Konjunkturindikatoren für ausgewählte Bundesländer Westdeutschlands

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Abstract

Leading business indicators for West Germany have been identified for specific industries on the basis of causality tests and time series for net production for 1978-1990. The leading indicators and the attendant lag structures were formed using stationary test and both bivariate and multivariate causality tests. Forecasts for 1991/1992 display only small forecast errors in four of seven industries.

A corresponding procedure is presented here for selected West German Bundesländer, again using Ifo Survey data and net production time series for the Bundesländer 1980-1990. Due to availability of survey data, measurements are made for total manufacturing and not for specific industries. The appropriate leading indicators varies by Länder, and regional forecast on the total manufacturing level exhibit low forecast errors.

Gliederung

1. ABSTRACT

There is increasing demand for regional forecasts and regional planning in many countries. Therefore, it is necessary to evaluate new methods for this purpose, e.g. creating regional leading indicators for production. The use of leading indicators in a regional setting has a short history and started about ten years ago. To our knowledge, the regional leading indicators presented in this paper are the first for Germany, and they are found on the basis of survey data by means of causality tests. As we pointed out in an earlier paper (SCHÖLER, 1994a), there are two reasons to include Ifo survey data in the indicators. First, the survey data are available earlier to the users than official statistics. Second, the managements' overall knowledge of the individual situation of each firm is reflected in qualitative statements which contain more information - and this is our hypothesis - than the quantitative time series published later about the same facts.

The regional leading indicators are formed by means of a three-step test procedure (stationarity tests, bivariate causality tests, multivariate causality tests), in which survey data from the Ifo Business Survey (*Konjunkturtest*) are investigated.[1] It can be shown that regional leading indicators can be formed as "composed indicators" for three of the four selected regions (North Rhine-Westphalia, Baden-Württemberg, and Bavaria). Only for Hesse do none of the Ifo Business Test time series prove to be adequate for the formation of a leading indicator. In this case, we apply an autoregressive model to forecast production in this region. If we look at the indicators across all regions, we find three variables with indicator properties: (1) In two regions (North Rhine-Westphalia and Bavaria), the "backlog of orders" is applied to forecast production. As today's backlog of orders results in future production, the use of this time series is not implausible. (2) In one region (Baden-Württemberg), "business judgement" and (3) in another region (North Rhine-Westphalia), the "prices, compared to the previous month" are selected as indicators by econometric methods.

The evaluation of the forecast results and forecast errors shows us the suitability of our leading indicators for specific regions. With respect to the ex post forecast models selected (model 1 is a dynamic model and model 2 is a stepwise model), we get very small forecast errors. For model 1, the errors range from 2.2% to 3.9% and for model 2 from 2.6% to 3.9%. Across all regions, the leading indicators found on the basis of survey data are well suited to forecasting production.

[1] Anne-Francoise Blüher undertook the preparation of the Ifo data, Rahel Hausmann conducted the statistical tests and documented the test results. We are most grateful for their empirical work and valuable suggestions.

2. DEMAND FOR REGIONAL LEADING INDICATORS

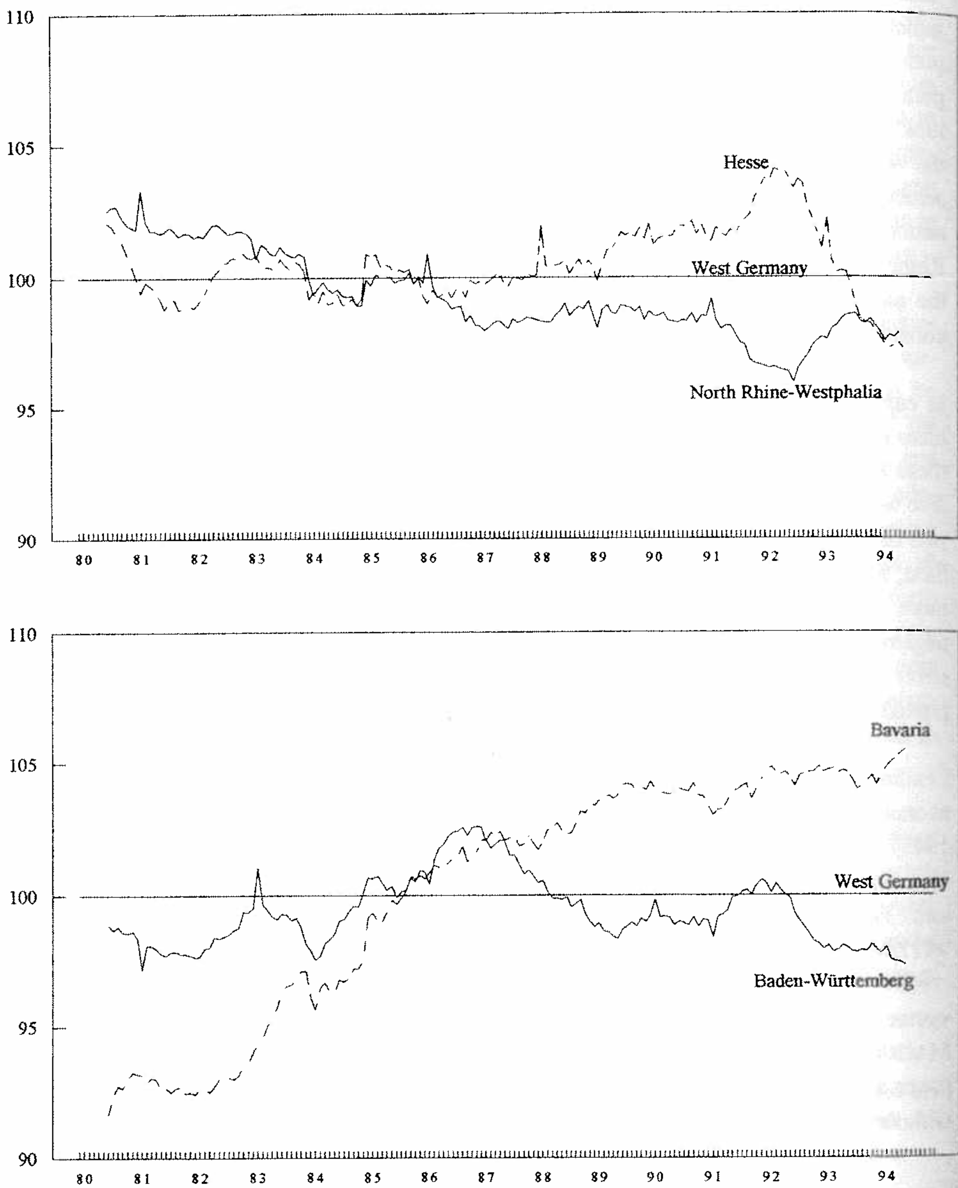
In many countries - including post-reunification Germany - there is increasing demand for regional forecasts as a basis for formulating rational regional policy. Therefore, it is necessary to create valid methods for this purpose. One method is the regional leading indicator for production (see LESAGE, 1991; LESAGE/MAGURA, 1987). If the time path of regional production varies in all regions in the same direction as the nationwide path, region-specific leading indicators for production would not be necessary. If we look at the time path for production in West Germany and set its level equal to 100 for the whole period (1980-1994), we can plot the deviations of the production path of the selected regions. In each case, the regional production time path differs from the national path. There is a downward sloping curve with increasing differences (North Rhine-Westphalia) or an upward sloping curve (Bavaria) or oscillating curves around the national production path (Baden-Württemberg and Hesse). Therefore, it is worth constructing regional leading indicators from production time series.

