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The Status Quo Bias of Bond Market Analysts

Zulia Gubaydullina[1], Oliver Hein[2] and Markus Spiwoks[3]

Abstract

Status quo bias is a systematic cognitive error which makes it difficult for individuals to make decisions independently of the currently dominant situation. This study pursues the question of whether bond market analysts are affected by status quo bias. We evaluated interest rate forecast series from twelve industrial nations. This revealed that, on average, forecasts were much too close to the status quo – the current interest rate at the time when the forecast was made. With the aid of various analytical procedures it can be shown that the actual extent of interest rate changes is systematically and significantly underestimated.

JEL classification numbers: D03, G17, G12

Keywords: Behavioral finance, Status quo bias, Bond market analysts, Interest rate forecasts

[1] Georg August University Göttingen, Faculty of Economic Sciences, e-mail: zg@wiwi.uni-goettingen.de
[2] Technische Hochschule Mittelhessen, Department of Mathematics, University of Applied Sciences, Natural Sciences and Computer Science, e-mail: oliver.hein@mnd.th-mittelhessen.de
[3] Ostfalia University of Applied Sciences Wolfsburg, Faculty of Business Administration, e-mail: m.spiwoks@ostfalia.de

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1 Introduction and Overview of the Literature

The success of active portfolio management strategies in the bond market depends above all on the ability to forecast future interest rate trends. The success of interest rate forecasts has thus been a focus of academic research for some time. Various analytical procedures have been applied in this research. A comparison with naïve forecasts on the basis of simple forecast accuracy measurements found for example in Belongia (1987), Dua (1988), Hafer and Hein (1989), Ilmanen (1996), Brooks and Gray (2004), Mose (2005) and Baghestani (2005). The sign accuracy test has been employed by Greer (2003) and by Spiwoks, Bedke and Hein (2009). The unbiasedness test has been applied by Friedman (1980), Baghestani, Jung, and Zuchegno (2000), Mitchell and Pearce (2007) and by Spiwoks, Bedke and Hein (2010). The efficiency test has been used to evaluate interest rate forecasts by Throop (1981) and Simon (1989), among others. A comparison with simple ARIMA models has been carried out by Zarnowitz and Braun (1992) and by Spiwoks, Bedke and Hein (2008). Francis (1991) and Domian (1992) draw conclusions about the quality of forecasts on the basis of the chronological order and the success of investment and financing decisions. A comparison with forward rates was made for example by Hafer, Hein, and MacDonald (1992) and by Gosnell and Kolb (1997), while Cho (1996) and Kolb and Stekler (1996) pursued the question of whether it is true that some individual forecasters repeatedly achieve better results than others.

A large number of these studies raised considerable doubts about the reliability of the interest rate forecasts which they analysed. However, previous research has hardly touched upon the issue of which are the individual factors that frequently lead to forecasts which have to be viewed as failures.

The studies of Brooks and Gray (2004) and those of Spiwoks, Bedke and Hein (2010) provided the first indications that forecasters might be systematically underestimating the extent of future interest rate changes. Behavioral economics

has been aware of the phenomenon of status quo bias for some time now (see for example Samuelson and Zeckhauser, 1988; Kahnemann, Knetsch and Thaler, 1991; and Johnson, Hershey, Meszaros and Kunreuther, 1993). Status quo bias is a cognitive prejudice which leads individuals to pay particular attention to the status quo and to approximate their decisions or evaluations to it. This can lead to a subject refraining from making a change which would actually be meaningful. It can also lead to his or her decision-making being influenced by earlier decisions or the currently dominant situation. This type of behavior often leads to sub-optimal results, which is why status quo bias is viewed as a behavioral anomaly.

The reasons for such a behavioral anomaly are thought to be related to the reference point dependency of individual decision-making processes (Kahnemann and Tversky, 1979). The potential losses which could be related to a change are weighted higher than possible gains. In addition, a loss which occurs as a result of an active decision is perceived more keenly than one which is caused by inactivity (Kahneman and Tversky, 1982; Landmann, 1987). This cultivates a preference for the status quo.

If subjects are affected by status quo bias, they will for example not (or at least not sufficiently) adapt a portfolio of securities which they have inherited to their own risk profile and their own investment preferences. In this way, investors might hang on to a portfolio which composition they would not have chosen if they had inherited a sum of money. Status quo bias is also present when an investor buys an unprofitable share only because he or she has already bought stocks of the same company in the past.

