Macroeconomic Uncertainty and Currency Premia*

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Abstract

This paper studies empirically the relation between macroeconomic disagreement and the cross-section of carry trade returns. Using surveys of agents' expectations, we construct proxies of disagreement for various macroeconomic and financial variables. Building on the model of international financial adjustment of Gourinchas and Rey (2007) and Gourinchas (2008), our empirical evidence reveals that investors demand a carry premium because investment currencies go down (funding currencies go up) during global shocks when countries' current account uncertainty spikes, thus suggesting an economically meaningful explanation of the UIP anomaly in foreign exchange markets.

Keywords: Carry Trade, Currency Risk Premium, Dispersion in Beliefs.

JEL Classification: F14; F31; F32; F34; G12; G15.

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1 Introduction

What risk a carry trade investor bear? The recent finance literature has proven successfully that excess returns in currency markets can be thought of as compensation for risk (Lustig, Roussanov, and Verdelhan, 2011; Menkhoff, Sarno, Schmeling and Schrimpf, 2012; Lettau, Maggiori and Weber, 2013). Understanding the nature of this risk, however, remains an open question.

Carry trade returns originate from borrowing in low-yielding currencies and investing in high-yielding currencies. By engaging into this naïve strategy, Mrs Watanabe – the fabled Japanese housewife – earns the equivalent of a free lunch that does not exist in economic theory. This happens because the predictions of the uncovered interest rate parity condition are violated in the data, and exchange rate movements fail to offset the interest rate differentials across countries, thus giving rise to what academic literature generally refers to as forward premium puzzle. If investments in high-yielding currencies provide investors with low returns in bad times, then carry trade returns should be understood as reward for higher risk-exposure. Building on this argument, Lustig, Roussanov, and Verdelhan (2011) identify a global risk variable driving the cross-sectional average of currency excess returns by constructing a high-minus-low factor as in Fama and French (1993). Menkhoff, Sarno, Schmeling and Schrimpf (2012) get to similar conclusion by using the shocks to the average exchange rate volatility. Finally, Lettau, Maggiori and Weber (2013) argue that carry premium, as well as many risk premia in other asset classes, can be explained by the downside CAPM framework. While these factors help understand the properties of currency returns, they defer the question on what economic forces determine currency risk premia.

In this paper, we show potential channel through which currency excess returns and agent's stochastic discount factor (SDF) are linked. We use the distribution of forecasts for future macroeconomic variables (current account, inflation, real growth) and prices (exchange rates and interest rates). We have manually retrieved the data from the historical archive of Blue Chip surveys from July 1993 to December 2009[1]. The data are collected every month across a stable cross-section of forecasters for all major economies and a number of emerging market

[1]We recently extended the Blue Chip sample to February 2013, making it almost 20 years of survey data. The results do not change materially. Moreover, we verified the findings on a completely different data set - that of Consensus Economics - on exactly the same time span with unchanged conclusion.

countries. To preview our results, we empirically find that investment currencies perform poorly while funding currencies yield positive returns when disagreement on future current account (CA) position is unexpectedly high. In contrast, unexpected changes affecting the disagreement on inflation, real growth, exchange rates, and interest rates fail to explain the cross-sectional variation of currency excess returns[2]. In addition, Krecetovs and Stolper (2013) show that current account disagreement is likely to lead aggregate volatility measure of Menkhoff et al. (2012) and, hence might provide more fundamental explanation behind their results.

We propose the following conceptual story to motivate the empirical part. Consider a net debtor - Australia, for example. According to the present value relation of Gourinchas (2008), in order for the negative external position to be sustainable, the country must be expected to generate future current account surpluses. Consider an (unexpected) global shock hitting the world and affecting everyone's SDF, and suppose this shock generates higher CA uncertainty as perceived by agents. Then their concern about the ability of Australia to balance its external position increases. For the latter to remain sustainable exchange rate must depreciate to contribute to the external adjustment via the trade channel. Summarising the main observation we have the following: in bad times, when everyone feels worse off (global shock), currencies of net debtors perform poorly. Hence, investors demand an ex-ante currency risk premium (for exposure to unexpected undiversifiable currency depreciation) by the traditional asset pricing theory. Such explanation is also consistent with the recent findings of Della Corte, Riddiough and Sarno (2013).

Anderson et al. (2009) are among few who consider disagreement factor in cross sectional asset pricing exercises. They concentrate on pricing equity market assets, and to our knowledge none has so far looked at linking mean carry trade portfolio returns with differences in beliefs about macro variables. We fill this gap, finding interesting and robust results. The negative price of risk for disagreement factors is broadly consistent with neo-classical (risk-based) explanation of differences in beliefs. Looking from another angle, previous literature had difficulty linking current state of the economy to expected carry returns. Rather than using historical macroeconomic data, we work directly with agent's expectations about future

[2]Consensus Economics dataset allows also to look separately at aggregate disagreements about investment and consumption - the two components of the current account; nonetheless these variables separately do not give insightful results.

macro realisations with the latter (arguably more than the former) also feeding into asset prices.

The remainder of the paper is organized as follows. Section 2 describes the data and provide details on how currency portfolio and proxies of macroeconomic disagreement are constructed. Asset pricing methods are reviewed in Section 3. Here we also analyze the empirical asset pricing results, before concluding in Section 4.

2 Data and its processing

This section describes the data on exchange rates and macro variables' forecasts employed in the empirical analysis. We also describe the construction of currency portfolios and our measures of macroeconomic disagreement.

Data on Gross Domestic Product. Individual countries' GDP time-series is taken from International Monetary Fund (IMF) website. The data at annual frequency covers the period from 1992 to 2008. All series are in prevailing USD prices.

Data on Spot and Forward Exchange Rates. We collect daily spot and 1-month forward exchange rates vis-à-vis the US dollar (USD) from Barclays and Reuters via Datastream[3]. The empirical analysis uses monthly data obtained by sampling end-of-month rates from July 1993 to December 2009. Our sample consists of the following 51 country: Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, China, Croatia, Cyprus, Czech Republic, Denmark, Egypt, Euro Area[4], Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Kuwait, Malaysia, Mexico, Netherlands, New Zealand, Norway, Philippines, Poland, Portugal, Russia, Saudi Arabia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, Ukraine, and United Kingdom. We call this sample 'All Countries'. Analogous to previous literature we also consider the subsample of 15 countries whose currencies are easier traded - Australia, Belgium, Canada, Denmark, Euro Area, France, Germany, Italy, Japan,

[3]We clean up the data set removing spot and forward quotes violating $BID < MID < ASK$ rule as well as negative ones.

[4]After the introduction of the euro in January 1999, we exclude the eurozone countries and replace them with the Euro Area.

Netherlands, New Zealand, Norway, Sweden, Switzerland, and the United Kingdom - also known as 'Developed Countries'.

In addition, we consider a set of 35 countries as in Lustig et al. (2011) and 48 countries as in Menkhoff et al. (2012). We also check covered interest parity deviations and remove periods with suspiciously large inconsistencies[5]. Qualitatively, the results never change in any of these cases.

Data on Macro Forecasts. The forecasts on individual countries' 5 macro variables - real GDP growth (RG), inflation (PI), current account (CA), foreign exchange rate (FX), and short (3-month) interest rate (IR) - come from 'Blue Chip - Economic Indicators' database (see Appendix A for an example). At each point in time and for each macro variable there are at least 10 countries for which data is available. The frequency is monthly and the span is more than 16 years starting in July 1993 and finishing in December 2009[6]. One of the main peculiarities is that forecasts are made by analysts from financial companies or big corporates[7] for the end-of-current year and end-of-next year and supplied to Blue Chip team normally during the first two days of the month[8] (Buraschi and Whelan (2012)). Data is then aggregated and made public to subscribers usually around the 10^{th} day of the same month. The forecasts are displayed in three main metrics: top 3 average, bottom 3 average, and consensus (all forecasts averaged)[9].

One should mention that due to potential coffee-break errors dataset includes instances of e.g. forecast consensus being higher than top 3 average forecasts which clearly cannot be the case. In such situations the general rule was taken to substitute data points with missing values (NaNs in MATLAB routines). Also after euro adoption individual country data on FX and IR is removed due to adoption of common monetary policy which takes the data into

[5] The main outlier visibly is Turkey in 2000-2001; result sensitivity to other currencies and periods is immaterial.

[6] All time span falls well post Bretton-Woods fixed exchange rate system as desirable (Engel and West (2010)). Only after 1979 can one fully consider risk premium as the driver of FX dynamics which is also shown empirically in Sarno and Schmeling (2012).

[7] The fact that forecasters are not restricted to banks is viewed as positive since Anderson et al. (2005) and Kim and Zapatero (2011) caution that financial analysts might not represent random sample from population of agents.

[8] The assumed data collection day is varied in robustness applications as discussed below.

[9] Before May 1995 instead of top 3 (bottom 3) averages the highest (the lowest) data point is displayed. In order to make the time series longer the assumption was made that two subsets are homogeneous and, thus, merged together.

unbalanced panel representation.

GDP and FX datasets are used to transform the CA and FX forecasts in the % change on a year format (potentially improving statistical properties of the data) consistent with RG, PI, and IR formats[10]. Namely, to adjust the short horizon forecast, we transform CA forecasts into $CA_{t+k}/GDP_t \times 100$ and FX forecasts into $(FX_{t+k}/FX_t^{SPOT} - 1) \times 100$ where t denotes the previous year end date and k the number of the months in the current year. To adjust the long horizon forecast, we use shorter term consensus forecasts for RG and FX to come up with GDP_{t+12} and FX_{t+12} estimates used in corresponding scaling factors for original macro forecasts. See below the summary of macro variable definitions:

- CA – Current Account, as % of country's GDP (all figures taken in USD)
- FX – Exchange Rate, USD units per foreign currency unit % change y-o-y
- IR – Interest Rate, 3-month deposit rate
- PI – Inflation, % change in consumer price index y-o-y
- RG – Economic Growth, % change in real growth y-o-y

There are also outliers that do not appear to result in obvious inconsistencies but which nevertheless appear suspicious to the researchers[11]. For the base case analysis below it was decided to adjust the extreme values using winsorization in the following manner[12]. Firstly, since consensus is affected by extreme positive or negative forecasts we take consensus maximum deviation to be limited to 3 standard deviations (estimated on each individual historical time-series) from the previously reported consensus figure. Secondly, after adjustments (if any) to all consensus time series, we take the 5^{th} highest deviation of top forecast from consensus and substitute all four extremes higher than the one chosen with that 5^{th} highest deviation. Separate analogous procedure is performed for the bottom extremes. Such filtering is consistent with Anderson et al. (2009) who suggest downplaying the effect of extreme forecasts in asset pricing exercises.

[10]As in Sarno and Schmeling (2012) it is assumed that interest rates (as well as their forecasts) follow stationary processes; thus, no transformations required.

[11]Those outliers are easily observed in the individual forecast graphs (available upon request).

[12]Nonetheless, it should be noted that main pricing results below are not changing significantly.

Seasonality adjustment was performed via SEATS-TRAMO routine, available on Bank of Spain's website, for three macroeconomic variables - RG, PI, CA. Despite being another important robustness check the analysis did not display any significant seasonalities in the data. Hence, asset pricing results below are not materially affected by this filtering.

Currency Excess Returns. We denote time-t spot and forward exchange rates as S_t and F_t, respectively. All FX quotes – spot and forward – in all applications are converted into USD/FCU (US dollar per foreign currency unit) format for consistency such that an increase in S_t is an appreciation of the foreign currency. The excess return on buying a foreign currency in the forward market at time t and then selling it in the spot market at time $t+1$ is computed as

$$RX_{t+1} = (S_{t+1} - F_t)/S_t$$

which is equivalent to the forward premium plus the spot exchange rate return $RX_{t+1} = (S_t - F_t)/S_t + (S_{t+1} - S_t)/S_t$. According to the CIP condition, the forward premium approximately equals the interest rate differential $(S_t - F_t)/S_t \simeq i_t^* - i_t$, where i_t and i_t^* represent the domestic and foreign riskless rates respectively, over the maturity of the forward contract. Since CIP holds closely in the data at daily and lower frequency (e.g., Akram, Rime and Sarno, 2008), the currency excess return is approximately equal to the interest rate differential minus the exchange rate change

$$RX_{t+1} \simeq i_t^* - i_t + (S_{t+1} - S_t)/S_t.$$

We compute currency excess returns adjusted for transaction costs using bid-ask quotes on spot and forward rates. The net excess return for holding foreign currency for a month is computed as $RX_{t+1}^l \simeq (S_{t+1}^b - F_t^a)/S_t^a$, where a indicates the ask price, b the bid price, and l a long position in a foreign currency. This is equivalent to buying foreign currency at the ask price F_t^a at time t in the forward market and selling it at the bid price S_{t+1}^b in the spot market at time $t+1$. This net excess return reflects the full round-trip transaction cost occurring when the domestic currency is sold at time t and purchased at time $t+1$. If the investor buys foreign currency at time t but decides to maintain the position at time $t+1$, the net excess return is computed as $RX_{t+1}^l \simeq (S_{t+1} - F_t^a)/S_t^a$. Similarly, if the investor closes a position in foreign currency at time $t+1$ already existing at time t, the net excess return is defined as

$RX^l_{t+1} \simeq (S^b_{t+1} - F_t)/S^a_t$. The net excess return for holding domestic currency for a month is computed as $RX^s_{t+1} \simeq -\left(S^a_{t+1} - F^b_t\right)/S^b_t$, where s denotes a short position on a foreign currency. This is equivalent to selling foreign currency at the bid price F^b_t at time t in the forward market and buying it at the ask price S^a_{t+1} in the spot market at time $t+1$. If the domestic currency enters the strategy at time t and the position is rolled over at time $t+1$, the net excess return is computed as $RX^s_{t+1} \simeq -\left(S_{t+1} - F^b_t\right)/S^b_t$. Similarly, if the domestic currency leaves the strategy at time $t+1$ but the position was already opened at time t, the net excess return is computed as $RX^s_{t+1} \simeq -\left(S^a_{t+1} - F_t\right)/S^b_t$.

Currency Portfolios. We construct five portfolios and re-balance them at the end of each month. At the end of each period t, we allocate currencies to five portfolios on the basis of their forward premia $(S_t - F_t)/S_t$. Sorting on forward premia is equivalent to sorting currencies on the basis of the interest rate differential $i^*_t - i_t$ via the CIP condition. This exercise implies that currencies with the lowest forward premia (or lowest interest rate differential relative to the US) are assigned to Portfolio 1, whereas currencies with the highest forward premia (or highest interest rate differential relative to the US) are assigned to Portfolio 5. We refer to these five currency portfolios as FX portfolios. We then compute the excess return for each portfolio as an equally weighted average of the currency excess returns within that portfolio (denoted Rx^j_{t+1} for portfolio j). For the purpose of computing portfolio returns net of transaction costs, we assume that investors go short on foreign currencies in Portfolio 1 and long on foreign currencies in the remaining portfolios.

The total number of currencies in our portfolios changes over time. We only include currencies for which we have bid and ask quotes on forward and spot exchange rates in the current and subsequent period. The group of All Countries starts with 19 countries at the beginning of the sample in 1993, and ends with 33 countries at the end of the sample in 2009. The set of Developed Countries starts with 13 countries in 1993, and ends with 10 countries in 2009. The maximum (minimum) number of currencies managed during the sample is 36 (19) in the All sample and 14 (9) in the Developed sample.

