0.0025]	0.2373
MX	0.1799	(0.0727)	[0.0141]	-0.1665	(0.1029)	[0.1068]	0.0048	(0.1034)	[0.9628]	0.1177	(0.0494)	[0.0180]	-0.8786	(0.4109)	[0.0335]	0.0792
ZA	0.1216	(0.0838)	[0.1479]	-0.0920	(0.0810)	[0.2573]	0.1751	(0.1212)	[0.1498]	0.0104	(0.0501)	[0.8365]	-0.4971	(0.3194)	[0.1209]	0.0808

Note: The table reports coefficient estimates, robust standard errors (se) with respect to heteroskedasticity and serial correlation according to Newey and West (1994), p-values and the R^2 for single-country regressions of expected percentage exchange rate changes on interest rate expectations relative to the US (IR), GDP growth expectations relative to the US (GDP), inflation expectations relative to the US (Inflation) and current account to GDP ratio expectations relative to the US (CA). The table includes estimations for the following economies: Argentina (AR), Australia (AU), Brazil (BR), Canada (CA), Chile (CL), China (CN), Colombia (CO), the Czech Republic (CZ), Denmark (DK), the Euro Area (EU), Hong Kong (HK), Hungary (HU), India (IN), Indonesia (ID), Japan (JP), Korea (KR), Mexico (MX), New Zealand (NZ), Norway (NO), Philippines (PH), Poland (PL), Russia (RU), Singapore (SG), South Africa (ZA), Sweden (SE), Switzerland (CH), Taiwan (TW), Thailand (TH), Turkey (TR) and the United Kingdom (UK).

