Hong Kong Institute for Monetary Research

Predictability in Financial Markets: What Do Survey Expectations Tell Us?

Philippe Bacchetta, Elmar Mertens & Eric van Wincoop

HKIMR Working Paper No.10/2006

August 2006

Predictability in Financial Markets: What Do Survey Expectations Tell Us?[1]

Philippe Bacchetta
Study Center Gerzensee
University of Lausanne
FAME & CEPR

and

Elmar Mertens
Study Center Gerzensee
University of Lausanne

and

Eric van Wincoop
University of Virginia
NBER
Hong Kong Institute for Monetary Research

March 24, 2006

Abstract

There is widespread evidence of excess return predictability in financial markets. A potential explanation is that investors make expectational errors that are predictable. To examine this issue, we use data on survey expectations of market participants in the stock market, the foreign exchange market, and the bond and money markets in various countries. We find systematic evidence of predictable expectational errors across markets, sample periods and countries. Moreover, the predictability of expectational errors coincides with the predictability of excess returns: when a variable predicts expectational errors in a given market, it typically predicts the excess return as well. We conclude that that predictable expectational errors play a key role in understanding excess return predictability.

[1] van Wincoop acknowledges financial support from the Hong Kong Institute for Monetary Research and the Bankard Fund for Political Economy. A first draft of the paper was written while Eric van Wincoop visited the Hong Kong Institute for Monetary Research. Support from the National Centre of Competence in Research “Financial Valuation and Risk Management” (NCCR FINRISK) is also gratefully acknowledged. The NCCR FINRISK is a research program supported by the Swiss National Science Foundation. Daniel Burren provided excellent research assistance.

1. Introduction

There is extensive evidence in financial markets that expected returns are time varying and that excess returns are predictable. This evidence has obvious implications for portfolio allocations. But it is equally important to understand the source of this predictability. It runs against some basic hypotheses often made in economics such as the expectations hypothesis of the term structure of interest rates and uncovered interest parity between investments in different currencies.

Two broad sets of explanations exist in the literature. One set of explanations assumes strong rationality in the Muth sense, which implies that asset prices fully reflect all available public information. In that case excess returns are predictable to the extent that predictors are correlated with risk premia. A second set of explanations is associated with deviations from strong rationality, implying predictable expectational errors. This does not necessarily imply that agents are irrational as it is also consistent with models where agents do not always process all available information if the cost of doing so is larger than the benefit. The goal in this paper is to evaluate the empirical relevance of this second set of explanations by examining evidence from survey data on the predictability of expectational errors and its link to excess return predictability.

Since the evidence of excess return predictability applies to many different financial markets, we will use data on survey expectations for a variety of markets: forex, stock, bond and money markets. The surveys we use all involve actual market participants, either a substantial number of big financial institutions or large numbers of wealthy individual investors. It is important to focus on market participants for several reasons. First, they ultimately drive asset prices through their trades. Second, this also avoids well-known biases associated with expectations by financial analysts, especially in the stock market.

The results are striking. We find extensive evidence of predictability of expectational errors in all four financial markets, when strong rationality implies that expectational errors are unpredictable by publicly available information. Moreover, the direction of the predictability is consistent with evidence of excess return predictability in each of these markets. One always needs to be suspicious of survey data because of potential measurement problems, which we will discuss when describing the data in the next section. But the pervasiveness of the evidence across countries, time periods, different financial markets and different market participants makes it hard to attribute it all to measurement error.

Several other papers have used evidence from survey expectations to evaluate deviations from strong rationality. We will briefly review this literature in section 2. Those previous papers usually focus on one asset market. The main contribution of our paper is to present a broader set of evidence, for all four financial markets and for more countries and years than previous work. Our hope is that by presenting the evidence for all these markets jointly, a unifying picture arises about the predictability of expectational errors of market participants that in turn can be related to uniform evidence of excess return predictability across all of these markets. The implication will be that, to explain these features, we need to find an explanation that applies equally to the various financial markets.

The methodology we follow is simple. Consider the log excess return q_{t+n} of an investment over n periods, between t and $t+n$, in an asset such as a stock, a bond, or a foreign currency investment. We run the following regression:

$$q_{t+n} = \alpha + \beta x_t + u_{t+n} \tag{1}$$

where x_t is a variable or a vector of variables observable at time t. As in the literature,[1] we often find a significant β . In standard asset pricing models the expected excess return is a risk premium, so that the excess return can be written as the sum of a risk premium and an expectational error:

$$q_{t+n} = rp_t^n + \varepsilon_{t+n} \tag{2}$$

where rp_t^n is the risk premium and $\varepsilon_{t+n} = q_{t+n} - E_t q_{t+n}$ is the expectational error about the excess return over the next n periods. Since strong rationality implies that ε_{t+n} is unpredictable by information at time t, predictability in equation (1) can only be explained by a correlation of x_t with the risk premium.[2] But alternatively the predictability in equation (1) can also be associated with predictability of the expectational error ε_{t+n}. To examine this, we use survey expectations on excess returns $E_t^s q_{t+n}$ and run the following regression:[3]

$$q_{t+n} - E_t^s q_{t+n} = \gamma + \delta x_t + v_{t+n} \tag{3}$$

We find that δ is often significant. Moreover, δ tends to be significant precisely when β is significant and the elements of δ are of similar sign and magnitude to the elements of β.

Thus, the systematic evidence from survey data indicates that predictability in financial markets is driven to a large extent by predictable expectational errors. This clearly implies that strong rationality is not an appropriate assumption in this context. The assumption of strong rationality can be replaced by an assumption based on psychological behavior (e.g., see Hirschleifer, 2001 for a survey) . But it could also be replaced by a more meaningful definition of rationality. Fama (1991) suggest that “a weaker and economically more sensible version of the efficient market hypothesis says that prices reflect information to the point where the marginal benefits of acting on information do not exceed the marginal cost”.

The remainder of the paper is organized as follows. After reviewing related literature in section 2, in

---

1 e.g., see Cochrane (2005) for a summary of the evidence.

2 There is another set explanations based on “statistical” problems estimating equation (1). The main problems are a small sample bias and bias caused by the persistence of the x_t variable. However, these problems usually can only explain a part of the total bias. See, for example, Stambaugh (1999), Campbell and Yogo (2005) and Liu and Maynard (2005). Moreoever, persistence of x_t will not at all affect regressions of survey expectational errors on those variables that are discussed below. The reason is that under the null hypothesis expectational errors are white noise. Ferson et al. (2003) have shown that persistence of the right hand side variable can only lead to a bias when the left hand side variable also has persistence.

3 We obviously assume that $E_t^s q_{t+n}$ is informative about $E_t q_{t+n}$. If $E_t^s q_{t+n} = E_t q_{t+n} + \varepsilon_{t+n}^s$, where ε_{t+n}^s is a measurement error, we assume that ε_{t+n}^s is not fully negatively correlated with $E_t q_{t+n}$.

section 3 we describe the survey data sets used for each of the three financial markets. Section 4 describes the results from regressions that capture the predictability of expectational errors and excess returns. Section 5 discusses the results and section 6 concludes.

2. Related Literature

Here we will briefly review other papers that have used survey data of expectations of returns in stock, bond and foreign exchange markets in order to draw conclusions about rationality. Most papers use averages of expectations across respondents over a given period, rather than expectations of individual respondents.[4] They also focus on a given market.[5]

Many papers focus on the foreign exchange market. The first papers in the literature include Dominguez (1986), Ito (1990), Froot and Frankel (1987) and Frankel and Froot (1989).[6] These papers all use surveys of foreign exchange experts of companies operating in the foreign exchange market (both financial and non-financial).[7] The data samples are short in these early studies, often just a couple of years. Expectational errors of exchange rate changes are regressed on variables that are in the information set at the time that expectations were formed, in particular the forward discount, past exchange rate changes and past expected exchange rate changes. Despite the short samples, these papers resoundingly reject strong rationality.[8] In particular the large negative coefficients of a regression of expectational errors on the forward discount have received a lot of attention. Froot and Frankel (1989) argue that this can explain the entire forward discount puzzle. Subsequent literature for the foreign exchange market, such as Frankel and Chinn (1993), Chinn and Frankel (1994) and Cavaglia, Verschoor and Wolff (1994) have more currencies and years but confirm the earlier findings. The most recent paper for the foreign exchange market that we are aware of, by Chinn and Frankel (2002), uses data from 1988 to 1994 for 24 currencies.

Next consider the markets for fixed income securities. Froot (1989) uses survey data from 1969 to 1986 for the United States from the Goldsmith-Nagan Bond and Money Market Letter. It is based on a quarterly survey of about 50 financial market participants (investors, traders and underwriters). The survey asks for expectations of the level of various short- and long-term interest rates, both 3 months and 6 months ahead. Froot regresses expectational errors about these future interest rates on the current forward premium (forward interest rate minus current short rate). For assets of all maturities he finds that the

4 There are several interesting studies examining the behavior of individual expectations, showing in particular that survey responses are related to current conditions and to the individual's characteristics (e.g., see Dominitz and Manski, 2005, for a recent contribution). We do not review these studies here.

5 One exception is Froot (1990) who examines excess return predictability in various markets and examines survey evidence in both the bond and the foreign exchange market.

6 See Takagi (1991) for a review of the early literature.

7 Ito (1990) uses survey data for individual respondents, while the other papers use surveys with only the median or average response reported.

8 The evidence for the forward discount and past exchange rate changes as predictors of future expectational errors is most relevant in this context. Using past exchange rate expectations as a predictor for future expectational errors is not a good test of strong rationality to the extent that average expectations reflect heterogeneous information that is not publicly available.

coefficient on the forward premium is negative. It is significant for maturities of 12 months and longer. Froot shows that the predictable expectational errors help explain the predictability of excess returns on bonds. This is especially the case for long-term bonds of 20 and 30-year maturities.[9]

More recently two papers have tested for rationality of interest rate expectations using data sets that are broader than Froot (1989) in that they contain more countries. A drawback is that they only focus on short-term assets with a 3-month maturity. Gourinchas and Tornell (2004) use data from the “Financial Times Currency Forecaster” on 3-month euro rates, forecast 3, 6 and 12 months ahead. There are 48 respondents from both large banks and multinational companies. These are all active players in the foreign exchange market. Data are used for the G-7 countries. Assuming that interest rates contain a persistent AR component and a transitory component, their findings show that investors underestimate the relative variance of persistent shocks and overestimate their conditional persistence. They show that this deviation from rationality can explain both the forward discount puzzle and the puzzle of delayed overshooting of exchange rates in response to interest rate shocks.

Jongen, Verschoor and Wolff (2005) also use survey data on assets with a 3-month maturity (euro rates, interbank rates, T-bills). Their data are from a different source, the Consensus Economics of London. The forecasts are for 3-month ahead expectations of interest rates in 20 industrialized countries by “250 professional financial and economic forecasters worldwide”. Expectational errors are regressed on the forward premium. Consistent with Froot (1989), they find a negative coefficient in the majority of cases with significance in about half of the cases. They do not have data for expectations of long-term interest rates, for which Froot (1989) documented the most significant rejections of strong rationality.

Finally, for the stock market we are not aware of any tests of strong rationality based on survey data of market participants. Expectations of non-market participants have been used in various studies. Brav, Lehavy and Michaely (2004) use data for sell-side analysts and independent research analysts to test some cross-sectional implications of asset pricing models. They use First Call sell-side analyst forecasts for one-year ahead stock prices of 7000 firms from 1997 to 2001 and Value Line forecasts for 3,800 stocks over the period 1975-2001. The latter is an independent research provider. It is well known that financial analyst expectations are overly optimistic due to client relationships.[10] The advantage of the Value Line data is that such biases are less likely due to their independence. Brav et al. (2004) find evidence that cross-sectional variation in expectations is related to known risk factors such as beta and size. They do not conduct explicit tests of rationality, but they find some evidence suggesting deviations from rationality in that value stocks (high book to market stocks) tend to have higher subsequent returns while they do not have higher return expectations. This suggests that high book-to-market ratios predict positive expectational errors of returns.

---

9 Friedman (1979) uses the same data, but only focuses on the 3-month T-bill rate. He does not test for rationality of expectations. He finds that the forward interest rate contains a time varying risk premium (term premium).

10 See for example Rajan and Servaes (1997) and Michaely and Womack (1999).

Another set of papers exploit evidence from the Livingston survey. This is a biannual survey that has been conducted since 1946 among a group of about 50 economists from financial and non-financial institutions, government and academia. While mostly known as an inflation survey, many other variables are forecasted, including the S&P500 stock return. Pearce (1984) and Lakonishok (1980) find that expectational errors are predictable by a variety of variables in the information set. But a problem with this survey (at least prior to 1992) is that the survey questions are answered at different times by different respondents and these times are unknown. Dokko and Edelstein (1989) find that rationality can no longer be rejected when dealing with this timing issue more carefully. But in the process they make a number of assumptions that may themselves be considered as problematic.[11]

One paper, Vissing-Jorgensen (2003), does consider evidence on stock return expectations of market participants. While she does not consider any explicit test of rationality, she provides some suggestive evidence of behavioral features. She uses a survey conducted since 1996 by UBS and Gallup on stock return expectations by 1000 investors who own at least $10,000 in financial assets. Since this is one of the surveys that will be used in this study as well, it will be described in more detail in the next section. She finds evidence of what is called “biased self-attribution” in behavioral economics. Biased self-attribution means that good performance in the past is interpreted as evidence of the investor’s own skill, while bad performance is interpreted as bad luck. Consistent with that, the survey evidence shows that investors who report high past returns continue to expect high returns, while those that report low past returns do not expect this to continue.

3. Description of the Survey Data

We now turn to a description of the survey data that will be used in this study. We will use three different surveys. The first one is a survey of both exchange rate and interest rate expectations, while the other two are surveys of stock return expectations.

3.1 Exchange Rates and Interest Rates Expectations

The survey of exchange rate and interest rate expectations is by Forecasts Unlimited Inc. This survey has gone by different names in the past because of changes in ownership. It was started by Alan Teck in 1984 and called “The Currency Forecasters’ Digest”. In 1990 it was sold to a subsidiary of the Financial Times and renamed the “Financial Times Currency Forecaster” (used for example by Gourinchas and Tornell, 2004, described above). In the following decade it was moved among four different subsidiaries of the Financial Times, each with different personnel. In September 2000 it was bought back by Alan Teck for the company Forecasts Unlimited.[12] Currently 45 large financial institutions contribute to the monthly forecast.[13]

11 For example, it is assumed that respondents believe that stock prices follow a geometric random walk.

12 The web site is FX4casts.com.

13 The number of contributors has not changed much over time, but after December 1993 there was an important change in the type of contributors. Until December 1993 the forecasts came from 30 multinational companies and 18 financial institutions. After that there was a switch to 45 forecasters from financial institutions only. The reason for the change is that forecasts from financial institutions were found to be more reliable.

We have monthly data from August 1986 to July 2005. Because of the frequent changes in ownership some of the data are missing. For the exchange rate survey there are missing data for 7 months of the survey. For the interest rate survey there is 3-year gap in the data from November 1997 to November 2000. For most countries and maturities, the survey covers interest rates only as of September 1987. Depending on the maturity, there is further missing interest rate survey data for 25-27 months spread throughout the sample. This leaves 219 observations per currency for exchange rates and 165-167 observations for interest rates. The survey questions are collected over a period of 3 days. Usually the survey is emailed (or faxed) on Friday morning (last Friday of the month), with responses collected during Friday and the following Monday and Tuesday.

While the survey reports forecasts for 31 countries, we focus on the evidence of the main industrialized countries in the survey. Those are 8 countries: US, Germany, France, UK, Japan, Canada, Australia and Switzerland. All exchange rate forecasts are relative to the dollar, so there are 7 currencies. For the foreign exchange market the survey reports the average forecast of the spot exchange rate 3, 6 and 12 months ahead. For interest rates the survey reports the expectations of 3-month Libor, 12-month Libor and 10-year government bond yields 3, 6, and 12 months ahead.[14]

3.2 Stock Market Expectations

For the stock market we use two different data sets. The first survey is the UBS/Gallup poll. This is a random telephone survey of 1000 investors with at least $10,000 in financial assets. The data are only for the US stock market. Several questions about return expectations are asked. The one that we will use here is: “thinking about the stock market more generally, what overall rate of return do you think the stock market will provide investors during the coming twelve months?” The poll was conducted twice in 1998 and monthly between February 1999 and April 2003.[15] This gives a total of 53 observations. The data are collected in the first two weeks of each month.