A peculiarity of status quo bias is that it is intensified by a growing number of alternative decisions (see for example the experimental study by Samuelson and Zeckhäuser, 1988, and the empirical study by Kempf and Ruenzi, 2006). This means that status quo bias is particularly marked when the number of alternatives

is unlimited.

Experimental studies have the advantage of creating a counterfactual alternative, so that the alternatives are presented either as neutral or as status quo. This makes it possible to measure status quo bias quantitatively. The experimental study by Samuelson and Zeckhauser (1988) shows that the probability for the selection of an alternative increases significantly when this alternative is framed as the status quo. Similar experimental studies (Ritov and Baron, 1992; Kahnemann and Miller, 1986; Schweitzer, 1994; Schweitzer, 1995) reveal that subjects have a strong tendency to orientate their decisions towards the reference point (status quo). Various approaches can be used to determine status quo bias. In many cases, the endowment effect, or the difference between willingness to pay (WTP) and willingness to accept (WTA) is interpreted as status quo bias (Knetsch, 1989; an overview of the literature is provided by Plott and Zeiler, 2005).

Empirical studies on decision-making patterns when a reference point is present confirm the existence of status quo bias in consumer decisions (e.g. Hartmann, Doane and Woo, 1991) or in investment decisions (Patel, Zeckhauser and Hendricks, 1991; Agnew, Balduzzi and Sundén, 2003; Kempf and Ruenzi, 2006). The study by Kempf and Ruenzi (2006) analyses the factors which influence the growth of investment funds' assets. It reveals that alongside relevant fund characteristics (such as performance, volatility, age, size, fees or turnover rate), the flow of funds in the past plays a statistically and economically significant role. This is interpreted as status quo bias.

In this study we investigate whether forecasts of interest rate trends in twelve industrial nations exhibit a status quo bias. Forecasters have to make forecasting decisions from a certain point which is characterized by a specific current interest rate level. This can be considered status quo framing. We measure status quo bias as reference point dependency and analyse whether interest rate forecasts underestimate the possible variability of interest rates and are thus too close to the

reference point (the current interest rate).

Proponents of the efficient market hypothesis might well reach the conclusion that analysts have no choice but to rely on naive forecasts since financial market trends are impossible to predict. This explains the automatic underestimation of the real change in interest levels. Research efforts over the last twenty years in the area of behavioral finance have furthered massive doubts about the assumed reliability of rational expectation hypothesis. This is tantamount to cancelling out the basic element of the efficient market hypothesis. We therefore argue that the existence of efficient markets cannot be held responsible for a possible underestimation of future capital market movements.

The following chapter deals with the data basis and the method of investigation used. In the chapter after next, the results are presented, and the final chapter provides a short summary of the study.

2 Data and Methodology

Status quo bias would express itself in financial analysts making forecasts which are closely orientated towards the current interest rate level. Bond market analysts' orientation towards the current interest rate, which is viewed here as the reference point, prevents them from adequately reflecting the actual extent of interest rate changes in their forecasts. Status quo bias is thus revealed in the fact that interest rate forecasts compared to the real interest rate developments are usually much closer to the actual interest rate level at the time when the forecast was made. Status quo bias drives forecasters to systematically underestimate the variability of real interest rate trends.

The hypothesis of this study is therefore that forecasts systematically underestimate the actual changes of the interest rate level. The measurement of status quo bias in this case is carried out by comparing the actual interest rate changes with the forecast changes.

The actual interest rate change at the point in time *t* is calculated as the absolute value of the difference between the interest rate at the point in time *t* and the interest rate at the point in time *t-h* , whereby *h* is the forecast horizon. The forecast interest rate change at the point in time *t* is calculated as the absolute value of the difference between the forecast made at the point in time *t-h* (which forecasts the event at the point in time *t*) and the actual interest rate at the point in time *t-h*. The absolute values are measured because this corresponds to the measurement of the distance to the reference point. This avoids the negative and positive deviations cancelling each other out.

Three different indicators can be used for the comparison:

1. Comparison of the mean values (ANOVA F-test).
2. Comparison of the medians (Wilcoxon-Mann-Whitney test und chi-square test) in order to take the non-normality of the distribution into account.
3. Comparison of the variance (F-test, Levene test, Brown-Forsythe test). Whereas the Levene test is based on the ANOVA analysis and considers the absolute values of the deviations from the mean, in the Brown-Forsythe test the deviation between medians is considered instead of the deviations between means.

