Ifo World Economic Survey and the Business Cycle in Selected Countries

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The Ifo World Economic Survey is an international economic survey that has been conducted by the Ifo Institute on a quarterly basis since 1981. Economic experts from a large number of countries are asked to assess the current economic situation, the economic outlook and other economic data in their respective field. In recent years, WES results have attracted a growing amount of attention from national and international media. The following study examines the validity of the WES survey results in relation to the business cycle in selected countries. To this end the Ifo economic climate for a country is compared with the corresponding annual growth rates of real gross domestic product.

Concept of the World Economic Survey

The main focus of the Ifo World Economic Survey (WES) is to provide an accurate picture of the current economic situation, as well as economic trends for important advanced economies, emerging markets and developing countries by polling over 1,000 economic experts on a quarterly basis. Unlike the official statistics, which are largely based on quantitative information, WES focuses on qualitative information by asking economists to assess main economic indicators for the present and for the near-term future. This allows for a rapid, up-to-date assessment of the economic situation prevailing around the world, and particularly in developing and transition economies, which often have deficits in their official statistics. The uniform questionnaire, methodology and data processing guarantee international comparability and the aggre-

gation of country results according to various country groups, as well as comparability over time. In addition, the survey is not limited to certain product groups, industries or companies, but concentrates on economies as a whole.

The selection of the experts involved in this survey focuses not on a high number of respondents in the respective countries, but rather on the expertise in economic questions of the economic experts surveyed. That means the question of representativeness thus does not depend on the number of experts in the surveyed countries, but on an accurate portrayal of the national economies examined. Although all respondents are highly qualified, the panel members are very heterogeneous with respect to their professional occupation, which covers multinational companies and institutions, economic research institutes, national and international chambers of industry and trade or foundations. Participation in the survey is absolutely voluntary. The questionnaire consists of eight standard questions and regularly recurring additional questions. For the study, the relevant questions of the survey are those that concern the assessments of the present economic situation and economic expectations for the next six months, whose arithmetic mean forms the economic climate indicator for each country. About 1,200 respondents currently participate in the survey, which covers around 120 countries. This results in a breakdown of ten questionnaires on average for each country and quarter. In fact, the number of respondents differs strongly across the economies surveyed and ranges from 4 up to 40. Generally, the more a country is considered as economically important (in accordance with that country's trade share in total world trade), the more survey participants for the respective economy are chosen.

There are three possible response categories for the assessment of the present economic situation and the economic expectations for the next six months: 'good/better' for positive replies on the current situation or expected improvement, 'satisfactory/about the same' for neutral replies or an unchanged expected situation and 'bad/worse' for negative replies or an expected deterioration in the next six months. The individual re-

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plies are transferred to an ordinal scale from one (negative) to nine (positive), where five is neutral. The individual replies are combined for each country without weighting as an arithmetic mean of all survey responses in the respective country. Overall grades within a range greater than five indicate that positive answers prevail and to an even greater degree, the more the value approaches the upper end of the scale, thus 9. The same applies *vice versa* to the lower end of the scale from one to five. As a standardized size, the index for the economic climate is not intended to represent the absolute values of economic growth, but represents turning points and changes in the trend and forecast. While aggregating the results to groups of countries (e.g. euro area, EU28), the country results are weighted according to the country's share in total world trade. The trade figures published by the UN are used (imports and exports of a country in US dollar[2]) to calculate this share.

The data collection of each quarterly WES begins with the first month of the respective quarter, which means that WES experts respond to the questionnaire in January, April, July and October. The release of the survey results takes place in the second month of each quarter (February, May, August and November) with the press release of the *Ifo Economic Climate for the Euro Area* and the *Ifo World Economic Climate*. The detailed survey results, along with an extensive analysis of all regions and countries, are published in the English publication CESifo World Economic Survey (Nerb *et al.* 2013) and appear in German in the *ifo Schnelldienst* (Nerb and Plenk 2013).[3]

Former studies using WES data

Both qualitative and quantitative WES survey data formed the basis for several studies, especially with regard to inflation expectations. Haupt and Waller (2004) proved the information content of the quantitative WES inflation forecasts for Germany, the United States and Japan. Henzel and Wollmershäuser (2005) used WES inflation forecasts to develop an alternative to the Carlson-Parkin method for the quantification of qualitative inflation expectations. Their subsequent study (Henzel und Wollmershäuser 2006) used the direct WES measures of inflation expectations to show inflation dynamics (new Keynesian