The second stock market survey contains data for both the United States and Japan. It is available through the International Center for Finance at the Yale School of Management.[16] For the United States the survey asks about expected percentage change in the Dow Jones Industrial index over the next 1, 3, and 12 months.[17] For Japan the same question is asked for the Nikkei Dow. The US data are collected by Robert Shiller, while the Japanese data are collected by Yoshiro Tsutsui at Osaka University and Fumiko Kon-Ya of the Japan Securities Research Institute. For Japan the survey is mailed to most of the major financial institutions (165 banks, 46 insurance companies, 113 securities companies and

14 Apart from the more recent data the survey is therefore broader than Froot (1989) in that there are more countries than just the United States. It is also broader than Jongen, Verschoor and Wolff (2005) in that both expectations of short-term and long-term rates are reported.

15 See Vissing-Jorgensen (2003) for a detailed description and use of this data. The data can be purchased via the Roper Center at the University of Connecticut. UBS/Gallup have discontinued asking the question about the expected stock market return, even though the poll is still conducted monthly with several other questions.

16 We would like to thank the International Center for Finance for making these data available to us.

17 It also asks about the expectation in 10 years, but that obviously cannot be used here.

45 investment trust companies). For the United States there is a separate survey of institutional investors and wealthy individual investors. For institutional investors about 400 randomly drawn institutions are selected from “Investment Managers” in the “Money Market Directory of Pensions Funds and their Investment Managers”. For individual US investors the survey is mailed to a random sample of 400 high income Americans from a list purchased from Survey Sampling Inc. For all three of these surveys the average response rate is about one-third. For corporate investors, the survey starts in 1989 with six-month interval surveys until 1998, after which monthly surveys are conducted. For individual investors one survey was conducted in 1989, one in 1996 and monthly surveys started in 1999.[18] We have the answers by the individual respondents as well as the date that they filled out the survey. Even if only one or two surveys were conducted during a particular year, the responses came in over a period of two or more months. This is not a problem as we know the date of each individual survey response.

4. Empirical Results

In this section we present in turn the evidence for the foreign exchange market, the stock market, the bond market and the money market. We will estimate three types of regressions: one to determine the predictability of expectational errors; one to determine the predictability of excess returns; and one to explain the risk premia derived from survey expectations. In each subsection we first describe the precise specification of these regressions and the data used and then present the results. Most of the results presented use monthly data, so that we consider one period to be a month. For the first three markets considered, we only present evidence for the one-year horizon in the main text. Results for other horizons are presented in the Appendix Tables A1-A16. In addition the Appendix Tables B1-B3 provide some basic statistics about survey expectational errors, such as the mean, median, autocorrelation and correlations across countries. The precise data sources are described in the data Appendix.

4.1 Foreign Exchange Market

4.1.1 Regressions

In the foreign exchange market, the excess return on foreign currency investment from t to $t+n$ is

$$q_{t+n} \equiv i_t^* + s_{t+n} - s_t - i_t \tag{4}$$

where i_t^* is the foreign interest rate on an n-month instrument, i_t is the corresponding domestic interest rate, and s_t the log exchange rate. Regressions for the foreign exchange market always take the US to be the home country, so that i_t is a dollar interest rate and the exchange rate is dollars per foreign currency. As for the predictor, we consider the interest differential $x_t = i_t - i_t^*$. Thus, the equation for excess return predictability (1) is:

[18] See Shiller et al. (1996) and http://icf.som.yale.edu/confidence.index/explanation.shtml for more details.

$$s_{t+n} - s_t - (i_t - i_t^*) = \alpha + \beta(i_t - i_t^*) + u_{t+n} \quad (5)$$

There is an extensive literature on the forward bias puzzle that shows that estimates of β are negative and significant.[19] Notice that if we add $(i_t - i_t^*)$ back to both sides, we have the standard Fama (1984) regression.

For expectational errors we have $q_{t+n} - E_t^s q_{t+n} = s_{t+1} - E_t^s s_{t+n}$ so that the equation for expectational errors (3) is:

$$s_{t+n} - E_t^s s_{t+n} = \gamma + \delta(i_t - i_t^*) + v_{t+n} \quad (6)$$

As for the data used in (6), we compute s_{t+n} as the average exchange rate during the three days that are n months subsequent to the three days that the survey takes place. On the right-hand side of (6), we take the interest differential that prevailed the day before the survey starts. We use n-month euro market interest rates. For comparison, we run (5) over the same sample.

We estimate equations (5) and (6) from monthly data with horizons of 3 months, 6 months or one year. To account for the overlap in the forecast intervals we report Newey-West standard errors, where the lags are chosen to equal the number of monthly observations per period plus one (i.e. 4, 7 and 13 respectively).

4.1.2 Results

Table 1 presents the results for the one-year horizon. Panel A gives the estimates of equation (6). In six out of seven regressions, expectational errors are predictable and δ is significant at least at the 5% level. The only exception is the UK. The two bottom lines of Panel A give results for the average of countries. To compute these numbers we stack the regressions for all countries in a SUR system. This leaves each individual regression's results unchanged but gives us an estimate of the correlation between the standard errors of the δ's across countries.[20] The standard error of the average slope then follows from the asymptotic, multivariate normality of the individual slope coefficients. On average, the estimate of δ is -2.6424 and its p-value is close to zero.

Panel B shows the results for excess return predictability. Except for the UK, the coefficient β is significant at least at the 5% level, which is consistent with the forward bias puzzle typically found in the literature.[21] The average estimate for β is -2.4462 and it is significant at the 1% level.

---

19 Since *covered* interest parity holds in the markets we consider, we can replace $(i_t - i_t^*)$ with the forward discount. For surveys of the forward bias literature, see Lewis (1995), Engel (1996) or Sarno (2005).

20 As discussed above, standard errors are estimated using the Newey-West estimator.

21 Our sample is somewhat shorter than recent estimates in the literature because we match the survey sample. However, we get similar results over a longer sample.

Similar results are found at horizons of 3 and 6 months. The corresponding tables are found in the Appendix (Tables A1 and A2). The only differences are that expectational errors are no longer predictable for the yen/dollar exchange rate at the 3-month horizon and that R^2's are naturally smaller. Overall our results are in line with the previous studies using survey data mentioned in section 2.

The striking result from Table 1 is that the predictability of expectational errors "matches" the predictability of excess return. In the only case where excess returns are not predictable, the UK, expectational errors are unpredictable. Moreover, the magnitude of δ is similar to the magnitude of β. This implies that a change in the interest differential has a similar effect on the expectational error to the effect it has on the excess return. Thus, these results support the idea that the predictability of excess returns is explained by expectational errors and that there are deviations from strong rationality.

To complete the picture, in Panel C we regress the risk premium computed with survey expectations, $E_t^s q_{t+12}$, on the forward discount. By construction, the coefficients in Panel C are equal to the difference $\beta - \delta$ found in Panels B and A.

We see that these risk premia are unrelated to the interest differential in five out of seven cases. The same results obtain at the other horizons.

4.2 Stock Market

4.2.1 Regressions

For the stock market, the excess return of stocks over the short-term interest rate is

$$q_{t+n} \equiv r_{t+n} - i_t \tag{7}$$

where $r_{t+n} = \ln \frac{P_{t+n}+D_{t+n}}{P_t}$ is the log return on the stock price index, P_t is the stock price index and D_{t+n} measures dividends paid between t and $t+n$. As before i_t is the interest rate on an n-month instrument. We regress the excess return on three variables that have been extensively used in the stock market literature on excess return predictability: the short rate i_t, the log dividend yield $ln(D_t/P_t)$, and the consumption-wealth ratio *cay* as proposed by Lettau and Ludvigson (2001) . We again do this for the different horizons over which survey expectations are available. Regarding expectational errors, we treat the two surveys somewhat differently since the UBS/Gallup poll gives an expected return, while the ICF/Yale survey gives an expected price change.

For the UBS/Gallup poll, we regress the expectational error $r_{t+12} - E_t^s r_{t+12}$ on the same predictors, where $E_t^s r_{t+12} = \ln(1 + E_t^s R_{t+12})$ and $E_t^s R_{t+12}$ is the average expectation from the survey. We compare the survey expectation to the average 12-month return on the S&P 500 computed over the precise days of the survey (around 10 working days). We use the Composite Total Return Index from DataStream (Thomson Financial) . For the dividend yield, we use the S&P 500 Composite Dividend Yield from DataStream and we use the one-year Treasury Constant Maturity Rate from FRED for the interest rate. We regress the average expectational error on the interest rate and the log dividend-yield measured on the day before the survey is started as well as the most recent quarterly observation of the consumption-wealth before the start of the survey.

For the ICF/Yale data there are three differences. First, as mentioned, we have expectations of the percentage stock prices change as opposed to the overall return. Denote the log price change by $\widetilde{r}_{t+n} = \ln(P_{t+n}/P_t)$. Second, we have expectations for individual respondents. Let $E_t^{s,i}\widetilde{r}_{t+n}$ be the log of one plus respondent i's expected percentage change in the stock price. We therefore regress $\widetilde{r}_{t+n} - E_t^{s,i}\widetilde{r}_{t+n}$ on the predictors available at time t.[22] Third, we have survey data for the 1-month, 3-month, and one-year horizons. For each respondent we compute the actual price change in the Dow Jones or Nikkei during the corresponding forecast period (from DataStream) and compute $\widetilde{r}_{t+n} - E_t^{s,i}\widetilde{r}_{t+n}$. In the regressions we consider data for individual respondents, daily averages, and monthly averages for the various horizons. This creates varying overlaps of the forecasting horizons across observations. Even with monthly averages, there are months with no observations and the number of observations varies from year to year. We address these overlaps with Newey-West standard errors where the number of lags included is the average number of observations per year in the sample. We find very similar standard errors if we use a lag length equal to the maximum number of observations in a given year.

4.2.2 Results

Since the surveys are available over relatively short intervals, we first need to examine the evidence on excess return predictability. Table 2 presents evidence for monthly data over four intervals of decreasing length.[23] The first equation regresses the excess return on the interest rate and the dividend yield, while the second equation adds the consumption-wealth ratio. There is clearly instability of estimates across samples. This is particularly the case for the interest rate coefficient, which becomes insignificant or changes sign in the more recent period. Since the bulk of the survey data starts in the late nineties,[24] we focus on the shorter sample starting in 1998. We also consider univariate regressions in this sample. When taken alone, we find that the interest rate and the *cay* variables are not significant while the dividend yield is strongly significant. This result is similar for the samples matching precisely the survey data.[25]

Table 3 presents evidence using the UBS/Gallup poll using the same right-hand side variables as in Table 2. In Panel A, we find that there is predictability of expectational errors when we use the dividend-yield ratio alone or combined with the interest rate. The interest rate is insignificant in a univariate regression, but has a positive and significant coefficient when associated with the dividend-yield ratio.

22 We get almost identical results when we run the regressions in levels rather than in logs.

23 In Table 2, we use quarterly returns and dividend yield on the S&P 500 index (including dividend payments). The riskfree rate is the 3-month Treasury Bill rate and cay is from Lettau and Ludvigson (2001).

24 The UBS/Gallup poll data starts in 1998, while for ICF/Yale data there was a switch from bi-annual to monthly surveys in 1999.

25 We should obviously be careful in interpreting the results over shorter samples. In particular, reported standard errors may be too small to the extent that there is small sample bias associated with persistence of predictors.

Panel B shows that the significant coefficients in excess return predictability correspond exactly to those for survey error predictability. Finally, Panel C shows that the risk premium derived from survey expectations is related to all the three right-hand side variables.

Table 4 presents evidence on price changes for a one-year horizon using the ICF/Yale data. In Table 4a we show the predictability of survey errors by regressing $\widetilde{r}_{t+12} - E_t^{s,i}\widetilde{r}_{t+12}$ on the dividend yield and the interest rate. The three panels in Table 4 correspond to the three different surveys: individual and institutional investors for the Dow Jones, and institutional investors for the Nikkei. The sample for each survey is determined by data availability[26] and the number of observations varies between 1174 and 2348 since we have individual observations. The results again show that expectational errors are predictable. For the Dow Jones, predictability, measured by the regressions' R^2, is much stronger for individual investors. In this case, results are similar to those found in Table 3, where the dividend yield is strongly significant when taken alone or in combination with the interest rate. For the Nikkei, expectational errors are predictable by the interest rate but not by the dividend yield. Table 4b shows that excess return predictability broadly corresponds to the predictability of survey errors, while Table 4c shows that risk premia are all related to the interest rate and in some cases to the dividend yield.

When we look at horizons of one and three months for individual investors (see Tables A3 and A4) the results are similar. However, there is less predictability for institutional investors. Notice, however, that for the one-month horizon the number of observations is much lower for these investors. Finally, the regressions in Table 4 are based on all investors responses treated equally. However, the number of responses in a given day is very unequal, which may introduce a problem of heteroscedasticity. To verify that this is not a serious problem we compute the same regressions using data averaged daily and monthly (see Tables A5 and A6). The results turn out to be very similar.

Although the UBS/Gallup and Yale surveys are for different sets of investors, markets, and horizons, the picture that emerges from the predictability regressions is similar. In most cases we find predictability of expectational errors, mainly by the dividend yield. This parallels the evidence for excess return predictability over the corresponding sample.

4.3 Bond Market

4.3.1 Regression

For the bond market equations we need a little more explanation since the survey expectations are not of expected returns but expected future interest rates. Most of the literature on excess return predictability in the bond market is based on zero-coupon bonds. This is not possible here to the extent that the interest rate expectations in the survey are for 10-year government bonds, which are coupon bonds. We follow Shiller, Campbell and Schoenholtz (SCS, 1983) who derived linearized coupon bond returns, which have also been used by Froot (1989) and Hardouvelis (1994) .

[26] The results are not sensitive to the precise sample. The samples used in Table 4 do not include some responses collected in the very early years. When we include them or when we consider a common sample for all horizons starting in 1999, we get similar results.

Define a period as one month and consider the return over n periods of a coupon bond which has initially a maturity of $m+n$ periods. Following SCS, the excess return from t to $t+n$ is approximately equal to

$$\begin{aligned} q_{t+n}^{m+n} &\equiv r_{t+n}^{m+n} - i_t^n \\ \text{where} \quad r_{t+n}^{m+n} &= \frac{D_{m+n} i_t^{m+n} - (D_{m+n} - D_n) i_{t+n}^m}{D_n} \end{aligned}$$

Here i_t^n is the yield to maturity at t of a coupon bond with remaining maturity of n periods (all yields and returns are annualized); $D_n = (1-\rho^n)/(1-\rho)$ is the Macaulay duration of a par bond with n periods to maturity and coupon rate c, where $\rho = 1/(1+c)$.[27]

We estimate the excess return equation using the yield spread as predictor:

$$q_{t+n}^{m+n} = \alpha + \beta(i_t^{m+n} - i_t^n) + u_{t+n} \tag{8}$$

Another conventional predictor would be the forward rate discount which can be shown to equal the scaled yield spread.[28]

We estimate equation (8) for the case where m is 10 years, corresponding to the 10-year bonds for which we have survey expectations. We alternatively take the horizon n to be 3, 6 or 12 months, corresponding to the forecast horizons in the survey data. We do not have data on bonds with maturity $m+n$ but it is reasonable to assume that the term structure is flat over these short intervals over its far end. So we set $i_t^{m+n} \approx i_t^m$.[29]

The bond market surveys are conducted in terms of yields, not prices or returns as with the stocks or the foreign exchange markets. Because of the negative relationship between bond returns and yields, we use the negative of the expectational error in order to keep the sign of coefficients comparable with the above excess return regression. The expectational error regression is thus:[30]

$$-(i_{t+n}^m - E_t^s i_{t+n}^m) = \gamma + \delta(i_t^{m+n} - i_t^n) + v_{t+n} \tag{10}$$

where $E_t^s i_{t+n}^m$ is the average survey expectation of the yield on government bonds with a remaining 10-year maturity at $t+n$ (for m equal to 10 years).