A status quo bias is present when the mean values, the medians and the variances of the forecast interest rate changes turn out to be significantly lower than the respective mean values, medians and variances of the actual interest rate changes.
The consensus forecast time series published in Consensus Forecasts magazine (Consensus Economics Inc.) in the period between October 1989 and February 2009 form the data basis of the study. The forecasts of the interest rate trends of government bonds with ten-year maturities are evaluated. These forecast time series have forecast horizons of three and twelve months. The interest rate forecasts for the USA, Japan, Germany, the UK, France, Italy and Canada cover the entire observation period. Since January 1995, forecasts for the Spanish, Dutch and Swedish bond markets have also been published in Consensus Forecasts

magazine, and from June 1998 interest rate forecasts for Norway and the Switzerland have also been included (cf. Table 1).

At total of 24 forecast time series with 4,796 forecast data are evaluated in the study. The longest time series include 233 observations. The shortest time series have 129 observations.

Table 1: Data basis: Consensus forecasts on the interest rate trends of government bonds with ten-year maturities from Consensus Forecasts magazine in the period from October 1989 to February 2009

	Start of the forecast time series	End of the forecast time series	Number of 12-month forecasts	Number of 3-month forecasts
Canada (CAN)	Oct. 1989	Feb. 2009	233	233
Switzerland (CH)	June 1998	Feb. 2009	129	129
Spain (ES)	Jan. 1995	Feb. 2009	170	170
France (FR)	Oct. 1989	Feb. 2009	233	233
Germany (GER)	Oct. 1989	Feb. 2009	233	233
Italy (IT)	Oct. 1989	Feb. 2009	233	233
Japan (JP)	Oct. 1989	Feb. 2009	233	233
Netherlands (NL)	Jan. 1995	Feb. 2009	170	170
Norway (NOR)	June 1998	Feb. 2009	129	129
Sweden (SWE)	Jan. 1995	Feb. 2009	170	170
UK	Oct. 1989	Feb. 2009	233	233
USA (US)	Oct. 1989	Feb. 2009	233	233

3 Results

The mean values of the forecast interest rate changes are shown to be significantly lower than the mean values of the actual interest rate changes (Table 2). For

example, the interest rate for US government bonds changes by an average of 0.769 percentage points over the course of 12 months. The corresponding forecasts, however, assume on average that there will be a change in interest rates of 0.349 percentage points. The average change in interest rates is thus more than twice as high as that expected by the bond market analysts. The difference is significant at 1% level.

Table 2: Average actual interest rate changes and average forecast interest rate changes in percentage points over a forecast horizon of 12 months.

	Number of observations	Average actual interest rate changes	Average forecast interest rate changes	ANOVA F-test
Canada (CAN)	221	0.761	0.347	85.65***
Switzerland (CH)	117	0.504	0.438	2.88*
Spain (ES)	158	0.908	0.329	70.97***
France (FR)	221	0.772	0.336	98.83***
Germany (GER)	221	0.675	0.350	82.49***
Italy (IT)	221	1.138	0.462	65.39***
Japan (JP)	221	0.558	0.297	58.44***
Netherlands (NL)	158	0.581	0.375	27.41***
Norway (NOR)	117	0.600	0.410	14.40***
Sweden (SWE)	158	0.878	0.370	76.55***
UK	221	0.790	0.273	150.99***
USA (US)	221	0.769	0.349	106.39***

Level of significance: 1%***, 5%** and 10%*

Underestimation of the variability of interest rate trends is particularly marked in the UK. The average change in the interest rate level of British government bonds with ten-year maturities over the course of twelve months is 0.790 percentage points. The average forecast change over the course of twelve months, however, is only 0.273 percentage points. The average forecast interest rate change thus only accounts for 34% of the average actual change.

If the medians of the forecast and actual interest rate changes over the course of twelve months are analysed (Table 3), there is also a dramatic underestimation of the extent of actual interest rate changes. For example, the median of the actual interest rate changes of US government bonds within twelve months is 0.682 percentage points. The median of the forecast interest rate changes, on the other hand, is only 0.289 percentage points.

The forecasts for the interest rate trends of Swiss government bonds with ten-year maturities are an exception. Analysis of the mean values reveals a weak significance which, however, does not extend to the medians.