Phillips curve) for selected euro area countries, the United States and United Kingdom. Other studies presented how WES indicators, along with other leading indicators, can be used for economic forecasts (Brand *et al.* 1990, Hülsewig *et al.* 2008). Abberger *et al.* (2009) pointed out that the Ifo World Economic Climate correlates well with OECD industrial production. The validity of the WES indicators themselves was examined in detail in the twelfth year after the implementation of the World Economic Survey (Brand and Pouquet 1993). Stangl (2009) dealt with the expectation formation of WES survey participants.

Methods and preliminary considerations

In order to assess the suitability of the Ifo economic climate indicator for a business cycle observation, a correlation analysis of both variables is performed. Thus, the real GDP in yearly growth rates (source: OECD) as a reference series is compared to the economic climate indicator. Information about economic activity on a quarterly basis is not available for all of the countries included in the World Economic Survey. From the available time series a selection was made: only the series based on an average sample size of at least four expert opinions per country is included in the forthcoming analysis.

Hence, the analysis is conducted for 43 countries and two country aggregates for which the corresponding information, GDP growth series and sufficient survey participants are available.[4] The observation period ranges from the first quarter of 1989 to the fourth quarter of 2012, i.e. at best, for both time series, which are subject to comparison, 96 observation points exist. Information on GDP is only partially available for shorter periods of time. Thus the analysis time frame is reduced accordingly, even if WES data exist for a longer period of time. The number of observations (N) is stated in Table 1. In fact, WES data has already been collected since 1983; however, the survey was only conducted thrice a year prior to 1988. It was not

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[2] United Nations Monthly Bulletin of Statistics, International Merchandise Trade, Table 34.
[3] For further information on the World Economic Survey, see Stangl (2004; 2007a; 2007b).

[4] The yearly real GDP in growth rates are available for at least nine years on a quarterly basis for the following countries: Argentina, Australia, Austria, Belgium, Brazil, United Kingdom, Bulgaria, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hong Kong, Hungary, India, Indonesia, Ireland, Italy, Japan, Latvia, Mexico, Netherlands, New Zealand, Norway, Philippines, Poland, Portugal, Russia, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, the United States, Uruguay, as well as the euro area and EU28 as country aggregates. For China, yearly real GDP growth rates are only at hand for the eight quarters from 2011 to 2012, hence, a detailed analysis for this country cannot provide reliable results and is not treated here.