---

27 As in SCS, c is a linearization constant which is estimated from the sample mean of the yields in our data set.

28 Let $f_t^{n,m}$ be the forward rate at time t for the interest rate from $t+n$ to $t+n+m$. Following SCS, the forward rate discount is then equal to

$$f_t^{n,m} - i_t^n = \frac{D_{n+m}}{D_{n+m} - D_n}(i_t^{n+m} - i_t^n) \tag{9}$$

29 Froot (1989) makes a similar assumption. $m+n$ would equal 10 years and a quarter (123 months), 10 years and a half (126 months) and 11 years (132 months) respectively.

30 Using the definition of r_{t+n}^{m+n}, it is easy to see that the expectational error $q_{t+n}^{m+n} - E(q_{t+n}^{m+n}) = -\frac{D_{m+n}-D_n}{D_n}(i_{t+n}^m - E_t i_{t+n}^m)$. After multiplying by the constant $\frac{D_n}{D_{n+m}-D_n} > 0$ we get the expectational error in equation (10).

In addition to regressions using the yield spread as predictor, we consider multivariate regressions with multiple yields. This is based on the insight of Cochrane and Piazzesi (2005), who show that excess returns are better predicted by a combination of various yields than by a single forward premium. We consider regressions where yields of 3 months, 6 months, 1 year and 10 years replace the yield spread on the right-hand side of equations (8) and (10).

4.3.2 Results

We first review the evidence on excess return predictability in the bond market. Table 5 presents this evidence for the one-year horizon for the same sample as the survey. When using the term spread as in equation (8), we do not find significant predictability, with the exception of Switzerland at the 5% level and Canada at the 10% level. However, the average coefficient across equations, equal to 1.5392, is significant at the 5% level. Moreover, the multivariate regression with yields all show predictability, at the 10% level for the UK and at the 1% level for the other countries.[31] The results in Table 5 thus confirm and extend the results of Cochrane and Piazzesi (2005) to several other countries.

Table 6 presents the evidence on the predictability of expectational errors in the bond market. The regressions with multiple yields show predictability for all 8 countries. For the spread regression, there are six countries showing predictability and the average coefficient of 0.2896 is strongly significant.

Comparing Tables 5 and 6 again shows a strong parallel in forecasting excess returns and forecasting expectational errors. Similar results emerge when we consider the 3-month and 6-month horizons (see Tables A7 to A10) .

4.4 Money Market

4.4.1 Regression

In the money market, we have similar interest rate expectations, but the instruments we consider, 3-month and 12-month Libor, do not have coupons. Thus, the approach is somewhat different from the bond market. Consider the excess return on holding $n+m$ - month Libor for n months. Let i_t^n be the annualized Libor interest rate for n months at time t, which corresponds to a zero bond price of:[32]

$$p_t^n = -\frac{n}{12} i_t^n \tag{11}$$

[31] These results appear robust to the choice of return approximation: As an alternattive to the linearization of SCS we compute returns directly from total return indices (including coupon payments) for 10 year government benchmark bonds from DataStream. The results are similar. These indices typically contain the most liquid bond with maturity close to 10 years and are frequently rebalanced as new bonds are issued. Their returns are not perfectly but very closely correlated to the approximte returns computed from the yield changes.

[32] The zero bond formulas require $m + n \leq 12$ to hold; otherwise we would have to account for the yearly interest rate payments. Since we only use Libor up to one year, this condition is satisfied.

Similar to the bond market, define the annualized excess return as

$$q_{t+n}^{m+n} \equiv r_{t+n}^{m+n} - i_t^n \tag{12}$$

where the return is given by the change in bond prices

$$r_{t+n}^{m+n} = \frac{12}{n}(p_{t+n}^m - p_t^{m+n}) \tag{13}$$

We regress the excess return on the corresponding term spread:[33]

$$q_{t+n}^{m+n} = \alpha + \beta(i_t^{m+n} - i_t^n) + u_{t+n} \tag{15}$$

In order to run this regression we need data on $n + m$-month Libor. Given the data availability, this restricts us to 2 cases: i) n = 3 and m = 3, thus using 6-month Libor; ii) n = 6 and m = 6, thus using 12-month Libor.

Using (11) and (13) the expectational error of the return is equal to $-(m/n)(i_{t+n}^m - E_t i_{t+n}^m)$. In order to evaluate the predictability of expectational errors we consider the regression

$$-(i_{t+n}^m - E_t^s i_{t+n}^m) = \gamma + \delta(i_t^l - i_t^k) + v_{t+n} \tag{16}$$

We only have survey data for 3-month Libor (m = 3) and 12-month Libor (m = 12). The only case we can consider that exactly corresponds to the excess return regressions is m = n = 3, in which case we use the same interest rate spread predictor as for the excess return regressions (l = 6 and k = 3) . More generally we have survey predictions of 3 and 12-month Libor over 3, 6 and 12 month horizons, so that we also report estimates of (16) for the 5 other combinations of m = 3, 12 and n = 3, 6, 12.[34] We also consider a second set of regressions, where we replace the single predictor with a vector of yields, similar to the bond market regressions.

4.4.2 Results

Let us first consider the excess return regressions. In the case where n = m = 3, Table 7 shows that there is no predictability of excess returns for 6 out of 8 countries, with only France and Germany significant at the 10% level. If we consider regressions using the yield vector, there is no significance in 5 out of 8 cases. There is even less predictability for m = n = 6 (Table A.11). Thus, there is limited or no predictability of excess returns in the money market.

---

33 The term spread is again identical to a scaled forward rate discount. Let $f_t^{n,m}$ be the forward rate at time t for interest between $t + n$ and $t + n + m$. The forward rate discount is then

$$f_t^{n,m} - i_t^n = \frac{m+n}{m}(i_t^{m+n} - i_t^n) \tag{14}$$

34 To be precise, we estimate (16) for 6 cases: (i) m = n = 3, k = 6, l = 3, (ii) m = 3, n = 6, k = 12, l = 6, (iii) m = 3, n = 12, k = 12, l = 6, (iv) m = 12, n = 3, k = 12, l = 3, (v) m = 12, n = 6, k = 12, l = 6, (vi) m = 12, n = 12, k = 12, l = 6.

Turning to expectational error regressions, Table 8 shows the evidence from running equation (16) in the case $n = m = 3$. Expectational errors cannot be predicted from the spread in 6 of the 8 countries, while none of the multivariate regressions with the various yields are significant. Similar results apply to other combinations of $m = 3, 12$ and $n = 3, 6, 12$ reported in Tables A.12-A.16.

Although it is by now repetitive, we can stress the parallel between the results of the two types of predictability regressions. In the case of the money market, however, the parallel is that there is little or no predictability either in excess returns or in expectational errors.

5. Discussion

The evidence presented in the last section is consistent with the results found previously in the literature. First, we find systematic evidence of excess return predictability in the foreign exchange, stock and bond markets. We find less predictability in the money market, which is consistent with a less systematic rejection of the expectations hypothesis at shorter maturities. Second, we find that expectational errors are systematically predictable; the exception is found again in the money market, where results are mixed. While our results for the stock market are novel, the findings for the foreign exchange market confirm what has been found in the literature since Froot and Frankel (1989). The findings for the bond market extend and confirm those of Froot (1989).

These results suggest that strong rationality does not hold and that predictable expectational errors play a key role in understanding excess return predictability. These findings raise two important questions. First, skeptics may believe that subjective beliefs are hard to measure and that the survey evidence should therefore be interpreted as evidence of measurement error rather than evidence of deviations from strong rationality. Second, skeptics may doubt evidence of deviations from strong rationality on the grounds that the predictors are publicly available and large financial institutions actively trade on the latest information.

Measurement error is equal to the difference between the average market expectation of returns and the survey expectation of returns. While we recognize the limitations of survey data, we believe that it goes too far to say that all these results are entirely due to measurement error.[35] First, measurement error that is uncorrelated with predictors does not create biased results. Second, we have attempted to minimize biases in the empirical work. It is well known that the expectations of financial analysts can be systematically biased and that a mismatch between the forecast and actual return period can create a bias. We therefore focused on expectations of market participants and we carefully matched the forecast period at the time that the survey is answered to the actual asset return period. Third, even though there are measurement errors in that the survey does not capture all market participants, this should not minimize the results too much. The surveys do capture large numbers of wealthy investors and financial institutions that actively participate in these markets, suggesting that at least for those respondents the evidence violates strong rationality. Fourth, we find evidence of predictable expectational errors in many

35 In this context we agree with Manski (2004): “Economists have long been hostile to subjective data. Caution is prudent, but hostility is not warranted.”

financial markets, sample periods and countries. It is no longer a matter of just a couple of years of data for one market, as was the case in the early survey literature for the foreign exchange market. Fifth, the survey evidence is consistent with the evidence on excess return predictability. The latter is based not on what investors say, but what they do. It suggests that what investors say when answering surveys is not meaningless.

Finally, previous authors have pointed out that the survey expectations are not just random noise. Froot and Frankel (1989) find that the expected depreciation in foreign exchange surveys is highly correlated with the forward discount. Vissing-Jorgensen (2003) report that average market expectations for US stock returns were high when the market was strong at the end of the 1990s and fell sharply when the market went down. Tables 9 to 13 shows that in all four markets expected changes in prices from surveys are related to the same variables as those considered in the predictability regresssions. Table 9 shows that in six out of seven cases the expected depreciation is related to the interest differential. Table 11 shows that expected stock price changes are related to the interest rate and dividend yield. Finally, Tables 12 and 13 show that expected changes in both short and long-term interest rate are closely related to the yield spread for all countries.

The second potential criticism is that large financial institutions are very active in financial markets, continuously watching new developments, and that it is therefore doubtful that they would make predictable expectational errors. On the one hand there is indeed good reason to believe that very active large financial institutions do not make consistently predictable errors. Consider for example banks operating in the foreign exchange market. Banks are very active in that market. About 70% of the large volume of trade in the foreign exchange market is among banks. Banks have a lot of money at stake, both from inventory positions resulting from their role as intermediaries (foreign exchange dealers) and from their own intraday speculative positions. They therefore have great interest in knowing what will happen to the exchange rate over the next minute or seconds. Large banks therefore put a lot of effort into effectively using all available public and private information to make such high frequency predictions. One therefore would not expect them to make consistently predictable expectational errors. In line with that, Chaboud and Wright (1995) indeed find evidence of uncovered interest rate parity at the very high interday frequency.

But while banks have good reason to use all available information to predict very high frequency exchange rate movements, they have much less incentive to predict where the exchange rate will be one year from now or even one month from now. First, most banks themselves hold zero or very small overnight positions. Second, there are costs associated with continuously processing all available information about where the exchange rate will be one month or more from now. It is not clear that the benefits outweigh the costs since uncertainty about excess returns significantly outweighs predictability. Figure 1 shows the excess return on DM relative to the dollar based on monthly data of annual returns from October 1986 to July 2004. It corresponds to the regression results for Germany in Panel B of Table 1. The graph shows a negative relationship between these variables, with a slope of -2.43. This is representative of average excess return predictability in the foreign exchange market. But it is clear from Figure 1 that predictability is almost entirely overshadowed by risk. Moreover, the predictability coefficient is not necessarily constant over time. In general there can be many predictors of the excess return. The coeffficient on a particular predictor, such as the interest rate differential, will depend on its covariance structure with other predictors, which generally changes over time. Simplistic corrections of expectations based on past evidence of predictable errors therefore makes little sense.

Anecdotal evidence confirms all of this. For example, there is currently about a $200-$300 billion industry worldwide of speculative trade in the foreign exchange market. This includes both hedge funds and speculative trades by financial institutions on behalf of individual clients. Anecdotal evidence from interviews with institutions that conduct these trades suggests that exchange rate expectations are formed based on very simple rules. Many institutions do not bother forecasting at all and expect the future spot rate to be the same as the current spot rate. Others use a simple factor model, with four or five factors used to predict future exchange rates. These factors may include the forward discount or interest rate differential, equity returns, some measure of risk-appetite and past currency changes. Others mainly use some form of technical analysis. There is no uniform practice in developing these forecasts and at most a very small subset of the available information space is used.

6. Conclusion

We have documented extensive evidence of predictability of expectational errors by market participants in stock, bond and foreign exchange markets. We can summarize our main results as follows: i) expectational errors in the foreign exchange market are predicted by the interest differential for 6 out of the 7 currency pairs we consider for the 1986-2004 period; ii) using the UBS/Gallup survey for stock market returns between 1998 and 2003, expectational errors are predicted by the dividend-yield ratio or by a combination of the dividend-yield and a short-term interest rate; iii) using the ICF/Yale survey for expected stock price changes over the period 1985-2003, we find that expectational errors for the Dow Jones are predicted by the dividend yield, while expectational errors for the Nikkei are predicted by the short-term interest rate; iv) expectational errors on 10-year bonds are predicted by a combination of yields in the 8 industrialized countries we consider over the 1987-2004 period. There is also predictability by the term spread; v) there is little predictability of expectation errors for shorter maturities. The tables in the Appendix show that most results are confirmed when we vary the horizon of prediction.

The striking result, however, is that predictability of expectational errors tends to coincide with excess return predictability. In the foreign exchange market, there is predictability for excess returns and for expectational errors for the same 6 currency pairs. In the stock market, the same variables are significant predictors for excess returns and expectational errors. For interest rates, significance in the two sets of regressions also tends to coincide. These findings suggest that predictable expectational errors play a key role in understanding excess return predictability.

Finally, the fact that we find similar results across markets is important. It implies that we need an explanation of these findings that applies to all markets.

References

Brav, Aol, Reuven Lehavy and Roni Michaely (2005), “Using Expectations to Test Asset Pricing Models,” *Financial Management*, 34(3): 31-64.

Campbell, John Y. and Motohiro Yogo (2006), “Efficient Tests of Stock Return Predictability,” *Journal of Financial Economics*, 81(1): 27-60.

Cavaglia, Stefano M.F.G., Willem F.C. Verschoor and Christian C.P. Wolff (1994), “On the Biasedness of Forward Foreign Exchange Rates: Irrationality or Risk Premia?” *The Journal of Business,* 67(3): 321-43.

Chaboud, Alain and Jonathan H. Wright (2005), “Uncovered Interest Parity: It Works, but not for long,” *Journal of International Economics*, 66: 349-62.

Chinn, Menzie and Jeffrey Frankel (1994), “Patterns in Exchange Rate Forecasts for Twenty-Five Currencies,” *Journal of Money, Credit and Banking*, 26(4): 759-70.

Chinn, Menzie and Jeffrey Frankel (2002), “Survey Data on Exchange Rate Expectations: More Currencies, More Horizons, More Tests,” in W. Allen and D. Dickinson, eds., *Monetary Policy, Capital Flows and Financial Market Developments in the Era of Financial Globalization: Essays in Honor of Max Fry*, London: Routledge, 145-67.

Cochrane, John H. and Monika Piazzesi (2005), “Bond Risk Premia,” *American Economic Review,* 95(1): 138-60.

Cochrane, John H. (2005), “Financial Markets and the Real Economy,” NBER Working Paper No. 11193, Cambrige MA: National Bureau of Economic Research.

Dokko, Yoon and Robert H. Edelstein (1989), “How well do Economists Forecast Stock Market Prices? A Study of the Livingston Surveys,” *American Economic Review,* 79(4): 865-71.

Dominguez, Kathryn M. (1986), “Are Foreign Exchange Forecasts Rational?” *Economics Letters,* 21: 277-81.

Dominitz, Jeff, and Charles F. Manski (2005), “Measuring and Interpreting Expectations of Equity Returns,” NBER Working Paper No. 11313, Cambrige MA: National Bureau of Economic Research.