Table 3: Medians of the actual interest rate changes and medians of the forecast interest rate changes in percentage points over a forecast horizon of 12 months

	Number of obser-vations	Median of actual interest rate changes	Median of forecast interest rate changes	Wilcoxon-Mann-Whitney test	Chi-square test
CAN	221	0.617	0.296	7.83***	33.67***
CH	117	0.438	0.420	0.44	0.01
ES	158	0.605	0.271	6.46***	29.16***
FR	221	0.640	0.292	8.28***	55.06***
GER	221	0.556	0.321	7.13***	40.62***
IT	221	0.625	0.398	5.62***	11.08***
JP	221	0.426	0.294	5.02***	12.39***
NL	158	0.513	0.340	3.99***	16.41***
NOR	117	0.557	0.338	3.41***	11.56***
SWE	158	0.698	0.313	6.74***	42.58***
UK	221	0.616	0.237	11.05***	103.61***
US	221	0.682	0.289	8.81***	59.37***

Level of significance: 1%***, 5%** and 10%*

In the interest rate forecasts for the other eleven bond markets, highly significant results are revealed in both in the mean values and the medians. The actual changes of the interest rate level are severely underestimated.

This is also reflected by a markedly lower standard deviation of the forecast interest rate changes in comparison to the standard deviation of the actual interest rate changes (Table 4).

Table 4: Standard deviations (SD) of actual and forecast interest rate changes for a forecast horizon of 12 months

	Number of obser-vations	SD of actual interest rate changes	SD of forecast interest rate changes	F-test	Levene test	Brown-Forsythe test
CAN	221	0.609	0.267	5.21***	95.28***	72.94***
CH	117	0.361	0.211	2.90***	26.34***	21.49***
ES	158	0.833	0.227	13.51***	152.17***	77.89***
FR	221	0.609	0.229	7.10***	111.78***	88.52***
GER	221	0.485	0.218	4.93***	120.59***	86.97***
IT	221	1.191	0.353	11.42***	170.81***	69.98***
JP	221	0.475	0.180	6.97***	151.98***	104.13***
NL	158	0.427	0.247	2.99***	46.72***	32.27***
NOR	117	0.439	0.320	1.88***	9.78***	10.36***
SWE	158	0.691	0.233	8.81***	129.41***	92.51***
UK	221	0.592	0.202	8.63***	166.91***	111.76***
US	221	0.538	0.277	3.77***	87.28***	86.65***

Level of significance: 1%***, 5%** and 10%*

There are highly significant results in all twelve bond markets which were analysed. The forecasts for the interest rate trends of Italian government bonds stand out particularly: the standard deviation of the forecast interest rate changes is 0.353. The standard deviation of the actual interest rate changes, however, is 1.191.

The forecasts are always highly orientated towards the current interest rate level, which means that the variance (or the standard deviation) of the actual interest rate trend is systematically underestimated. The smaller fluctuations of forecast interest rate changes are due to the high degree of orientation of the forecasters towards the current interest rate level at the time when the forecast is made. They

fail to make forecasts which are sufficiently independent of their reference point (the current interest rate). This result can also be interpreted as a clear sign for the existence of status quo bias. The analysis of the variances is, alongside the comparison of the mean values and medians, particularly suited to establishing the presence and intensity of status quo bias.

The results for forecasts with a horizon of three months also largely agree (cf. Tables 5-7). Within three months, for example, the interest rate for ten-year US government bonds changed by an average of 0.403 percentage points (Table 5). The forecasters, however, only expected an average change in interest rates of 0.167 percentage points. The forecasts therefore reflect less than half of the average actual interest rate changes.

Table 5: Average actual interest rate changes and average forecast interest rate changes in percentage points for a forecast horizon of three months

	Number of observations	Actual interest rate changes	Forecast interest rate changes	ANOVA F-test
Canada (CAN)	230	0.389	0.169	83.56***
Switzerland (CH)	126	0.259	0.164	25.69***
Spain (ES)	167	0.356	0.158	69.63***
France (FR)	230	0.345	0.151	104.57***
Germany (GER)	230	0.327	0.148	100.73***
Italy (IT)	230	0.460	0.220	56.82***
Japan (JP)	230	0.281	0.168	31.99***
Netherlands (NL)	167	0.292	0.147	65.90***
Norway (NOR)	126	0.335	0.178	39.63***
Sweden (SWE)	167	0.377	0.175	62.48***
UK	230	0.388	0.137	113.73***
USA (US)	230	0.403	0.167	131.43***

Level of significance: 1%***, 5%** and 10%*

Interest rate forecasts in other countries reveal a similar picture (Table 5). The average actual change in the interest rate level within three months is markedly higher everywhere than the average forecast interest rate change. In all twelve cases the findings are highly significant.