Table 1

Cross Correlations: WES Economic Climate and GDP yearly growth rates

	N	<----- Lead				Lag ----->	
		− 4	− 3	− 2	− 1	0	1	2
Argentina	76	0.15	0.34	0.51	0.61	**0.66**	0.60	0.49
Australia	96	0.27	0.31	0.37	0.44	**0.44**	0.43	0.36
Austria	96	0.31	0.46	0.59	0.71	**0.76**	0.68	0.50
Belgium	68	0.11	0.34	0.53	0.67	**0.73**	0.66	0.51
Brazil	88	− 0.18	0.04	0.27	0.37	**0.48**	0.40	0.25
Bulgaria	60	0.20	0.32	0.55	0.59	**0.71**	0.66	0.67
Canada	96	0.44	0.57	0.68	**0.72**	0.66	0.52	0.36
Chile	36	0.48	0.61	0.69	**0.71**	0.68	0.63	0.44
Czech Republic	64	0.06	0.28	0.50	0.69	0.78	**0.79**	0.73
Denmark	88	0.20	0.29	0.40	**0.45**	0.44	0.41	0.34
Estland	68	0.30	0.47	0.61	0.73	**0.79**	0.74	0.64
EU-27	68	0.29	0.53	0.73	**0.85**	0.85	0.73	0.56
Eurozone	68	0.28	0.52	0.72	0.85	**0.85**	0.74	0.58
Finland	88	0.39	0.53	0.67	0.76	**0.81**	0.81	0.76
France	96	0.21	0.41	0.60	0.75	**0.77**	0.68	0.57
Germany	84	0.00	0.25	0.48	0.68	**0.75**	0.67	0.52
Hong Kong	92	− 0.02	0.25	0.55	0.71	**0.80**	0.68	0.42
Hungary	68	0.45	0.51	0.56	**0.58**	0.58	0.49	0.35
India	63	0.22	0.32	0.49	0.62	0.62	**0.62**	0.47
Indonesia	88	0.27	0.41	0.59	**0.65**	0.64	0.58	0.46
Ireland	60	0.62	0.72	0.79	0.84	**0.88**	0.81	0.77
Italy	96	0.33	0.49	0.61	**0.70**	0.69	0.59	0.47
Japan	72	0.03	0.24	0.44	0.54	**0.54**	0.42	0.27
Latvia	68	0.48	0.59	0.68	0.73	**0.76**	0.72	0.66
Mexico	76	− 0.11	0.18	0.41	0.62	**0.68**	0.58	0.44
Netherlands	96	0.34	0.50	0.64	**0.71**	0.71	0.64	0.54
New Zealand	96	0.45	0.56	0.65	**0.68**	0.65	0.58	0.47
Norway	96	− 0.11	0.04	0.18	0.23	**0.35**	0.26	0.25
Philippines	56	0.12	0.28	0.43	0.50	**0.53**	0.41	0.27
Poland	68	0.34	0.42	0.51	0.53	**0.57**	0.54	0.39
Portugal	68	0.58	0.67	0.77	**0.81**	0.79	0.71	0.57
Russia	68	0.16	0.24	0.41	0.61	0.72	**0.74**	0.64
Slovakia	60	0.27	0.47	0.60	0.71	**0.74**	0.65	0.49
Slovenia	63	0.28	0.42	0.57	0.69	**0.73**	0.66	0.58
South Africa	96	0.57	0.63	0.67	**0.68**	0.67	0.64	0.55
South Korea	96	− 0.03	0.16	0.37	0.53	**0.56**	0.43	0.18
Spain	68	0.81	0.89	**0.93**	0.92	0.89	0.82	0.75
Sweden	76	− 0.08	0.19	0.45	0.64	**0.72**	0.66	0.49
Switzerland	96	0.04	0.26	0.48	0.70	**0.78**	0.71	0.50
Taiwan	92	− 0.15	0.00	0.25	0.44	**0.53**	0.47	0.30
Thailand	76	0.26	0.45	0.55	0.65	**0.66**	0.54	0.43
Turkey	56	− 0.14	0.03	0.22	0.41	0.55	**0.61**	0.56
United Kingdom	96	0.48	0.61	0.69	**0.72**	0.66	0.56	0.45
Uruguay	59	0.50	0.61	0.72	**0.81**	0.79	0.70	0.61
USA	96	0.40	0.53	0.65	**0.70**	0.67	0.58	0.45

Source: Own calculations.

until 1989 that a comparison of both time series on a quarterly basis was possible.

The quarterly WES surveys are conducted in the first month of each quarter. More precisely, the data ascertainment finishes by the end of the first quarterly month (e.g. January). In comparison to the 'hard' GDP data, which reflect the economic activity of a whole quarter (in this case from January until March), not all the relevant economic occurrences are included in the survey data. Consequently, exogenous shocks, like for instance, natural catastrophes or strong raw

material price increases, which arise after the completion of the survey data collection, can only be indicated by the WES indicator with a certain time-lag.

A first graphical exposition

In order to gain an initial idea of the quality of the WES, we plot the WES climate and the yearly growth rate of the gross domestic product (GDP) for five countries (the United States, Britain, Brazil, Japan and Russia) and the European Union as a region. Comparisons show that the actual business cycles are well traced by the WES Economic Climate. This is especially important as the results are published at the beginning of the current quarter and therefore far in advance of the official statistics. Thus, the results of the WES offer a good indicator as to the status of the economy.