In earlier papers (SCHÖLER, 1994a; 1994b), we formulated leading indicators on the basis of Ifo survey data for selected industries in West Germany. It can be shown that these indicators produce small forecast errors in the range of about 3% to 6%. Therefore we apply this successful method to our regional forecasting problem. But there are two further reasons to include such survey data in the formation of leading indicators. First, the survey data are earlier available to the users than official statistics. Furthermore, the data of official statistics are often corrected at a later date. Second, the managements' overall knowledge of the situation in their firms is reflected in their qualitative statements which contain more information than the quantitative time series later published about the same facts

Leading indicators have a long history of usefulness in the forecasting of nationwide economies. Ever since the criticism "Measurement without Theory" (KOOPMANNS, 1947) was raised against the purely empirical determination of leading indicators and forecast models, there have been ongoing eforts to develop new and improved indicators. For example we may mention the articles of AUERBACH (1982), ZARNOWITZ/MOORE (1982), MOORE (1983), KLING (1987) and DIEBOLD/RUDEBUSCH (1989). The use of leading indicators in a regional setting has a shorter history and started about ten years ago (KOZLOWSKI, 1987 and 1989; LESAGE, 1991; LESAGE/MAGURA, 1987). To our knowledge, the regional leading indicators presented in this paper are the first for Germany, and they are created in the sense of "Measurement without Theory" by econometric methods for selected regions of West Germany.

Figure 1: Net Production Time Path for Selected Regions 1980 - 1994 (Deviation from the total West German Time Path)

The production index for West Germany has been normalized to 100 over the entire period.



The paper is organized as follows: In Section 3 we describe the time series data used and in Section 4 the methodical concept underlying our regional leading indicators. The formation of the indicators is described in Section 5. The forecast procedure as well as the evaluation of forecast results and forecast errors are presented in Section 6.

3. DESCRIPTION OF THE DATA

For the econometric tests, we selected eleven time series from the Ifo Business Survey. Since the early fifties, this survey has compiled monthly responses from about 5,000 firms in the manufacturing industry. We select four regions in West Germany: North Rhine-Westphalia with about 1,500 firms, Hesse with about 400 firms, Baden-Württemberg with about 1,100 firms and Bavaria with about 800 firms. In the remaining West German regions there are only a small number of firms reporting to the Ifo Institute or the net production time series from the Federal State Statistical Offices are not available as monthly figures. For the East German regions, the time series are not available for the period investigated.

The survey not only reports on the economic situation in the last month, it also documents expectations for three or six months ahead. The Ifo Business Survey covers the entire manufacturing industry in West Germany. From the Ifo questionnaire we obtain a percentile distribution of the replies, separated into three given categories: "increase", "remain about the same" and "decrease". In our paper, we further use the balance of the positive and negative replies. The eleven time series selected are as follows (abbreviations given in brackets):

- backlog of orders, compared to the previous month (BOR),
- production plans (PPL),
- price expectations (PRE),
- export expectations (EXE),
- business expectations (BUE),
- business judgement (BUJ),
- production, compared to the previous month (PPM),
- judgement of finished goods inventory (INJ),
- demand situation, compared to the previous month (DSM),
- judgement of order level (OLJ) and
- prices, compared to the previous month (PRM).

From the available Ifo time series, we include the survey data from the manufacturing industry. We also use the production indices (net production) from the Federal State Statistical Offices (1985 basis). All time series contained monthly figures for the period January 1980 to December 1990. We use the data from May 1981 to September 1989 for calculating the indicators. To perform and assess the ex-post forecasts, monthly figures from January 1990 to December 1990 are used for forecast model 1 and from October 1988 to December 1990 for forecast model 2.