Lustig et al. (2011) study these currency portfolio returns using the first two principal components. The first principal component is interpreted as an equally weighted strategy across all portfolios, abbreviated to RX. The second principal component is interpreted as a strategy with a long position in Portfolio 5 and a short position in Portfolio 1. This is the carry trade strategy that borrows in the money markets of low yielding currencies and invests in the money markets of high yielding currencies (note that by construction it is dollar-neutral in a sense that %-level change in all USD/FCU bilateral rates does not affect the return on high-minus-low strategy). This high-minus-low portfolio is called the slope factor, and is denoted as HML_{FX}.

Table 3 presents summary statistics for the five currency portfolios. The first panel displays the results for All Countries, while the second panel refers to Developed Countries. All numbers are annualized. Average excess returns display an increasing pattern when moving from Portfolio 1 to Portfolio 5 for both samples. The annualized average excess return on Portfolio 1 is about -2.30 percent per annum for All Countries, and -2.09 percent per annum for Developed Countries. Portfolio 5 exhibits an annualized average excess return of 8.82 percent per annum for All Countries, and 5.57 percent per annum for Developed Countries. The average excess return from holding an equally weighted portfolio of foreign currencies (RX portfolio) is 2.21 percent per annum for All Countries, and 1.60 percent per annum for Developed Countries. These figures, taken together, suggest that a US investor would demand a low but positive risk premium for holding foreign currency while borrowing in the US money market. The average excess return from a long-short strategy that borrows in low-interest rate currencies and invests in high-interest rate currencies (HML_{FX} portfolio) is around 11.12 percent per annum for All Countries and 7.65 percent per annum for Developed Countries. We find skewness of opposite signs for low- and high-interest portfolios, consistent with the findings of Brunnermeier et al. (2009) who suggest that investment currencies (or high yielding currencies) may be subject to 'crash' risk.

The realized Sharpe ratio (SR) is equal to the average excess return of a portfolio divided by the standard deviation of the portfolio returns. The SR simply measures the excess return per unit of volatility. The SR increases systematically when moving from Portfolio 1 to Portfolio 5. For instance, the annualized SR for All Countries ranges from -0.34 (Portfolio 1) to 0.99 (Portfolio 5). The results are largely comparable for Developed Countries. Finally, we report the portfolios' turnover ($turn$), computed as the ratio between the number of portfolio switches and the total number of currencies at each date: overall, there is little variation in the composition of these portfolios, which is not surprising given that interest rates are known to be very persistent.

Shocks to Disagreement about Macro Variables. Dispersion in beliefs measure for each country and for each macro variable is constructed using cross-sectional standard deviation with fixed horizon transformation as in Buraschi and Whelan (2012). For instance, for CA top 3 average (bottom 3 average and consensus are done in the same fashion) fixed horizon forecast is constructed as follows:

$$CA_{t+k}^{f,FH_{TOP}} = (1 - k/12) \times CA_{t+k}^{f,SR_{TOP}} + (k/12) \times CA_{t+k}^{f,LR_{TOP}}$$

where k is the number of the months in the current year, SR and LR are short and long horizon forecasts respectively (both available at $t + k$), and the macro forecasts enter in gross percentage change format. The disagreement proxy used in our framework is:

$$DiB(CA) = \sqrt{\log 2 \times (\log CA_{t+k}^{f,FH_{TOP}} - \log CA_{t+k}^{f,FH_{BOTTOM}})} \tag{1}$$

The following reasoning for such proxy is provided. Due to forecast data limitations discussed above we are restricted to think about e.g. top 3 average forecast as being a forecast provided by a relatively optimistic agent and vice versa for the bottom 3 average forecast - it is regarded as a point estimate of a relatively pessimistic agent. Then $DiB(x)$ can be seen as a scaled analogue of Parkinson (1980)'s measure for volatility[13]:

$$STD(x) = \sqrt{\frac{1}{4\log 2} \times (\log x^{FH_{TOP}} - \log x^{FH_{BOTTOM}})} \tag{2}$$

Information on the properties of individual country macro time series constructed above is available upon request.

[13] Qualitatively the empirical results are unchanged if one uses the 'simpler' dispersion measure: $\log CA_{t+k}^{f,FH_{TOP}} - \log CA_{t+k}^{f,FH_{BOTTOM}}$. Such measure is also consistent with MAD measure of Beber et al. (2010):

$$\begin{aligned} MAD(x) &= 1/2 \times ((|\log x^{FH_{TOP}} - \log x^{FH_{CONSENSUS}}|) \\ &+ (|\log x^{FH_{BOTTOM}} - \log x^{FH_{CONSENSUS}}|)) \\ &= 1/2 \times (\log x^{FH_{TOP}} - \log x^{FH_{BOTTOM}}) \end{aligned}$$

The aggregate disagreement, which we term MAD, for each macro variable is then calculated as the cross sectional average[14]. Note that variables are highly persistent with first lag autocorrelation ranging from 0.73 to 0.87 (Table 1) largely because of overlapping forecast horizon. First principal component explains roughly 70% of the data. The figure plots of the time series are available upon request.

Due to high persistence of aggregate MADs of five macro variables mentioned above, it was decided, consistent with Menkhoff et al. (2012) and Mancini et al. (2012), to fit univariate $AR(p)$-type process with a constant and two lags (i.e. $p = 2$), based on Box-Jenkins statistic, and take the residuals. The resulting innovations to MADs are then used in the asset pricing tests[15]. The descriptive statistics are displayed in Table 2. Two things are worth paying attention to. Firstly, shocks by construction do not display any persistence in univariate analysis. Thus one can interpret innovations as unexpected shocks. Secondly, shocks to current account disagreement correlate the least with other shocks, indicating ΔDiB_{CA} could contain extra information potentially missing in other macro disagreement measures.

In addition, we construct a tradeable factor analogue. Following Balduzzi and Robotti (2008) and Menkhoff et al. (2012), we regress innovations to MADs one at a time on the currency portfolios described above adding a constant. Coefficients (ex-constant) are then used as weights forming a factor-mimicking portfolio. We denote corresponding traded factors as $\widetilde{\Delta DiB}_{factor}$.

As it was mentioned earlier, the exact date when forecasts were made is hard to pin down. This is a natural constraint which authors cannot do much about. Hence, as a robustness check, it was decided to perform asset pricing tests assuming various forecast collection dates. The parameter was varied from the last business day of the previous month to the last business day before or equal to the 25^{th} day of the current month of the issue. The results are available upon request. In general, significant coefficients survive within the reasonable distance (6-7 days) of the 1^{st} date of the month used in default setting.

[14]Correlation with first principal component is above 0.96, but at at the same time having advantage of not using forward-looking information. Furthermore, the empirical results are robust to using cross sectional standard deviation of individual disagreement proxies instead.

[15]Fitting $AR(12)$ instead did not change any of the empirical conclusions

3 Asset pricing tests

This section presents the cross-sectional asset pricing tests between the five currency portfolios and macro disagreement shocks, and empirically documents that the returns to carry trades can be thought of as compensation for risk.

Methods. Consistent with standard empirical asset pricing literature we make the following two main assumptions. Firstly, there is no arbitrage, and, hence – since carry portfolios constructed to be zero-cost – risk-adjusted returns for each portfolio should be zero:

$$E_t[Rx^j_{t+1}M_{t+1}] = 0 \tag{3}$$

for some existing SDF M_t. Secondly, SDF is affine in factors. In particular, the base case specification assumes the following form where Φ contains two factors - RX and ΔDiB[16]:

$$M_t = 1 - (\Phi_t - \mu_\Phi)'b \tag{4}$$

where μ_Φ represents unconditional factor means and b's are also known as factor loadings. This specification (3)-(4) implies beta-pricing model:

$$E[Rx^j_t] = \lambda'\beta^j \tag{5}$$

where β^j contains quantities of risk of portfolio j (measured through covariance with the risk factors) and λ's contain the corresponding prices

$$\beta^j \equiv V_\Phi^{-1} cov(Rx^j_t, \Phi_t)$$
$$\lambda \equiv V_\Phi b$$

In this paper the empirical unconditional asset pricing tests are performed only (i.e. instrument set contains only a constant). At most two families of tests are employed - cross sectional (XS) and time series (TS). The former is performed under the generalized method of moments (GMM) methodology. It is inherited from the reviewed empirical asset pricing

[16] Apart from Lustig et al. (2011) who invent it, RX was also used in the SDFs of Menkhoff et al. (2012) and Burnside (2011a) to control for the level.

works to estimate factor loadings b's in (4) and λ's as well as their standard errors (computed with the help of Hansen (1982), Burnside (2007), and Burnside (2011b)). Long run variance-covariance matrix of the sample moments is estimated with Newey and West (1987) and optimal number of lags according to Andrews (1991). Alternative XS test is performed using Fama and MacBeth (1973) procedure with betas estimated over the entire time sample and, again, prices of risk received as main output[17]. The point estimates are set equal to those of GMM and the standard errors are calculated either similarly with Newey and West (1987) or with Shanken (1992). In the tables below the cross-sectional R^2 and the p-value of the χ^2 test for the null hypothesis of zero pricing errors are also reported. TS test on the other hand is the standard application of Cochrane (2005). The reader is referred to Appendix B for more details on test methodology.

Base Case Results. Tables 4-8 present asset pricing results for each macro variable disagreement taken separately in the SDF model. The discussion of results based on All Countries sample is provided first. The only strong observation from Panel A which survives under both GMM and FMB specifications is that for ΔDiB_{CA} where the *t-ratio* on the market price of risk estimate λ never decreases below 2.40. At the same time none of the other macro disagreement shocks is priced if we look at the GMM estimates (at the exception of DIB_{PI} which is marginally significantly different from zero at the 10% level). Equivalent conclusions are made about factor loadings b which are only strongly significant for the current account disagreement. Cross-sectional R^2's for each macro disagreement are reasonably good with the minimum of 77% for ΔDiB_{FX} and maximum of 99% for ΔDiB_{CA}. At the same time asset pricing tests almost never fail to reject the null of zero pricing errors (at the exception of particular cases for ΔDiB_{FX} and ΔDiB_{RG}) which indicates highly noisy signals, even though forecasts-aggregating procedures are considered. That is also why most of the beta coefficients in Panel B are statistically not different from zero. The notable exception is current account for which portfolio 1 beta is significantly positive and portfolio 5 beta is significantly negative. Interestingly, almost everywhere the monotonic pattern in betas can be identified. In conclusion, the results suggest CA uncertainty is the main macroeconomic driver of premium investors require for being involved in a carry trade strategy studied by

[17] We do not include a constant in the second stage of this method

Lustig et al. (2011) - the result we also establish and verify in numerous exercises below.

Turning to the Developed Countries subsample which is included in the analysis to be consistent with previous literature (Lustig et al. (2011) and Menkhoff et al. (2012)) one can notice from Panel A that none of the disagreement shocks are priced if one looks at the GMM standard errors[18]. Only ΔDiB_{IR} survives if FMB-based asset pricing test is performed. All factor loadings are insignificant. On the other hand, again, all cross-sectional R^2's are high and none of the pricing tests rejects the null. Panel B betas are all not significantly different from zero (at the exception of portfolio 1 beta on ΔDiB_{IR}), but the monotonic patterns remain for each shock series. To make any decisive conclusions on Developed Countries sample it would be preferable to have longer time-series which are unfortunately unavailable to the authors.

Principal Component Decomposition. To make sure all five shocks to aggregate disagreements are not just noisy proxies on a single risk factor (also keeping in mind from the base case exercise that all market price estimates were negative, all XS R^2's were comparable, and portfolio betas displayed monotonic patterns) it is intuitive to dig a bit deeper and perform principal component analysis on the shocks. In unreported results it turns out that all shocks load positively on the first principal component ($PC1$) which is to be expected. Looking at the Appendix Table C.6 one can notice that indeed $PC1$ could potentially represent an important risk factor explaining carry portfolio returns if one looks at monotonic pattern in betas of Panel B. However, none of the betas is significantly different from zero, as is the case for market prices and factor loadings in Panel A. Therefore, there is weak evidence that all of the disagreement shocks are noisy proxies on a single variable.

Furthermore, if one now looks at the disagreement shocks subtracting $PC1$ effect (i.e. shock components containing effects of $PC2$-$PC5$) one can notice that results on the ΔDiB_{CA} still hold strongly for All Countries test assets - *t-ratio* on the market price of risk and factor loading of current account disagreement shock is way above 2 while betas of extreme portfolios are significant with opposite intuitive signs consistent with results above. The market price of risk for ΔDiB_{FX} ex-$PC1$ becomes significant with unintuitive positive sign and is therefore disregarded. Finally, ΔDiB_{PI} loses its marginal significance in the previous setting with betas

[18]In unreported results we find that ΔDiB_{CA} prices 'Developing Countries' subsample, defined as All Countries sample with Developed Countries excluded. Since developing countries constitute the bulk of our sample it can be concluded that these are responsible for good performance of ΔDiB_{CA} in total cross-section of countries.

now not even making the monotonic pattern and each not being statistically different from zero.

Factor-mimicking portfolio. Becoming convinced that current account forecasts contain most relevant information in our setting and to conserve space, Table 9 reports the asset pricing results only for $\widetilde{\Delta DiB}_{CA}$. First, looking at Panel A - market price of risk and loading on CA factor are significant. Now that the $\widetilde{\Delta DiB}_{CA}$ is theoretically traded an additional restriction is that factor mean is statistically indistinguishable from its risk price. This is satisfied - as we can see the mean of 0.72 is contained within one standard error band from λ_{CA} estimate independent on whether we use GMM or FMB procedure. R^2 by construction is identical to that of Table 4 and XS asset pricing test does not reject the null[19]. Now, moving to Panel B - all betas apart from portfolio 3 are significantly different from zero with becoming familiar monotonic pattern. The time series asset pricing test, consistently with cross sectional one, does not reject the null of zero pricing errors. Therefore, additional support for importance of current account-linked factor is provided.

Horse races. Table 10 provides horse race analysis in an asset pricing setting among HML_{FX} of Lustig et al. (2011), VOL_{FX} of Menkhoff et al. (2012), and our ΔDiB_{CA}. Panel A starts off by comparing the former and the latter. It should be noted straight away that our factor is put in a weaker position as high-minus-low portfolio is linear combination of the test assets and is very likely to be less noisy than the forecast information authors have at hand. Not very surprising the orthogonalized component of ΔDiB_{CA} with respect to HML_{FX} (denoted by $\Delta DiB_{CA}^{\perp}$) does not provide any superior information - b_{CA} loading is not statistically different from zero. What is more interesting is that orthogonalized $HML_{FX}^{\perp}$ has insignificant loading while loading on ΔDiB_{CA} has *t-ratio* comfortably above 2 (as well as significant risk price).

Panel B continues by comparing VOL_{FX} to ΔDiB_{CA}. Both of the factors are non-tradable. $\Delta DiB_{CA}^{\perp}$ does not have significant loading but neither does $VOL_{FX}^{\perp}$. Interestingly, in both sets of tests b's and λ's maintain the same intuitive sign for ΔDiB_{CA} while switching the sign for VOL_{FX}.

Finally, in Panel C we also compare the factor-mimicking portfolios $\widetilde{VOL}_{FX}$ and $\widetilde{\Delta DiB}_{CA}$.