Cross-correlations

A glance at the correlation-coefficients of the economic climates of the respective countries with yearly GDP growth rates (Table 1) reveals that 34 of the 45 examined countries and country aggregates – around 75 percent – yield values of at least 0.6 for the contemporary correlation (t = 0). Hence, a strong positive statistical connection is given, which indicates a synchronism between WES results and GDP growth rates. Around 24 percent of the countries attain a correlation-coefficient of at least 0.4 to 0.6 and feature a weak linear link to GDP growth. Norway is the only country that stands slightly below this threshold. Peak values are reached by the EU27 (i.e. EU28 without Croatia) (0.85), the euro-zone (0.85), Finland (0.81), Hong Kong (0.80), Ireland (0.88) and Spain (0.89). Given that the surveyed experts render their opinions at the beginning of each quarter, i.e. they still possess relatively little information on cur-

rent economic developments, the strong correlation is remarkable. With regard to the differences observed between the countries, the question arises whether a positive relation between the correlation and the sample size exists. According to an OLS regression, this assumption can be rejected, i.e. there is no significant relationship between those factors. This is an argument in favor of the goodness of the experts' opinions, which rather depends on their professional competence than on the number of experts surveyed. If you regard the economic climate indicator with a lead of one quarter, the results remain favorable. In more than 70 percent of all cases the correlation again constitutes over 0.6. In some selected countries, like e.g. Chile or Portugal, the correlation is even slightly higher. The highest correlation is achieved by Spain with 0.93 and a lead of two quarters.

All in all, the results are auspicious. The WES economic climate depicts a good to very good correlation

Figure 1

GDP yearly growth rate vs. ifo WES climate

Source: OECD; Ifo World Economic Survey (WES).
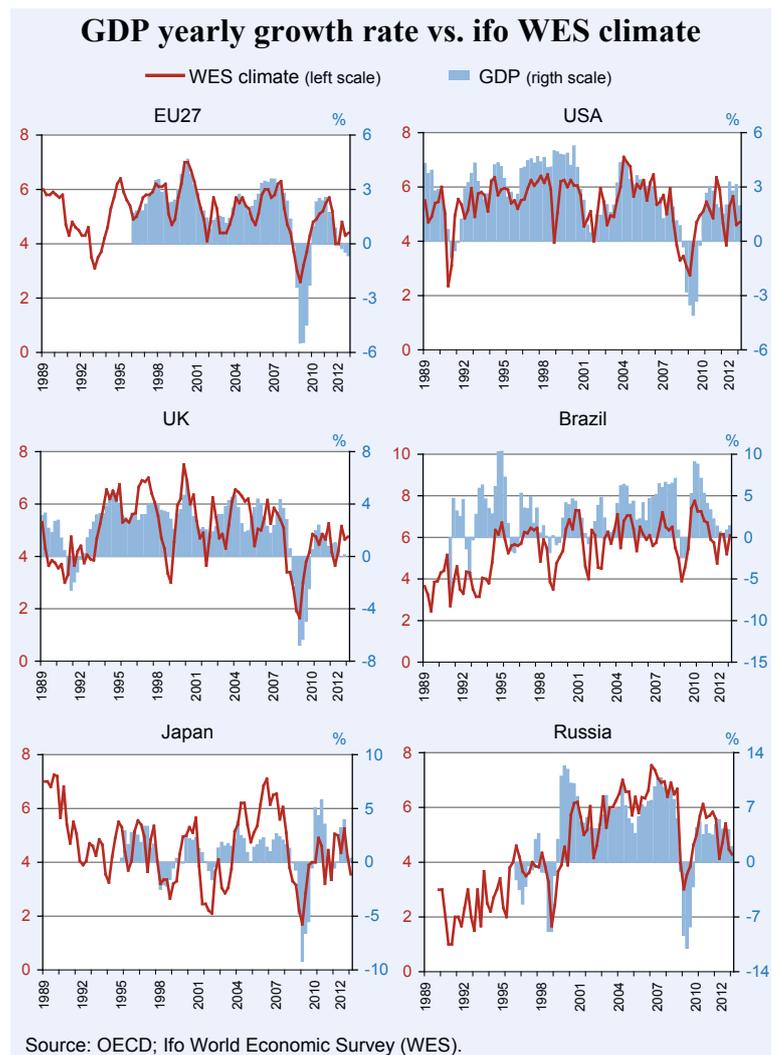
with actual economic development. In fact, cross-correlations do not provide any information about the actual growth rate, but hint at the direction in which direction the growth rates of the respective country will develop.