Engel, Charles (1996), “The Forward Discount Anomaly and the Risk Premium: A Survey of Recent Evidence,” *Journal of Empirical Finance,* 3: 123-92.

Fama, Eugene F. (1984), “Forward and Spot Exchange Rates,” *Journal of Monetary Economics,* 14: 319-38.

Fama, Eugene F. (1991), "Efficient Capital Markets: II," *Journal of Finance*, 46(5): 1575-617.

Ferson, Wayne E., Timothy Simin and Sergei Sarkissian (2003), "Spurious Regressions in Financial Economics?" *Journal of Finance,* 58(4): 1393-414.

Frankel, Jeffrey A. and Menzie D. Chinn (1993), "Exchange Rate Expectations and the Risk Premium: Tests for a Cross Section of 17 Currencies," *Review of International Economics,* 1(2): 136-44.

Frankel, Jeffrey A. and Kenneth Froot (1987), "Using Survey Data to Test Standard Propositions Regarding Exchange Rate Expectations," *American Economic Review,* 77(1): 133-53.

Friedman, Benjamin M. (1979), "Interest Rate Expectations versus Forward Rates: Evidence From an Expectations Survey," *Journal of Finance,* 34(4): 965-73.

Froot, Kenneth A. (1990), "Short Rates and Expected Asset Returns," NBER Working Paper No. 3247, Cambridge MA: National Bureau of Economic Research.

Froot, Kenneth A. (1989), "New Hope for the Expectations Hypothesis of the Term Structure of Interest Rates," *Journal of Finance,* 44(2): 283-305.

Froot, Kenneth A. and Jeffrey A. Frankel (1989), "Forward Discount Bias: Is it an Exchange Risk Premium?" *Quarterly Journal of Economics,* 104, February: 139-61.

Froot, Kenneth A. and Richard H. Thaler (1990), "Anomalies: Foreign Exchange," *Journal of Economic Perspectives,* 4(3): 179-92.

Gourinchas, Pierre-Olivier and Aaron Tornell (2004), "Exchange Rate Puzzles and Distorted Beliefs," *Journal of International Economics,* 64: 303-33.

Hardouvelis, Gikas A. (1994), "The term structure spread and future changes in long and short rates in the G7 countries: Is there a puzzle?" *Journal of Monetary Economics,* 33(2): 255-83.

Hirshleifer, David (2001), "Investor Psychology and Asset Pricing," *Journal of Finance,* 56: 1533-97.

Ito, Takatoshi (1990), "Foreign Exchange Rate Expectations: Micro Survey Data," *The American Economic Review*, 80(3): 434-49.

Jongen, Ron, Willem F.C. Verschoor and Christian C. Wolff (2005), "Time Variation in Term Premia: International Evidence," CEPR Working Paper No. 4959, London: Center for Economic Policy Research.

Lakonishok, Josef (1980), "Stock Market Return Expectations: Some General Properties," *Journal of Finance,* 35: 921-31.

Lewis, Karen K. (1995), “Puzzles in International Financial Markets,” in Gene M. Grossman and Kenneth Rogoff, eds., *Handbook of International Economics* (Amsterdam, Elsevier Science): 1913-71.

Lettau, M. and S.C. Ludvigson (2001), “Consumption, Aggregate Wealth, and Expected Stock Returns,” *Journal of Finance,* 56(3): 815-49.

Liu, Wei and Alex Maynard (2005), “Testing Forward Rate Unbiasedness Allowing for Persistent Regressors,” *Journal of Empirical Finance*, 12(5): 613-28.

Lyons, Richard K. (2001), *The Microstructure Approach to Exchange Rates*, MIT Press, (Cambridge, Massachusetts).

Manski, C. (2004), “Measuring Expectations,” *Econometrica,* 72: 1329-76.

Michaely, Roni and Kent L. Womack (1999), “Conflict of Interest and the Credibility of Underwriter Analyst Recommendations,” *Review of Financial Studies,* 12(4): 653-86.

Pearce, Douglas K. (1984), “An Empirical Analysis of Expected Stock Price Movements,” *Journal of Money, Credit and Banking,* 16(3): 317-27.

Rajan, Raghuram and Henri Servaes (1997), “Analyst Following of Initial Public Offerings,” *Journal of Finance,* 52(2): 507-29.

Sarno, Lucio (2005), “Towards a Solution to the Puzzles in Exchange Rate Economics: Where do we Stand?” *Canadian Journal of Economics,* 38(3): 673-708.

Shiller, Robert J., Fumiko Kon-Ya and Yoshiro Tstsui (1996), “Why did the Nikkei Crash? Expanding the Scope of Expectations Data Collection,” *Review of Economics and Statistics,* 78(1): 156-64.

Stambaugh, Robert F. (1999), “Predictive Regressions,” *Journal of Financial Economics,* 54: 375-421.

Takagi, Shinji (1991), “Exchange Rate Expectations: A Survey of Survey Studies,” *IMF Staff Papers*, 38(1): 156-83.

Vissing-Jorgenson, Annette (2003), “Perspectives on Behavioral Finance: Does , “Irrationality” Disappear with Wealth? Evidence from Experience and Actions,” *NBER Macroeconomics Annual* 2003, 139-208.

Table 1. Foreign Exchange Market: Predictability over 12 months

Panel A: Expectational Error Predictability

$$s_{t+12} - E_t^s s_{t+12} = \gamma + \delta(i_t - i_t^*) + v_{t+12}$$

Currencies	δ	$\sigma(\delta)$	R^2
Australia	−3.3226***	0.6876	0.44
Canada	−2.0242***	0.6063	0.22
France	−2.7630**	1.1299	0.21
Germany	−2.6155***	0.8454	0.22
Japan	−2.9273***	0.8649	0.25
Switzerland	−2.9961***	0.9207	0.24
U.K.	−1.8484	1.2363	0.10
EW avg.	−2.6424***	0.5846	
p (δ = 0)	0.0000		

Panel B: Excess Return Predictability

$$q_{t+12} = \alpha + \beta(i_t - i_t^*) + u_{t+12}$$

Currencies	β	$\sigma(\beta)$	R^2
Australia	−2.4873***	0.6723	0.29
Canada	−1.9729***	0.6611	0.20
France	−2.2524**	1.1029	0.17
Germany	−2.4323**	0.9789	0.22
Japan	−3.8764***	0.7786	0.42
Switzerland	−2.7610***	1.0263	0.23
U.K.	−1.3412	1.1863	0.06
EW avg.	−2.4462***	0.6635	
p (β = 0)	0.0000		

Panel C: Risk Premium Explainability

$$E_t^s q_{t+12} = \alpha + \beta(i_t - i_t^*) + u_t^s$$

Currencies	β	$\sigma(\beta)$	R^2
Australia	0.8353***	0.1767	0.25
Canada	0.0513	0.2038	0.00
France	0.5105	0.4896	0.03
Germany	0.1832	0.4704	0.00
Japan	−0.9491***	0.3340	0.13
Switzerland	0.2351	0.4935	0.01
U.K.	0.5072	0.4843	0.03
EW avg.	0.1962	0.2729	
p (β = 0)	0.0000		

Note: ***, ** and * denote significance at the 1%, 5% and 10% level respectively. Newey-West standard errors with 13 lags. SUR systems for all panels estimated from 207 observations over sample from October 1986 to July 2004. See section 4.1.1 for construction of data.

Table 2: Stock Return Predictability

Excess Return Predictability $r_{t+1} - i_t = \alpha + \boldsymbol{\beta} \boldsymbol{X}_t + \varepsilon_{t+1}$			
i	dy	cay	R^2 p (β = 0)
March 1966 – July 2005			
−0.9896			0.01%
(0.7096)			(0.1647)
	0.0601		0.01%
	(0.0530)		(0.2586)
		5.0051***	0.06%
		(1.2480)	(0.0001)
−2.8926***	0.1820***		0.04%
(0.8052)	(0.0677)		(0.0016)
−1.9885**	0.0997	3.9825***	0.07%
(0.8838)	(0.0779)	(1.4478)	(0.0002)
January 1980 – July 2005			
−0.4076			0.00%
(0.8242)			(0.6224)
	0.0799		0.02%
	(0.0595)		(0.1820)
		3.5920***	0.03%
		(1.3764)	(0.0097)
−2.7539***	0.2120***		0.05%
(0.9352)	(0.0747)		(0.0071)
−2.3308*	0.1746	1.1904	0.05%
(1.3257)	(0.1114)	(2.1762)	(0.0109)
January 1990 – July 2005			
0.5643			0.00%
(1.9308)			(0.7716)
	0.1462*		0.03%
	(0.0855)		(0.0906)
		3.6314**	0.06%
		(1.4217)	(0.0119)
−0.3382	0.1511*		0.04%
(1.9069)	(0.0798)		(0.1691)
0.4163	−0.1079	5.3625*	0.06%
(1.7819)	(0.1636)	(2.8118)	(0.0548)

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. Newey West standard errors reported in brackets (computed with 4 lags) .

Table 3: UBS/Gallup Survey

Panel A: Survey Error Predictability

$$r_{t+12} - E_t^s r_{t+12} = \gamma + \boldsymbol{\delta X}_t + v_{t+12}$$

i	$\ln(D/P)$	cay	R^2 / p
−4.5705			0.16
(3.2383)			0.1722
	0.8506***		0.50
	(0.1371)		0.0000
		5.2796	0.18
		(3.5263)	0.1481
11.6813***	1.9475***		0.72
(2.2884)	(0.1665)		0.0000
11.9669***	1.9419***	0.4070	0.72
(2.5445)	(0.1664)	(2.7294)	0.0000

Panel B: Excess Return Predictability (survey sample)

$$q_{t+12} = \alpha + \boldsymbol{\beta X}_t + u_{t+12}$$

i	$\ln(D/P)$	cay	R^2 / p
−4.1429			0.14
(3.2290)			0.2139
	0.8080***		0.46
	(0.1421)		0.0000
		4.7067	0.14
		(3.5775)	0.2027
12.0136***	1.9361***		0.71
(2.0942)	(0.1372)		0.0000
11.7387***	1.9416***	−0.3918	0.71
(2.3204)	(0.1441)	(2.7524)	0.0000

Panel C: Risk Premium Explainability

$$E_t^s q_{t+12} = \alpha + \boldsymbol{\beta X}_t + u_t^s$$

i	$\ln(D/P)$	cay	R^2 / p
0.4276**			0.21
(0.1721)			0.0184
	−0.0426**		0.19
	(0.0187)		0.0301
		−0.5729***	0.31
		(0.1425)	0.0002
0.3323	−0.0114		0.21
(0.3158)	(0.0356)		0.0595
−0.2282	−0.0003	−0.7988**	0.32
(0.3746)	(0.0274)	(0.3405)	0.0002

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. Newey West standard errors reported in brackets (computed with 13 lags) . Sample with 53 observations from May 1998 to April 2003. See Section 4.2.1 for construction of data.

Table 4.a: ICF/Yale Survey Error Predictability over 12 months (Aggregation: none)

Survey Error Predictability $\tilde{r}_{t+12} - E_t^s \tilde{r}_{t+12} = \gamma + \boldsymbol{\delta X}_t + v_{t+12}$			
i	$\ln(D/P)$	R^2 / p (δ = 0)	obs / NW lags
Dow Jones (Individuals) Sep/96 – Nov/03			
0.2785		0.00	1174
(2.5923)		0.9145	196
	0.5724***	0.36	1174
	(0.1427)	0.0001	196
4.2042**	0.7507***	0.49	1174
(1.6883)	(0.1696)	0.0001	196
Dow Jones (Institutions) Jun/89 – Nov/03			
2.2708*		0.06	2547
(1.3215)		0.0860	170
	0.1164*	0.06	2547
	(0.0693)	0.0933	170
1.5663	0.0803	0.08	2547
(1.1952)	(0.0650)	0.1777	170
Nikkei (Institutions) Jun/89 – Nov/03			
−1.6331		0.04	1424
(1.1528)		0.1571	95
	0.4401***	0.21	1424
	(0.1290)	0.0007	95
0.9584	0.5029***	0.22	1424
(1.1944)	(0.1516)	0.0021	95

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. Newey West standard errors reported in brackets (lags as indicated above, corresponding to the number of observations per year) . See Section 4.2.1 for construction of data.

Table 4.b: ICF/Yale Survey Sample: Excess Return Predictability over 12 months (Aggregation: none)

Excess Return Predictability (survey sample)

$$q_{t+12} = \alpha + \boldsymbol{\beta X}_t + u_{t+12}$$

i	$\ln(D/P)$	R^2 $p\ (\beta = 0)$	obs NW lags
Dow Jones (Individuals) Sep/96 – Nov/03			
−1.3126		0.02	1187
(2.4390)		0.5909	198
	0.6043***	0.55	1187
	(0.1263)	0.0000	198
2.3754	0.7051***	0.60	1187
(1.7138)	(0.1648)	0.0001	198
Dow Jones (Institutions) Jun/89 – Nov/03			
0.3218		0.00	2566
(1.3658)		0.8138	171
	0.0788	0.06	2566
	(0.0663)	0.2351	171
−0.4587	0.0893	0.06	2566
(1.2683)	(0.0613)	0.3369	171
Nikkei (Institutions) Jun/89 – Nov/03			
−4.5118***		0.30	1435
(1.1950)		0.0002	96
	0.6724***	0.53	1435
	(0.1141)	0.0000	96
−1.5576	0.5699***	0.55	1435
(1.0968)	(0.1320)	0.0000	96

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. Newey West standard errors reported in brackets (lags as indicated above, corresponding to the number of observations per year) . See Section 4.2.1 for construction of data.

Table 4.c: ICF/Yale Risk Premium Explainability over 12 months (Aggregation: none)

Risk Premium Explainability $\tilde{E}_t^s q_{t+12} = \alpha + \boldsymbol{\beta} \boldsymbol{X}_t + u_t^s$			
i	$\ln(D/P)$	R^2 p (δ = 0)	obs NW lags
Dow Jones (Individuals) Sep/96 – Oct/04			
−1.5544***		0.09	1408
(0.2267)		0.0000	201
	0.0401	0.01	1408
	(0.0492)	0.4159	201
−1.7836***	−0.0430***	0.10	1408
(0.1260)	(0.0122)	0.0000	201
Dow Jones (Institutions) Jun/89 – Oct/04			
−1.9120***		0.10	2711
(0.2030)		0.0000	169
	−0.0425	0.02	2711
	(0.0265)	0.1082	169
−1.9952***	0.0094	0.10	2711
(0.2792)	(0.0164)	0.0000	169
Nikkei (Institutions) Jun/89 – Oct/04			
−2.8933***		0.25	1490
(0.2179)		0.0000	93
	0.2380***	0.13	1490
	(0.0453)	0.0000	93
−2.5490***	0.0662**	0.26	1490
(0.2259)	(0.0271)	0.0000	93

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. Newey West standard errors reported in brackets (lags as indicated above, corresponding to the number of observations per year) . See Section 4.2.1 for construction of data.