[19] ΔDiB_{FX} fails strongly cross-sectional asset pricing test even at 1% significance level under both GMM and FMB specification while ΔDiB_{RG} fails marginally under FMB procedure and 10% significance level.

Factor loading of $\widetilde{\Delta DiB}_{CA}^{\perp}$ is significant (it is not so for $\widetilde{VOL}_{FX}$), and reversing the exercise - b on $VOL_{FX}^{\perp}$ is highly insignificant while it is so for ΔDiB_{CA}, which also has significant price of risk. To conclude, if anything, neither of the previously studied factors can comfortably cover information incorporated in ΔDiB_{CA}.

Beta-sorted portfolios. Consistent with previous literature (Lustig et al. (2011) and Menkhoff et al. (2012)), it is interesting to find out whether investors are demanding compensation for exchange rate risk. Table 11 presents descriptive statistics of five currency portfolios sorted monthly on time $t-1$ estimate of rolling beta of those portfolios with respect to ΔDiB_{CA}. Rolling period is taken to be 12 months. The first portfolio ($P1$) contains currencies with the highest β_{CA} while the last portfolio ($P5$) contains currencies with the lowest β_{CA}.

As one can see, from both All Countries and Developed Countries results, the procedure produces monotonic pattern in mean returns and significant spread between the extreme portfolios which is captured by HML_{β}. Therefore, lower β_{CA} currencies (which generally tend to correspond to higher interest countries looking at previous tables) earn on average larger return than higher β_{CA} currencies providing support for risk-based explanation. Noticeably, both the mean and the Sharpe ratio of HML_{β} are half that of HML_{FX}. This is again explained by higher noise of forecast data; nevertheless, CA forecasts again prove to be very informative.

Individual currencies. Next we consider asset pricing exercise with test assets being switched from portfolios to individual currencies. As currency risk with time can change so does the demanded risk premium. Therefore, to make sure the same consistent 'cross-sectional' carry trade strategy is considered (going long high risk currencies and short low risk ones) we follow Lustig et al. (2011, p.3753) (in particular, the section which they call 'Conditional Risk Premiums').

Table 12 contains FMB estimation results. As one can notice ΔDiB_{CA} price of risk is significant and quantitatively similar to that of Table 4 while λ_{RX} is as always not significant. Inherently, strategies on individual currencies contain a lot of noise which is also reflected in the lower R^2 measure relative to that when portfolios are used as test assets.

Additional robustness. Here we briefly describe additional exercises performed to make the proposed case more robust. Firstly, as argued above, in May 1995 there was a change in the way top and bottom forecasts are reported. Hence, we re-estimated base case asset pricing tests with May 1995 as the start date for forecast collection. The results are reported in Tables C.1-C.5 in Appendix. Again, ΔDiB_{CA} on All (and Developed) Countries is the only one that comfortably survives.

Secondly, wary of the peso events, consistent with Menkhoff et al. (2012) we winsorize the extreme high values of the ΔDiB_{CA} at 95%-tile and see if it makes any difference. As Table C.7 suggests peso events cannot be entirely responsible for observed carry portfolio premia. All the results remain qualitatively unchanged relative to the base case.

Thirdly, we look at exchange rate component of the return - Δs_{t+1} - of each portfolio. We find that earlier observed monotonic pattern in portfolio betas is mainly attributed to sensitivities of the exchange rate component to ΔDiB_{CA}. Hence, consistent with earlier literature (Lustig et al. (2011) and Menkhoff et al. (2012)) we find support to exchange rate risk compensation as a source of carry premia. The results are available in Table C.8. Notice, that again current account disagreement shock is the only factor for which betas on extreme portfolios are significant with opposite intuitive signs.

Fourthly, we consider a simpled measure of individual differences in beliefs: $DiB(factor)^{simple} = factor_{t+k}^{TOP} - factor_{t+k}^{BOTTOM}$ from which the aggregate DiB's and corresponding shocks are constructed. Table C.9 displays the estimated coefficients. The conclusions are unchanged[20].

Finally, instead of separating into developed and developing countries subsamples we split all countries into those appearing the Blue Chip (BC) database and those that do not (ex-BC). Test assets are constructed on currencies in these two categories. Tables C.10-C.14 suggest that DIB_{CA} price of risk is marginally significant at 10% on BC sample and highly significant on ex-BC sample. Therefore, there is information in forecasts about some currencies which are relevant for pricing others.

[20]Separately, in unreported results we also find that aggregate DiB proxy constructed from XS standard deviation rather XS mean of individual country-month DiB's indicates once more current account as the only factor containing relevant information for pricing carry return portfolios. Hence, no matter how we tweak the procedure CA forecasts remain the informative source of carry trade performance.

4 Conclusion

FX traders often describe carry returns as picking up pennies in front of a steam roller. Most of the time it pays off. But every once in a while, the low-yielding currencies suddenly appreciate, and investors caught short are squashed. In this paper, we study the risk-return profile of this strategy that borrows in low interest rate currencies and invests in high interest rate currencies. If high interest rate currencies deliver low returns during bad times, then currency excess returns simply compensate investors for higher risk-exposure and carry trade returns reflect time-varying risk premia (Fama, 1984; Engel, 1996).

Armed with agents' expectations of future fundamentals and prices, we construct proxies of macroeconomic disagreement and find that investment currencies deliver low returns whereas funding currencies offer a hedge when disagreement about the current account is unexpectedly high. This result suggests that investors demand a currency risk premium for bearing external adjustment risk via the trade channel, thus suggesting an economically meaningful explanation of the UIP anomaly in foreign exchange markets.

Table 1: Descriptive Statistics - MAD level

This table presents summary statistics of aggregate dispersions in beliefs on financial and economic indicators. Dispersions in beliefs proxies are constructed as cross sectional averages of individual factor-year disagreement measures. The latter are in turn received as $DiB_{factor} = \sqrt{\log 2 \times (\log factor_{t+k}^{f,FH_{TOP}} - \log factor_{t+k}^{f,FH_{BOTTOM}})}$. AC_k denotes the k^{th}-order autocorrelation coefficient whereas Q_k is k^{th} percentile. The sample runs from July 1993 to December 2009. Forecast data are collected from *Blue Chip Economic Indicators*.

	CA	*FX*	*IR*	*PI*	*RG*
mean	0.10	0.26	0.10	0.10	0.10
std	0.02	0.03	0.01	0.01	0.01
median	0.10	0.27	0.10	0.10	0.09
skewness	-0.03	-0.42	0.16	0.53	0.63
kurtosis	3.19	3.15	3.99	2.71	3.06
AC_1	0.82	0.73	0.80	0.87	0.87
AC_3	0.73	0.60	0.66	0.75	0.75
AC_{12}	0.59	0.25	0.20	0.37	-0.05
Q_5	0.07	0.21	0.07	0.08	0.08
Q_{95}	0.13	0.31	0.12	0.12	0.12

Table 2: Descriptive Statistics - MAD innovations

This table presents statistical properties of the innovations to aggregate disagreements fitting an $AR(2)$ process to each of the level series based on Box-Jenkins statistic. *Panel A* reports descriptive statistics on individual macro variable time series while *Panel B* shows the correlation structure among those. The sample runs from September 1993 to December 2009. Forecast data are collected from *Blue Chip Economic Indicators*.

Panel A: Individual Series Statistics					
	CA	*FX*	*IR*	*PI*	*RG*
std	0.01	0.02	0.01	0.01	0.01
skewness	-0.23	-0.42	0.03	-0.11	-0.26
kurtosis	4.02	4.37	4.41	4.00	5.46
AC_1	-0.06	-0.04	0.02	0.00	-0.01
Panel B: Sample Cross Correlations					
CA	1.00				
FX	0.27	1.00			
IR	0.34	0.43	1.00		
PI	0.26	0.41	0.37	1.00	
RG	0.20	0.45	0.40	0.58	1.00

Table 3: Descriptive Statistics - FX carry portfolios

This table presents descriptive statistics of five currency portfolios sorted monthly on time $t-1$ forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. RX denotes the average across all portfolios. HML is a long-short strategy that buys $P5$ and sells $P1$. The table also reports the first order autocorrelation coefficient (AC_1), standard error of the mean (*mean SE*) with Newey and West (1987), the annualized Sharpe ratio (*Sharpe*), and the portfolios' turnover (*turn*). Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The sample runs from September 1993 to December 2009. Exchange rates are from *Datastream*.

Portfolio	*1*	*2*	*3*	*4*	*5*	*HML*	*RX*
			All Countries				
mean	-2.30	-0.45	2.06	2.90	8.82	11.12	2.21
std	6.85	6.76	7.09	7.23	8.93	8.43	6.33
median	-0.91	0.77	1.63	4.33	10.53	11.30	4.04
skewness	0.07	-0.23	-0.42	-0.56	-0.22	-0.27	-0.49
kurtosis	4.38	4.00	6.36	7.15	6.70	5.06	5.19
AC_1	0.12	0.09	0.22	0.20	0.26	0.20	0.20
mean SE	0.54	0.50	0.63	0.59	0.83	0.72	0.55
Sharpe	-0.34	-0.07	0.29	0.40	0.99	1.32	0.35
turn	0.18	0.31	0.32	0.29	0.16		
			Developed Countries				
mean	-2.09	0.67	1.82	2.05	5.57	7.65	1.60
std	8.84	9.37	9.12	8.54	10.51	9.98	8.05
median	-1.10	1.52	5.43	2.40	5.16	10.24	4.29
skewness	0.08	0.10	-0.17	-0.79	-0.07	-0.92	-0.10
kurtosis	3.22	3.48	4.07	6.82	6.61	6.68	4.13
AC_1	0.10	0.09	0.13	0.16	0.09	0.17	0.13
mean SE	0.68	0.71	0.72	0.70	0.80	0.83	0.65
Sharpe	-0.24	0.07	0.20	0.24	0.53	0.77	0.20
turn	0.14	0.28	0.32	0.22	0.12		

Table 4: Asset Pricing - Dispersion in Beliefs on Current Account

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the current account changes (ΔDiB_{CA}) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM and Fama and MacBeth (1973), FMB, estimates of the market price of risk λ, the cross-sectional R^2 as well as the factor loadings b. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. *sh* denotes Shanken (1992) standard errors. $pval_\chi$ denotes p-values from the cross-sectional asymptotic asset pricing test for the null hypothesis of zero pricing errors based on χ^2-distributed test statistics. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings									
	All Countries					*Developed Countries*			
	RX	CA	R^2	$pval_\chi$		RX	CA	R^2	$pval_\chi$
b_{GMM}	0.17	-1.69	99%	96%	b_{GMM}	0.16	-1.58	95%	94%
	(0.11)	(0.66)				(0.14)	(1.31)		
λ_{GMM}	0.14	-1.78			λ_{GMM}	0.13	-1.67		
	(0.35)	(0.73)				(0.35)	(1.41)		
λ_{FMB}	0.14	-1.78	99%		λ_{FMB}	0.13	-1.67	95%	
	(0.16)	(0.40)		71%		(0.16)	(0.69)		59%
(sh)	(0.13)	(0.68)		95%	*(sh)*	(0.17)	(1.14)		94%
Panel II: Factor Betas									
Porfolio	α	β_{RX}	β_{CA}	R^2	*Porfolio*	α	β_{RX}	β_{CA}	R^2
1	-0.51	1.03	0.28	58%	*1*	-0.30	0.91	0.18	47%
	(0.15)	(0.15)	(0.11)			(0.17)	(0.17)	(0.13)	
2	-0.15	0.89	0.12	74%	*2*	-0.12	1.19	0.07	69%
	(0.08)	(0.06)	(0.07)			(0.10)	(0.09)	(0.09)	
3	0.01	0.97	-0.02	80%	*3*	-0.02	1.22	-0.02	75%
	(0.07)	(0.06)	(0.07)			(0.10)	(0.07)	(0.10)	
4	0.10	0.99	-0.08	78%	*4*	0.01	1.10	-0.06	69%
	(0.08)	(0.07)	(0.07)			(0.10)	(0.09)	(0.09)	
5	0.55	1.12	-0.30	63%	*5*	0.27	1.34	-0.14	67%
	(0.13)	(0.09)	(0.12)			(0.13)	(0.14)	(0.13)	

Table 5: Asset Pricing - Dispersion in Beliefs on Exchange Rate

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the exchange rate changes (ΔDiB_{FX}) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM and Fama and MacBeth (1973), FMB, estimates of the market price of risk λ, the cross-sectional R^2 as well as the factor loadings b. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. *sh* denotes Shanken (1992) standard errors. $pval_\chi$ denotes p-values from the cross-sectional asymptotic asset pricing test for the null hypothesis of zero pricing errors based on χ^2-distributed test statistics. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings

	All Countries					*Developed Countries*			
	RX	FX	R^2	$pval_\chi$		RX	FX	R^2	$pval_\chi$
b_{GMM}	0.07	-1.69	77%	72%	b_{GMM}	0.06	-0.77	90%	92%
	(0.23)	(1.48)				(0.13)	(0.85)		
λ_{GMM}	0.14	-6.70			λ_{GMM}	0.16	-3.05		
	(1.00)	(5.92)				(0.52)	(3.38)		
λ_{FMB}	0.14	-6.70	77%		λ_{FMB}	0.16	-3.05	90%	
	(0.16)	(1.49)		1%		(0.16)	(1.24)		55%
(sh)	(0.13)	(4.56)		74%	*(sh)*	(0.17)	(1.90)		89%

Panel II: Factor Betas

Porfolio	α	β_{RX}	β_{FX}	R^2	*Porfolio*	α	β_{RX}	β_{FX}	R^2
1	-0.52	1.05	0.05	57%	*1*	-0.31	0.93	0.12	47%
	(0.15)	(0.16)	(0.06)			(0.16)	(0.17)	(0.09)	
2	-0.15	0.90	0.04	74%	*2*	-0.12	1.20	0.02	68%
	(0.08)	(0.06)	(0.04)			(0.10)	(0.09)	(0.05)	
3	0.01	0.97	0.02	80%	*3*	-0.02	1.22	-0.01	75%
	(0.07)	(0.06)	(0.04)			(0.10)	(0.07)	(0.05)	
4	0.10	0.98	-0.05	78%	*4*	0.01	1.09	0.02	69%
	(0.08)	(0.07)	(0.04)			(0.10)	(0.09)	(0.06)	
5	0.55	1.10	-0.06	62%	*5*	0.27	1.33	-0.05	67%
	(0.13)	(0.09)	(0.07)			(0.13)	(0.14)	(0.09)	

Table 6: Asset Pricing - Dispersion in Beliefs on Interest Rate

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the nominal 3-month interest rates (ΔDiB_{IR}) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM and Fama and MacBeth (1973), FMB, estimates of the market price of risk λ, the cross-sectional R^2 as well as the factor loadings b. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. *sh* denotes Shanken (1992) standard errors. $pval_\chi$ denotes p-values from the cross-sectional asymptotic asset pricing test for the null hypothesis of zero pricing errors based on χ^2-distributed test statistics. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings

	All Countries					*Developed Countries*			
	RX	IR	R^2	$pval_\chi$		RX	IR	R^2	$pval_\chi$
b_{GMM}	0.10	-4.14	95%	91%	b_{GMM}	0.05	-1.27	88%	68%
	(0.15)	(3.32)				(0.06)	(0.94)		
λ_{GMM}	0.14	-2.27			λ_{GMM}	0.13	-0.69		
	(0.61)	(1.85)				(0.25)	(0.52)		
λ_{FMB}	0.14	-2.27	95%		λ_{FMB}	0.13	-0.69	88%	
	(0.16)	(0.51)		23%		(0.16)	(0.30)		34%
(sh)	(0.13)	(1.40)		92%	*(sh)*	(0.15)	(0.35)		59%