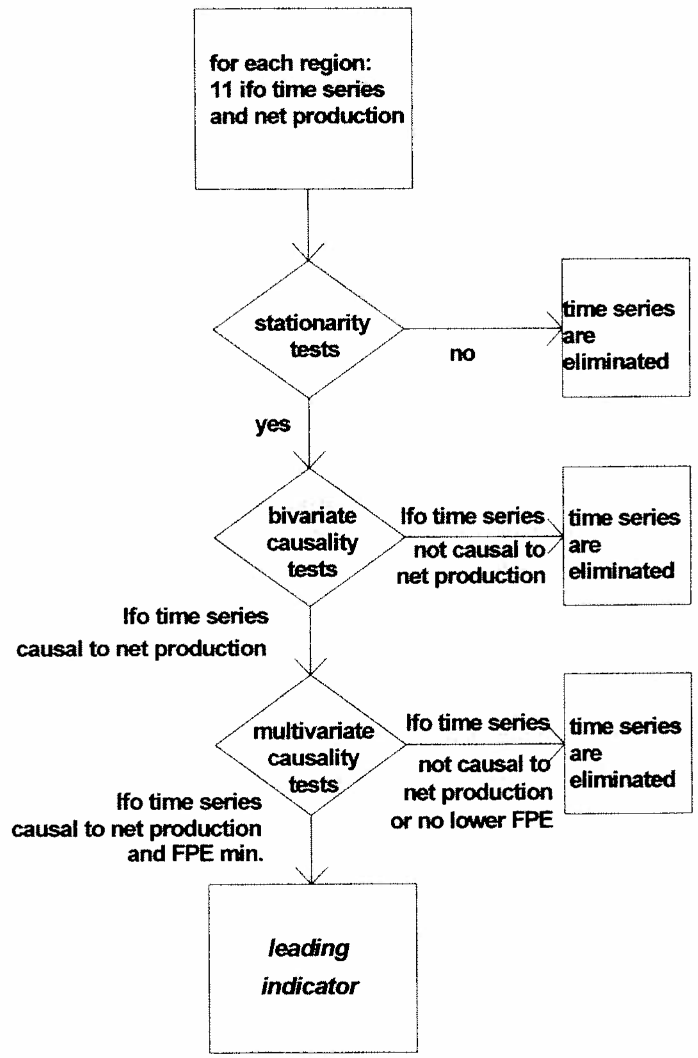
4. METHODICAL CONCEPT

The leading indicators are determined in a three step selection process (see Figure 2): First, the stationarity of all time series is tested, as stationarity is a precondition for the causality tests in steps two and three. For each stationary time series, we then determine in bivariate causality tests for each region which causality exists between each Ifo Business Test series and "net production". Any series may generally serve as an adequate leading indicator in those cases where it proves to be causal to the series "net production". If the causality turns out to be opposite (net production is causal to the Ifo time series) or if, at the same time, feedback causality exists between the series, these Ifo time series fail to qualify as leading indicators. The same is true if there is no causality at all between the time series.

If more than one Ifo time series qualifies as a possible leading indicator in the bivariate test for net production, these series are tested by multivariate causality tests in the third step. By means of the minimal "Final Prediction Error" FPE (see AKAIKE, 1969), these tests investigate whether the inclusion of two or more series leads to a lower FPE. In such a case, a composed leading indicator is formed. For the causality tests we apply the Hsiao method (see HSIAO, 1979, 1981, 1982), in which the optimum lag structure of the independent variables is determined, whereas in the original GRANGER test the lags are predetermined arbitrarily.

To summarize the main points of our methodical concept: The elements of the leading indicators - variables and lags - are selected by means of causality tests. If a variable is causal to net production, this variable becomes an element of the leading indicator, which is composed of two parts, the autoregressive part and - in many cases - an additional part of one or more Ifo time series that minimize the FPE criteria.

Figure 2: Selection Process



5. FORMATION OF LEADING INDICATORS

Stationarity tests:

Before the causality tests can be performed, all non-stationary time series must be made stationary by means of an appropriate transformation that leaves the causality relationship between the series unchanged. In order to test for stationarity, we apply the Augmented-Dicky-Fuller test (DICKY, FULLER, 1979):

$$\Delta y_t = \alpha + (\rho - 1) y_{t-1} + \sum_{i=1}^{p} a_i \Delta y_{t-i} + \varepsilon$$

where y represents the time series, ε the residuals, (ρ-1) a coefficient and α a constant term. Depending on their significance level, up to 12 lags are included in the regression. The reason for doing so is to ensure that the residuals of the estimated regression are not serially correlated (HAMILTON, 1994).

The asymptotic properties of the ordinary least square (OLS) estimate depend on whether or not a constant term or a time trend is included in the regression (HAMILTON, 1994). We therefore sequentially test whether the constant term is significant or not, and finally we test:

H_0: $(\rho-1) = 0 \Rightarrow$ y is at least I(1) against
H_1: $(\rho-1) < 0 \Rightarrow$ y is I(0).[2]

If the t-test of the null hypothesis for the constant term is accepted and if the t-ratio of (ρ-1) exceeds the 5 percent critical value (e.g. H_0 is rejected), y is characterized by a random walk without drift.[3] This latter result could be verified in most cases.

All four "net production" time series for the selected regions prove to be stationary after one non-seasonal differencing. This means they are of "integration level one" - I(1). Whereas net production in Hesse and Bavaria is I(1) with drift, there is no significant constant term in North Rhine-Westphalia and Baden-Württemberg. Of the 44 Ifo series (11 Ifo series for each region), 32 have the same integration level as net production - I(1) - some with drift and some without, but all without trend. Stationarity is then obtained by taking one non-seasonal difference. The other 12 Ifo series are integrated of zero - I(0) - which means that they are stationary in their original state. (As shown below, it turns out that no series is integrated of level 2.) As long as integration levels of Ifo series differ from those of net production, a stationarity transformation would not be identical for both variables. This could possibly affect the relationship between net production and the particular Ifo series, and thus affect the causality test results. Therefore only those 32 out of the total 44 Ifo series which have an integration level I(1) were selected for the following causality tests after transformation.

[2] In a preceeding step we found out that there is no time trend included in the estimated regression.

[3] For 50 (100) observations and α = 0 the critical value is -2.93 (-2.89).

The above ADF tests allow us to distinguish between Ifo series or net production series with I(0) or with I(1) or more than I(1). So, in all cases where H_0 could not be rejected , we follow up by testing:

$$\Delta\Delta y_t = \alpha + (\rho - 1)\Delta y_{t-1} + \sum_{i=1}^{p} a_i \Delta\Delta y_{t-i} + \varepsilon$$

H_0: $(\rho-1) = 0 \Rightarrow$ y is at least I(2) against
H_1: $(\rho-1) < 0 \Rightarrow$ y is I(1).

It turns out that no series is integrated of level I(2).

Ifo series PPM (production compared to previuos month) and DSM (demand compared to previous month) are I(0) in all regions and thus cannot be included in the causality tests. Ifo series OLJ (judgement of order level) is I(0) in three of the four regions and series EXE (export expectations) is I(0) in one region. In all other cases, Ifo series have the same integration level as net production and thus can be included in the causality tests that follow. Table 1 gives an overview of the ADF test results.

Table 1: Stationarity of Net Production and Ifo Series - ADF Test Results

	Indicator	Integration: I(0) or I(1) NRW	HES	BWU	BAV
	Net Production	I(1)	I(1)	I(1)	I(1)
Ifo time series					
BOR	backlog of orders (comp. to prev. month)	I(1)	I(1)	I(1)	I(1)
PPL	production plans	I(1)	I(1)	I(1)	I(1)
PRE	price expectations	I(1)	I(1)	I(1)	I(1)
EXE	export expectations	I(0)	I(1)	I(1)	I(1)
BUE	business expectations	I(1)	I(1)	I(1)	I(1)
BUJ	business judgement	I(1)	I(1)	I(1)	I(1)
PPM	production (compared to prev. month)	I(0)	I(0)	I(0)	I(0)
INJ	judgement of finished goods inventory	I(1)	I(1)	I(1)	I(1)
DSM	demand situation (comp. to prev. month)	I(0)	I(0)	I(0)	I(0)
OLJ	judgement of order level	I(0)	I(1)	I(0)	I(0)
PRM	prices (compared to previous month)	I(1)	I(1)	I(1)	I(1)

Integration I(0): Stationarity of the indicator in its original form
Integration I(0): Stationarity of the indicator after transformation by one difference

NRW (Northrhine-Westphalia), HES (Hesse), BWU (Baden-Württemberg), BAV (Bavaria)

Bivariate causality tests:

Bivariate causality tests were run for those 32 out of 44 Ifo series (11 Ifo series for four selected regions), which have integration level I(1), i.e. which along with net production are stationary after one differencing. In 5 cases Ifo series prove to be causal to net production, for 12 cases the causality turns to be in the opposite direction - net production is causal to the Ifo series - and for the remaining 15 cases feedback causality exists between net production and Ifo series. The great number of cases in which net production is causal to Ifo series (which leads to opposite causalities), suggests that replies to the questions of the Ifo Business Test are strongly influenced by the previous business cycle in these regions.