Moving correlations

The previous results can be subject to a bias in various ways. The connection can only be regarded as stable in the case of a long time series with a high correlation. A high (low) correlation can occur by chance if the sample size is small. Even a low correlation for a long time series does not necessarily imply that the indicator has a low predicting ability for the reference series. In order to cope with this problem, we use moving correlations. In the present case, a window of 15 quarters, which corresponds to a time period of almost four years, is applied.

Figure 2

Moving correlations

Quarterly values

Source: Own calculations.
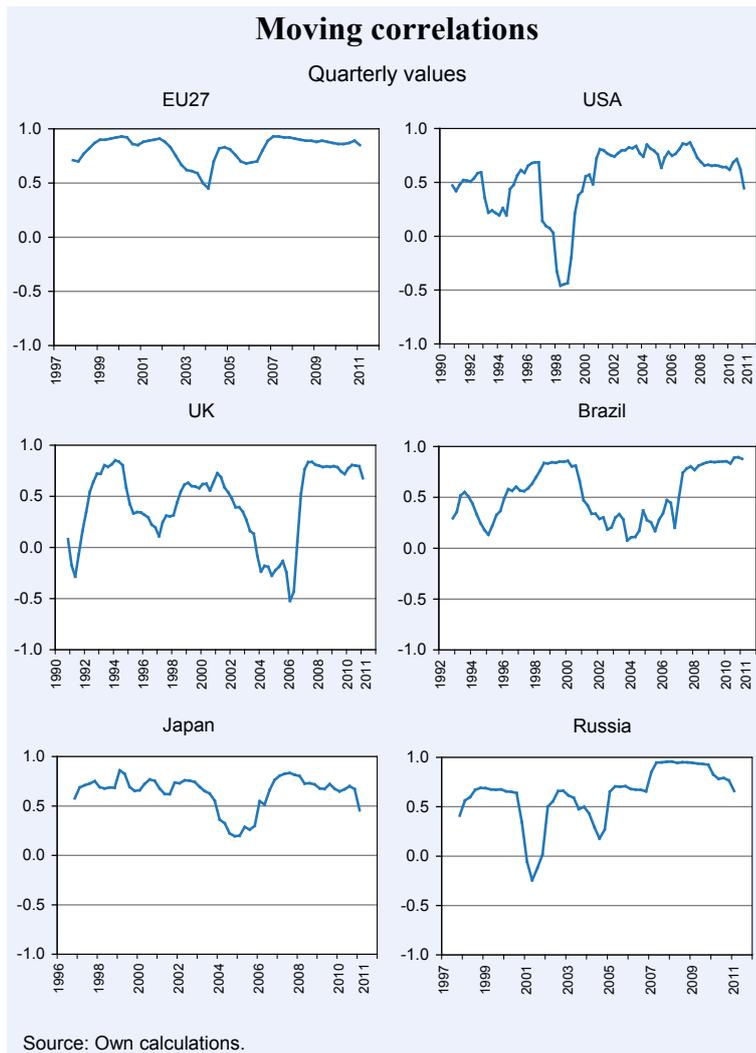
For about 83 percent of the countries surveyed, the correlation rises gradually over the years. This may be a sign of the learning process experienced by respondents, who gradually learn to assess overall economic performance with great accuracy. Figure 2 shows the results for the five countries already mentioned and the EU27. The outcomes have to be interpreted in conjunction with Figure 1.

Forecast bias and efficiency

In the second quarter of the WES survey respondents are asked for the quantitative point forecast of the growth rate for the current year ("Expected growth of real Gross Domestic Product (GDP) this year in % …"). We test how these forecasts correspond with the actual growth rates in each country. We start with the average forecast error. Let the $y_{t,i}$ actual growth rate in year t in country i. The corresponding forecast is labeled $p_{t,i}$. Testing for a potential up- or downward bias we use the following regression

$$(1) \qquad y_{t,i} - p_{t,i} = b_i + u_{t,i}$$

In equation (1) forecast errors are regressed on a constant b_i (bias). The variable $u_{t,i}$ is the error term. For $b_i = 0$ we have unbiased forecasts. In case of $b_i > 0$ the GDP forecasts of the experts are systematically too low (pessimistic), and for $b_i < 0$ too high (optimistic).