Table 5: Bonds: Return Predictability over 12 months

Excess Return Predictability

$$q^{132}_{t+12} = \alpha + \boldsymbol{\beta} \boldsymbol{X}_t + \varepsilon_{t+12}$$

Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 p (β = 0)
Australia	1.3908					0.05
	(1.0001)					0.1679
		13.9424*	−22.8263	6.4687	3.8409***	0.22
		(8.1864)	(14.8686)	(8.5119)	(1.4364)	0.0032
Canada	1.6534*					0.10
	(0.9335)					0.0795
		3.8357	−8.1918	1.8777	3.9008***	0.22
		(3.6124)	(6.6852)	(4.5904)	(1.4106)	0.0058
France	1.0830					0.03
	(1.3301)					0.4188
		11.0273***	−18.1185**	3.8061	5.2426***	0.18
		(3.6506)	(8.1971)	(5.3488)	(1.5693)	0.0040
Germany	1.6422					0.09
	(1.2127)					0.1793
		18.5134**	−35.1932***	14.9720***	3.2968***	0.22
		(8.1237)	(11.0042)	(4.4005)	(1.2710)	0.0000
Japan	2.8462					0.13
	(1.9130)					0.1403
		7.3131	−5.8309	−7.0244	7.5476***	0.34
		(5.3731)	(5.7526)	(8.0457)	(1.6742)	0.0000
Switzerland	1.8098**					0.11
	(0.8691)					0.0395
		9.0931	−17.7673**	3.4205	10.4964***	0.44
		(6.5890)	(8.6973)	(4.8664)	(2.3620)	0.0000
U.K.	1.0439					0.05
	(0.9642)					0.2827
		2.1452	−9.1559	6.1216	1.7200	0.13
		(6.7691)	(12.3367)	(6.5900)	(1.1503)	0.0420
U.S.	0.8441					0.02
	(0.9098)					0.3570
		2.0164	−18.1969**	15.6911***	1.5055	0.28
		(4.5682)	(9.1354)	(5.7798)	(1.6199)	0.0000
EW avg.	1.5392**					
	(0.7501)					
Spread: p (β = 0)						0.0002
Yields: p (β = 0)						0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to *F*-tests. Newey-West standard errors with 13 lags. SUR system for Spread and Yield regressions estimated from 203 observations over sample from September 1987 to July 2004. Spread is the difference in log-yields of Bonds (10Y) and Libor (12M) . See section 4.3.1 for construction of data.

Table 6: Bonds: Survey Error Predictability over 12 months

Expectational Error Predictability

$$-(i_{t+12} - E_t^s i_{t+12}) = \gamma + \boldsymbol{\delta X}_t + v_{t+12}$$

Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 p (δ = 0)
Australia	0.2017					0.05
	(0.1516)					0.1882
		1.0507	−1.5086	0.1446	0.4537**	0.11
		(1.6362)	(2.8988)	(1.5295)	(0.2145)	0.0444
Canada	0.2839**					0.12
	(0.1191)					0.0191
		−0.3312	0.0115	−0.0244	0.4505*	0.17
		(0.9248)	(1.5010)	(0.8001)	(0.2352)	0.0095
France	0.3218*					0.11
	(0.1925)					0.0988
		2.2328**	−4.3721**	1.6810	0.6651***	0.23
		(1.0743)	(2.1948)	(1.2081)	(0.2293)	0.0278
Germany	0.3115**					0.14
	(0.1523)					0.0438
		3.2435***	−7.0160***	3.6196***	0.2621	0.30
		(0.9483)	(1.1321)	(0.6696)	(0.2183)	0.0000
Japan	0.4948***					0.25
	(0.1860)					0.0091
		2.3485***	−3.8824**	0.8471	0.9032***	0.43
		(0.7808)	(1.9489)	(1.5248)	(0.2294)	0.0000
Switzerland	0.3514***					0.22
	(0.0952)					0.0003
		1.0458	−3.1252**	1.5012	1.1337***	0.43
		(0.9126)	(1.5173)	(1.0772)	(0.3700)	0.0000
U.K.	0.2562**					0.13
	(0.1299)					0.0519
		2.0893**	−4.2436**	2.0135*	0.1740	0.18
		(0.8930)	(1.8540)	(1.1746)	(0.2042)	0.0030
U.S.	0.0926					0.01
	(0.1277)					0.4724
		0.8160	−3.4870	2.6746**	0.0769	0.23
		(1.4854)	(2.5236)	(1.2420)	(0.2951)	0.0000
EW avg.	0.2892***					
	(0.0876)					
Spread: p (δ = 0)						0.0000
Yields: p (δ = 0)						0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to F-tests. Newey-West standard errors with 13 lags. SUR system for Spread and Yield regressions estimated from 153 observations over sample from September 1987 to July 2004. Spread is the difference in log-yields of Bonds (10Y) and Libor (12M) . See section 4.3.1 for construction of data.

Table 7: Libor (6M) : Return Predictability over 3 months

			Excess Return Predictability $q^{6}_{t+3} = \alpha + \boldsymbol{\beta X}_t + \varepsilon_{t+3}$			
Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 p (β = 0)
Australia	0.0716					0.00
	(0.5272)					0.8925
		0.6579	−1.1091	0.3909	0.1235*	0.08
		(0.9541)	(1.6137)	(0.7414)	(0.0660)	0.0521
Canada	0.7953*					0.04
	(0.4405)					0.0738
		−1.2066**	1.8475	−0.7376	0.1590	0.06
		(0.6025)	(1.1267)	(0.6824)	(0.1342)	0.1338
France	0.0322					0.00
	(0.4161)					0.9387
		−0.0077	0.2159	−0.3450	0.1871*	0.02
		(0.6003)	(1.0745)	(0.6001)	(0.1074)	0.5363
Germany	0.4173*					0.02
	(0.2330)					0.0762
		−0.7547*	1.0407	−0.2916	0.0002	0.03
		(0.3916)	(0.6451)	(0.3034)	(0.0690)	0.2613
Japan	0.5527					0.03
	(0.3772)					0.1462
		−0.7961***	1.6243***	−1.0276***	0.2637***	0.19
		(0.2880)	(0.3546)	(0.2427)	(0.0798)	0.0000
Switzerland	0.5152					0.01
	(0.3722)					0.1697
		−0.7274	1.1259	−0.5887	0.3351**	0.07
		(0.5120)	(0.8604)	(0.4210)	(0.1596)	0.0356
U.K.	0.3021					0.01
	(0.3624)					0.4077
		−0.6774	1.0620	−0.4075	0.0034	0.02
		(0.7972)	(1.3013)	(0.5654)	(0.0702)	0.4042
U.S.	0.0766					0.00
	(0.3853)					0.8433
		0.1021	−0.1983	0.0962	0.0470	0.02
		(0.4681)	(0.7639)	(0.4006)	(0.0854)	0.7842
EW avg.	0.3454*					
	(0.1884)					
Spread: p (β = 0)						0.4529
Yields: p (β = 0)						0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to *F*-tests. Newey-West standard errors with 4 lags. SUR system for Spread and Yield regressions estimated from 212 observations over sample from September 1987 to April 2005. Spread is the difference in log-yields of Libor (6M) and Libor (3M) . See section 4.4.1 for construction of data.

Table 8: Libor (3M) : Survey Error Predictability over 3 Months

	Expectational Error Predictability $-(i_{t+3} - E_t^s i_{t+3}) = \gamma + \boldsymbol{\delta X}_t + v_{t+3}$					
Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 p (δ = 0)
Australia	−1.2575*					0.08
	(0.7566)					0.1005
		1.5173	−1.5874	−0.0092	0.1193	0.10
		(1.2412)	(2.0122)	(0.9174)	(0.1034)	0.1080
Canada	−0.4598					0.01
	(0.4716)					0.3340
		0.0441	0.3774	−0.4226	−0.0032	0.02
		(0.5112)	(0.9265)	(0.6604)	(0.1955)	0.8803
France	−1.3694***					0.18
	(0.5001)					0.0072
		1.5355	−1.5902	0.0235	0.0695	0.19
		(1.1407)	(2.1055)	(1.0673)	(0.1272)	0.0917
Germany	−0.3427					0.02
	(0.2404)					0.1586
		0.6851	−0.9813	0.3230	−0.0084	0.03
		(0.4662)	(0.8503)	(0.4385)	(0.0715)	0.2745
Japan	−0.4759					0.02
	(0.4151)					0.2562
		0.2291	0.1054	−0.4646	0.1958***	0.10
		(0.4258)	(0.6997)	(0.4124)	(0.0754)	0.1055
Switzerland	−0.4809					0.01
	(0.4162)					0.2525
		0.9080	−1.1636	0.1340	0.2561	0.05
		(0.5538)	(0.9971)	(0.5664)	(0.1692)	0.2174
U.K.	−0.6962					0.03
	(0.5218)					0.1866
		0.9105	−1.1029	0.2310	−0.0813	0.05
		(0.9114)	(1.4043)	(0.5836)	(0.0865)	0.7436
U.S.	−0.5681					0.03
	(0.4397)					0.2010
		0.6347	−0.8495	0.3172	−0.1326	0.06
		(0.4732)	(0.7042)	(0.3548)	(0.1033)	0.3901
EW avg.	−0.7063***					
	(0.2433)					
Spread: p (δ = 0)						0.0896
Yields: p (δ = 0)						0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to F-tests. Newey-West standard errors with 4 lags. SUR system for Spread and Yield regressions estimated from 163 observations over sample from September 1987 to April 2005. Spread is the difference in log-yields of Libor (6M) and Libor (3M) . See section 4.4.1 for construction of data.

Table 9: Foreign Exchange Market: Expected Depreciation over 12 months

Explainability of Expected Depreciation $E_t^s s_{t+12} - s_t = \alpha + \beta(i_t - i_t^*) + u_t$			
Currencies	β	$\sigma(\beta)$	R^2
Australia	1.8353***	0.1767	0.61
Canada	1.0513***	0.2038	0.42
France	1.5105***	0.4896	0.23
Germany	1.1832**	0.4704	0.16
Japan	0.0509	0.3340	0.00
Switzerland	1.2351**	0.4935	0.14
U.K.	1.5072***	0.4843	0.21
EW avg.	1.1962***	0.2729	
p (β = 0)	0.0000		

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. Newey-West standard errors with 13 lags. SUR system estimated from 210 observations over sample from October 1986 to July 2004. See section 4.1.1 for construction of data.

Table 10: UBS/Gallup Survey: Explainability of Expected Returns

$E_t^s r_{t+12} = \alpha + \boldsymbol{\beta} \boldsymbol{X}_t + u_t^s$			
i	$\ln(D/P)$	cay	R^2 p (β = 0)
1.4276***			0.75
(0.1721)			0.0000
	−0.1365***		0.61
	(0.0202)		0.0000
		−1.5726***	0.74
		(0.1319)	0.0000
1.3323***	−0.0114		0.75
(0.3158)	(0.0356)		0.0000
0.7718**	−0.0003	−0.7988**	0.78
(0.3746)	(0.0274)	(0.3405)	0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. Newey West standard errors reported in brackets (computed with 13 lags) . Sample with 53 observations from May 1998 to April 2003. See Section 4.2.1 for construction of data.

Table 11: ICF/Yale Survey: Explainability of Expected Returns (12 months, no Aggregation)

Explainability of Expected Price Change $\tilde{E}_t^s \tilde{r}_{t+12} = \alpha + \boldsymbol{\beta X}_t + u_t^s$			
i	$\ln(D/P)$	R^2 p (δ = 0)	obs NW lags
Dow Jones (Individuals) Sep/96 – Oct/04			
−0.5544**		0.01	1408
(0.2267)		0.0147	201
	−0.0065	0.00	1408
	(0.0221)	0.7680	201
−0.7836***	−0.0430***	0.02	1408
(0.1260)	(0.0122)	0.0000	201
Dow Jones (Institutions) Jun/89 – Oct/04			
−0.9120***		0.02	2711
(0.2030)		0.0000	169
	−0.0165	0.00	2711
	(0.0172)	0.3371	169
−0.9952***	0.0094	0.03	2711
(0.2792)	(0.0164)	0.0000	169
Nikkei (Institutions) Jun/89 – Oct/04			
−1.8933***		0.13	1490
(0.2179)		0.0000	93
	0.1706***	0.08	1490
	(0.0323)	0.0000	93
−1.5490***	0.0662**	0.13	1490
(0.2259)	(0.0271)	0.0000	93

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. Newey West standard errors reported in brackets (lags as indicated above, corresponding to the number of observations per year) . See Section 4.2.1 for construction of data.

Table 12: Libor (3M) Survey: Expected Yield Change over 3 Months

			Expected Yield Change Explainability $E_t^s i_{t+3} - i_t = \alpha + \boldsymbol{\beta} \boldsymbol{X}_t + u_t^s$			
Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 p (δ = 0)
Australia	0.5051**					0.07
	(0.2190)					0.0232
		0.1118	−0.7259	0.6690	−0.0996***	0.13
		(0.5865)	(1.0185)	(0.4667)	(0.0293)	0.0000
Canada	1.0027***					0.22
	(0.2020)					0.0000
		−1.1571***	1.2715**	−0.0953	−0.0256	0.22
		(0.3490)	(0.5354)	(0.2252)	(0.0460)	0.0001
France	0.7135***					0.31
	(0.1106)					0.0000
		−0.6517**	0.3852	0.3809	−0.1474***	0.38
		(0.2718)	(0.4921)	(0.2434)	(0.0470)	0.0000
Germany	1.0403***					0.42
	(0.1278)					0.0000
		−0.7281**	0.4518	0.3114	−0.0174	0.46
		(0.3694)	(0.6359)	(0.2903)	(0.0328)	0.0000
Japan	1.3564***					0.41
	(0.2371)					0.0000
		−1.2572***	1.0760**	0.2401	−0.0613	0.45
		(0.2720)	(0.4410)	(0.2306)	(0.0386)	0.0000
Switzerland	0.5554***					0.13
	(0.1109)					0.0000
		−0.0784	−0.5283*	0.6596***	−0.0528	0.21
		(0.1625)	(0.3138)	(0.1749)	(0.0347)	0.0000
U.K.	0.9272***					0.23
	(0.1705)					0.0000
		−0.8334**	0.7167	0.1734	−0.0989**	0.28
		(0.3480)	(0.6321)	(0.3199)	(0.0405)	0.0000
U.S.	1.4488***					0.43
	(0.1656)					0.0000
		−1.6656***	1.7474***	−0.0544	−0.0620	0.46
		(0.3276)	(0.5447)	(0.2463)	(0.0431)	0.0000
EW avg.	0.9437***					
	(0.0825)					
Spread: p (δ = 0)						0.0000
Yields: p (δ = 0)						0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to *F*-tests. Newey-West standard errors with 4 lags. SUR system for Spread and Yield regressions estimated from 163 observations over sample from September 1987 to April 2005. Spread is the difference in log-yields of Libor (6M) and Libor (3M) . See section 4.4.1 for construction of data.

Table 13: Bonds Survey: Expected Yield Change over 12 Months

Expected Yield Change Explainability

$$E_t^s i_{t+12} - i_t = \alpha + \boldsymbol{\beta X}_t + u_t^s$$

Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 p (δ = 0)
Australia	0.1157***					0.11
	(0.0251)					0.0000
		−0.1603	0.0567	0.0819	−0.0808	0.28
		(0.5472)	(0.9657)	(0.4845)	(0.0800)	0.0000
Canada	0.2178***					0.27
	(0.0462)					0.0000
		−0.9122***	0.9367**	−0.0822	−0.0635	0.40
		(0.2400)	(0.4582)	(0.2629)	(0.0647)	0.0000
France	0.2527***					0.34
	(0.0422)					0.0000
		0.5649**	−1.3092**	0.5464	0.1860**	0.37
		(0.2863)	(0.5436)	(0.3402)	(0.0733)	0.0000
Germany	0.2212***					0.34
	(0.0467)					0.0000
		0.4486	−1.6307***	1.0569***	0.0891	0.46
		(0.3729)	(0.6210)	(0.3135)	(0.0699)	0.0000
Japan	0.2548***					0.32
	(0.0729)					0.0007
		0.2187	−0.6700	0.1938	0.2789***	0.34
		(0.5858)	(0.9238)	(0.4687)	(0.0719)	0.0000
Switzerland	0.2083***					0.39
	(0.0377)					0.0000
		0.1214	−1.2331**	1.0609***	−0.0524	0.53
		(0.2781)	(0.4811)	(0.3011)	(0.0666)	0.0000
U.K.	0.2231***					0.40
	(0.0359)					0.0000
		0.0529	−0.1031	−0.1177	0.0902	0.49
		(0.4862)	(0.9186)	(0.4948)	(0.0590)	0.0000
U.S.	0.1501***					0.18
	(0.0244)					0.0000
		−0.1125	−0.3532	0.4006	−0.0033	0.25
		(0.3578)	(0.5529)	(0.2929)	(0.0596)	0.0000
EW avg.	0.2055***					
	(0.0273)					
Spread: p (δ = 0)						0.0000
Yields: p (δ = 0)						0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to *F*-tests. Newey-West standard errors with 13 lags. SUR system for Spread and Yield regressions estimated from 162 observations over sample from September 1987 to April 2005. Spread is the difference in log-yields of Bonds (10Y) and Libor (12M) . See section 4.3.1 for construction of data.