For Hesse, none of the Ifo series proves to be causal to net production. This contrasts with 6 cases where causality turns out to be in the opposite direction. For Bavaria, only BOR (backlock of orders) proves to be causal to net producton, against 4 cases with feedback causality and 3 other cases with opposite causality.

In North Rhine-Westphalia and Baden-Württemberg we find causalities to net production for 2 Ifo series. Here multivariate causality tests are required so as to show whether composite leading indicators can improve the forecasting model. For North Rhine-Westphalia, Ifo indicators BOR (backlock of orders) and PRE (price expectations) prove to be causal to net production (with 3 feedback and 2 opposite causalities) and for Baden-Württemberg BUJ (business judgement) and PRM (prices compared to previous month) showed the "correct" causality, with 5 feedback causalities and 1 case showing causality in the opposite direction.

If we compare the causality test results documented here (net production in total manufacturing for four selected regions) with the corresponding results for net production in selected industries for all of West Germany (SCHÖLER, 1994a), we can make two observations:

- At ca. 15% (5 cases out of 32), the proportion of Ifo series displaying causality to net production in this regional approach lies below the corresponding share (20%) found in causality tests for selected industries thoughout West Germany (11 cases out of 56).

- Results of bivariate causality tests for manufacturing industry in West Germany, run in parallel to the tests for individual industries (SCHÖLER, 1994a), showed non of the Ifo series to be causal to net production. On the contrary, in at least 3 of 4 regions studied, the model for forecasting net production in manufacturing industry can be improved by including at least one Ifo series.

Multivariate causality tests:

The results of the bivariate causality tests lead to the construction of forecast models with single or composed leading indicators and the optimal lag structure. All leading indicators have net production as an autoregressive component. If no Ifo series is added, the forecast model consists of this autoregressive part only. With one or more Ifo series components we have a composed leading indicator.

Table 2 shows the final results of the causality tests, the selected time series for the leading indicator, the lag optimal structures and the FPE values (final prediction error). For Bavaria the bivariate causality tests already lead to the forecast model: In this case, the bivariate causality test shows that the FPE value of the autoregressive part can be lowered slightly by including the Ifo series BOR (backlock of orders), although the improvement is only marginal (from 20.49 to 20.46).

In North Rhine-Westphalia and Baden-Württemberg, two of the tested Ifo series are causal to net production. Here, multivariate causality tests must demonstrate if one or two of these Ifo series can improve the forecast model, when used in addition to the autoregressive part. In North Rhine-Westphalia, the FPE value of the autoregressive part (23.73) can be lowered by including the Ifo variable PRE (price expectations). Furthermore, including the Ifo variable BOR (backlock of orders) leads to greater improvement in the forecast model. In the end we obtain a composed leading indicator, which is - according to the FPE value - distinctly better than the autoregressive part alone: The FPE value of the forecast model with two Ifo series is 19.16. The FPE would have been higher (21.14), were only price expectations and an autoregressive component to have been used. In contrast, the forecast model for Baden-Württemberg contains only one Ifo series in addition to the autoregressive element (business judgement). This lowers the FPE value of the autoregressive part from 37.04 to 35.57. By contrast, a model containing a composed leading indicator with both Ifo variables, which are causal to net production, would only lead to a slight improvement (FPE: 36.62).

If we compare the forecast models of the four regions (for manufacturing industry), presented in this paper, with those for 8 selected industries (for West Germany as a whole, presented in SCHÖLER, 1994a), the results are similar: In four regional forecast models we have one autoregressive model, two models with one Ifo series in addition and one model with two Ifo time series. By comparison, in eight sectoral forecast models we have two autoregressive models, four models with one Ifo series in addition and two models with two Ifo series.

Table 2 gives an overview of the causality test results. Two complementary tables in the appendix present more detailed descriptions.

Table 2: Causality Test Results for the four Selected Regions

Bivariate causality tests:
Cases, where Ifo series are causal to net production (NP)
(i.e. no feedback causalities and no causality of the type net production — Ifo series)
(tested for those Ifo series, which have the same integration level as net production)

Abbreviations for the Ifo series: see Table 1

	NRW	HES	BWU	BAV
Bivariate causality **Ifo → NP**	BOR PRE	-	BUJ PRM	BOR
Multivariate causality: forecast model (optimal lag structures in months)	NP (14) PRE (14) BOR (4)	NP (14)	NP (13) BUJ (11)	NP (14) BOR (2)
FPE Final prediction error - autoregressive part - model incl. Ifo series	 23,73 19,16	 30,92 -	 37,04 35,57	 20,49 20,46

6. EX POST FORECASTS

We apply the following procedure for the ex post production forecasts.

Model 1: In this model, the net production for 12 months ahead t+i (i = 1, ..., 12) is estimated for the period January 1990 (t+1) to December 1990 (t+12) by a dynamic forecasting procedure. The 12-months forecast was made by a successive substitution: The estimated value for the net production in month t+1 is used for the net production forecast in month t+2. In the next step, both values are used for the forecast in month t+3, and so on. The additional Ifo time series are built up by an autoregressive process for the period t+1 to t+i-1 (i=1, ..., 12).

Model 2: To estimate net production in a certain future month t+i (i = 1, ..., 27), we use the actual values of the variables, which are combined in the leading indicator, up to the preceeding month t+i-1. In light of the availability of new data each month, the regression model is calculated for each monthly forecast. Consequently, 27 one-month-forecasts cover the period from October 1988 to December 1990. While the composition of the leading indicator and the lag structure of the independent variables refers to the analysis for the period May 1981 to September 1988 (t), the regression coefficients for the forecast of month t+i are determined by linear regression on the basis of the data including the month t+i-1.