Panel II: Factor Betas

Porfolio	α	β_{RX}	β_{IR}	R^2	*Porfolio*	α	β_{RX}	β_{IR}	R^2
1	-0.52	1.05	0.21	57%	*1*	-0.31	0.92	0.41	48%
	(0.15)	(0.16)	(0.13)			(0.16)	(0.17)	(0.16)	
2	-0.15	0.90	0.09	74%	*2*	-0.12	1.20	0.08	68%
	(0.07)	(0.06)	(0.11)			(0.10)	(0.09)	(0.22)	
3	0.01	0.97	0.02	80%	*3*	-0.02	1.22	0.09	75%
	(0.07)	(0.06)	(0.10)			(0.10)	(0.07)	(0.15)	
4	0.10	0.98	-0.11	78%	*4*	0.01	1.09	-0.21	69%
	(0.08)	(0.07)	(0.09)			(0.10)	(0.09)	(0.16)	
5	0.55	1.10	-0.21	62%	*5*	0.27	1.33	-0.31	67%
	(0.13)	(0.09)	(0.24)			(0.13)	(0.14)	(0.24)	

Table 7: Asset Pricing - Dispersion in Beliefs on Inflation Rate

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the inflation rates (ΔDiB_{PI}) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM and Fama and MacBeth (1973), FMB, estimates of the market price of risk λ, the cross-sectional R^2 as well as the factor loadings b. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. *sh* denotes Shanken (1992) standard errors. $pval_\chi$ denotes p-values from the cross-sectional asymptotic asset pricing test for the null hypothesis of zero pricing errors based on χ^2-distributed test statistics. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings									
	All Countries					*Developed Countries*			
	RX	PI	R^2	$pval_\chi$		RX	PI	R^2	$pval_\chi$
b_{GMM}	0.08	-4.79	95%	86%	b_{GMM}	0.11	-4.11	95%	99%
	(0.12)	(2.82)				(0.14)	(4.57)		
λ_{GMM}	0.14	-1.77			λ_{GMM}	0.26	-1.52		
	(0.54)	(1.07)				(0.51)	(1.70)		
λ_{FMB}	0.14	-1.77	95%		λ_{FMB}	0.26	-1.52	95%	
	(0.16)	(0.40)		22%		(0.17)	(0.62)		77%
(sh)	(0.13)	(1.03)		92%	*(sh)*	(0.23)	(1.41)		98%
Panel II: Factor Betas									
Porfolio	α	β_{RX}	β_{PI}	R^2	*Porfolio*	α	β_{RX}	β_{PI}	R^2
1	-0.52	1.05	0.24	57%	*1*	-0.31	0.93	0.30	47%
	(0.15)	(0.16)	(0.15)			(0.16)	(0.17)	(0.21)	
2	-0.15	0.90	0.16	74%	*2*	-0.12	1.20	0.12	69%
	(0.07)	(0.06)	(0.12)			(0.09)	(0.09)	(0.19)	
3	0.01	0.97	-0.03	80%	*3*	-0.02	1.22	0.09	75%
	(0.07)	(0.06)	(0.12)			(0.10)	(0.07)	(0.18)	
4	0.10	0.98	-0.07	77%	*4*	0.01	1.09	0.08	69%
	(0.08)	(0.07)	(0.08)			(0.10)	(0.09)	(0.17)	
5	0.55	1.10	-0.31	62%	*5*	0.27	1.32	-0.04	67%
	(0.13)	(0.09)	(0.20)			(0.13)	(0.14)	(0.22)	

Table 8: Asset Pricing - Dispersion in Beliefs on Real Growth

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the real GDP growth rates (ΔDiB_{RG}) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM and Fama and MacBeth (1973), FMB, estimates of the market price of risk λ, the cross-sectional R^2 as well as the factor loadings b. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. *sh* denotes Shanken (1992) standard errors. $pval_\chi$ denotes p-values from the cross-sectional asymptotic asset pricing test for the null hypothesis of zero pricing errors based on χ^2-distributed test statistics. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings									
	All Countries					*Developed Countries*			
	RX	RG	R^2	$pval_\chi$		RX	RG	R^2	$pval_\chi$
b_{GMM}	-0.08	-5.56	93%	89%	b_{GMM}	0.01	-2.23	78%	58%
	(0.14)	(4.78)				(0.09)	(2.51)		
λ_{GMM}	0.15	-2.24			λ_{GMM}	0.20	-0.90		
	(0.91)	(1.96)				(0.46)	(1.02)		
λ_{FMB}	0.15	-2.24	93%		λ_{FMB}	0.20	-0.90	78%	
	(0.16)	(0.51)		10%		(0.17)	(0.41)		14%
(sh)	(0.13)	(1.58)		91%	*(sh)*	(0.17)	(0.61)		61%
Panel II: Factor Betas									
Porfolio	α	β_{RX}	β_{RG}	R^2	*Porfolio*	α	β_{RX}	β_{RG}	R^2
1	-0.52	1.05	0.24	57%	*1*	-0.31	0.94	0.37	47%
	(0.15)	(0.16)	(0.21)			(0.16)	(0.16)	(0.27)	
2	-0.15	0.90	-0.02	74%	*2*	-0.12	1.20	0.19	69%
	(0.08)	(0.06)	(0.11)			(0.09)	(0.09)	(0.15)	
3	0.01	0.97	0.03	80%	*3*	-0.02	1.22	0.11	75%
	(0.07)	(0.06)	(0.11)			(0.10)	(0.07)	(0.14)	
4	0.10	0.98	-0.02	77%	*4*	0.01	1.09	-0.12	69%
	(0.08)	(0.07)	(0.10)			(0.10)	(0.09)	(0.15)	
5	0.55	1.09	-0.23	62%	*5*	0.27	1.32	-0.07	67%
	(0.13)	(0.08)	(0.20)			(0.13)	(0.14)	(0.21)	

Table 9: Asset Pricing - Dispersion in Beliefs on Current Account (Factor-Mimicking)

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the ΔDiB_{CA}-mimicking portfolio ($\widetilde{\Delta DiB}_{CA}$) according to Balduzzi and Robotti (2008) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM and Fama and MacBeth (1973), FMB, estimates of the market price of risk λ, the cross-sectional R^2 as well as the factor loadings b. *Panel B* reports least-squares estimates of time series regressions. $\bar{f}$ denotes the factor means. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. *sh* denotes Shanken (1992) standard errors. $pval_\chi$ denotes p-values from the respective - cross-sectional or time-series - asymptotic asset pricing test for the null hypothesis of zero pricing errors based on χ^2-distributed test statistics. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings									
	All Countries					*Developed Countries*			
	RX	CA	R^2	$pval_\chi$		RX	CA	R^2	$pval_\chi$
b_{GMM}	0.17	-0.17	99%	73%	b_{GMM}	0.17	-0.15	91%	49%
	(0.08)	(0.05)				(0.11)	(0.08)		
λ_{GMM}	0.14	-0.76			λ_{GMM}	0.21	-0.59		
	(0.23)	(0.30)				(0.24)	(0.41)		
λ_{FMB}	0.14	-0.76	99%		λ_{FMB}	0.21	-0.59	91%	
	(0.16)	(0.21)		71%		(0.17)	(0.31)		39%
(sh)	(0.13)	(0.20)		74%	*(sh)*	(0.15)	(0.29)		53%
$\bar{f}$	0.14	-0.72			$\bar{f}$	0.14	-0.72		
Panel II: Factor Betas									
Porfolio	α	β_{RX}	β_{CA}	R^2	*Porfolio*	α	β_{RX}	β_{CA}	R^2
1	-0.04	0.61	0.57	81%	*1*	0.09	0.56	0.48	64%
	(0.08)	(0.05)	(0.14)			(0.14)	(0.15)	(0.11)	
2	0.06	0.71	0.24	82%	*2*	0.13	0.97	0.29	75%
	(0.06)	(0.03)	(0.08)			(0.09)	(0.07)	(0.12)	
3	-0.02	1.00	-0.04	80%	*3*	0.07	1.13	0.11	76%
	(0.07)	(0.07)	(0.07)			(0.10)	(0.06)	(0.11)	
4	-0.04	1.11	-0.17	81%	*4*	-0.04	1.15	-0.07	69%
	(0.08)	(0.06)	(0.05)			(0.11)	(0.09)	(0.08)	
5	0.04	1.57	-0.61	90%	*5*	0.15	1.44	-0.15	68%
	(0.07)	(0.05)	(0.06)			(0.13)	(0.13)	(0.09)	
$pval_\chi$	94%				pval_χ	51%			

Table 10: Asset Pricing - horse race among ΔDiB_{CA}, HML_{FX}, and VOL_{FX}

This table reports cross-sectional asset pricing results. As factors the linear SDF model includes the average across currency portfolios (RX) and two of the three - HML_{FX}, ΔDiB_{CA} and VOL_{FX} - one of which, denoted by $^{\perp}$, is always orthogonalized with respect to the other. For the latter two the horse race between the corresponding mimicking portfolios, denoted by tilde, is also included. The test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. The panels report GMM estimates of the factor loadings b, the market price of risk λ, the cross-sectional R^2 as well as p-values from the cross-sectional asymptotic asset pricing test $pval_{\chi}$. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel A: ΔDiB_{CA} vs. HML_{FX}											
	RX	$\Delta DiB_{CA}^{\perp}$	HML_{FX}	R^2	$pval_{\chi}$		RX	ΔDiB_{CA}	$HML_{FX}^{\perp}$	R^2	$pval_{\chi}$
b_{GMM}	0.10	-0.09	0.13	100%	93%	b_{GMM}	0.10	-0.14	0.07	100%	93%
	(0.11)	(0.11)	(0.03)				(0.12)	(0.06)	(0.09)		
λ_{GMM}	0.14	0.04	1.07			λ_{GMM}	0.14	-0.73	0.47		
	(0.22)	(0.18)	(0.40)				(0.23)	(0.32)	(0.25)		
Panel B: ΔDiB_{CA} vs. VOL_{FX}											
	RX	$\Delta DiB_{CA}^{\perp}$	VOL_{FX}	R^2	$pval_{\chi}$		RX	ΔDiB_{CA}	$VOL_{FX}^{\perp}$	R^2	$pval_{\chi}$
b_{GMM}	0.30	-2.42	3.81	100%	97%	b_{GMM}	0.30	-2.39	5.22	100%	97%
	(0.39)	(2.36)	(14.16)				(0.39)	(2.29)	(15.45)		
λ_{GMM}	0.14	-2.53	0.02			λ_{GMM}	0.14	-2.51	0.04		
	(0.44)	(2.47)	(0.12)				(0.44)	(2.40)	(0.13)		
Panel C: $\widetilde{\Delta DiB}_{CA}$ vs. $\widetilde{VOL}_{FX}$											
	RX	$\widetilde{\Delta DiB}_{CA}^{\perp}$	$\widetilde{VOL}_{FX}$	R^2	$pval_{\chi}$		RX	$\widetilde{\Delta DiB}_{CA}$	$\widetilde{VOL}_{FX}^{\perp}$	R^2	$pval_{\chi}$
b_{GMM}	0.19	-0.18	-0.054	99%	59%	b_{GMM}	0.19	-0.18	0.01	99%	61%
	(0.12)	(0.09)	(0.034)				(0.12)	(0.06)	(0.05)		
λ_{GMM}	0.14	-0.35	-1.15			λ_{GMM}	0.14	-0.76	-0.70		
	(0.24)	(0.25)	(0.50)				(0.25)	(0.29)	(0.45)		

Table 11: Portfolios Sorted on β_{CA}

This table presents descriptive statistics of five currency portfolios sorted monthly on time $t-1$ estimate of rolling beta of those portfolios with respect to ΔDiB_{CA}. The first portfolio ($P1$) contains currencies with the highest β_{CA} while the last portfolio ($P5$) contains currencies with the lowest β_{CA}. HML is a long-short strategy that buys $P5$ and sells $P1$. The table also reports the first order autocorrelation coefficient (AC_1), standard error of the mean (*mean SE*) with Newey and West (1987), the annualized Sharpe ratio (*Sharpe*), and the portfolios' turnover (*turn*). Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The sample runs from September 1994 to December 2009. Exchange rates are from *Datastream*.

Portfolio	*1*	*2*	*3*	*4*	*5*	HML_{β}
			All Countries			
mean	-0.04	0.07	2.45	2.25	3.55	3.59
std	11.15	7.41	6.39	6.82	10.50	11.84
median	2.42	2.30	1.49	1.29	5.51	1.07
skewness	-0.55	-0.55	0.02	-0.01	-0.81	-0.02
kurtosis	4.59	5.76	5.34	6.20	6.83	4.79
AC_1	0.25	0.04	0.18	0.11	0.42	0.31
mean SE	1.05	0.55	0.52	0.53	1.15	1.00
Sharpe	0.00	0.01	0.38	0.33	0.34	0.30
turn	0.23	0.42	0.44	0.41	0.22	
			Developed Countries			
mean	-0.23	0.58	1.41	1.80	4.34	4.56
std	10.04	10.26	8.63	9.67	9.11	8.80
median	1.18	1.10	3.40	3.01	2.37	5.75
skewness	0.23	0.28	0.08	-0.20	-0.84	-0.24
kurtosis	4.53	3.88	3.62	5.23	6.41	3.80
AC_1	-0.01	0.06	0.10	0.18	0.11	0.01
mean SE	0.73	0.78	0.68	0.85	0.71	0.65
Sharpe	-0.02	0.06	0.16	0.19	0.48	0.52
turn	0.26	0.45	0.45	0.38	0.24	

Table 12: Asset Pricing - Dispersion in Beliefs on Current Account. Individual Currencies

This table reports asset pricing results for the type of 'cross-sectional' carry strategies which are studied by Lustig et al. (2011) implemented on individual currencies (see p.3753 in their article). The reported results contain Fama and MacBeth (1973), FMB, estimates of the market price of risk λ, the cross-sectional R^2 as well as Newey and West (1987) standard errors with Andrews (1991) optimal lag selection procedure. Excess returns are expressed in percentage and adjusted for transaction costs that occur in short and long positions. The individual currency strategies are monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

	Factor Prices		
	RX	CA	R^2
λ_{FMB}	0.21	-1.89	19%
	(0.30)	(0.52)	