Table A.1: Foreign Exchange Market: Predictability over 3 months

Panel A: Expectational Error Predictability

$$s_{t+3} - E_t^s s_{t+3} = \gamma + \delta(i_t - i_t^*) + v_{t+3}$$

Currencies	δ	$\sigma(\delta)$	R^2
Australia	−3.0989***	0.7646	0.15
Canada	−2.1294***	0.4634	0.10
France	−2.3636***	0.8987	0.06
Germany	−2.6882***	0.9066	0.08
Japan	−1.3139	1.1531	0.01
Switzerland	−2.8000**	1.1563	0.07
U.K.	−0.7555	1.4323	0.00
EW avg.	−2.1642***	0.6531	
p (δ = 0)	0.0000		

Panel B: Excess Return Predictability

$$q_{t+3} = \alpha + \beta(i_t - i_t^*) + u_{t+3}$$

Currencies	β	$\sigma(\beta)$	R^2
Australia	−2.3996***	0.6849	0.11
Canada	−2.2144***	0.4490	0.11
France	−2.0620**	0.9733	0.05
Germany	−1.9760**	0.9293	0.05
Japan	−3.4887***	1.0324	0.10
Switzerland	−2.5341**	1.1328	0.06
U.K.	−1.7219	1.4516	0.03
EW avg.	−2.3424***	0.6407	
p (β = 0)	0.0000		

Panel C: Risk Premium Explainability

$$E_t^s q_{t+3} = \alpha + \beta(i_t - i_t^*) + u_t^s$$

Currencies	β	$\sigma(\beta)$	R^2
Australia	0.6994***	0.2463	0.06
Canada	−0.0850	0.1504	0.00
France	0.3016	0.5066	0.01
Germany	0.7123*	0.4036	0.03
Japan	−2.1748***	0.5011	0.19
Switzerland	0.2659	0.5088	0.00
U.K.	−0.9664	0.6243	0.04
EW avg.	−0.1781	0.3138	
p (β = 0)	0.0000		

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. Newey-West standard errors with 4 lags. SUR systems for all panels estimated from 216 observations over sample from October 1986 to April 2005. See section 4.1.1 for construction of data.

Table A.2: Foreign Exchange Market: Predictability over 6 months

Panel A: Expectational Error Predictability

$$s_{t+6} - E_t^s s_{t+6} = \gamma + \delta(i_t - i_t^*) + v_{t+6}$$

Currencies	δ	$\sigma(\delta)$	R^2
Australia	−3.6196***	0.7487	0.34
Canada	−2.1585***	0.4794	0.15
France	−2.9174***	1.0196	0.14
Germany	−3.0588***	0.8130	0.17
Japan	−2.2369**	1.0379	0.07
Switzerland	−3.4626***	1.0207	0.17
U.K.	−1.5476	1.4416	0.03
EW avg.	−2.7145***	0.5806	
p (δ = 0)	0.0000		

Panel B: Excess Return Predictability

$$q_{t+6} = \alpha + \beta(i_t - i_t^*) + u_{t+6}$$

Currencies	β	$\sigma(\beta)$	R^2
Australia	−2.5407***	0.7046	0.20
Canada	−1.9864***	0.4908	0.14
France	−2.2968**	1.0684	0.12
Germany	−2.3986***	0.9295	0.13
Japan	−3.8211***	0.8653	0.21
Switzerland	−2.9378***	1.0532	0.16
U.K.	−1.5000	1.3776	0.04
EW avg.	−2.4974***	0.6189	
p (β = 0)	0.0000		

Panel C: Risk Premium Explainability

$$E_t^s q_{t+6} = \alpha + \beta(i_t - i_t^*) + u_t^s$$

Currencies	β	$\sigma(\beta)$	R^2
Australia	1.0789***	0.2113	0.23
Canada	0.1721	0.1957	0.01
France	0.6206	0.5680	0.03
Germany	0.6602	0.5161	0.03
Japan	−1.5842***	0.4503	0.14
Switzerland	0.5248	0.5660	0.02
U.K.	0.0476	0.6139	0.00
EW avg.	0.2171	0.3367	
p (β = 0)	0.0000		

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. Newey-West standard errors with 7 lags. SUR systems for all panels estimated from 214 observations over sample from October 1986 to February 2005. See section 4.1.1 for construction of data.

Table A.3: ICF/Yale Survey Error Predictability over 1 month (Aggregation: none)

Survey Error Predictability $\tilde{r}_{t+1} - E_t^s \tilde{r}_{t+1} = \gamma + \boldsymbol{\delta X}_t + v_{t+1}$			
i	$\ln(D/P)$	R^2 p (δ = 0)	obs NW lags
Dow Jones (Individuals) Jan/99 – Oct/04			
−1.0218		0.00	1152
(3.0562)		0.7384	16
	0.0463*	0.02	1152
	(0.0258)	0.0735	16
19.4283***	0.1852***	0.06	1152
(6.5955)	(0.0541)	0.0028	16
Dow Jones (Institutions) Aug/93 – Oct/04			
6.0100***		0.02	1387
(2.0616)		0.0036	10
	−0.0026	0.00	1387
	(0.0103)	0.7983	10
6.2799***	−0.0083	0.03	1387
(2.1130)	(0.0104)	0.0120	10
Nikkei (Institutions) Aug/93 – Oct/04			
−2.6332		0.00	787
(3.8619)		0.4961	6
	0.0294	0.01	787
	(0.0254)	0.2469	6
−0.3228	0.0288	0.01	787
(4.3580)	(0.0281)	0.4918	6

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. Newey West standard errors reported in brackets (lags as indicated above, corresponding to the number of observations per year divided by 12) . See Section 4.2.1 for construction of data.

Table A.4: ICF/Yale Survey Error Predictability over 3 months (Aggregation: none)

Survey Error Predictability $\tilde{r}_{t+3} - E^s_t \tilde{r}_{t+3} = \gamma + \boldsymbol{\delta X}_t + v_{t+3}$			
i	$\ln(D/P)$	R^2 p (δ = 0)	obs NW lags
Dow Jones (Individuals) Sep/96 – Aug/04			
0.1341		0.00	1300
(2.1938)		0.9513	47
	0.1456***	0.10	1300
	(0.0419)	0.0005	47
4.2325**	0.1942***	0.13	1300
(1.7144)	(0.0418)	0.0000	47
Dow Jones (Institutions) Jun/89 – Aug/04			
2.1370		0.01	2301
(1.6085)		0.1843	36
	0.0128	0.00	2301
	(0.0208)	0.5385	36
2.2055	−0.0019	0.01	2301
(1.5889)	(0.0203)	0.3752	36
Nikkei (Institutions) Jun/89 – Aug/04			
−2.4047		0.02	1297
(1.6863)		0.1544	20
	0.1500***	0.08	1297
	(0.0421)	0.0004	20
1.2677	0.1713***	0.08	1297
(2.0492)	(0.0579)	0.0020	20

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. Newey West standard errors reported in brackets (lags as indicated above, corresponding to the number of observations per year divided by 4) . See Section 4.2.1 for construction of data.

Table A.5: ICF/Yale Survey Error Predictability over 12 months (Aggregation: daily)

	Survey Error Predictability $\tilde{r}_{t+12} - E_t^s \tilde{r}_{t+12} = \gamma + \boldsymbol{\delta} \boldsymbol{X}_t + v_{t+12}$		
i	$\ln(D/P)$	R^2	obs
		p (δ = 0)	NW lags
	Dow Jones (Individuals) Sep/96 – Nov/03		
−0.2238		0.00	600
(2.2248)		0.9201	100
	0.5174***	0.34	600
	(0.1258)	0.0000	100
4.2092**	0.7364***	0.47	600
(1.7658)	(0.1832)	0.0003	100
	Dow Jones (Institutions) Jun/89 – Nov/03		
2.5567*		0.09	953
(1.4110)		0.0706	64
	0.1535**	0.11	953
	(0.0694)	0.0275	64
1.7035	0.1183*	0.14	953
(1.2623)	(0.0610)	0.0868	64
	Nikkei (Institutions) Jun/89 – Nov/03		
−1.2684		0.02	686
(1.1343)		0.2646	46
	0.5005***	0.27	686
	(0.1350)	0.0002	46
1.5597	0.5923***	0.29	686
(1.1649)	(0.1267)	0.0000	46

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. Newey West standard errors reported in brackets (lags as indicated above, corresponding to the number of observations per year). See Section 4.2.1 for construction of data.

Table A.6: ICF/Yale Survey Error Predictability over 12 months (Aggregation: monthly)

Survey Error Predictability $\tilde{r}_{t+12} - E^s_t \tilde{r}_{t+12} = \gamma + \boldsymbol{\delta X}_t + v_{t+12}$			
i	$\ln(D/P)$	R^2 p (δ = 0)	obs NW lags
Dow Jones (Individuals) Sep/96 – Nov/03			
−0.5338		0.00	54
(2.1910)		0.8120	12
	0.4908***	0.39	54
	(0.1157)	0.0001	12
4.5098**	0.7644***	0.57	54
(1.9412)	(0.2137)	0.0039	12
Dow Jones (Institutions) Jun/89 – Nov/03			
2.6577*		0.10	110
(1.6055)		0.1039	12
	0.1484*	0.13	110
	(0.0785)	0.0636	12
1.8781	0.1176	0.17	110
(1.4301)	(0.0729)	0.1552	12
Nikkei (Institutions) Jun/89 – Nov/03			
−0.5462		0.00	105
(1.1448)		0.6375	12
	0.5214***	0.32	105
	(0.1791)	0.0048	12
2.0978*	0.6285***	0.37	105
(1.1823)	(0.1359)	0.0000	12

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. Newey West standard errors reported in brackets (lags as indicated above, corresponding to the survey horizon of 12 months) . See Section 4.2.1 for construction of data.

Table A.7: Bonds: Return Predictability over 3 months

Excess Return Predictability

$$q_{t+3}^{123} = \alpha + \boldsymbol{\beta X}_t + \varepsilon_{t+3}$$

Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 p (β = 0)
Australia	1.9096					0.03
	(1.3281)					0.1539
		−5.1841	6.8646	−4.9757	5.0062**	0.08
		(20.6353)	(34.8710)	(15.6579)	(1.9737)	0.1347
Canada	1.9089					0.03
	(1.2403)					0.1271
		−2.0560	−12.5740	13.6323	2.2343	0.09
		(10.5405)	(19.9693)	(12.2562)	(2.5888)	0.0723
France	0.5968					0.00
	(1.1601)					0.6092
		14.5787	−19.1035	0.3144	6.3599***	0.07
		(9.4036)	(19.1419)	(10.6418)	(2.2243)	0.0206
Germany	1.2637					0.02
	(1.0982)					0.2534
		3.6649	−7.4964	2.2936	2.1695	0.02
		(10.7877)	(17.4088)	(8.7544)	(1.9293)	0.7436
Japan	4.1236*					0.07
	(2.1423)					0.0568
		7.1494	5.1683	−22.3425*	13.4446***	0.20
		(10.6607)	(15.4784)	(12.9457)	(3.7349)	0.0106
Switzerland	2.2393**					0.07
	(0.8891)					0.0129
		−1.7203	1.9848	−6.4666	11.0417***	0.18
		(10.6316)	(18.4733)	(10.7180)	(3.3949)	0.0017
U.K.	1.2991					0.02
	(1.2109)					0.2869
		−8.4309	11.4872	−4.8789	2.6146	0.04
		(10.3091)	(17.9368)	(9.9382)	(1.9303)	0.5481
U.S.	1.0329					0.01
	(1.1965)					0.3912
		−15.0849	4.2956	10.6547	1.3509	0.09
		(12.1549)	(20.0263)	(10.1985)	(1.9754)	0.0403
EW avg.	1.7967**					
	(0.8529)					
Spread: p (β = 0)						0.1393
Yields: p (β = 0)						0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to *F*-tests. Newey-West standard errors with 4 lags. SUR system for Spread and Yield regressions estimated from 212 observations over sample from September 1987 to April 2005. Spread is the difference in log-yields of Bonds (10Y) and Libor (3M) . See section 4.3.1 for construction of data.

Table A.8: Bonds: Return Predictability over 6 months

			Excess Return Predictability $q^{126}_{t+6} = \alpha + \boldsymbol{\beta X}_t + \varepsilon_{t+6}$			
Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 $p\ (\beta = 0)$
Australia	1.9279					0.05
	(1.2158)					0.1161
		12.9130	−24.2987	8.6458	4.2309***	0.15
		(14.3506)	(24.2999)	(10.7430)	(1.5626)	0.0392
Canada	1.8751*					0.07
	(1.1008)					0.0915
		5.3339	−20.0325*	13.1410*	2.8064	0.15
		(6.1317)	(12.1746)	(7.8374)	(2.0091)	0.0076
France	0.8539					0.01
	(1.3789)					0.5384
		21.0253***	−32.3660**	7.4495	6.1157***	0.14
		(6.2523)	(13.8151)	(8.4037)	(1.8282)	0.0006
Germany	1.5522					0.05
	(1.1425)					0.1778
		13.9436*	−27.4327**	11.9756*	2.6281	0.09
		(8.4715)	(11.8226)	(6.3951)	(1.6874)	0.1201
Japan	3.6098*					0.11
	(2.0436)					0.0802
		−5.2568	8.3454	−10.1525	9.6029***	0.24
		(6.8549)	(10.2565)	(9.9226)	(2.8007)	0.0014
Switzerland	2.1113**					0.10
	(0.8626)					0.0157
		1.8361	−8.2917	0.7763	10.8740***	0.28
		(8.0588)	(14.0501)	(9.1273)	(3.0340)	0.0000
U.K.	1.2494					0.04
	(1.1756)					0.2914
		−1.2552	−3.8175	3.8979	1.9903	0.07
		(8.3204)	(16.3711)	(9.3498)	(1.6755)	0.2549
U.S.	1.0904					0.02
	(1.0835)					0.3177
		0.6956	−22.2292*	21.5181***	0.9088	0.18
		(8.4110)	(12.8363)	(7.0955)	(1.8312)	0.0018
EW avg.	1.7838**					
	(0.7923)					
Spread: p (β = 0)						0.0409
Yields: p (β = 0)						0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to *F*-tests. Newey-West standard errors with 7 lags. SUR system for Spread and Yield regressions estimated from 209 observations over sample from September 1987 to January 2005. Spread is the difference in log-yields of Bonds (10Y) and Libor (6M) . See section 4.3.1 for construction of data.

Table A.9: Bonds: Survey Error Predictability over 3 months

		Expectational Error Predictability $-(i_{t+3} - E_t^s i_{t+3}) = \gamma + \boldsymbol{\delta X}_t + v_{t+3}$				
Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 p (δ = 0)
Australia	0.0364					0.01
	(0.0503)					0.4725
		−1.8730***	2.8664**	−1.0900*	0.1426*	0.08
		(0.6592)	(1.1815)	(0.5784)	(0.0752)	0.0073
Canada	0.0857					0.05
	(0.0532)					0.1114
		−0.2998	−0.5020	0.8420**	−0.0581	0.14
		(0.4699)	(0.7776)	(0.4181)	(0.0951)	0.0681
France	0.0589					0.03
	(0.0451)					0.1958
		0.5682*	−0.6955	−0.0909	0.3197***	0.12
		(0.3128)	(0.6245)	(0.3728)	(0.0936)	0.0158
Germany	0.0794**					0.07
	(0.0347)					0.0244
		−0.4278	0.2749	0.0886	0.0835	0.11
		(0.3875)	(0.6967)	(0.4165)	(0.0776)	0.1022
Japan	0.0871					0.04
	(0.0632)					0.1727
		0.2074	−0.7480	0.3944	0.2199**	0.12
		(0.5414)	(0.9329)	(0.5425)	(0.1049)	0.0817
Switzerland	0.1111***					0.16
	(0.0292)					0.0002
		−0.0631	−0.5605	0.5133	0.1806	0.21
		(0.4667)	(0.8434)	(0.4954)	(0.1171)	0.0001
U.K.	0.0383					0.02
	(0.0403)					0.3473
		−0.1583	0.0283	0.1009	0.0445	0.03
		(0.5451)	(0.9613)	(0.4903)	(0.0750)	0.7505
U.S.	0.0141					0.00
	(0.0486)					0.7733
		−1.2205**	0.8505	0.4440	−0.0754	0.16
		(0.6057)	(0.9540)	(0.4746)	(0.0762)	0.0050
EW avg.	0.0639**					
	(0.0288)					
Spread: p (δ = 0)						0.0046
Yields: p (δ = 0)						0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to *F*-tests. Newey-West standard errors with 4 lags. SUR system for Spread and Yield regressions estimated from 162 observations over sample from September 1987 to April 2005. Spread is the difference in log-yields of Bonds (10Y) and Libor (3M) . See section 4.3.1 for construction of data.