While forecast model 1 therefore proceeds on the basis of information available at period t, model 2 incorporates new information on a monthly basis over the entire forecast period. By this very nature, the forecast error under the dynamic procedure (model 1) is higher than in the second model - provided the same forecast period is used. For this reason, we limited the forecast period of model 1 to 12 months, and thus attained comparable forecast errors between models 1 (12 months) and 2 (27 months).

The forecast results are shown in 8 figures in the appendix. Each figure contains the forecast of production (dotted lines) and the actual production (solid lines) from January 1990 to December 1990 for model 1 and from October 1988 to December 1990 for model 2. Not only the actual figures, but also the forecasts refer to the index of net production (basis 1985=100) of the Federal State Statistical Offices. For the assessment of the forecast results presented, please note that for a more precise graphic representation the ordinate is adjusted by the range of the values depicted.

The quality of the applied forecast procedure is assessed on the basis of the forecast error $P_t - X_t$ for all t+i (P_t = forecast, X_t = actual production, i = 1, ..., 12 for model 1 and i = 1, ..., 27 for model 2). Specifically, the following test statistics are used:
(N = number of the forecasts)

Mean Absolute Error:

$$MAE = \frac{1}{N}\sum |P_t - X_t|$$

Mean Absolute Percentage Error:

$$MAPE = \frac{1}{N}\sum\left(\frac{|P_t - X_t|}{X_t}\right)\cdot 100$$

Root Mean Square Error:

$$RMSE = \sqrt{\frac{1}{N}\sum (P_t - X_t)^2}$$

Root Mean Square Relative Error:

$$RMSRE = \sqrt{\frac{1}{N}\sum\left(\frac{P_t - X_t}{X_t}\right)^2}$$

Janus quotient (JANUS)
(M = number of values in the estimation period, p_t = estimated values and x_t = actual values in the estimation period)
(N = number of values in the forecast period, P_t = estimated values and X_t = actual values in the forecast period)

$$J2 = \frac{\frac{1}{N}\sum (P_t - X_t)^2}{\frac{1}{M}\sum (p_t - x_t)^2}$$

Theil's inequality coefficient (THEIL-U)

$$U2 = \frac{\sum (P_t - X_t)^2}{\sum X_t^2}$$

Theil's coefficient (THEIL-V)

$$V2 = \frac{\sum (P_t - X_t)^2}{\sum\left(X_t - \frac{1}{N}\sum X_t\right)^2}$$

Theil's coefficient (THEIL-W)

$$W2 = \frac{\sum (P_t - X_t)^2}{\sum (X_t - X_{t-1})^2}$$

The test statistics in Table 3 provide an assessment of the forecast results for specific regions. The MAPE value may be interpreted as a percentage forecast error. Using model 1, we get small errors for the 12-months-ahead forecast: Bavaria 2.2%, North Rhine-Westphalia 3.1%, Hesse 3.7%, and Baden-Württemberg 3.9%. We obtain comparable forecast errors if we apply model 2 for the 27-months-ahead-forecast: Bavaria 2.6%, North Rhine-Westphalia 2.7%, Hesse 3.9%, and Baden-Württemberg 3.8%.

On the one hand, the Janus quotient J^2 indicates the quality of the forecast, while on the other hand, because of its relation to the estimation errors in the period of the model formation, it may serve as a criterion for the stability of the model in the estimation and forecast periods. It is shown that, when considering the estimated period, both forecast models deliver the best results for Bavaria and North Rhine-Westphalia. The stability of the forecast models (J^2 near 1) is particularly high for Bavaria with 1.003 in the case of model 1 and 1.602 in the case of model 2.

Table 3: Forecast Error Statistics

Test statistics	Model 1 dynamic forecast (12 months) NRW	HES	BWU	BAV	Model 2 stepwise forecast (27 months) NRW	HES	BWU	BAV
MAE	3,677	4,586	4,388	2,818	3,097	4,620	4,115	3,124
MAPE	3,126	3,730	3,887	2,218	2,773	3,865	3,836	2,632
RMSE	4,617	5,889	5,556	3,876	3,870	5,887	5,468	3,949
RMSRE	0,039	0,047	0,051	0,029	0,036	0,049	0,054	0,034
JANUS	3,231	3,119	2,477	1,602	1,388	1,500	1,267	1,003
THEIL-U	0,002	0,002	0,002	0,001	0,001	0,003	0,002	0,001
THEIL-V	1,17E-07	1,62E-07	1,62E-07	6,45E-08	9,04E-08	1,84E-07	1,75E-07	7,50E-08
THEIL-W	0,002	0,003	0,002	0,001	0,164	0,278	0,204	0,087

Theil's inequality coefficient U^2 relates the forecast errors to a simple model of constant actual values of each time series (no-change-hypothesis), while in the formation of the coefficient V^2 the forecast errors with respect to the actual values are compared with the average changes of the actual values. By means of Theil's coefficient W^2 the relation of the forecast errors is computed relative to the changes of the actual values in period t-1. The coefficients U^2 and V^2 show us for all regions that in none of them do the original time series correspond to a simple stationary model (U^2) or a model with extrapolation of average changes (V^2). In relation to these assumptions, all forecast models deliver reasonable results (U^2, V^2 near to zero). The assumption of a model with extrapolation of the changes in period t-1 (W^2 near to 1) does not fit the forecast results in any region; in all regions our forecast models are better than models obtained through extrapolation only.

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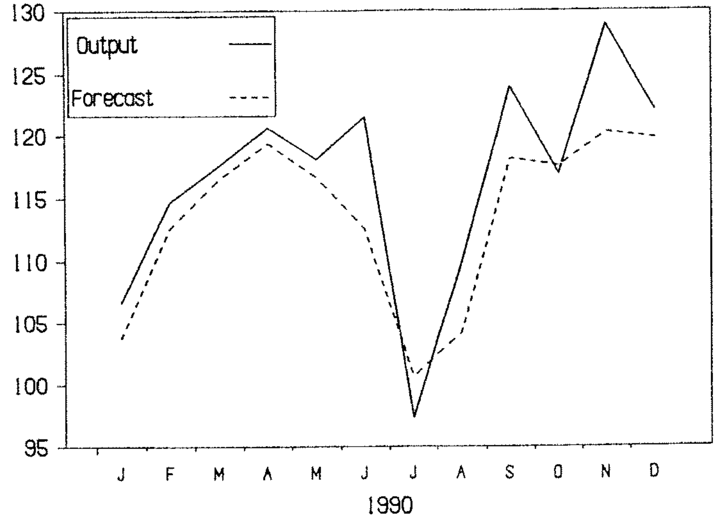
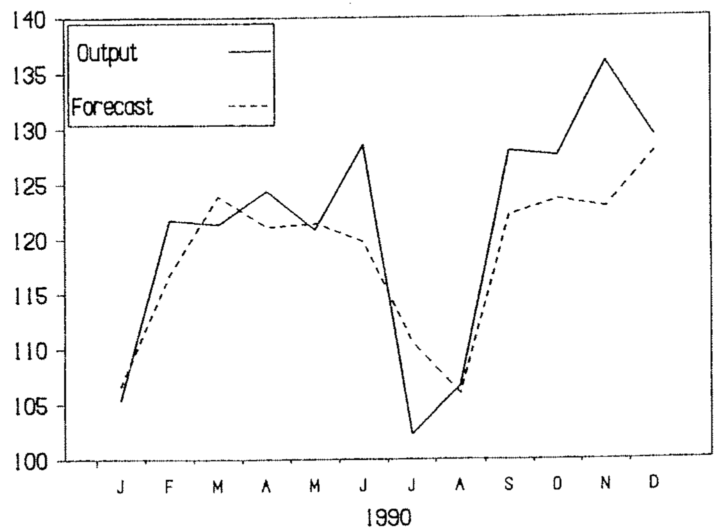
Appendix: Figures of Ex Post Production Forecasts