These results are fully confirmed by an analysis of the medians (Table 6). In all twelve bond markets, the median of the actual interest rate changes is considerably higher than the median of the forecast changes.

Table 6: Medians of the actual interest rate changes and medians of the forecast interest rate changes in percentage points for a forecast horizon of three months

	Number of observations	Median of actual interest rate changes	Median of forecast interest rate changes	Wilcoxon-Mann-Whitney test	Chi-square test
CAN	230	0.320	0.144	8.17***	50.23***
CH	126	0.233	0.159	4.23***	10.73***
ES	167	0.277	0.144	7.95***	46.04***
FR	230	0.300	0.128	8.93***	50.23***
GER	230	0.270	0.125	9.49***	58.47***
IT	230	0.345	0.160	7.43***	45.08***
JP	230	0.188	0.142	4.03***	8.90***
NL	167	0.268	0.124	7.05***	33.64***
NOR	126	0.280	0.154	5.34***	14.29***
SWE	167	0.301	0.160	7.24***	28.75***
UK	230	0.301	0.118	10.01***	68.87***
US	230	0.364	0.144	9.61***	67.34***

Level of significance: 1%***, 5%** and 10%*

Forecasts with three month horizons also exhibit standard deviations of forecast interest rate changes which are significantly lower than the standard deviations of the actual interest rate changes (Table 7). The forecast interest rate changes of US government bonds, for example, have a standard deviation of 0.122. By contrast,

the actual interest rate changes within three months have a standard deviation of 0.288.

Table 7: Standard deviations (SD) of the actual and forecast interest rate changes for a forecast horizon of three months

	Number of obser-vations	SD of actual interest rate changes	SD of forecast interest rate changes	F-test	Levene test	Brown-Forsythe test
CAN	230	0.344	0.120	8.21***	83.01***	66.45***
CH	126	0.175	0.114	2.35***	24.60***	21.33***
ES	167	0.282	0.122	5.37***	45.07***	32.36***
FR	230	0.268	0.124	4.68***	96.82***	80.48***
GER	230	0.244	0.116	4.44***	62.60***	46.22***
IT	230	0.446	0.191	5.48***	47.20***	31.69***
JP	230	0.272	0.135	4.06***	63.36***	38.62***
NL	167	0.201	0.113	3.15***	42.29***	37.39***
NOR	126	0.247	0.129	3.68***	38.94***	30.73***
SWE	167	0.302	0.132	5.22***	48.56***	34.95***
UK	230	0.341	0.108	10.04***	113.25***	82.48***
US	230	0.288	0.122	5.57***	121.58***	109.31***

Level of significance: 1%***, 5%** and 10%*

The previous results are confirmed by a comparison of the maximum actual and the maximum forecast interest rate changes (Table 8).

In the period October 1989 - February 2009, for example, there was a maximum interest rate change of 2.366 percentage points on the US bond market over the course of twelve months. The highest forecast change of the interest rates of US government bonds over the course of twelve months was 1.101 percentage points. Spain and Sweden stand out particularly here. The interest rates of ten-year Spanish government bonds changed by up to 3.969 percentage points within twelve months. The forecasts, however, exhibit a maximum expected change in

interest rates of only 0.867 percentage points. The interest rate for Swedish government bonds changed by up to 4.190 percentage points. The maximum forecast interest rate change, on the other hand, was only 1.040 percentage points. In both cases, the forecasts reflect less than a quarter of the maximum actual interest rate changes.