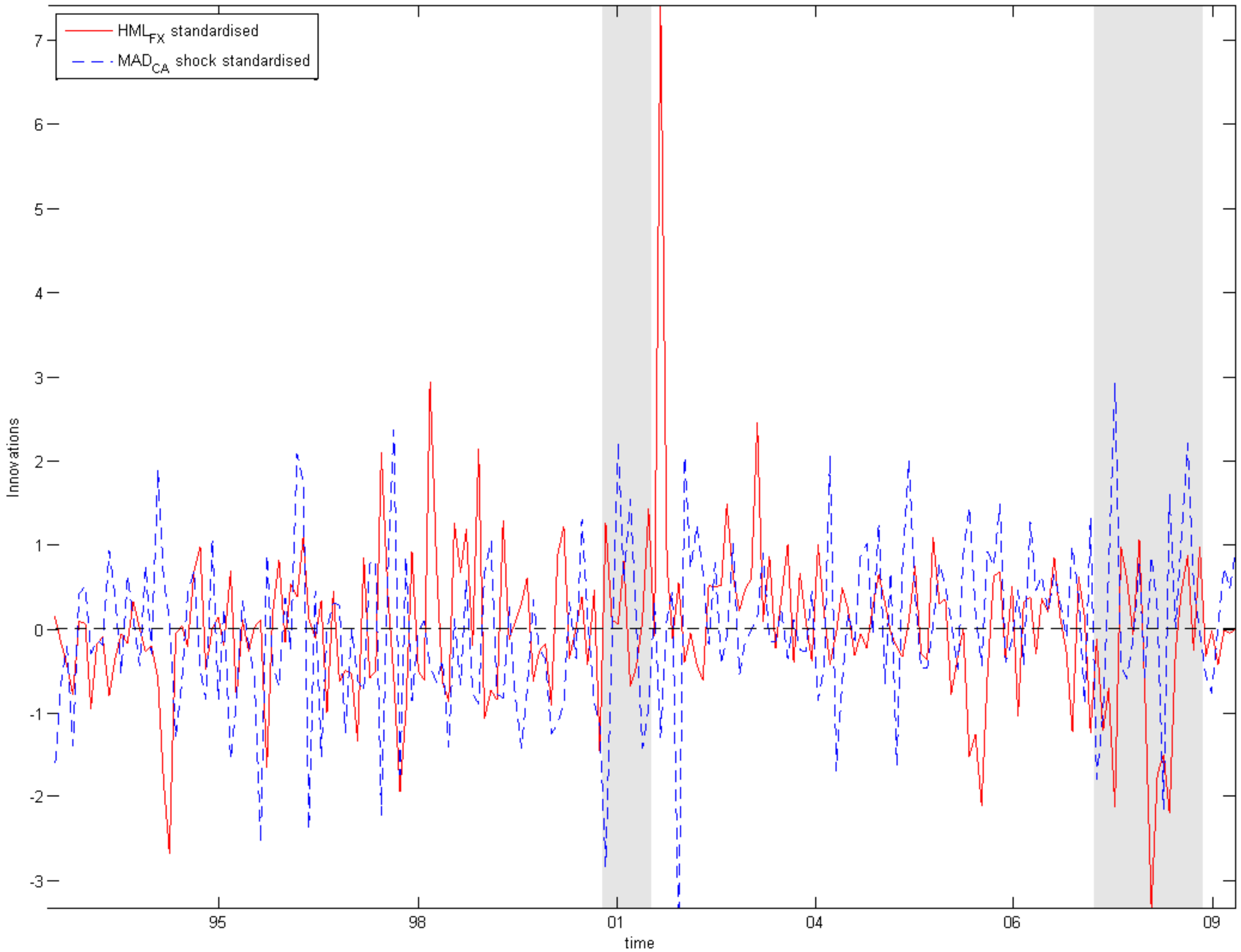

Figure 1: The figure plots the shocks to MAD^{CA} versus return on the HML_{FX} of Lustig et al. (2011)

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Appendices

A Example of forecasts extract

Source: Aspen Publishers website, `http://www.aspenpublishers.com/%5CAspenUI%5CSampleIssuesPDF%5C968.pdf`

6 ■ BLUE CHIP ECONOMIC INDICATORS ■ JANUARY 10, 2013

BLUE CHIP INTERNATIONAL CONSENSUS FORECASTS

	ANNUAL DATA						END OF YEAR			
	Real Economic Growth % Change GDP		Inflation % Change Consumer Prices		Current Account In Billions Of U.S. Dollars		Exchange Rate [1] Against U.S. $		Interest Rates 3-Month	
CANADA	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**1.9**	**2.5**	**1.8**	**2.1**	**-60.2**	**-56.2**	**1.00**	**1.02**	**1.14**	**1.73**
Top 3 Avg.	2.2	3.1	2.0	2.6	-47.2	-40.4	1.03	1.07	1.37	2.15
Bottom 3 Avg.	1.5	2.2	1.6	1.4	-72.3	-70.0	0.96	0.98	0.97	1.30
Last Month Avg.	2.0	na	1.8	na	-52.5	na	1.01	na	1.26	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	2.5	2.1	2.9	1.7	-47.1	-58.4	0.98	1.01	1.24	0.82
MEXICO	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**3.4**	**4.1**	**4.0**	**3.8**	**-9.3**	**-11.4**	**12.69**	**12.73**	**4.87**	**5.49**
Top 3 Avg.	3.8	4.9	4.4	4.2	-5.4	-5.5	13.02	13.12	5.32	6.00
Bottom 3 Avg.	2.8	3.5	3.8	3.5	-13.7	-17.7	12.23	12.27	4.47	4.98
Last Month Avg.	3.5	na	3.9	na	-10.4	na	12.75	na	4.72	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	3.9	3.9	3.4	4.1	-11.6	-5.3	12.70	13.70	4.85	4.32
JAPAN	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**0.7**	**1.2**	**-0.2**	**0.7**	**49.9**	**46.5**	**84.2**	**87.0**	**0.17**	**0.24**
Top 3 Avg.	1.5	1.8	0.1	1.8	79.3	81.8	90.3	93.6	0.27	0.40
Bottom 3 Avg.	0.2	0.7	-0.5	-0.2	23.6	13.8	79.5	80.8	0.08	0.08
Last Month Avg.	0.8	na	-0.3	na	65.1	na	83.6	na	0.15	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	-0.7	1.8	-0.3	0.0	130.3	65.0	87.2	76.7	0.17	0.15
UNITED KINGDOM	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**1.0**	**1.7**	**2.5**	**2.1**	**-76.8**	**-66.7**	**1.58**	**1.58**	**0.52**	**0.81**
Top 3 Avg.	1.3	2.2	2.9	2.6	-58.9	-48.8	1.62	1.66	0.66	1.07
Bottom 3 Avg.	0.4	1.1	2.1	1.7	-92.9	-86.2	1.53	1.49	0.37	0.51
Last Month Avg.	1.2	na	2.4	na	-61.5	na	1.56	na	0.58	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	0.7	-0.1	4.5	2.8	-19.8	-79.3	1.64	1.56	0.50	1.10
SOUTH KOREA	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**3.1**	**4.0**	**2.5**	**2.9**	**32.7**	**29.3**	**1080**	**1052**	**3.10**	**4.28**
Top 3 Avg.	3.6	4.9	2.9	3.3	42.6	43.6	1110	1096	3.46	5.12
Bottom 3 Avg.	2.4	3.1	2.0	2.5	24.1	17.7	1043	1011	2.81	3.54
Last Month Avg.	3.1	na	2.6	na	23.7	na	1069	na	3.18	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	3.6	2.3	4.0	2.3	23.2	31.4	1064	1149	2.87	3.56
GERMANY	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**0.9**	**1.4**	**1.9**	**1.9**	**188.3**	**186.9**	**1.26**	**1.24**	**0.41**	**0.70**
Top 3 Avg.	1.4	2.1	2.2	2.2	210.4	208.1	1.31	1.29	0.76	0.98
Bottom 3 Avg.	0.6	0.5	1.7	1.7	166.3	165.7	1.19	1.20	0.21	0.35
Last Month Avg.	1.0	na	1.8	na	179.6	na	1.24	na	0.46	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	3.1	0.9	2.3	2.1	176.1	196.4	1.32	1.30	0.19	1.32
TAIWAN	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**3.1**	**4.1**	**1.6**	**1.9**	**42.4**	**42.8**	**29.29**	**29.21**	**1.10**	**1.37**
Top 3 Avg.	3.8	4.9	1.9	2.3	45.2	46.1	30.49	30.34	1.33	1.56
Bottom 3 Avg.	2.2	3.3	1.4	1.5	39.4	39.1	28.40	28.51	0.91	1.20
Last Month Avg.	3.1	na	1.8	na	39.8	na	29.35	na	1.06	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	4.0	1.3	1.4	1.9	37.8	40.2	29.00	30.30	0.94	1.15
NETHERLANDS	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**-0.2**	**0.9**	**2.4**	**1.9**	**53.9**	**56.1**	**1.26**	**1.24**	**0.41**	**0.70**
Top 3 Avg.	0.7	1.7	2.6	2.4	59.7	61.8	1.31	1.29	0.76	0.98
Bottom 3 Avg.	-0.8	0.1	2.1	1.4	46.9	50.2	1.19	1.20	0.21	0.35
Last Month Avg.	0.1	na	2.3	na	52.1	na	1.24	na	0.46	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	1.3	-0.8	2.3	2.5	58.3	56.9	1.32	1.30	0.19	1.32

*Best estimates available. **In most all cases, actual data for 2012 GDP, consumer prices and current account are not yet available. Where it is unavailable, figures are consensus forecasts from December 10, 2012 Blue Chip Economic Indicators. Figures are currency units per U.S. dollar except for U.K., Australia and the Euro.

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BLUE CHIP INTERNATIONAL CONSENSUS FORECASTS

	ANNUAL DATA						END OF YEAR			
	Real Economic Growth % Change GDP		Inflation % Change Consumer Prices		Current Account In Billions Of U.S. Dollars		Exchange Rate [1] Against U.S. $		Interest Rates 3-Month	
RUSSIA	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**3.4**	**3.9**	**6.3**	**5.9**	**64.5**	**45.9**	**31.1**	**31.5**	**6.72**	**6.52**
Top 3 Avg.	3.9	4.3	7.0	7.2	84.7	65.7	31.7	32.6	8.25	7.75
Bottom 3 Avg.	3.1	3.5	5.5	5.1	45.1	29.0	30.5	30.3	5.00	5.29
Last Month Avg.	3.6	na	6.4	na	55.2	na	31.4	na	7.22	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	4.3	3.7	8.4	5.3	82.7	83.4	30.10	31.90	7.50	6.87
FRANCE	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**0.2**	**1.0**	**1.7**	**1.6**	**-46.7**	**-40.6**	**1.26**	**1.24**	**0.41**	**0.70**
Top 3 Avg.	0.6	1.5	2.1	2.0	-42.5	-33.8	1.31	1.29	0.76	0.98
Bottom 3 Avg.	-0.1	0.1	1.3	0.9	-50.9	-47.4	1.19	1.20	0.21	0.35
Last Month Avg.	0.3	na	1.7	na	-44.4	na	1.24	na	0.46	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	1.7	0.1	2.1	2.2	-61.8	-51.1	1.32	1.30	0.19	1.32
BRAZIL	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**3.4**	**4.1**	**5.7**	**5.5**	**-54.8**	**-54.4**	**2.02**	**2.00**	**7.57**	**8.74**
Top 3 Avg.	4.3	5.1	6.1	6.2	-45.5	-44.1	2.11	2.12	7.86	9.48
Bottom 3 Avg.	2.1	3.4	5.2	5.1	-65.5	-66.2	1.94	1.89	7.29	8.00
Last Month Avg.	3.8	na	5.5	na	-56.4	na	2.01	na	7.93	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	2.9	1.5	6.5	5.4	-47.8	-51.8	2.04	1.82	7.05	10.90
HONG KONG	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**3.2**	**4.1**	**4.0**	**3.8**	**11.0**	**13.1**	**7.77**	**7.77**	**0.34**	**0.35**
Top 3 Avg.	4.1	5.0	4.8	4.3	14.0	15.9	7.80	7.79	0.49	0.50
Bottom 3 Avg.	2.2	3.3	3.1	3.4	8.0	10.7	7.75	7.76	0.17	0.19
Last Month Avg.	3.5	na	3.9	na	9.7	na	7.76	na	0.40	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	5.0	1.7	5.3	4.0	12.5	8.8	7.75	7.77	0.45	0.38
INDIA	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**6.0**	**7.0**	**7.6**	**6.7**	**-67.2**	**-63.4**	**52.8**	**51.7**	**8.08**	**8.04**
Top 3 Avg.	6.6	7.8	8.5	8.0	-52.2	-42.7	54.5	53.9	9.24	8.77
Bottom 3 Avg.	5.1	6.1	6.8	5.0	-80.0	-83.1	51.2	49.3	7.23	7.38
Last Month Avg.	6.2	na	7.7	na	-68.3	na	53.0	na	8.10	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	7.0	5.5	8.9	8.7	-56.2	-81.2	54.4	53.0	8.13	8.52
CHINA	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**8.0**	**8.1**	**3.1**	**3.6**	**242.2**	**224.3**	**6.22**	**6.12**	**4.71**	**4.98**
Top 3 Avg.	8.3	8.6	3.9	4.0	282.3	297.7	6.33	6.22	5.58	5.96
Bottom 3 Avg.	7.8	7.6	2.6	3.1	199.3	140.6	6.12	6.00	3.83	4.00
Last Month Avg.	8.0	na	3.1	na	242.7	na	6.19	na	4.83	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	9.2	7.7	5.4	2.7	280.4	230.4	6.23	6.29	3.90	5.47
AUSTRALIA	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**2.7**	**3.1**	**2.7**	**2.7**	**-87.3**	**-86.2**	**1.01**	**1.00**	**3.05**	**3.58**
Top 3 Avg.	3.3	3.6	3.1	3.1	-58.7	-60.0	1.06	1.07	3.41	4.05
Bottom 3 Avg.	2.2	2.5	2.1	2.3	-124.2	-117.0	0.93	0.94	2.73	3.13
Last Month Avg.	2.8	na	2.8	na	-70.9	na	1.00	na	3.32	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	2.0	3.5	3.5	1.9	-24.3	-57.8	1.05	0.97	3.25	4.66
EUROZONE	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
January Consensus	**0.0**	**0.9**	**2.0**	**1.8**	**127.4**	**153.8**	**1.26**	**1.24**	**0.41**	**0.70**
Top 3 Avg.	0.4	1.7	2.3	2.0	191.0	225.9	1.31	1.29	0.76	0.98
Bottom 3 Avg.	-0.4	-0.2	1.7	1.6	63.9	80.2	1.19	1.20	0.21	0.35
Last Month Avg.	0.1	na	2.0	na	134.3	na	1.24	na	0.46	na
	2011*	2012**	2011*	2012**	2011*	2012**	Latest	Year Ago	Latest	Year Ago
Actual	1.5	-0.4	2.7	2.5	10.3	108.5	1.32	1.30	0.19	1.32

Contributors to Blue Chip International Survey: IHS Global Insight, US; Federal Express Corporation, USA; Credit Suisse, US; JP Morgan, US; Economist Intelligence Unit, UK; BMO Capital Markets, Canada; UBS, US; AIG, New York, NY; Oxford Economics, US; Citigroup U.S. Economics; Societe Generale, New York, NY; Bank of America-Merrill Lynch, US; Nomura Capital Markets America, US; Morgan Stanley; US; Moody's Capital Markets, US; Wells Fargo & Company, US; Moody's Analytics, US; Swisse Re, U.S.; Barclays Capital, US; General Motors Corp., US; Wintrust Wealth Management, US; and Grupo de Economistas y Asociados, Mexico.