Model 1: Dynamic forecast model, 12 months forecast

(a) North Rhine-Westphalia

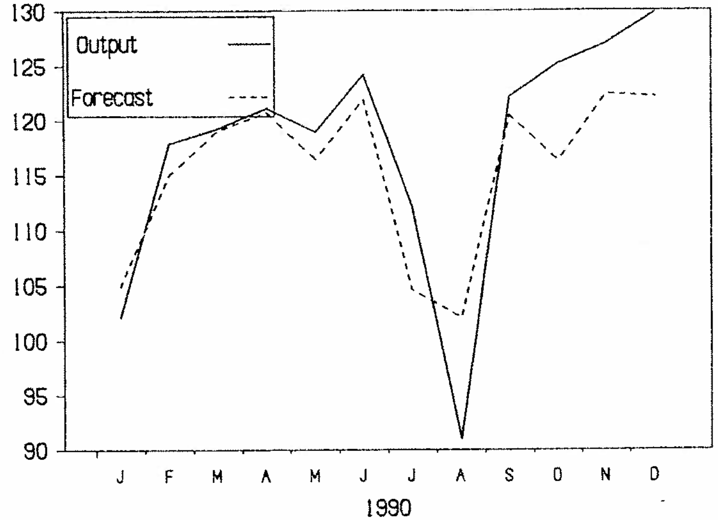


(b) Hesse

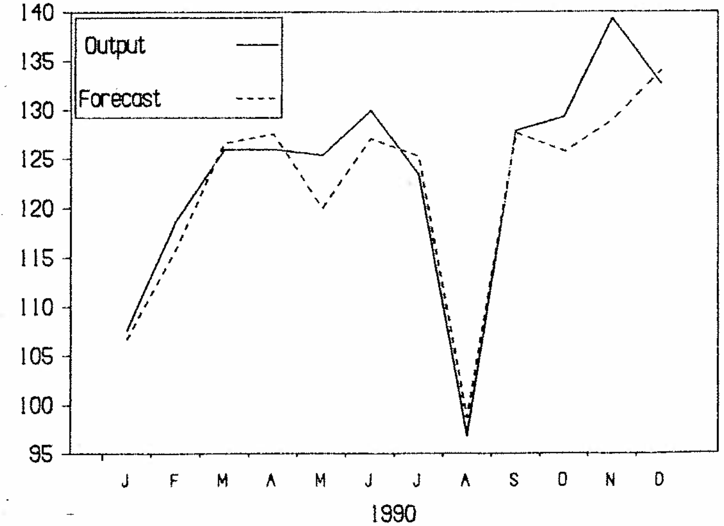


Model 1: Dynamic forecast model, 12 months forecast

(c) Baden-Württemberg

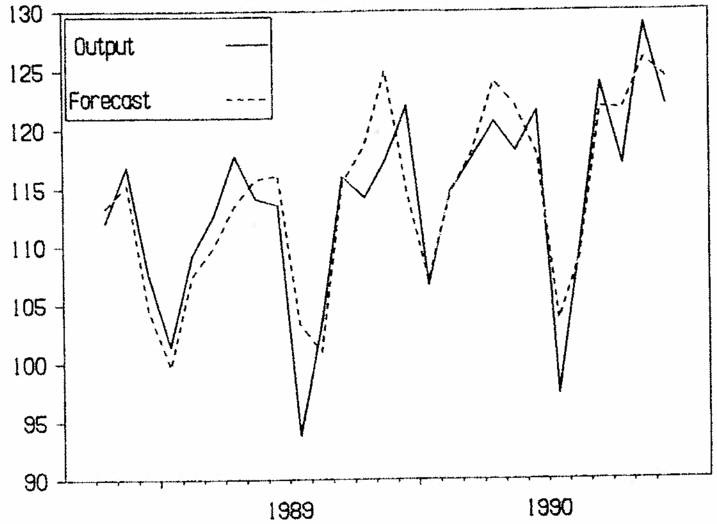


(d) Bavaria

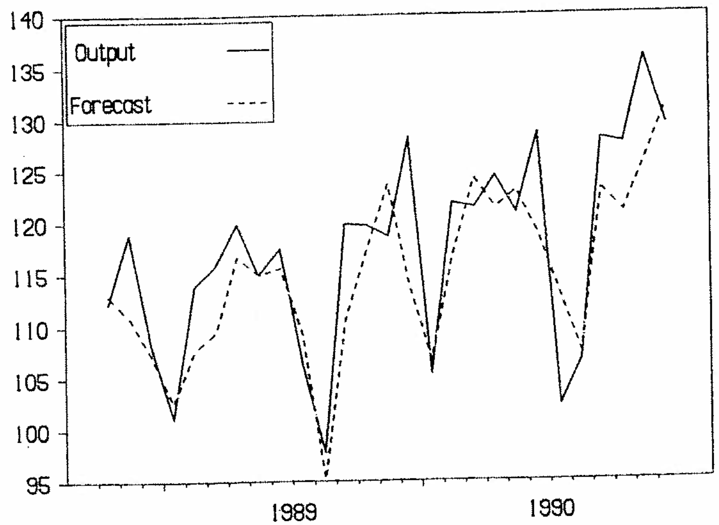


Model 2: Stepwise forecast model, 27 months forecast

(a) North Rhine-Westphalia

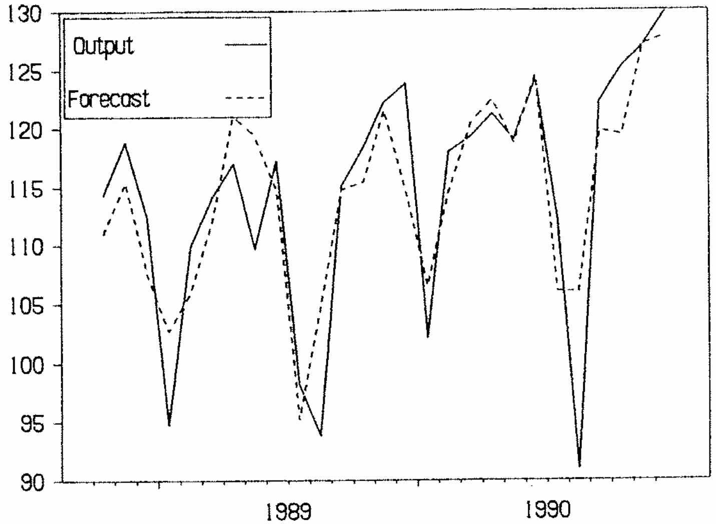


(b) Hesse

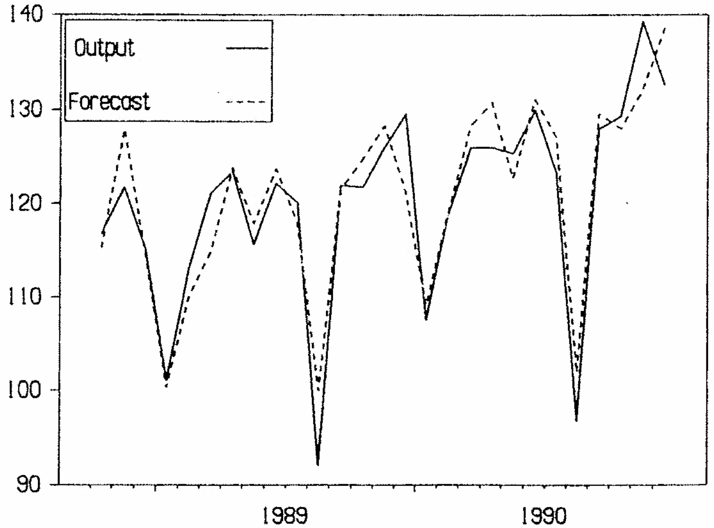


Model 2: Stepwise forecast model, 27 months forecast

(c) Baden-Württemberg



(d) Bavaria



Franziska Bignasca
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Wohnentscheide im Kanton Zürich. Analyse der Nachfrage nach Mietwohnungen mit "discrete choice"-Modellen

Gesellschaft für Regionalforschung (Hrsg.), Seminarberichte 37 (1996), 5-26

Kurzfassung

Die Wohnungsnachfrage ist ein simultaner mehrdimensionaler Entscheidungsprozeß zwischen diskreten Alternativen. Mit der Wahl derWohnung werden gleichzeitig Entscheidungen über Mobilität, über Besitz, über Wohnort und Charakteristika der Wohnung getroffen. In diesem Beitrag werden die Wohnentscheidungen von Mietern und Mieterinnen im Kanton Zürich untersucht. Zwei Entscheidungen stehen im Vordergrund: die Wahl des Standortes und die Wahl der Wohnungsgröße. Diese Entscheidungen werden innerhalb eines „nested multinomial logit" Modells empirisch untersucht.

Uwe Blien und Friedrich Graef
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Die Ermittlung und Prognose regionaler Beschäftigung mit dem ENTROP-Verfahren. Eine Anwendung auf Arbeitsmärkte in Ostdeutschland

Gesellschaft für Regionalforschung (Hrsg.), Seminarberichte 37 (1996), 27-53

Kurzfassung

Das ENTROP-Verfahren wurde zur Schätzung von Tabellen aus heterogenen Informationen entwikkelt. Es eignet sich zur Bearbeitung vieler Fragestellungen der Regionalforschung aus den Bereichen Disaggregation von Daten, Stichprobengewichtung, Umschätzung von Regionalgliederungen, Erstellung von Regionalprognosen etc. Im vorliegenden Fall werden Testrechnungen zur Ermittlung regionaler Disparitäten auf Arbeitsmärkten Ostdeutschlands durchgeführt. Das Verfahren basiert auf dem Entropieoptimierungsprinzip, es ist in dem PC-Programm ENTROTAB implementiert.