Table 8: Maximum actual interest rate changes (max_{actual}) and maximum forecast interest rate changes ($max_{forecast}$) in percentage points

	12 month forecast horizon		3 month forecast horizon	
	max_{actual}	$max_{forecast}$	max_{actual}	$max_{forecast}$
Canada (CAN)	2.785	1.092	1.870	0.601
Switzerland (CH)	1.595	1.042	0.809	0.451
Spain (ES)	3.969	0.867	1.824	0.863
France (FR)	2.997	0.958	1.192	0.894
Germany (GER)	2.157	0.948	1.705	0.848
Italy (IT)	4.879	1.495	2.965	0.996
Japan (JP)	2.674	0.846	1.435	0.906
Netherlands (NL)	2.275	1.038	0.999	0.507
Norway (NOR)	2.157	1.171	1.302	0.562
Sweden (SWE)	4.190	1.040	1.561	0.572
UK	2.845	1.240	1.851	0.771
USA (US)	2.366	1.101	1.511	0.576

When the maximum values for a period of three months are examined, Italy and Canada stand out particularly. The interest rates of ten-year Italian government bonds changed within three months by up to 2.965 percentage points. The forecasts, on the other hand, exhibit a maximum expected change in interest rates of 0.996 percentage points. In Canada, interest rates changed within three months

by up to 1.870 percentage points. The maximum forecast interest rate change, however, was only 0.601 percentage points. In both cases, the forecasts only reflect around a third of the actual maximum values.

Bond market analysts systematically underestimate the variability of interest rate trends. In contrast to the assumption of Brooks and Gray (2004, p. 117), this result is in no way due to the fact that consensus forecast time series are being evaluated. Sample analysis of the interest rate forecast time series of individual banks and research institutes, which are listed separately in Consensus Forecasts magazine, led to the same findings. This is not surprising when one considers that the forecast time series of individual bond market analysts are only slightly different to the respective consensus forecasts time series (Spiwoks, Bizer and Hein, 2008, pp. 179-180; Spiwoks, 2008, pp. 438-439).

The mean values, medians, standard deviations and maximum values of the forecast and actual interest rate changes show that the extent of actual interest rate changes are systematically underestimated by financial market analysts. Their forecasts are distorted in a very specific way. They are too strongly orientated towards the bond market interest rate at the time when the forecast is made. It is reasonable to infer that the respective current interest rate – the status quo – is being used as a reference point, and that a status quo bias is present.

The same result was obtained for the forecasts of Canadian, Spanish, French, German, Italian, Japanese, Dutch, Norwegian, Swedish, British and US interest rate trends. The findings are independent of the forecast horizon (three or twelve months). Only the forecasts for Swiss interest rate trends are somewhat inconsistent in this respect: the forecasts with a horizon of three months exhibit an obvious status quo bias, whereas forecasts with a twelve month horizon only offer weak evidence of a systematic underestimation of interest rate changes.

4 Conclusion

This study focuses on whether the forecasts of bond market analysts are characterised by status quo bias. To this end, forecasts of the interest rate trends of government bonds with ten-year maturities were evaluated. The forecasts employed are consensus forecast time series from Consensus Forecasts magazine, which were published in the period between October 1989 and February 2009 for the bond markets in Canada, Switzerland, Spain, France, Germany, Italy, Japan, the Netherlands, Norway, Sweden, the UK and the USA. The forecasts have horizons of three and twelve months. At total of 24 forecast time series with 4,796 forecast data were evaluated in the study.

It was shown that the extent of actual interest rate changes is significantly underestimated in 23 out of the 24 forecast time series examined. On average over all of the bond markets analyzed, forecasts with a twelve-month horizon reflect only around 48% of actual changes in the interest rate level. The figure for the forecasts with a horizon of three months is very similar at around 47%. These results are further substantiated by an analysis of the medians of the forecast and actual changes of interest rates. It is also noticeable that the forecast interest rate changes exhibit markedly lower standard deviations than actual interest rate changes. This occurs because financial market analysts strongly orientate their forecasts towards the interest rate level which is currently dominant in the bond market. In this way, the variability of interest rate trends is systematically underestimated. This can be interpreted as a robust tendency towards a status quo bias on the part of forecasters.

These findings are supported by an examination of the maximum actual interest rate changes and the maximum forecast interest rate changes. In this respect too, the forecasts lag significantly behind reality. The maximum forecast interest rate change over a period of twelve months on average for all the bond markets analyzed is only around 37% of the actual maximum changes in the interest rate

level, while the maximum forecast interest rate changes over a period of three months reflect on average only around 45% of the actual maximum changes.

When making their forecasts, bond market analysts strongly orientate themselves towards the current interest rate, which they perceive as a reference point and the status quo. They are obviously affected by status quo bias. Bond market analysts should therefore take up the challenge of concentrating more on future events when making their forecasts, and not overestimating the significance of current circumstances.

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