Table A.10: Bonds: Survey Error Predictability over 6 months

			Expectational Error Predictability $-(i_{t+6} - E_t^s i_{t+6}) = \gamma + \boldsymbol{\delta} \boldsymbol{X}_t + v_{t+6}$			
Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 p (δ = 0)
Australia	0.1275					0.04
	(0.0919)					0.1698
		−1.7319*	2.5515	−1.0521	0.3288***	0.11
		(0.9696)	(1.6931)	(0.8016)	(0.1164)	0.0012
Canada	0.1765**					0.09
	(0.0865)					0.0442
		−0.2725	−0.9480	1.1765**	0.0476	0.21
		(0.6402)	(1.0018)	(0.4921)	(0.1532)	0.0008
France	0.1629					0.08
	(0.1027)					0.1169
		1.4893***	−2.4756***	0.6438	0.5000***	0.18
		(0.4528)	(0.9396)	(0.6407)	(0.1357)	0.0010
Germany	0.1725**					0.12
	(0.0680)					0.0127
		0.4935	−1.8734**	1.2776*	0.1556	0.20
		(0.5677)	(0.9085)	(0.6730)	(0.1414)	0.0211
Japan	0.2417**					0.12
	(0.1088)					0.0287
		0.0257	−0.7063	0.2944	0.5395***	0.26
		(0.7840)	(1.5833)	(0.9711)	(0.1898)	0.0037
Switzerland	0.2066***					0.20
	(0.0531)					0.0002
		0.4950	−2.3086**	1.5846**	0.4525**	0.33
		(0.7291)	(1.1774)	(0.7345)	(0.2260)	0.0000
U.K.	0.1413*					0.09
	(0.0753)					0.0640
		0.0028	−0.5270	0.4019	0.1597	0.11
		(0.6990)	(1.4517)	(0.8964)	(0.1494)	0.2453
U.S.	0.0693					0.01
	(0.0896)					0.4429
		−1.1704	−0.1907	1.4387**	−0.0730	0.24
		(0.8331)	(1.3460)	(0.7196)	(0.1415)	0.0014
EW avg.	0.1623***					
	(0.0485)					
Spread: p (δ = 0)						0.0011
Yields: p (δ = 0)						0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to *F*-tests. Newey-West standard errors with 7 lags. SUR system for Spread and Yield regressions estimated from 159 observations over sample from September 1987 to January 2005. Spread is the difference in log-yields of Bonds (10Y) and Libor (6M) . See section 4.3.1 for construction of data.

Table A.11: Libor (12M) : Return Predictability over 6 months

			Excess Return Predictability $q^{12}_{t+6} = \alpha + \boldsymbol{\beta X}_t + \varepsilon_{t+6}$			
Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 $p\ (\beta = 0)$
Australia	0.4044					0.01
	(0.6200)					0.5170
		3.3561*	−5.4630*	2.0527*	0.1883	0.17
		(1.8181)	(2.8726)	(1.1622)	(0.1188)	0.0126
Canada	0.4723					0.01
	(0.6745)					0.4866
		0.9424	−1.9473	0.9374	0.1646	0.04
		(0.8038)	(1.5824)	(0.9274)	(0.1923)	0.5199
France	0.0316					0.00
	(0.3367)					0.9257
		0.8309*	−1.2669	0.2934	0.1934	0.04
		(0.4958)	(1.0086)	(0.6409)	(0.1869)	0.3906
Germany	0.3139					0.01
	(0.3555)					0.3807
		2.0224***	−3.6927***	1.7510***	−0.0965	0.07
		(0.7794)	(1.3905)	(0.6729)	(0.1577)	0.1346
Japan	0.3639					0.00
	(0.9867)					0.7140
		0.8942	−1.0859	−0.1264	0.4474***	0.17
		(0.5653)	(0.6830)	(0.6214)	(0.1731)	0.0649
Switzerland	0.9375					0.04
	(0.7388)					0.2081
		1.2919	−2.8174**	1.1974	0.6870**	0.15
		(0.8975)	(1.3973)	(0.7286)	(0.2966)	0.0469
U.K.	0.3219					0.01
	(0.5767)					0.5792
		0.6221	−1.4164	0.8368	−0.0555	0.01
		(1.4375)	(2.4586)	(1.1247)	(0.1414)	0.9359
U.S.	0.6974					0.02
	(0.6865)					0.3132
		1.6918*	−3.4739**	1.8748**	−0.0063	0.08
		(1.0236)	(1.6394)	(0.8486)	(0.2313)	0.0129
EW avg.	0.4429					
	(0.3604)					
Spread: p (β = 0)						0.8959
Yields: p (β = 0)						0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to *F*-tests. Newey-West standard errors with 7 lags. SUR system for Spread and Yield regressions estimated from 209 observations over sample from September 1987 to January 2005. Spread is the difference in log-yields of Libor (12M) and Libor (6M) . See section 4.4.1 for construction of data.

Table A.12: Libor (3M) : Survey Error Predictability over 6 Months

Expectational Error Predictability

$$-(i_{t+6} - E_t^s i_{t+6}) = \gamma + \boldsymbol{\delta X}_t + v_{t+6}$$

Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 p (δ = 0)
Australia	−1.1615*					0.06
	(0.6991)					0.1007
		2.4020	−2.1437	−0.4887	0.3175*	0.15
		(2.0497)	(3.2329)	(1.4322)	(0.1827)	0.1554
Canada	−0.3915					0.01
	(0.7826)					0.6198
		0.1687	0.5623	−0.9096	0.2073	0.03
		(0.7500)	(1.1700)	(0.6497)	(0.2752)	0.4734
France	−0.9742***					0.12
	(0.3716)					0.0101
		1.4429*	−1.3893	−0.1663	0.1295	0.17
		(0.8545)	(1.6230)	(0.9055)	(0.2211)	0.0155
Germany	−0.0924					0.00
	(0.4260)					0.8295
		2.0932**	−3.4921*	1.4705	−0.0588	0.07
		(1.0532)	(1.9272)	(0.9521)	(0.1478)	0.3210
Japan	0.0612					0.00
	(1.0034)					0.9518
		0.8479	−0.5782	−0.6019	0.4749***	0.21
		(0.6069)	(1.1453)	(0.7808)	(0.1564)	0.0264
Switzerland	0.3556					0.00
	(0.8150)					0.6652
		1.5887	−2.5980	0.6941	0.6918**	0.12
		(1.3839)	(2.1648)	(1.0474)	(0.3265)	0.1950
U.K.	−0.4465					0.01
	(0.6881)					0.5200
		0.2926	0.2275	−0.5667	−0.0267	0.05
		(0.9400)	(1.4686)	(0.7646)	(0.1343)	0.8142
U.S.	−0.3590					0.01
	(0.6472)					0.5822
		0.6760	−1.1016	0.5877	−0.2020	0.04
		(0.9927)	(1.5490)	(0.8276)	(0.2718)	0.7884
EW avg.	−0.3760					
	(0.4257)					
Spread: p (δ = 0)						0.0546
Yields: p (δ = 0)						0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to *F*-tests. Newey-West standard errors with 7 lags. SUR system for Spread and Yield regressions estimated from 160 observations over sample from September 1987 to January 2005. Spread is the difference in log-yields of Libor (12M) and Libor (6M) . See section 4.4.1 for construction of data.

Table A.13: Libor (3M) : Survey Error Predictability over 12 Months

		Expectational Error Predictability $-(i_{t+12} - E_t^s i_{t+12}) = \gamma + \boldsymbol{\delta X}_t + v_{t+12}$				
Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 p (δ = 0)
Australia	−2.8251**					0.13
	(1.3704)					0.0423
		4.0430	−2.5103	−1.9389	0.6872**	0.25
		(3.1463)	(5.0823)	(2.6164)	(0.3121)	0.0132
Canada	−1.6137*					0.05
	(0.9604)					0.0971
		0.8988	0.5407	−1.6067	0.2318	0.06
		(1.0702)	(1.8299)	(1.3088)	(0.5599)	0.2610
France	−0.8471					0.03
	(0.6495)					0.1970
		3.7173***	−5.5033***	1.6164	0.1481	0.15
		(1.0486)	(1.7887)	(1.0706)	(0.3920)	0.0001
Germany	0.0215					0.00
	(1.1354)					0.9850
		6.5000***	−11.1903***	4.9185***	−0.2548	0.18
		(1.6955)	(3.1999)	(1.6506)	(0.3242)	0.0005
Japan	−0.3670					0.00
	(2.3129)					0.8749
		3.4198***	−3.2369	−0.8777	0.9528***	0.32
		(0.9100)	(2.2867)	(1.8263)	(0.2852)	0.0001
Switzerland	0.3022					0.00
	(1.7853)					0.8667
		3.6906**	−5.3986**	0.9973	1.5558**	0.19
		(1.6507)	(2.6648)	(1.9212)	(0.7649)	0.0696
U.K.	−0.4704					0.01
	(1.0756)					0.6646
		2.3188	−3.3085	1.0656	−0.1842	0.04
		(1.9328)	(3.1920)	(1.6298)	(0.3138)	0.7889
U.S.	−1.0047					0.02
	(1.1700)					0.3949
		2.3879	−3.6353	1.6317	−0.4330	0.08
		(2.0848)	(3.4726)	(1.7454)	(0.6117)	0.5291
EW avg.	−0.8505					
	(0.9822)					
Spread: p (δ = 0)						0.0001
Yields: p (δ = 0)						0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to *F*-tests. Newey-West standard errors with 13 lags. SUR system for Spread and Yield regressions estimated from 154 observations over sample from September 1987 to July 2004. Spread is the difference in log-yields of Libor (12M) and Libor (6M) . See section 4.4.1 for construction of data.

Table A.14: Libor (12M) : Survey Error Predictability over 3 Months

	Expectational Error Predictability $-(i_{t+3} - E_t^s i_{t+3}) = \gamma + \boldsymbol{\delta X}_t + v_{t+3}$					
Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 p (δ = 0)
Australia	−0.1444					0.01
	(0.3395)					0.6729
		0.3951	−0.2192	−0.3112	0.1509	0.05
		(1.3924)	(2.3540)	(1.0982)	(0.1164)	0.5454
Canada	0.0512					0.00
	(0.2646)					0.8478
		−0.3025	0.1221	0.3218	−0.1457	0.03
		(0.6151)	(1.0582)	(0.6165)	(0.1727)	0.5496
France	−0.4996***					0.16
	(0.1640)					0.0029
		0.8506	−0.5360	−0.3489	0.0956	0.19
		(0.6898)	(1.2033)	(0.6140)	(0.1219)	0.0148
Germany	−0.0546					0.00
	(0.1486)					0.7153
		−0.0762	0.2056	−0.0992	0.0045	0.03
		(0.6613)	(1.2303)	(0.6337)	(0.1006)	0.6168
Japan	0.1644					0.01
	(0.2898)					0.5736
		−0.2851	0.4030	−0.2452	0.2035*	0.07
		(0.5518)	(0.9728)	(0.5793)	(0.1066)	0.1483
Switzerland	0.0885					0.00
	(0.1792)					0.6241
		−0.3551	0.5413	−0.2986	0.2517	0.04
		(0.5339)	(1.0617)	(0.6406)	(0.1743)	0.5658
U.K.	−0.1757					0.01
	(0.2070)					0.4000
		−0.5905	1.3118	−0.7169	−0.0148	0.02
		(0.9140)	(1.5381)	(0.7210)	(0.0985)	0.7141
U.S.	0.2032					0.01
	(0.2636)					0.4447
		−0.7928	0.6752	0.2693	−0.1837	0.07
		(0.7205)	(1.0944)	(0.5384)	(0.1251)	0.1805
EW avg.	−0.0459					
	(0.1352)					
Spread: p (δ = 0)						0.0206
Yields: p (δ = 0)						0.0023

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to *F*-tests. Newey-West standard errors with 4 lags. SUR system for Spread and Yield regressions estimated from 164 observations over sample from September 1987 to April 2005. Spread is the difference in log-yields of Libor (12M) and Libor (3M) . See section 4.4.1 for construction of data.

Table A.15: Libor (12M) : Survey Error Predictability over 6 months

		Expectational Error Predictability $-(i_{t+6} - E_t^s i_{t+6}) = \gamma + \boldsymbol{\delta X}_t + v_{t+6}$				
Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 p (δ = 0)
Australia	−0.3167					0.00
	(0.8194)					0.7014
		0.4019	0.2592	−0.9051	0.3339*	0.05
		(2.2582)	(3.6130)	(1.6121)	(0.1879)	0.3962
Canada	0.3516					0.00
	(0.6476)					0.5903
		−0.1422	−0.2147	0.3898	0.0036	0.01
		(0.9027)	(1.4018)	(0.6979)	(0.2843)	0.8619
France	−0.8382					0.08
	(0.5745)					0.1491
		2.0421***	−2.6005**	0.4737	0.1701	0.13
		(0.6761)	(1.1597)	(0.7045)	(0.1960)	0.0477
Germany	0.2887					0.01
	(0.6195)					0.6440
		1.8463	−3.4786	1.7121	−0.0352	0.05
		(1.2205)	(2.2244)	(1.1223)	(0.1843)	0.6382
Japan	0.8526					0.02
	(1.1040)					0.4439
		0.5440	−0.8768	−0.0270	0.5423***	0.22
		(0.6864)	(1.4469)	(0.9670)	(0.1849)	0.0074
Switzerland	0.6244					0.01
	(0.8062)					0.4427
		0.8741	−1.9679	0.8084	0.6924**	0.13
		(1.1389)	(1.8135)	(0.9997)	(0.3232)	0.0767
U.K.	−0.1177					0.00
	(0.6804)					0.8637
		−0.5474	1.1063	−0.5780	−0.0055	0.00
		(0.9954)	(1.6291)	(0.8307)	(0.1593)	0.9379
U.S.	0.7799					0.03
	(0.7183)					0.2822
		0.2258	−1.7512	1.7847*	−0.3006	0.09
		(1.2084)	(1.8826)	(0.9446)	(0.2814)	0.1717
EW avg.	0.2031					
	(0.4798)					
Spread: p (δ = 0)						0.0545
Yields: p (δ = 0)						0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to *F*-tests. Newey-West standard errors with 7 lags. SUR system for Spread and Yield regressions estimated from 161 observations over sample from September 1987 to January 2005. Spread is the difference in log-yields of Libor (12M) and Libor (6M) . See section 4.4.1 for construction of data.