Additionally, forecasts can be tested to be efficient. A weak form of efficiency is given by the following equation

$$(2) \qquad y_{t,i} = a_i + b_i p_{t,i} + u_{t,i}$$

Here we test simultaneously whether $a_i = 0$ and $b_i = 1$. In case of a rejection of the null hypotheses the forecast errors increase or decrease with the level of the forecast.

A stronger form of efficiency (semi-strong efficiency) is tested by the following equation:

(3) $y_{t,i} - p_{t,i} = a_i + c_i(y_{t-1,i} - p_{t-1,i}) + u_{t,i}$

We investigate whether experts learn from their own forecast errors. This is the case if c_i is not statistically

different from zero. The forecast errors are not autocorrelated.

In Table 2 we show the results for all three tests (equations 1 to 3). A coefficient from the estimation equa-

Table 2

	Bias		Weak Efficiency		Semi-strong Efficiency	
	Equation (1)		Equation (2)		Equation (3)	
Test	b=0		a=0 und b=1		c=0	
Country	b	Significant?	b	Significant?	c	Significant?
Argentina	1.05	no	1.29	no	0.32	no
Australia	0.36	no	0.89	no	− 0.18	no
Austria	0.35	no	1.31	yes	0.18	no
Belgium	0.09	no	0.96	no	− 0.32	no
Brazil	0.09	no	0.86	no	− 0.34	no
Bulgaria	0.10	no	1.49	yes	0.09	no
Canada	− 0.13	no	1.50	yes	0.32	no
Chile	0.76	no	1.25	no	0.04	no
Czech Republic	− 0.04	no	1.08	no	0.36	no
Denmark	− 0.35	no	1.61	no	0.19	no
Estland	1.04	no	1.49	no	0.32	no
EU-27	0.10	no	1.29	no	0.16	no
Eurozone	− 0.11	no	1.26	no	0.00	no
Finland	− 0.40	no	1.51	yes	0.24	no
France	− 0.21	no	1.23	no	0.04	no
Germany	0.20	no	1.31	no	0.16	no
Hong Kong	− 0.11	no	0.92	no	0.01	no
Hungary	− 0.64	no	1.34	yes	0.42	yes
India	0.26	no	0.87	no	− 0.02	no
Indonesia	0.56	no	1.20	yes	0.03	no
Ireland	1.33	yes	1.28	yes	0.25	no
Italy	− 0.45	yes	1.34	yes	− 0.06	no
Japan	− 0.09	no	1.19	no	− 0.01	no
Latvia	1.28	no	0.90	no	0.32	no
Mexico	0.29	no	1.43	no	− 0.05	no
Netherlands	0.43	no	1.25	no	0.42	yes
New Zealand	0.30	no	1.44	no	0.12	no
Norway	− 0.05	no	0.94	no	0.40	no
Philippines	− 0.16	no	0.96	no	− 0.07	no
Poland	0.30	no	1.05	no	0.15	no
Portugal	0.32	no	1.38	no	0.23	no
Russia	0.66	no	1.00	no	− 0.05	no
Slovakia	1.01	no	0.94	no	0.32	yes
Slovenia	− 0.04	no	1.80	yes	0.18	no
South Africa	0.09	no	1.33	no	0.17	no
South Korea	0.59	no	1.11	no	− 0.33	no
Spain	0.20	no	1.26	no	0.42	yes
Sweden	0.59	no	1.16	no	0.13	no
Switzerland	0.20	no	1.40	no	0.21	no
Taiwan	0.55	no	0.89	no	− 0.14	no
Thailand	− 0.15	no	1.17	no	0.18	no
Turkey	0.38	no	1.45	no	− 0.27	no
United Kingdom	0.39	no	1.35	no	0.35	no
Uruguay	0.69	no	0.92	no	0.06	no
USA	− 0.01	no	1.44	no	0.46	yes

Tests for Forecast Bias and Efficiency

Source: Own calculations.

tion is reported for each country and test. Furthermore, we state, whether the null hypotheses can be rejected or not. In case of a 'no', the null hypothesis cannot be rejected. This is the desired result.

As far as potential forecasting biases are concerned, the results are very good. In 32 out of 45 cases the average forecast error is smaller than 0.5 percentage points. For some countries like the United States, Czech Republic, Japan or the EU27, the forecast is quite close to the actual value. The forecasts only differ systematically from the realized values in two cases, namely Ireland and Italy.