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Ost-West-Mobilität in Deutschland - Ende der Abwanderung?

Gesellschaft für Regionalforschung (Hrsg.), Seminarberichte 37 (1996), 55-73

Kurzfassung

Nach den hohen Abwanderungszahlen in den Jahren 1989-1991 ist inzwischen die Abwanderung und die Bereitschaft zur Abwanderung in Ostdeutschland stark zurückgegangen. Betriebsschließungen und Massenentlassungen hatten keineswegs die unmittelbare Folge, daß betroffene Arbeitskräfte aus ökonomisch darniederliegenden Regionen massenhaft abgewandert wären. Die Wahrscheinlichkeit, daß Menschen ihre Region verlassen, ist um so größer, je näher diese zu den alten Bundesländern liegen. Kenntnisse über Möglichkeiten der Arbeitsaufnahme und Wohnungssuche in den westdeutschen Regionen sind bei denjenigen größer, die aufgrund geographischer Nähe genauere Kenntnisse über westliche Regionen haben. Aus Interviews kann jedoch auch eine wachsende 'kulturelle Distanz' zu den westlichen Regionen entnommen werden.

Hans Georg Helmstädter
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Regionale Struktur und Entwicklung der Industriebeschäftigung: Konzentration oder Dekonzentration?

Gesellschaft für Regionalforschung (Hrsg.), Seminarberichte 37 (1996), 75-104

Kurzfassung
Die empirischen Methoden und Befunde von Paul Krugman werden bisher weitaus weniger kontrovers debattiert als sein theoretischer Ansatz. In dem Beitrag werden die Krugman'schen Konzentrationsindikatoren für das Verarbeitende Gewerbe der Bundesrepublik Deutschland berechnet und interpretiert. Zwischen 1970 und 1994 ist dabei eine zunehmende räumliche Konzentration festzustellen. Dem steht aber im selben Zeitraum ein anhaltender industrieller Bedeutungsverlust der Verdichtungszentren (in ihrer Summe) relativ zum Verdichtungsumland und zu den peripheren Regionen gegenüber: eine Entwicklung, die von der Raumforschung im allgemeinen als Dekonzentrationsprozeß definiert wird. Der scheinbare Widerspruch ergibt sich daraus, daß Ökonomen und Geographen/Raumordner mit unterschiedlichen Begriffen von Konzentration hantieren und diese folgerichtig auch unterschiedlich messen.