Table A.9: **Single-country regression results for 12-month mean forecasts**

	IR	se	p-value	GDP	se	p-value	INF	se	p-value	CA	se	p-value	Intercept	se	p-value	R^2
UK	0.2627	(0.3843)	[0.4949]	0.5969	(0.6094)	[0.3283]	0.5198	(0.4966)	[0.2962]	-0.3424	(0.1402)	[0.0153]	0.4996	(0.6142)	[0.4168]	0.0938
CZ	0.2559	(0.4972)	[0.6073]	-0.0096	(0.3614)	[0.9787]	-0.7155	(0.4512)	[0.1141]	-0.2557	(0.2375)	[0.2827]	1.5986	(1.0899)	[0.1437]	0.0354
DK	0.4655	(0.3911)	[0.2351]	0.6131	(0.7219)	[0.3965]	0.1292	(0.6857)	[0.8507]	-0.2625	(0.1890)	[0.1662]	3.1502	(1.4344)	[0.0290]	0.1099
EU	0.7864	(0.3125)	[0.0125]	0.9511	(0.6937)	[0.1716]	0.4062	(0.7508)	[0.5890]	-0.0314	(0.0584)	[0.5913]	2.0184	(0.9433)	[0.0333]	0.1084
HU	0.3450	(0.2277)	[0.1311]	-1.1590	(0.2863)	[0.0001]	-0.8995	(0.3111)	[0.0042]	0.5113	(0.1441)	[0.0005]	0.0596	(0.9019)	[0.9474]	0.4162
NO	0.1459	(0.2418)	[0.5467]	0.7511	(0.4627)	[0.1058]	1.2537	(0.5689)	[0.0284]	0.0069	(0.0622)	[0.9118]	-1.8363	(1.0539)	[0.0827]	0.1832
PL	-0.2194	(0.3361)	[0.5146]	0.4711	(0.2405)	[0.0513]	-0.6110	(0.2021)	[0.0028]	-1.1607	(0.2951)	[0.0001]	2.7085	(1.0294)	[0.0090]	0.2784
RU	0.1673	(0.1826)	[0.3605]	-0.6868	(0.1846)	[0.0002]	-0.0936	(0.1297)	[0.4711]	-0.1433	(0.1685)	[0.3958]	3.3068	(1.3752)	[0.0169]	0.2768
SE	0.4794	(0.2391)	[0.0461]	1.9788	(0.4619)	[0.0000]	-0.5836	(0.3395)	[0.0869]	0.0120	(0.1722)	[0.9445]	-1.5184	(1.5431)	[0.3261]	0.2861
CH	1.5143	(0.1943)	[0.0000]	1.8566	(0.3983)	[0.0000]	-0.3837	(0.2869)	[0.1824]	-0.1223	(0.1044)	[0.2424]	5.4953	(1.7723)	[0.0022]	0.3786
TR	0.2433	(0.1161)	[0.0371]	-0.1014	(0.3429)	[0.7676]	0.2820	(0.0588)	[0.0000]	0.1192	(0.1504)	[0.4290]	0.8818	(1.3791)	[0.5232]	0.5737
AU	-0.1120	(0.3857)	[0.7717]	1.2494	(0.7007)	[0.0758]	0.4145	(0.7995)	[0.6046]	-0.4493	(0.2646)	[0.0907]	-0.2768	(0.6498)	[0.6705]	0.1198
CN	-0.0935	(0.1415)	[0.5092]	0.0544	(0.1946)	[0.7802]	-0.5104	(0.1660)	[0.0023]	-0.4708	(0.0776)	[0.0000]	2.4346	(0.9146)	[0.0083]	0.4336
IN	0.1359	(0.2275)	[0.5509]	-0.0960	(0.1393)	[0.4914]	-0.6333	(0.2392)	[0.0086]	-0.3798	(0.1786)	[0.0344]	1.7346	(1.1635)	[0.1373]	0.1226
ID	-0.1591	(0.1393)	[0.2546]	0.0621	(0.0652)	[0.3418]	0.0880	(0.1327)	[0.5079]	-0.4823	(0.1112)	[0.0000]	0.7991	(0.8634)	[0.3556]	0.3369
JP	1.5242	(0.3325)	[0.0000]	0.0589	(0.7017)	[0.9331]	0.1109	(0.4490)	[0.8051]	-0.3805	(0.2281)	[0.0965]	6.3106	(1.5085)	[0.0000]	0.5066
NZ	0.0575	(0.3115)	[0.8538]	1.2687	(0.5296)	[0.0173]	0.6716	(0.8500)	[0.4303]	-0.5621	(0.2675)	[0.0366]	-0.7196	(0.6707)	[0.2844]	0.1974
PH	0.3519	(0.2755)	[0.2027]	-0.1900	(0.3573)	[0.5953]	-0.2645	(0.2711)	[0.3302]	-0.3005	(0.1103)	[0.0069]	0.8180	(1.5462)	[0.5973]	0.0973
SG	0.6157	(0.3079)	[0.0466]	-0.7470	(0.1878)	[0.0001]	-0.2202	(0.2118)	[0.2996]	-0.0511	(0.0423)	[0.2288]	1.0872	(0.9495)	[0.2533]	0.3156
KR	0.0200	(0.3311)	[0.9519]	-0.1405	(0.2244)	[0.5318]	-0.7431	(0.5158)	[0.1509]	0.5802	(0.2074)	[0.0055]	-5.1012	(1.5022)	[0.0008]	0.2850
TW	0.1792	(0.1555)	[0.2504]	-0.5888	(0.1974)	[0.0031]	0.9305	(0.3229)	[0.0043]	0.4280	(0.1151)	[0.0002]	-5.6687	(1.4115)	[0.0001]	0.3734
TH	0.1650	(0.3627)	[0.6495]	-0.2236	(0.5943)	[0.7071]	-0.0578	(0.5430)	[0.9153]	-0.0718	(0.0515)	[0.1641]	0.3006	(1.2888)	[0.8158]	0.0298
AR	-0.1605	(0.1310)	[0.2217]	-0.4629	(0.3903)	[0.2367]	0.5473	(0.1311)	[0.0000]	-0.9348	(0.3115)	[0.0030]	8.6369	(3.1260)	[0.0062]	0.5752
BR	0.3323	(0.1712)	[0.0534]	-0.9142	(0.2386)	[0.0002]	0.2824	(0.3271)	[0.3888]	0.3842	(0.1774)	[0.0313]	-3.2145	(0.8909)	[0.0004]	0.3948
CA	-0.4199	(0.3448)	[0.2245]	0.4264	(0.5554)	[0.4434]	0.7329	(0.6352)	[0.2497]	-0.0169	(0.0822)	[0.8370]	-0.4728	(0.4199)	[0.2612]	0.0249
CL	0.0843	(0.1622)	[0.6035]	-0.4045	(0.3671)	[0.2716]	0.7181	(0.2837)	[0.0120]	-0.0989	(0.1009)	[0.3281]	-0.2071	(0.4885)	[0.6721]	0.0919
CO	0.9152	(0.3463)	[0.0087]	-1.2398	(0.5004)	[0.0139]	0.5905	(0.2303)	[0.0109]	-0.3196	(0.1783)	[0.0742]	-2.9244	(0.8512)	[0.0007]	0.4389
MX	0.6073	(0.2764)	[0.0289]	-0.8819	(0.4181)	[0.0359]	0.2535	(0.4664)	[0.5873]	0.5304	(0.1885)	[0.0053]	-3.1347	(1.4648)	[0.0333]	0.1753
ZA	0.8289	(0.2529)	[0.0012]	0.1454	(0.2256)	[0.5197]	0.6094	(0.2893)	[0.0361]	0.2200	(0.1479)	[0.1381]	-2.5701	(1.1132)	[0.0218]	0.2790

Note: The table reports coefficient estimates, robust standard errors (se) with respect to heteroskedasticity and serial correlation according to Newey and West (1994), p-values and the R^2 for single-country regressions of expected percentage exchange rate changes on interest rate expectations relative to the US (IR), GDP growth expectations relative to the US (GDP), inflation expectations relative to the US (Inflation) and current account to GDP ratio expectations relative to the US (CA). The table includes estimations for the following economies: Argentina (AR), Australia (AU), Brazil (BR), Canada (CA), Chile (CL), China (CN), Colombia (CO), the Czech Republic (CZ), Denmark (DK), the Euro Area (EU), Hong Kong (HK), Hungary (HU), India (IN), Indonesia (ID), Japan (JP), Korea (KR), Mexico (MX), New Zealand (NZ), Norway (NO), Philippines (PH), Poland (PL), Russia (RU), Singapore (SG), South Africa (ZA), Sweden (SE), Switzerland (CH), Taiwan (TW), Thailand (TH), Turkey (TR) and the United Kingdom (UK).