Column 3 contains the results from equation (2), whether the biases increase or diminish with the forecast itself. The hypothesis that relatively high forecasts are too high or too low, and *vice versa* can be rejected for a majority of countries. Forecast errors only increase with the level of forecasts for Bulgaria, Finland, Indonesia, Ireland, Italy, Canada, Austria, Slovenia and Uruguay.

Semi-strong efficiency is fulfilled for almost 90 percent of investigated countries. Thus country experts use all current available information and learn from their past mistakes. The errors are only autocorrelated for the Netherlands, Slovakia, Spain, Hungary and the United States.

Summary

The results show that the Ifo economic climate is a reliable indicator for assessing the current and upcoming economic development of a country. Occasional deviances from GDP are unsurprising, as the experts surveyed who assess the current situation and future developments have to monitor many factors like inflation, the labor market, political stability, financing conditions etc. Basically, however, expert opinions point in the right direction and can reliably detect turning points. Moreover, the quantitative GDP point forecasts are unbiased and efficient for the majority of investigated countries. This means that WES experts on average have a fairly good idea of yearly growth rate in the second quarter.

It is worth mentioning that the relationships between the opinion of experts and actual economic developments have improved over time. This indicates some learning effects. Another advantage is that the quality of the indicators does not depend on the number of participating experts.

References

Abberger, K., M. Frey, M. Kesina and A. Stangl (2009), "Indikatoren für die globale Konjunktur", *ifo Schnelldienst* 62(16), 32–41.

Brand, D., G. Nerb, F.J. Klein and K. Stock (1990), "Construction and Performance of a World Economy Leading Indicator", in: Oppenländer, K.H. and G. Poser (eds.), *Business Cycle Surveys with Special Reference to Pacific Basin Economies. Papers presented at the 19th CIRET Conference,* Proceedings, Osaka 1989, Aldershot: Edward Elgar, 249–290,

Brand, D. and L. Pouquet (1993), *The Explanatory and Forecasting Power of the Economic Survey International*, CIRET Studien 49, Munich: Ifo Institute.

Haupt, H. and S. Waller (2004), "Informationsgehalt von WES-Daten zur Inflationsprognose", in: Goldrian, G. (ed.): *Handbuch der umfragebasierten Konjunkturforschung,* ifo Beiträge zur Wirtschaftsforschung 15, Munich.

Henzel, S. and T. Wollmershäuser (2005), "An Alternative to the Carlson-Parkin Method for the Quantification of Qualitative Inflation Expectations: Evidence from the Ifo World Economic Survey", *Journal of Business Cycle Measurement and Analysis* 2, 321–352.

Henzel, S. and T. Wollmershäuser (2006), *The New Keynesian Phillips Curve and the Role of Expectations: Evidence from the Ifo World Economic Survey,* CESifo Working Paper 1694.

Hülseweig, O., J. Mayr and T. Wollmershäuser (2008), *Forecasting Euro Area Real GDP: Optimal Pooling of Information*, CESifo Working Paper 2371.

Nerb, G. and J. Plenk (2013), "ifo Weltwirtschaftsklima trübt sich leicht ein – Ergebnisse des 121. World Economic Survey (WES) für das dritte Quartal 2013", *ifo Schnelldienst* 66(16), 35–46.

Nerb, G., J. Plenk and K. Wohlrabe and T. Wollmershäuser (2013), "CESifo World Economic Survey August 2013", *CESifo World Economic Survey* 12(3).

Stangl A. (2004), "World Economic Survey: Umfragen des ifo Instituts; Konzeption, Repräsentation, Qualitätssicherung", in: Goldrian, G. (ed.), *Handbuch der umfragebasierten Konjunkturforschung*, Munich: Ifo Institute, 140–147.

Stangl A. (2007a), "Internet Business Tendency Surveys", *OECD Journal of Business Cycle Measurement and Analysis* 3, 387–400.

Stangl A. (2007b), "Ifo World Economic Survey Micro Data", *Journal of Applied Social Science Studies* 127, 487–496.

Stangl A. (2009), *Essays on the Measurement of Economic Expectations*, Munich Dissertations in Economics 9823, University of Munich, Department of Economics.