Table A.16: Libor (12M) : Survey Error Predictability over 12 Months

			Expectational Error Predictability $-(i_{t+12} - E_t^s i_{t+12}) = \gamma + \boldsymbol{\delta X}_t + v_{t+12}$			
Countries	Spread	Libor (3M)	Libor (6M)	Libor (12M)	Bonds (10Y)	R^2 p (δ = 0)
Australia	−1.8535					0.06
	(1.5650)					0.2411
		3.2454	−2.3339	−1.2308	0.5974*	0.15
		(3.2724)	(5.3658)	(2.8466)	(0.3151)	0.0079
Canada	−0.8848					0.02
	(0.9266)					0.3442
		−0.0206	0.8913	−0.8729	0.0972	0.03
		(1.0100)	(1.8207)	(1.3689)	(0.5221)	0.7332
France	−0.3857					0.01
	(0.9680)					0.6927
		4.0792***	−6.6640***	2.4813*	0.1614	0.08
		(1.3169)	(2.5319)	(1.4157)	(0.4129)	0.0023
Germany	0.6728					0.01
	(1.4568)					0.6470
		6.9846***	−12.6932***	5.9804***	−0.2080	0.17
		(1.8032)	(3.3718)	(1.8031)	(0.3436)	0.0011
Japan	0.7400					0.01
	(2.4052)					0.7603
		3.5024***	−4.5316**	0.3251	1.0074***	0.33
		(0.8254)	(2.2922)	(1.8554)	(0.2823)	0.0000
Switzerland	0.8181					0.01
	(1.8051)					0.6532
		3.0554**	−5.2336**	1.4743	1.6467**	0.22
		(1.5192)	(2.6369)	(1.9409)	(0.7033)	0.0236
U.K.	0.2307					0.00
	(1.1175)					0.8378
		1.9951	−3.8254	1.9804	−0.1815	0.01
		(1.9741)	(3.3326)	(1.7745)	(0.3202)	0.7957
U.S.	0.1801					0.00
	(1.2080)					0.8824
		2.3351	−4.8764	3.0040	−0.4873	0.09
		(2.2732)	(3.9282)	(2.0395)	(0.6048)	0.4111
EW avg.	−0.0603					
	(1.1162)					
Spread: p (δ = 0)						0.0395
Yields: p (δ = 0)						0.0000

Note: *** , ** and * denote significance at the 1%, 5% and 10% level respectively. The reported p-values correspond to *F*-tests. Newey-West standard errors with 13 lags. SUR system for Spread and Yield regressions estimated from 155 observations over sample from September 1987 to July 2004. Spread is the difference in log-yields of Libor (12M) and Libor (6M) . See section 4.4.1 for construction of data.

Table B.1: Foreign Exchange Market: Survey Errors

PANEL A: 3 Months

	AU	CN	FR	GE	JP	CH	UK
mean	−0.29	0.08	−0.66*	−0.48	−1.07**	−0.51	−0.89**
median	−0.38	0.01	−0.63	−0.41	−0.81	0.17	−0.86
autocorr.	0.69	0.69	0.65	0.66	0.73	0.67	0.62
obs	219	219	218	220	220	219	220
			Correlations (Std. on Diagonal)				
AU	5.43						
CN	0.57	2.76					
FR	0.25	0.22	5.71				
GE	0.21	0.20	0.98	5.93			
JP	0.12	0.11	0.44	0.47	6.25		
CH	0.15	0.14	0.94	0.95	0.51	6.38	
UK	0.26	0.21	0.77	0.77	0.46	0.76	5.44

Note: All in log-percentage points (log * 100) .Correlations with standard deviations on diagonal. *** , ** and * denote significance at the 1%, 5% and 10% level respectively. (Computed only for the means.)

PANEL B: 12 Months

	AU	CN	FR	GE	JP	CH	UK
mean	0.92	0.31	−2.08**	−1.40	−4.64***	−1.87**	−3.46***
median	0.16	0.53	−2.20	−1.67	−5.68	−2.39	−3.61
autocorr.	0.95	0.95	0.91	0.92	0.92	0.91	0.89
obs	210	210	209	211	211	210	211
			Correlations (Std. on Diagonal)				
AU	12.43						
CN	0.74	6.18					
FR	0.40	0.10	12.58				
GE	0.39	0.09	0.99	12.54			
JP	0.27	0.11	0.27	0.34	11.97		
CH	0.28	−0.03	0.95	0.96	0.37	12.93	
UK	0.43	0.14	0.70	0.70	0.35	0.71	10.33

Note: All in log-percentage points (log * 100) .Correlations with standard deviations on diagonal. *** , ** and * denote significance at the 1%, 5% and 10% level respectively. (Computed only for the means.)

Table B.2: Libor (3M) : Survey Errors

PANEL A: 3 Months

	AU	CN	FR	GE	JP	CH	UK	US
mean	−0.05	−0.07	−0.04	−0.02	−0.11***	−0.08	0.00	−0.10***
median	−0.05	−0.06	−0.00	−0.04	−0.08	−0.07	−0.03	−0.08
autocorr.	0.78	0.68	0.58	0.60	0.53	0.73	0.65	0.67
obs	164	176	165	176	176	176	176	176
				Correlations (Std. on Diagonal)				
AU	0.79							
CN	0.37	0.79						
FR	0.09	0.14	0.71					
GE	0.36	0.08	0.29	0.41				
JP	0.18	0.32	−0.05	0.31	0.35			
CH	0.36	0.12	0.07	0.56	0.16	0.63		
UK	0.26	−0.04	0.10	0.59	0.14	0.32	0.72	
US	0.46	0.52	0.01	0.27	0.33	0.31	0.13	0.45

Note: All in log-percentage points (log * 100) .Correlations with standard deviations on diagonal. *** , ** and * denote significance at the 1%, 5% and 10% level respectively. (Computed only for the means.)

PANEL B: 12 Months

	AU	CN	FR	GE	JP	CH	UK	US
mean	−0.42**	−0.48***	−0.18*	−0.17*	−0.47***	−0.30**	−0.12	−0.58***
median	−0.59	−0.33	−0.23	−0.25	−0.37	−0.44	−0.13	−0.57
autocorr.	0.97	0.91	0.86	0.98	0.88	0.99	0.94	0.90
obs	155	167	156	167	167	167	167	167
				Correlations (Std. on Diagonal)				
AU	2.12							
CN	0.60	1.72						
FR	0.29	0.58	1.25					
GE	0.35	0.53	0.74	1.18				
JP	0.16	0.38	0.23	0.49	1.04			
CH	0.47	0.51	0.59	0.85	0.42	1.65		
UK	0.59	0.61	0.47	0.74	0.34	0.75	1.61	
US	0.61	0.69	0.25	0.33	0.17	0.36	0.52	1.33

Note: All in log-percentage points (log * 100) .Correlations with standard deviations on diagonal. *** , ** and * denote significance at the 1%, 5% and 10% level respectively. (Computed only for the means.)

Table B.3: Bonds: Survey Errors

PANEL A: 3 Months

	AU	CN	FR	GE	JP	CH	UK	US
mean	−0.18***	−0.15***	−0.06*	−0.04	−0.08**	−0.09***	−0.11***	−0.17***
median	−0.23	−0.21	−0.14	−0.11	−0.10	−0.11	−0.19	−0.20
autocorr.	0.70	0.72	0.67	0.64	0.64	0.78	0.63	0.67
obs	164	176	165	176	175	176	176	176
Correlations (Std. on Diagonal)								
AU	0.62							
CN	0.66	0.59						
FR	0.53	0.59	0.45					
GE	0.58	0.69	0.80	0.42				
JP	0.42	0.59	0.52	0.67	0.46			
CH	0.34	0.37	0.61	0.66	0.38	0.41		
UK	0.55	0.63	0.60	0.65	0.55	0.46	0.53	
US	0.65	0.76	0.57	0.65	0.51	0.35	0.45	0.54

Note: All in log-percentage points (log * 100) .Correlations with standard deviations on diagonal. *** , ** and * denote significance at the 1%, 5% and 10% level respectively. (Computed only for the means.)

PANEL B: 12 Months

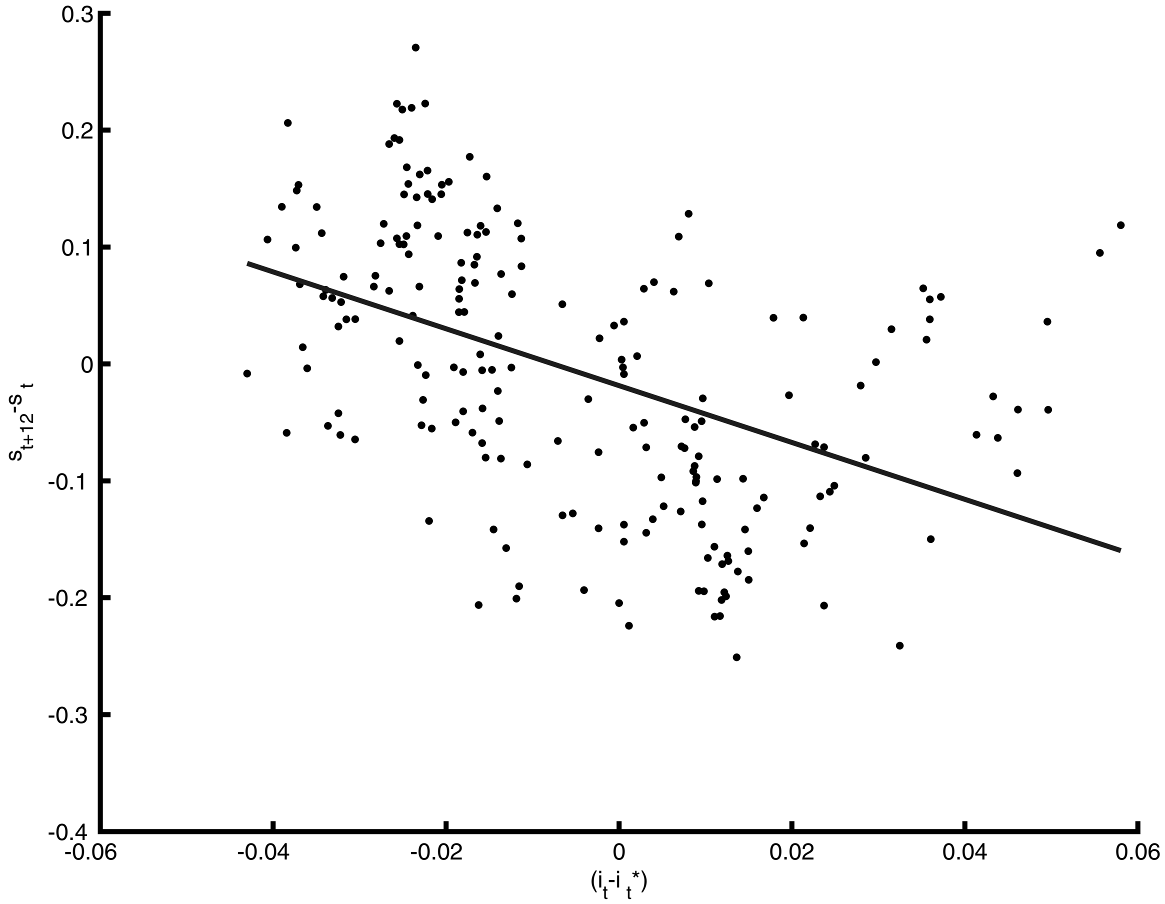
	AU	CN	FR	GE	JP	CH	UK	US
mean	−0.63***	−0.56***	−0.52***	−0.33***	−0.46***	−0.29***	−0.42***	−0.60***
median	−0.84	−0.69	−0.68	−0.38	−0.48	−0.40	−0.49	−0.72
autocorr.	0.94	0.80	0.87	0.87	0.84	0.91	0.86	0.87
obs	155	167	156	167	166	167	167	167
Correlations (Std. on Diagonal)								
AU	1.31							
CN	0.71	1.00						
FR	0.72	0.77	1.05					
GE	0.68	0.83	0.89	0.99				
JP	0.53	0.66	0.71	0.78	0.88			
CH	0.65	0.63	0.80	0.79	0.67	1.00		
UK	0.74	0.74	0.76	0.79	0.75	0.77	0.96	
US	0.65	0.73	0.68	0.70	0.55	0.49	0.54	0.96

Note: All in log-percentage points (log * 100) .Correlations with standard deviations on diagonal. *** , ** and * denote significance at the 1%, 5% and 10% level respectively. (Computed only for the means.)

Figure 1: Predictability of Excess Return on Deutschmark

Slope = −2.4323 (s.e. = 0.9789)

R^2= 0.22



Note: Same sample and data used as for Table 1 Panel B.

Appendix. Data Sources

This Appendix lists the sources for the market data used in this study. The survey data is described in section 3 of the main text.

Foreign Exchange Rate Data Market data on exchange rates for the seven countries (Australia, Canada, France, Germany, Japan, Switzerland and UK) against the US dollar are provided by DataStream ("GTIS exchange rate series"). Since Germany and France joined the European Monetary Union in 1999, implied rates for Deutschmark and French Franc are calculated from their official euro conversion rates (1.95583 DEM/EUR respectively 6.55957 FFR/EUR) and the euro/dollar exchange rate. The same is done for the survey data.

The interest rate spread is calculated from euro-market interest rates for the seven countries plus the US which are also provided by DataStream. For Australia DataStream provides a euro-market interest rate only as of 1997. We use instead an interbank rate which is quoted in London and collected by DataStream since 1986. The German and French euro-market rates are identical to the interest rates quoted for transactions in the euro currency as of January 1999.

Corresponding to the survey's horizon, the interest rates have a maturity of 3, 6 or 12 months. As we match the data with the survey dates as described in Section 4.1, the underlying data set covers daily observations from 15 October 1986 until 28 July 2005.

Stock Market Data The stock market data used for the survey error regressions is described in section 4.2. With the exception of the data on the consumption-wealth ratio (*cay*) and interest rates it is exclusively obtained from DataStream. The data on *cay* was downloaded from the website of Martin Lettau.[36] The interest rate data is the one-year Treasury Constant Maturity Rate from FRED.

For the return predictability regressions (Table 2) , we use monthly observations since March 1966 from the same data sources. The stock market return is computed from the Composite Total Return Index (i.e., with dividends reinvested) of the S&P 500 from DataStream. As predictors we use the dividend-yield on the same S&P 500 as well as the three-month Treasury Bill rate from FRED and *cay* from Lettau. Since *cay* is only constructed for quarterly observations, we define monthly observations on *cay* to be equal to its most recent quarterly value.

Bond and Money Market Data All data on bonds and money markets used for the computations in Sections 4.3 and 4.4 has been obtained from DataStream. Money market rates are Euro-market rates for the eight countries considered (Australia, Canada, France, Germany, Japan, Switzerland, UK and US) with a maturity of 3, 6 or 12 months. These are the same euro-market interest rates used already for the foreign exchange regressions. For Australia DataStream provides a euro-market interest rate only as of 1997. We use instead an interbank rate which is quoted in London and collected by DataStream since 1986. The German and French euro-market rates are identical to the interest rates quoted for transactions

[36] http://pages.stern.nyu.edu/~mlettau/data_cay.html

in the euro currency as of January 1991. With respect to the availability of survey data, the common sample across all countries and maturities covers the period from September 1987 to July 2005.

Consistent data on 10-year government bonds in the eight countries comes from DataStream's government benchmark bond indices. At a given point in time, these indices typically consisted of a single bond, namely the most liquid government bond which has close to 10 year's maturity. The interest rate surveys also provide data on each country's 10-year yield prevailing at the time of the survey. These yields coincide very neatly with the yields-to-maturity computed by DataStream for their indices. We use these yields-to-maturity to compute approximate bonds returns as described in section 4.3. The index data is available on a daily basis which is required to match the data with the surveys.

For the survey error regressions, the market data is matched with the surveys in a manner analogous to the foreign exchange survey: Since the surveys are typically conducted over a three-day window, we compute the survey error as the difference between the survey expectations and a three-day average of the realized yield at the end of the survey horizon. To be precise, let a survey be conducted from days $t = 1$ to $t = 3$, the three months realization is then the geometric average of the yields (simple average of the log yields) prevailing on $t = 91$, $t = 92$ and $t = 93$ (measured in calendar days) . The yields used as predictors are not averaged but measured at the earliest date when the survey is conducted, corresponding here to $t = 1$.

The underlying data set for matching market data with surveys covers daily observations from 20 September 1987 until 28 July 2005. For the regressions on excess return predictability, the data is monthly (end-of-month) .