Markus Hirschfeld
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Entwicklungsunterschiede von Städtetypen. Eine Untersuchung zur langfristigen Stadtentwicklung in Deutschland

Gesellschaft für Regionalforschung (Hrsg.), Seminarberichte 37 (1996), 105-129

Kurzfassung
Dieser Beitrag stellt Arbeitsergebnisse einer laufender Untersuchung im historischen Schwerpunkt der DFG vor, die sich mit den langfristigen Entwicklungsmustern deutscher Stadtregionen in Ost- und Westdeutschland befaßt. Im Rahmen des Projektes werden historische Städtetypen identifiziert, die nach dem Zweiten Weltkrieg eine homogene Entwicklung aufweisen. Es handelt sich dabei um die Universitätsstädte und um Typen, die durch eine vielfältige Branchenstruktur und durch das Fehlen prägender singulärer Standortfaktoren bzw. administrativer Einflüsse gekennzeichnet sind. Diese Städtetypen haben zugleich ihre Position im Entwicklungsprozeß der Städte behaupten und ausbauen können. - Aus der Untersuchung ergeben sich weitere Städtetypen, die nur in Teilzeiträumen der Nachkriegszeit bzw. gar keine homogene Entwicklung aufweisen.

Jörg Lüschow
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Regionales Wachstum und regionale Arbeitslosigkeit: Okun's Law in den Ländern der Bundesrepublik Deutschland (West) 1960-1993

Gesellschaft für Regionalforschung (Hrsg.), Seminarberichte 37 (1996), 131-153

Kurzfassung
In dieser Untersuchung wird der Zusammenhang zwischen dem Wachstum des Sozialprodukts und der Arbeitslosigkeit unter Verwendung von Okun's Law in den Ländern der Bundesrepublik Deutschland von 1960 bis 1993 untersucht. Es kann erstens festgestellt werden, daß im Zeitraum bis 1973 nur ein schwacher inverser Zusammenhang zwischen Arbeitslosenquote und Wachstum zu beobachten ist. Ursache dürfte der geräumte Arbeitsmarkt und die Vollauslastung der Kapazitäten sein. Das zweite wichtige Resultat ist, daß ab 1974 in allen Regionen von einem signifikanten inversen Zusammenhang ausgegangen werden kann und eine einprozentige Reduktion der Outputlücke zu einer Reduktion der Arbeitslosenquote um ca. 0,3 Prozent führt. Drittens ergab sich, daß die regionalen Okun-Koeffizienten statistisch nicht verschieden sind. Schließlich lassen sich aus den Ergebnissen keine empirischen Hinweise für die Gültigkeit der Entkoppelungsthese ableiten.

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Der Zusammenhang zwischen Entfernung und Bewertung von Standorten

Gesellschaft für Regionalforschung (Hrsg.), Seminarberichte 37 (1996), 155-172

Kurzfassung
Das Image von Orten und Gebieten ist für Standortentscheidungen von Unternehmern oft wichtiger als die Realität. Die subjektive Bewertung von Standorten wird aber zu einem erheblichen Teil vom sogenannten 'neighbourhood effect' bestimmt: der Neigung, die eigene Umgebung höher zu bewerten als weiter entfernte Gebiete. In diesem Beitrag wird anhand der Standortpräferenzen von niederländischen Unternehmern untersucht, wie sich der 'neighbourhood effect' quantifizieren läßt und wie die Standortpräferenzen aussehen, wenn die Bewertungen für den 'neighbourhood effect' korrigiert werden.

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How far to A Europe of the Regions ? Evidence from Gravity-Model Analysis of European Road Freight Traffic

Gesellschaft für Regionalforschung (Hrsg.), Seminarberichte 37 (1996), 173-190

Abstract
It is the aim of the article to investigate two hypotheses concerning integration of the European Union: firstly, national boundaries are still relevant and secondly the measurable effect of these boundaries decreases in time. Applying a testing scheme based on the gravity model to EU road freight traffic for 1987 and 1991 we provide a measure of where the EU currently stands relative to the Common Market project of a "boundaryless" region. It is shown that depending on the particular gravity model specification used distance reduces spatial interaction between 5 and 6,5 times more on the intra-EU than on the intra-national level. Evidence on a decrease in the impedance parameter, i.e. on integration, is also consistent. We conclude that the European region is still a supra-national rather than multi-regional entity and that robust evidence on integration tendencies requires an analysis of more recent data.

Ulrike Sailer-Fliege
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Transformationsprozesse im Wohnungswesen in Ungarn

Gesellschaft für Regionalforschung (Hrsg.), Seminarberichte 37 (1996), 191-213

Kurzfassung
Bereits seit den 80er Jahren wurden die Rahmenbedingungen des Wohnungswesens in Ungarn in Richtung Marktwirtschaft grundlegend umstrukturiert. Die hieraus resultierenden strukturellen und sozialräumlichen Auswirkungen wurden in mehreren ungarischen Beispielsstädten untersucht. Insgesamt lassen die derzeitigen sozialgruppenspezifischen Mobilitätsprozesse zwischen den städtischen Wohnungsteilmärkten deutliche Konvergenzerscheinungen zu westlichen Industriestaaten erkennen. Zu nennen sind insbesondere demographisch und sozioökonomisch selektive Abwanderungen aus den Wohnsiedlungen in Plattenbauweise und eine teilweise Zunahme von innerstädtischen Segregationsprozessen. Der bisherige staatliche Mietwohnungsmarkt wird durch die Privatisierungen weitgehend abgebaut werden. Hierdurch wird sich die Wohnungsproblematik für finanzschwächere Haushalte erheblich verstärken.

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Gesellschaft für Regionalforschung (Hrsg.), Seminarberichte 37 (1996), 215-236

Kurzfassung
Leading business indicators for West Germany have been identified for specific industries on the basis of causality tests and time series for net production for 1978-1990. The leading indicators and the attendant lag structures were formed using stationary test and both bivariate and multivariate causality tests. Forecasts for 1991/1992 display only small forecast errors in four of seven industries. A corresponding procedure is presented here for selected West German Bundesländer, again using Ifo Survey data and net production time series for the Bundesländer 1980-1990. Due to availability of survey data, measurements are made for total manufacturing and not for specific industries. The appropriate leading indicators varies by Länder, and regional forecast on the total manufacturing level exhibit low forecast errors.

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