B Methodology

B.1 Cross-sectional test

The cross-sectional test could slightly vary from specifications known to authors, and, thus, described below in more detail. The corresponding moment conditions estimated are:

$$E[Rx_t^j M_t] = 0 \tag{6}$$
$$E[\Phi_t] = \mu_\Phi \tag{7}$$
$$vech[E[(\Phi_t - \mu_\Phi)(\Phi_t - \mu_\Phi)']] = vech[V_\Phi] \tag{8}$$

and $1 \leq j \leq n$ goes through each and every portfolio. Hence, in total we have $n + k + l$ moment conditions, where k is the number of risk factors and $l = k(k+1)/2$ is the number of non-repeating elements of covariance matrix of factors. Such specification (as in Burnside (2007) and Burnside (2011b)) also implicitly assumes factors are independent over time, and, hence factor covariance matrix is estimated as its simple sample analogue. One could extend by e.g. pre-setting GMM estimator be equal to that of Newey and West (1987).

Summing up, the vector $h(.)$ takes the following form:

$$h(z_t, \theta) = \begin{bmatrix} Rx_t[1 - (\Phi_t - \mu_\Phi)'b] \\ \Phi_t - \mu_\Phi \\ vech[(\Phi_t - \mu_\Phi)(\Phi_t - \mu_\Phi)'] - vech[V_\Phi] \end{bmatrix} \tag{9}$$

where

$$z_t' = \begin{bmatrix} Rx_t' & \Phi_t' \end{bmatrix}$$
$$\theta' = \begin{bmatrix} b' & \mu_\Phi' & vech[V_\Phi]' \end{bmatrix}$$

and $g(.)$ are the sample moment conditions:

$$g(Z_T, \theta) = \frac{1}{T} \sum_{t=1}^{T} h(z_t, \theta) \equiv E_T[h(z_t, \theta)] \tag{10}$$

where

$$Z_T' = \left\{ z_1' \quad z_2' \quad ... \quad z_T' \right\}$$

For joint estimation of first and second moments one can e.g. refer to Burnside (2007) and Burnside (2011b) whose methodology is followed in this article as well. V_Φ is estimated as part of GMM procedure in order not to underrate standard error of the price of risk λ. For parameter estimation the following linear combinations of moments (g) summarized in matrix a is set to zero:

$$\hat{a}_T = \begin{bmatrix} d_1' W & 0 & 0 \\ 0 & I_k & 0 \\ 0 & 0 & I_l \end{bmatrix} \tag{11}$$

with $d_1 = E_T[Rx_t(\Phi_t - \mu_\Phi)']$. Such structure ensures that parameters specifying both first and second moments of factors are set equal to their sample analogues. Estimates of b's can be taken as first or as second stage GMM estimates when considering only moments for pricing equations in isolation (first n rows of g) depending on the choice of W ('OLS case' of $W = I_{n\times n}$ was assumed throughout).

$$\hat{d}_T \equiv \left.\frac{\partial g(Z_T,\tilde{\theta})}{\partial \tilde{\theta}'}\right|_{\tilde{\theta}=\hat{\theta}_{GMM}} = \begin{bmatrix} -d_1 & E_T[Rx_t]\hat{b}'_{GMM} & 0 \\ 0 & -I_k & 0 \\ 0 & 0 & -I_l \end{bmatrix} \tag{12}$$

The asymptotic covariance matrix of g

$$S = \sum_{j=-\infty}^{\infty} E[h(z_t,\theta)h(z_{t-j},\theta)'] \tag{13}$$

is estimated consistently using Newey and West (1987) with optimal number of lags criterion according to Andrews (1991). It is assumed throughout the paper that covariance between factor second sample moments and other sample moments is zero.

The joint test for the pricing errors equal to zero is then performed via Cochrane (2005, eq. (11.6)) statistic which is $\chi^2(n-k)$-distributed.

Now from definition of λ in (5):

$$\hat{C}_T \equiv \left.\frac{\partial \lambda(\tilde{\theta})}{\partial \tilde{\theta}'}\right|_{\tilde{\theta}=\hat{\theta}_{GMM}} = \begin{bmatrix} V_\Phi & 0_{k\times k} & P \end{bmatrix} \tag{14}$$

where

$$\begin{aligned} P &= \frac{\partial \lambda(\tilde{\theta})}{\partial (vech[\tilde{V_\Phi}])'} \\ &= \begin{bmatrix} b_1 & b_2 & b_3 & \cdots & b_k & 0 & 0 & \cdots & 0 & \cdots & 0 & 0 & 0 \\ 0 & b_1 & 0 & \cdots & 0 & b_2 & b_3 & \cdots & b_k & \cdots & 0 & 0 & 0 \\ 0 & 0 & b_1 & \cdots & 0 & 0 & b_2 & \cdots & 0 & \cdots & 0 & 0 & 0 \\ \vdots & & & & & & \ddots & & & & & & \vdots \\ 0 & 0 & 0 & \cdots & 0 & 0 & 0 & \cdots & 0 & \cdots & b_{k-1} & b_k & 0 \\ 0 & 0 & 0 & \cdots & b_1 & 0 & 0 & \cdots & b_2 & \cdots & 0 & b_{k-1} & b_k \end{bmatrix} \end{aligned}$$

Hansen (1982) showed:

$$\sqrt{T}(\hat{\theta}_{GMM} - \theta) \xrightarrow{d} N(0, V_{\hat{\theta}}) \tag{15}$$

where

$$V_{\hat{\theta}} = (ad)^{-1}aSa'(d'a')^{-1} \tag{16}$$

Using delta method[21]:

$$\sqrt{T}(\hat{\lambda}_{GMM} - \lambda) \xrightarrow{d} N(0, CV_{\hat{\theta}}C') \tag{17}$$

The diagonal elements of the covariance matrix then help to decide whether particular factor is priced or not.

[21] See e.g. Hamilton (1994, p.214)

B.2 Time-series test

Time-series asset pricing test is a standard application of Cochrane (2005, ch 12.1). Nonetheless, it is noted that since one is working with multiple factors ($k > 1$) one needs to be careful with generalisation of the first formula given on p.234 that is admittedly correct for considered case $k = 1$.

However, as soon as one generalizes to multiple factors and introduces the moment vector consistent with notation on p.242 (the last equation):

$$h(z_t, \theta) = \begin{bmatrix} Rx_t - \alpha - \beta\Phi_t \\ (Rx_t - \alpha - \beta\Phi_t) \otimes \Phi_t \end{bmatrix} \tag{18}$$

where

$$z_t' = \begin{bmatrix} Rx_t' & \Phi_t' \end{bmatrix}$$
$$\theta' = \begin{bmatrix} \alpha' & vec[\beta]' \end{bmatrix}$$

then the resulting 'score' matrix must have the respective form:

$$\begin{aligned} \hat{d}_T &\equiv \left. \frac{\partial g(Z_T, \tilde{\theta})}{\partial \tilde{\theta}'} \right|_{\tilde{\theta} = \hat{\theta}_{GMM}} \\ &= - \begin{bmatrix} I_n & E_T[\Phi^{(1)}]I_n & E_T[\Phi^{(2)}]I_n & \cdots & E_T[\Phi^{(k)}]I_n \\ I_n \otimes E_T[\Phi] & I_n \otimes Q_\Phi^{(:,1)} & I_n \otimes Q_\Phi^{(:,2)} & \cdots & I_n \otimes Q_\Phi^{(:,k)} \end{bmatrix} \end{aligned}$$

where $\Phi^{(i)}$ denotes the i^{th} element, $Q_\Phi = E_T[\Phi\Phi']$, and $Q_\Phi^{(:,i)}$ denotes the i^{th} column. This, for instance, shows that the first formula on top of p.243 is actually not entirely true given the usual definition of the Kronecker product. The formula for $\hat{d}_T$ right above is the one used in time-series asset pricing test of this paper.

C Additional analysis

Table C.1: Asset Pricing - Dispersion in Beliefs on Current Account. May 1995 as start date

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the current account changes (ΔDiB_{CA}) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM estimates of the factor loadings b, the market price of risk λ, the cross-sectional R^2 as well as p-values from the cross-sectional asymptotic asset pricing test $pval_{\chi}$. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from July 1995 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings														
All Countries					*Developed Countries*					*Developing Countries*				
	RX	CA	R^2	$pval_{\chi}$		RX	CA	R^2	$pval_{\chi}$		RX	CA	R^2	$pval_{\chi}$
b_{GMM}	0.12	-1.76	96%	78%	b_{GMM}	0.12	-1.98	74%	78%	b_{GMM}	0.11	-1.64	62%	27%
	(0.10)	(0.67)				(0.17)	(1.92)				(0.09)	(0.54)		
λ_{GMM}	0.08	-2.27			λ_{GMM}	0.04	-2.56			λ_{GMM}	0.08	-2.12		
	(0.43)	(0.92)				(0.51)	(2.51)				(0.40)	(0.76)		
Panel II: Factor Betas														
Porfolio	α	β_{RX}	β_{CA}	R^2	*Porfolio*	α	β_{RX}	β_{CA}	R^2	*Porfolio*	α	β_{RX}	β_{CA}	R^2
1	-0.58	1.02	0.20	57%	*1*	-0.35	0.88	0.04	45%	*1*	-0.50	0.97	0.19	33%
	(0.16)	(0.16)	(0.08)			(0.17)	(0.17)	(0.14)			(0.23)	(0.25)	(0.08)	
2	-0.17	0.89	0.13	76%	*2*	-0.16	1.18	0.10	70%	*2*	-0.14	0.60	0.14	60%
	(0.08)	(0.06)	(0.06)			(0.09)	(0.09)	(0.09)			(0.08)	(0.04)	(0.06)	
3	0.02	0.95	0.01	80%	*3*	-0.03	1.20	-0.01	75%	*3*	0.00	0.83	0.03	74%
	(0.07)	(0.07)	(0.06)			(0.11)	(0.07)	(0.09)			(0.08)	(0.06)	(0.06)	
4	0.09	0.99	-0.03	79%	*4*	-0.03	1.10	-0.02	70%	*4*	-0.08	1.12	-0.20	64%
	(0.08)	(0.07)	(0.07)			(0.10)	(0.09)	(0.07)			(0.13)	(0.09)	(0.11)	
5	0.64	1.14	-0.30	65%	*5*	0.32	1.36	-0.13	69%	*5*	0.96	1.11	-0.26	42%
	(0.14)	(0.09)	(0.10)			(0.15)	(0.14)	(0.13)			(0.21)	(0.13)	(0.16)	

Table C.2: Asset Pricing - Dispersion in Beliefs on Exchange Rate. May 1995 as start date

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the exchange rate changes (ΔDiB_{FX}) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM estimates of the factor loadings b, the market price of risk λ, the cross-sectional R^2 as well as p-values from the cross-sectional asymptotic asset pricing test $pval_{\chi}$. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from July 1995 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings

	All Countries					*Developed Countries*					*Developing Countries*			
	RX	FX	R^2	$pval_{\chi}$		RX	FX	R^2	$pval_{\chi}$		RX	FX	R^2	$pval_{\chi}$
b_{GMM}	-0.01	-1.98	89%	95%	b_{GMM}	0.02	-0.68	92%	93%	b_{GMM}	0.00	-1.90	28%	76%
	(0.25)	(2.04)				(0.11)	(0.55)				(0.25)	(2.92)		
λ_{GMM}	0.08	-12.31			λ_{GMM}	0.11	-4.21			λ_{GMM}	0.11	-11.80		
	(1.39)	(12.81)				(0.53)	(3.51)				(1.39)	(18.25)		

Panel II: Factor Betas

Porfolio	α	β_{RX}	β_{FX}	R^2	*Porfolio*	α	β_{RX}	β_{FX}	R^2	*Porfolio*	α	β_{RX}	β_{FX}	R^2
1	-0.58	1.03	0.03	56%	*1*	-0.35	0.89	0.08	46%	*1*	-0.50	0.98	0.02	33%
	(0.16)	(0.16)	(0.04)			(0.17)	(0.16)	(0.08)			(0.25)	(0.26)	(0.04)	
2	-0.17	0.90	0.02	75%	*2*	-0.16	1.18	0.05	70%	*2*	-0.14	0.61	0.00	59%
	(0.08)	(0.06)	(0.03)			(0.09)	(0.09)	(0.04)			(0.07)	(0.05)	(0.02)	
3	0.02	0.95	0.02	80%	*3*	-0.03	1.20	-0.02	75%	*3*	0.00	0.84	0.01	74%
	(0.07)	(0.07)	(0.03)			(0.11)	(0.07)	(0.05)			(0.08)	(0.07)	(0.03)	
4	0.09	0.99	-0.02	79%	*4*	-0.03	1.10	0.03	70%	*4*	-0.08	1.11	-0.03	63%
	(0.08)	(0.07)	(0.04)			(0.10)	(0.09)	(0.05)			(0.13)	(0.09)	(0.09)	
5	0.64	1.12	-0.05	64%	*5*	0.32	1.35	-0.06	69%	*5*	0.97	1.09	-0.02	42%
	(0.14)	(0.09)	(0.05)			(0.15)	(0.14)	(0.06)			(0.23)	(0.13)	(0.08)	

Table C.3: Asset Pricing - Dispersion in Beliefs on Interest Rate. May 1995 as start date

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the nominal 3-month interest rates (ΔDiB_{IR}) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM estimates of the factor loadings b, the market price of risk λ, the cross-sectional R^2 as well as p-values from the cross-sectional asymptotic asset pricing test $pval_{\chi}$. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from July 1995 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings

	All Countries					*Developed Countries*					*Developing Countries*			
	RX	IR	R^2	$pval_{\chi}$		RX	IR	R^2	$pval_{\chi}$		RX	IR	R^2	$pval_{\chi}$
b_{GMM}	0.04	-5.18	47%	58%	b_{GMM}	0.01	-3.53	84%	90%	b_{GMM}	0.04	0.26	5%	0%
	(0.20)	(6.92)				(0.14)	(4.18)				(0.06)	(0.66)		
λ_{GMM}	0.08	-4.01			λ_{GMM}	-0.03	-2.73			λ_{GMM}	0.17	0.20		
	(1.01)	(5.41)				(0.69)	(3.27)				(0.22)	(0.51)		

Panel II: Factor Betas

Porfolio	α	β_{RX}	β_{IR}	R^2	*Porfolio*	α	β_{RX}	β_{IR}	R^2	*Porfolio*	α	β_{RX}	β_{IR}	R^2
1	-0.58	1.03	0.00	56%	*1*	-0.35	0.89	0.06	45%	*1*	-0.50	0.98	0.02	33%
	(0.16)	(0.16)	(0.09)			(0.17)	(0.17)	(0.17)			(0.23)	(0.25)	(0.11)	
2	-0.17	0.90	0.07	75%	*2*	-0.16	1.18	0.05	70%	*2*	-0.14	0.61	0.13	60%
	(0.08)	(0.06)	(0.09)			(0.09)	(0.09)	(0.17)			(0.08)	(0.04)	(0.07)	
3	0.02	0.95	0.02	80%	*3*	-0.03	1.20	-0.03	75%	*3*	0.00	0.83	0.15	75%
	(0.07)	(0.07)	(0.08)			(0.11)	(0.07)	(0.11)			(0.08)	(0.06)	(0.08)	
4	0.09	0.99	0.03	79%	*4*	-0.03	1.10	-0.09	70%	*4*	-0.08	1.11	-0.14	63%
	(0.08)	(0.07)	(0.07)			(0.10)	(0.09)	(0.14)			(0.13)	(0.09)	(0.13)	
5	0.64	1.13	-0.13	64%	*5*	0.32	1.35	-0.15	69%	*5*	0.97	1.09	0.04	42%
	(0.14)	(0.09)	(0.18)			(0.15)	(0.14)	(0.19)			(0.21)	(0.13)	(0.27)	

Table C.4: Asset Pricing - Dispersion in Beliefs on Inflation Rate. May 1995 as start date

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the inflation rates (ΔDiB_{PI}) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM estimates of the factor loadings b, the market price of risk λ, the cross-sectional R^2 as well as p-values from the cross-sectional asymptotic asset pricing test $pval_{\chi}$. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from July 1995 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings

	All Countries					*Developed Countries*					*Developing Countries*			
	RX	PI	R^2	$pval_{\chi}$		RX	PI	R^2	$pval_{\chi}$		RX	PI	R^2	$pval_{\chi}$
b_{GMM}	0.08	-5.24	60%	53%	b_{GMM}	-0.01	2.40	10%	34%	b_{GMM}	0.10	-5.23	84%	84%
	(0.14)	(3.71)				(0.11)	(5.30)				(0.16)	(3.12)		
λ_{GMM}	0.08	-2.42			λ_{GMM}	0.07	1.11			λ_{GMM}	0.19	-2.42		
	(0.64)	(1.77)				(0.37)	(2.46)				(0.68)	(1.50)		

Panel II: Factor Betas

Porfolio	α	β_{RX}	β_{PI}	R^2	*Porfolio*	α	β_{RX}	β_{PI}	R^2	*Porfolio*	α	β_{RX}	β_{PI}	R^2
1	-0.58	1.03	0.05	56%	*1*	-0.35	0.89	-0.04	45%	*1*	-0.50	0.98	0.29	33%
	(0.16)	(0.16)	(0.16)			(0.17)	(0.17)	(0.21)			(0.23)	(0.25)	(0.21)	
2	-0.17	0.89	0.17	75%	*2*	-0.16	1.18	-0.01	70%	*2*	-0.14	0.61	0.13	60%
	(0.08)	(0.06)	(0.12)			(0.09)	(0.09)	(0.20)			(0.08)	(0.04)	(0.08)	
3	0.02	0.95	0.04	80%	*3*	-0.03	1.20	0.00	75%	*3*	0.00	0.84	0.00	74%
	(0.07)	(0.07)	(0.11)			(0.11)	(0.07)	(0.17)			(0.08)	(0.06)	(0.11)	
4	0.09	0.99	-0.07	79%	*4*	-0.03	1.10	0.07	70%	*4*	-0.08	1.11	-0.05	63%
	(0.08)	(0.07)	(0.07)			(0.10)	(0.09)	(0.14)			(0.13)	(0.09)	(0.16)	
5	0.64	1.13	-0.20	64%	*5*	0.32	1.35	-0.02	68%	*5*	0.96	1.10	-0.25	42%
	(0.14)	(0.09)	(0.18)			(0.15)	(0.14)	(0.24)			(0.21)	(0.13)	(0.29)	

Table C.5: Asset Pricing - Dispersion in Beliefs on Real Growth. May 1995 as start date

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the real GDP growth rates (ΔDiB_{RG}) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM estimates of the factor loadings b, the market price of risk λ, the cross-sectional R^2 as well as p-values from the cross-sectional asymptotic asset pricing test $pval_{\chi}$. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from July 1995 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings

All Countries					*Developed Countries*					*Developing Countries*				
	RX	RG	R^2	$pval_{\chi}$		RX	RG	R^2	$pval_{\chi}$		RX	RG	R^2	$pval_{\chi}$
b_{GMM}	-0.02	-1.37	7%	7%	b_{GMM}	-0.05	-2.47	22%	71%	b_{GMM}	-0.03	-1.82	20%	9%
	(0.08)	(1.28)				(0.11)	(3.13)				(0.10)	(1.29)		
λ_{GMM}	0.10	-0.68			λ_{GMM}	0.14	-1.23			λ_{GMM}	0.14	-0.91		
	(0.31)	(0.65)				(0.49)	(1.58)				(0.39)	(0.67)		

Panel II: Factor Betas

Porfolio	α	β_{RX}	β_{RG}	R^2	*Porfolio*	α	β_{RX}	β_{RG}	R^2	*Porfolio*	α	β_{RX}	β_{RG}	R^2
1	-0.58	1.03	-0.12	56%	*1*	-0.35	0.89	0.09	45%	*1*	-0.50	0.97	-0.23	33%
	(0.16)	(0.16)	(0.18)			(0.17)	(0.17)	(0.24)			(0.23)	(0.24)	(0.26)	
2	-0.17	0.90	0.11	75%	*2*	-0.16	1.19	0.19	70%	*2*	-0.14	0.61	0.05	59%
	(0.08)	(0.06)	(0.10)			(0.09)	(0.09)	(0.17)			(0.08)	(0.04)	(0.09)	
3	0.02	0.96	0.12	80%	*3*	-0.03	1.20	0.04	75%	*3*	0.00	0.84	0.11	74%
	(0.07)	(0.07)	(0.09)			(0.11)	(0.07)	(0.13)			(0.08)	(0.06)	(0.10)	
4	0.09	0.99	0.08	79%	*4*	-0.03	1.09	-0.03	70%	*4*	-0.08	1.12	0.27	63%
	(0.08)	(0.07)	(0.10)			(0.10)	(0.09)	(0.13)			(0.13)	(0.09)	(0.13)	
5	0.64	1.12	-0.19	64%	*5*	0.32	1.36	0.07	68%	*5*	0.97	1.08	-0.32	42%
	(0.14)	(0.09)	(0.17)			(0.15)	(0.15)	(0.29)			(0.21)	(0.13)	(0.25)	

Table C.6: Asset Pricing - PC1 and Dispersion in Beliefs ex-PC1

This table reports cross-sectional asset pricing results. As factors the linear SDF model includes the average across currency portfolios (RX) and one of the following - first principal component of the disagreement shocks to five macro variables ($PC1$) or one of the disagreement shocks with $PC1$ subtracted from it. The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM estimates of the factor loadings b, the market price of risk λ, the cross-sectional R^2 as well as p-values from the cross-sectional asymptotic asset pricing test $pval_{\chi}$. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings				
	RX	*PC1*	R^2	$pval_{\chi}$
b_{GMM}	0.08	-1.36	86%	76%
	(0.21)	(1.00)		
λ_{GMM}	0.14	-5.93		
	(0.85)	(4.45)		
Panel II: Factor Betas				
Porfolio	α	β_{RX}	β_{PC1}	R^2
1	-0.52	1.05	0.07	57%
	(0.15)	(0.16)	(0.06)	
2	-0.15	0.90	0.04	74%
	(0.07)	(0.06)	(0.04)	
3	0.01	0.97	0.01	80%
	(0.07)	(0.06)	(0.04)	
4	0.10	0.98	-0.05	78%
	(0.08)	(0.07)	(0.04)	
5	0.55	1.10	-0.07	62%
	(0.13)	(0.09)	(0.06)	

Panel I: Factor Prices and Loadings				
	RX	*CA*	R^2	$pval_{\chi}$
b_{GMM}	0.19	-2.13	99%	97%
	(0.10)	(0.83)		
λ_{GMM}	0.14	-1.93		
	(0.36)	(0.79)		
Panel II: Factor Betas				
Porfolio	α	β_{RX}	β_{CA}	R^2
1	-0.51	1.03	0.26	57%
	(0.15)	(0.16)	(0.10)	
2	-0.15	0.89	0.10	74%
	(0.08)	(0.06)	(0.07)	
3	0.01	0.97	-0.03	80%
	(0.07)	(0.06)	(0.07)	
4	0.10	0.99	-0.05	77%
	(0.08)	(0.07)	(0.07)	
5	0.55	1.12	-0.28	63%
	(0.13)	(0.09)	(0.12)	

Panel I: Factor Prices and Loadings				
	RX	*FX*	R^2	$pval_{\chi}$
b_{GMM}	0.12	6.94	99%	98%
	(0.09)	(3.04)		
λ_{GMM}	0.14	0.64		
	(0.38)	(0.29)		
Panel II: Factor Betas				
Porfolio	α	β_{RX}	β_{FX}	R^2
1	-0.52	1.04	-0.82	57%
	(0.15)	(0.16)	(0.31)	
2	-0.15	0.90	-0.22	74%
	(0.08)	(0.06)	(0.24)	
3	0.01	0.97	0.09	80%
	(0.07)	(0.06)	(0.23)	
4	0.10	0.98	0.08	77%
	(0.08)	(0.07)	(0.24)	
5	0.55	1.11	0.86	63%
	(0.13)	(0.09)	(0.39)	

Table C.6: (continued)

Panel I: Factor Prices and Loadings				
	RX	*IR*	R^2	$pval_\chi$
b_{GMM}	0.11	-8.66	99%	100%
	(0.22)	(10.68)		
λ_{GMM}	0.14	-3.50		
	(0.96)	(4.34)		
Panel II: Factor Betas				
Porfolio	α	β_{RX}	β_{IR}	R^2
1	-0.52	1.05	0.16	57%
	(0.15)	(0.16)	(0.13)	
2	-0.15	0.90	0.03	74%
	(0.08)	(0.06)	(0.12)	
3	0.01	0.97	0.00	80%
	(0.07)	(0.06)	(0.10)	
4	0.10	0.98	-0.04	77%
	(0.08)	(0.07)	(0.08)	
5	0.55	1.10	-0.14	62%
	(0.13)	(0.09)	(0.27)	

Panel I: Factor Prices and Loadings				
	RX	*PI*	R^2	$pval_\chi$
b_{GMM}	0.07	-8.11	89%	77%
	(0.14)	(5.99)		
λ_{GMM}	0.14	-2.29		
	(0.72)	(1.72)		
Panel II: Factor Betas				
Porfolio	α	β_{RX}	β_{PI}	R^2
1	-0.52	1.05	0.17	57%
	(0.15)	(0.16)	(0.13)	
2	-0.15	0.90	0.12	74%
	(0.07)	(0.06)	(0.12)	
3	0.01	0.97	-0.06	80%
	(0.07)	(0.06)	(0.11)	
4	0.10	0.98	0.01	77%
	(0.08)	(0.07)	(0.10)	
5	0.55	1.10	-0.24	62%
	(0.13)	(0.09)	(0.20)	

Panel I: Factor Prices and Loadings				
	RX	*RG*	R^2	$pval_\chi$
b_{GMM}	-0.14	-6.68	46%	47%
	(0.17)	(6.58)		
λ_{GMM}	0.15	-1.97		
	(0.69)	(1.96)		
Panel II: Factor Betas				
Porfolio	α	β_{RX}	β_{RG}	R^2
1	-0.52	1.05	0.17	57%
	(0.15)	(0.16)	(0.19)	
2	-0.15	0.90	-0.12	74%
	(0.08)	(0.06)	(0.13)	
3	0.01	0.97	0.01	80%
	(0.07)	(0.06)	(0.10)	
4	0.10	0.99	0.09	77%
	(0.08)	(0.07)	(0.14)	
5	0.55	1.09	-0.14	62%
	(0.13)	(0.09)	(0.21)	

Table C.7: Asset Pricing - Dispersion in Beliefs on Current Account winsorized at 95 %-tile

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the current account changes (ΔDiB_{CA}), winsorized at 95%-tile, as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM and Fama and MacBeth (1973), FMB, estimates of the market price of risk λ, the cross-sectional R^2 as well as the factor loadings b. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. *sh* denotes Shanken (1992) standard errors. $pval_\chi$ denotes p-values from the cross-sectional asymptotic asset pricing test for the null hypothesis of zero pricing errors based on χ^2-distributed test statistics. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings

	RX	CA	R^2	$pval_\chi$
b_{GMM}	0.18	-1.81	99%	95%
	(0.11)	(0.69)		
λ_{GMM}	0.14	-1.70		
	(0.36)	(0.68)		
λ_{FMB}	0.14	-1.70	99%	
	(0.16)	(0.38)		66%
(sh)	(0.13)	(0.65)		94%

Panel II: Factor Betas

Porfolio	α	β_{RX}	β_{CA}	R^2
1	-0.51	1.03	0.29	58%
	(0.15)	(0.15)	(0.12)	
2	-0.14	0.89	0.13	74%
	(0.08)	(0.06)	(0.08)	
3	0.01	0.97	-0.03	80%
	(0.07)	(0.06)	(0.08)	
4	0.10	0.99	-0.09	78%
	(0.08)	(0.07)	(0.08)	
5	0.54	1.12	-0.31	63%
	(0.13)	(0.09)	(0.11)	

Table C.8: Factor Betas - on Δs_{t+1} component of FX carry portfolios

This table reports least-squares estimates of time series regressions. As regressors the linear model includes the average across currency portfolios (RX) and one of the disagreement shocks to five macro variables. The regressand is the exchange rate component Δs_{t+1} of each of the five carry porfolios. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. Excess currency returns Δs_{t+1} are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

	Factor Betas			
Porfolio	α	β_{RX}	β_{CA}	R^2
1	-0.14	0.85	0.16	67%
	(0.09)	(0.07)	(0.08)	
2	-0.06	0.89	0.12	74%
	(0.08)	(0.06)	(0.07)	
3	-0.02	0.97	-0.01	80%
	(0.07)	(0.07)	(0.07)	
4	-0.12	0.98	-0.07	77%
	(0.08)	(0.07)	(0.07)	
5	-0.43	1.09	-0.25	63%
	(0.12)	(0.08)	(0.11)	

	Factor Betas			
Porfolio	α	β_{RX}	β_{FX}	R^2
1	-0.14	0.86	0.01	66%
	(0.09)	(0.07)	(0.04)	
2	-0.07	0.89	0.04	74%
	(0.08)	(0.05)	(0.04)	
3	-0.02	0.97	0.01	80%
	(0.07)	(0.07)	(0.04)	
4	-0.12	0.97	-0.05	77%
	(0.08)	(0.07)	(0.04)	
5	-0.42	1.07	-0.02	62%
	(0.12)	(0.08)	(0.07)	

	Factor Betas			
Porfolio	α	β_{RX}	β_{IR}	R^2
1	-0.14	0.86	0.16	67%
	(0.09)	(0.07)	(0.11)	
2	-0.07	0.89	0.09	73%
	(0.08)	(0.06)	(0.11)	
3	-0.02	0.97	0.02	80%
	(0.07)	(0.07)	(0.10)	
4	-0.12	0.97	-0.09	77%
	(0.08)	(0.07)	(0.09)	
5	-0.42	1.07	-0.15	62%
	(0.12)	(0.08)	(0.21)	

	Factor Betas			
Porfolio	α	β_{RX}	β_{PI}	R^2
1	-0.14	0.86	0.12	66%
	(0.09)	(0.07)	(0.12)	
2	-0.07	0.89	0.15	74%
	(0.08)	(0.06)	(0.12)	
3	-0.02	0.97	-0.04	80%
	(0.07)	(0.06)	(0.12)	
4	-0.12	0.97	-0.08	77%
	(0.08)	(0.07)	(0.09)	
5	-0.42	1.07	-0.32	63%
	(0.12)	(0.08)	(0.18)	

	Factor Betas			
Porfolio	α	β_{RX}	β_{RG}	R^2
1	-0.14	0.87	0.07	66%
	(0.09)	(0.07)	(0.13)	
2	-0.07	0.89	-0.02	73%
	(0.08)	(0.06)	(0.11)	
3	-0.02	0.97	0.01	80%
	(0.07)	(0.07)	(0.11)	
4	-0.12	0.97	-0.06	77%
	(0.08)	(0.07)	(0.10)	
5	-0.42	1.06	-0.26	62%
	(0.12)	(0.08)	(0.20)	

Table C.9: Asset Pricing - simple Dispersion in Beliefs Measure I

This table reports cross-sectional asset pricing results. As factors the linear SDF model includes the average across currency portfolios (RX) and one of the disagreement shocks to five macro variables, constructed from simple aggregate disagreement measure: $\Delta DiB(factor)^{simple} = factor_{t+k}^{TOP} - factor_{t+k}^{BOTTOM}$. The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM estimates of the factor loadings b, the market price of risk λ, the cross-sectional R^2 as well as p-values from the cross-sectional asymptotic asset pricing test $pval_{\chi}$. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings				
	RX	CA	R^2	$pval_{\chi}$
b_{GMM}	0.15	-4.95	99%	94%
	(0.12)	(2.44)		
λ_{GMM}	0.14	-0.80		
	(0.39)	(0.41)		
Panel II: Factor Betas				
Porfolio	α	β_{RX}	β_{CA}	R^2
1	-0.52	1.03	0.60	57%
	(0.15)	(0.15)	(0.25)	
2	-0.15	0.89	0.28	74%
	(0.08)	(0.06)	(0.18)	
3	0.01	0.97	-0.04	80%
	(0.07)	(0.06)	(0.19)	
4	0.10	0.99	-0.14	77%
	(0.08)	(0.07)	(0.16)	
5	0.55	1.11	-0.69	63%
	(0.13)	(0.09)	(0.35)	

Panel I: Factor Prices and Loadings				
	RX	FX	R^2	$pval_{\chi}$
b_{GMM}	0.08	-1.81	86%	80%
	(0.23)	(1.36)		
λ_{GMM}	0.14	-4.94		
	(0.97)	(3.77)		
Panel II: Factor Betas				
Porfolio	α	β_{RX}	β_{FX}	R^2
1	-0.52	1.05	0.08	57%
	(0.15)	(0.16)	(0.08)	
2	-0.15	0.90	0.04	74%
	(0.08)	(0.06)	(0.05)	
3	0.01	0.97	0.03	80%
	(0.07)	(0.06)	(0.05)	
4	0.10	0.98	-0.06	78%
	(0.08)	(0.07)	(0.05)	
5	0.55	1.10	-0.09	62%
	(0.13)	(0.09)	(0.07)	

Panel I: Factor Prices and Loadings				
	RX	IR	R^2	$pval_{\chi}$
b_{GMM}	0.06	-7.55	89%	63%
	(0.10)	(4.86)		
λ_{GMM}	0.14	-0.67		
	(0.44)	(0.45)		
Panel II: Factor Betas				
Porfolio	α	β_{RX}	β_{IR}	R^2
1	-0.52	1.05	0.70	57%
	(0.15)	(0.16)	(0.35)	
2	-0.15	0.90	0.34	74%
	(0.07)	(0.06)	(0.29)	
3	0.01	0.97	0.04	80%
	(0.07)	(0.06)	(0.24)	
4	0.10	0.98	-0.45	78%
	(0.08)	(0.07)	(0.24)	
5	0.55	1.10	-0.62	62%
	(0.13)	(0.09)	(0.56)	

Table C.9: (continued)

Panel I: Factor Prices and Loadings				
	RX	*PI*	R^2	$pval_{\chi}$
b_{GMM}	0.05	-9.83	89%	40%
	(0.09)	(5.48)		
λ_{GMM}	0.14	-0.53		
	(0.40)	(0.31)		
Panel II: Factor Betas				
Porfolio	α	β_{RX}	β_{PI}	R^2
1	-0.52	1.05	0.69	57%
	(0.15)	(0.16)	(0.32)	
2	-0.15	0.90	0.64	75%
	(0.07)	(0.06)	(0.31)	
3	0.01	0.97	-0.05	80%
	(0.07)	(0.06)	(0.27)	
4	0.10	0.98	-0.31	78%
	(0.08)	(0.07)	(0.21)	
5	0.55	1.10	-0.96	62%
	(0.13)	(0.09)	(0.50)	

Panel I: Factor Prices and Loadings				
	RX	*RG*	R^2	$pval_{\chi}$
b_{GMM}	-0.12	-17.40	93%	89%
	(0.14)	(14.24)		
λ_{GMM}	0.15	-0.63		
	(0.88)	(0.53)		
Panel II: Factor Betas				
Porfolio	α	β_{RX}	β_{RG}	R^2
1	-0.52	1.06	0.83	57%
	(0.15)	(0.16)	(0.71)	
2	-0.15	0.90	-0.04	74%
	(0.08)	(0.06)	(0.38)	
3	0.01	0.97	0.13	80%
	(0.07)	(0.06)	(0.38)	
4	0.10	0.98	-0.07	77%
	(0.08)	(0.07)	(0.34)	
5	0.55	1.09	-0.84	62%
	(0.13)	(0.08)	(0.66)	

Table C.10: Asset Pricing - Dispersion in Beliefs on Current Account. BC vs. Ex-BC sample

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the current account changes (ΔDiB_{CA}) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM estimates of the factor loadings b, the market price of risk λ, the cross-sectional R^2 as well as p-values from the cross-sectional asymptotic asset pricing test $pval_{\chi}$. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings

	BC Countries					*Ex-BC Countries*			
	RX	CA	R^2	$pval_{\chi}$		RX	CA	R^2	$pval_{\chi}$
b_{GMM}	0.14	-1.39	72%	22%	b_{GMM}	0.17	-1.63	82%	43%
	(0.10)	(0.79)				(0.10)	(0.54)		
λ_{GMM}	0.12	-1.47			λ_{GMM}	0.16	-1.72		
	(0.30)	(0.86)				(0.35)	(0.61)		

Panel II: Factor Betas

Porfolio	α	β_{RX}	β_{CA}	R^2	*Porfolio*	α	β_{RX}	β_{CA}	R^2
1	-0.41	0.84	0.27	50%	*1*	-0.63	1.22	0.36	47%
	(0.13)	(0.11)	(0.11)			(0.21)	(0.23)	(0.18)	
2	-0.17	0.74	0.10	54%	*2*	0.02	0.95	0.13	70%
	(0.09)	(0.07)	(0.09)			(0.09)	(0.06)	(0.09)	
3	-0.16	0.81	-0.10	63%	*3*	0.08	0.97	-0.11	70%
	(0.08)	(0.06)	(0.08)			(0.09)	(0.08)	(0.07)	
4	0.07	0.91	0.03	63%	*4*	-0.02	1.23	-0.12	66%
	(0.09)	(0.09)	(0.10)			(0.13)	(0.10)	(0.14)	
5	0.46	0.70	-0.23	35%	*5*	0.79	1.24	-0.32	48%
	(0.15)	(0.12)	(0.11)			(0.21)	(0.13)	(0.15)	

Table C.11: Asset Pricing - Dispersion in Beliefs on Exchange Rate. BC vs. Ex-BC sample

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the exchange rate changes (ΔDiB_{FX}) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM estimates of the factor loadings b, the market price of risk λ, the cross-sectional R^2 as well as p-values from the cross-sectional asymptotic asset pricing test $pval_{\chi}$. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings

	BC Countries					*Ex-BC Countries*			
	RX	FX	R^2	$pval_{\chi}$		RX	FX	R^2	$pval_{\chi}$
b_{GMM}	0.09	-1.40	86%	90%	b_{GMM}	0.06	-1.34	43%	48%
	(0.23)	(1.35)				(0.19)	(1.06)		
λ_{GMM}	0.24	-5.54			λ_{GMM}	0.14	-5.31		
	(0.92)	(5.39)				(0.80)	(4.27)		

Panel II: Factor Betas

Porfolio	α	β_{RX}	β_{FX}	R^2	*Porfolio*	α	β_{RX}	β_{FX}	R^2
1	-0.42	0.85	0.08	49%	*1*	-0.63	1.25	0.06	46%
	(0.13)	(0.10)	(0.07)			(0.22)	(0.24)	(0.09)	
2	-0.17	0.75	0.04	54%	*2*	0.02	0.96	0.06	69%
	(0.09)	(0.07)	(0.04)			(0.09)	(0.06)	(0.05)	
3	-0.16	0.80	0.03	63%	*3*	0.08	0.96	-0.01	70%
	(0.08)	(0.06)	(0.05)			(0.09)	(0.08)	(0.06)	
4	0.07	0.91	0.04	63%	*4*	-0.02	1.22	-0.07	66%
	(0.09)	(0.10)	(0.05)			(0.13)	(0.09)	(0.08)	
5	0.47	0.68	-0.08	34%	*5*	0.79	1.22	-0.06	47%
	(0.15)	(0.12)	(0.07)			(0.21)	(0.13)	(0.11)	

Table C.12: Asset Pricing - Dispersion in Beliefs on Interest Rate. BC vs. Ex-BC sample

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the nominal 3-month interest rates (ΔDiB_{IR}) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM estimates of the factor loadings b, the market price of risk λ, the cross-sectional R^2 as well as p-values from the cross-sectional asymptotic asset pricing test $pval_{\chi}$. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators.*

Panel I: Factor Prices and Loadings

	BC Countries					*Ex-BC Countries*			
	RX	IR	R^2	$pval_{\chi}$		RX	IR	R^2	$pval_{\chi}$
b_{GMM}	0.08	-2.18	90%	79%	b_{GMM}	0.07	-1.97	8%	7%
	(0.09)	(1.17)				(0.09)	(2.09)		
λ_{GMM}	0.17	-1.20			λ_{GMM}	0.15	-1.08		
	(0.35)	(0.67)				(0.33)	(1.15)		

Panel II: Factor Betas

Porfolio	α	β_{RX}	β_{IR}	R^2	*Porfolio*	α	β_{RX}	β_{IR}	R^2
1	-0.42	0.85	0.42	51%	*1*	-0.63	1.25	0.07	46%
	(0.13)	(0.10)	(0.14)			(0.22)	(0.24)	(0.20)	
2	-0.17	0.75	0.08	54%	*2*	0.02	0.96	0.14	69%
	(0.09)	(0.07)	(0.16)			(0.09)	(0.06)	(0.14)	
3	-0.16	0.80	0.03	63%	*3*	0.08	0.96	-0.06	70%
	(0.08)	(0.07)	(0.12)			(0.09)	(0.08)	(0.10)	
4	0.07	0.91	0.04	63%	*4*	-0.02	1.22	-0.22	66%
	(0.09)	(0.09)	(0.11)			(0.12)	(0.09)	(0.19)	
5	0.46	0.68	-0.33	35%	*5*	0.79	1.22	-0.06	47%
	(0.15)	(0.12)	(0.17)			(0.21)	(0.13)	(0.31)	

Table C.13: Asset Pricing - Dispersion in Beliefs on Inflation Rate. BC vs. Ex-BC sample

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the inflation rates (ΔDiB_{PI}) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM estimates of the factor loadings b, the market price of risk λ, the cross-sectional R^2 as well as p-values from the cross-sectional asymptotic asset pricing test $pval_{\chi}$. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings

	BC Countries					*Ex-BC Countries*			
	RX	PI	R^2	$pval_{\chi}$		RX	PI	R^2	$pval_{\chi}$
b_{GMM}	0.07	-3.32	78%	71%	b_{GMM}	0.08	-4.80	83%	72%
	(0.09)	(2.04)				(0.13)	(2.42)		
λ_{GMM}	0.15	-1.23			λ_{GMM}	0.16	-1.77		
	(0.38)	(0.77)				(0.56)	(0.92)		

Panel II: Factor Betas

Porfolio	α	β_{RX}	β_{PI}	R^2	*Porfolio*	α	β_{RX}	β_{PI}	R^2
1	-0.42	0.85	0.31	50%	*1*	-0.63	1.25	0.39	46%
	(0.13)	(0.10)	(0.17)			(0.22)	(0.24)	(0.21)	
2	-0.17	0.75	0.00	54%	*2*	0.02	0.96	0.06	69%
	(0.09)	(0.07)	(0.15)			(0.09)	(0.06)	(0.16)	
3	-0.16	0.80	0.07	63%	*3*	0.08	0.96	-0.07	70%
	(0.08)	(0.07)	(0.14)			(0.09)	(0.08)	(0.16)	
4	0.07	0.91	0.13	63%	*4*	-0.02	1.22	-0.16	66%
	(0.09)	(0.09)	(0.19)			(0.12)	(0.09)	(0.17)	
5	0.46	0.68	-0.35	35%	*5*	0.79	1.22	-0.30	47%
	(0.15)	(0.12)	(0.21)			(0.22)	(0.13)	(0.27)	

Table C.14: Asset Pricing - Dispersion in Beliefs on Real Growth. BC vs. Ex-BC sample

This table reports cross-sectional asset pricing results. The linear SDF model includes the average across currency portfolios (RX) and the shock to aggregate disagreement on the real GDP growth rates (ΔDiB_{RG}) as factors whereas the test assets are excess returns to five currency portfolios sorted on the one-month forward premia (nominal interest rate differentials). The first portfolio ($P1$) contains currencies with the lowest forward premia while the last portfolio ($P5$) contains currencies with the highest forward premia. *Panel A* reports GMM estimates of the factor loadings b, the market price of risk λ, the cross-sectional R^2 as well as p-values from the cross-sectional asymptotic asset pricing test $pval_{\chi}$. *Panel B* reports least-squares estimates of time series regressions. Newey and West (1987) standard errors with Andrews (1991) optimal lag selection are reported in parentheses. Excess returns are expressed in percentage per annum and adjusted for transaction costs that occur in a short position ($P1$) and long position ($P2$-$P5$). The portfolios are rebalanced monthly from September 1993 to December 2009. Exchange rates are from *Datastream* whereas forecast data are collected from *Blue Chip Economic Indicators*.

Panel I: Factor Prices and Loadings									
	BC Countries					*Ex-BC Countries*			
	RX	RG	R^2	$pval_{\chi}$		RX	RG	R^2	$pval_{\chi}$
b_{GMM}	-0.03	-2.33	81%	39%	b_{GMM}	-0.07	-5.61	48%	64%
	(0.09)	(1.62)				(0.16)	(5.34)		
λ_{GMM}	0.07	-0.94			λ_{GMM}	0.21	-2.26		
	(0.43)	(0.67)				(0.93)	(2.19)		

Panel II: Factor Betas									
Porfolio	α	β_{RX}	β_{RG}	R^2	*Porfolio*	α	β_{RX}	β_{RG}	R^2
1	-0.42	0.86	0.35	50%	*1*	-0.63	1.25	0.08	46%
	(0.12)	(0.10)	(0.23)			(0.22)	(0.25)	(0.30)	
2	-0.17	0.75	0.01	54%	*2*	0.02	0.96	0.20	69%
	(0.09)	(0.07)	(0.15)			(0.09)	(0.06)	(0.13)	
3	-0.16	0.80	-0.04	63%	*3*	0.08	0.96	-0.06	70%
	(0.08)	(0.07)	(0.13)			(0.09)	(0.08)	(0.13)	
4	0.07	0.91	0.09	63%	*4*	-0.02	1.22	0.09	66%
	(0.09)	(0.10)	(0.16)			(0.12)	(0.09)	(0.17)	
5	0.47	0.67	-0.52	36%	*5*	0.79	1.21	-0.21	47%
	(0.14)	(0.12)	(0.24)			(0.21)	(0.13)	(0.26)	