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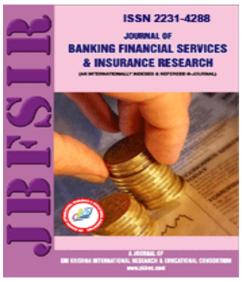

THE QUASI-CONTROL GROUP DESIGN FOR COMPARISON OF CUSTOMER GROUPS

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ABSTRACT

This paper is to inform marketing controllers and target group managers of the prerequisites necessary for a systematic comparison of the development of customer groups. Particularly, it presents a practical clarification of the epistemological framework for comparing customer groups. Correspondingly, a systematic comparison approach is described, and its application is demonstrated in an example.

The presented example contains time series data from two kindred customer groups of competing bank groups. For comparison, one of them was considered as the treatment group, and the other was used as a quasi-control group. With the help of a linear multivariate State Space Model, comparison focused on significant differences between the customer groups' developments.

An observed erratic reaction in the demand of the treatment group indicated a valid difference between the two customer groups. In addition, this erratic reaction proved to be a statistically significant shift of demand based on the documented business history of that customer group. Furthermore, the designed State Space Model provided accurate forecasts of the two customer groups' demand for the short-term future, which followed the point of time when the erratic reaction happened.

The paper expounds that any comparison of customer groups needs to be preceded by an analysis of whether they are representative samples or analogous samples. In the latter case, the statistical model must be designed in a special way to guarantee the validity of the comparison results.

KEYWORDS: *customer groups, development of demand, quasi-control group design, short-term forecasting, State Space Model.*

1. INTRODUCTION

The demand of customer groups has been constantly changing as a result of the momentum of the market. Hence, the development of demand can be used to show the dynamic driven by market. As a rule, this dynamic takes shape as trend and seasons in the course of time. If the monitoring of demand focuses on cross-sectional data, the demand's dynamic is inevitably left out of consideration. In even a month-by-month comparison or a latest month by the corresponding last year's month comparison, it is only possible to find differences. By merely focusing on the longitudinal data in the shape of time series, a coherent sequence of minima, maxima, and points of inflection is revealed. Furthermore, this facilitates the discovery of both the level and slope of the trend and amplitude and of the frequency of season. Thus, the longitudinal focus is the gate to the realm of statistical analysis concerning demand's dynamic.

As for the analysis of time series, the State Space Model is an excellent tool for determing trend and season contained in a development, becuse it takes into account their changing over the course of time. Additionally, this statistical model provides reliable short term forecasts. Furthermore, the State Space Model is very well suited for the multivariate analysis of time series. The latter is needed if two or more customer groups are to be compared with each other with regard to, for example, the developments of their demand to examine their interrelations. This is of special significance if impulses, shifts or kinks occur in one or more of the time series compared.

Normally, the controlling of customer groups performed by a company is restricted to the monitoring of those groups that have business connections with it. This restriction produces isolated findings because the monitoring excludes observations of customer groups doing business with competitors. Resulting from this, it is impossible to find out whether the success or failure of business activity with a specific customer group is true for only the company or also for the competitors. Without this restriction, the controlling is able to compare the development of the company's customer groups to that of those of the competitors'. To do so, the controlling has to apply the systematical comparison approach, which is described as follows.

2. THE EPISTEMOLOGICAL CONCEPT OF COMPARISON

The results of structured observations of customer groups performed synchronically and designed to ascertain quantitative data are comparable if they comply with at least the following general requirements:

- Observations relate to similar objects.
- Observations are based on one and the same concept.
- Observations are conducted with identical methods.
- Observations are recorded in a standardized way.

The requirement for similar objects means that observed groups are equally defined. The definition must comprise common denominators of social and /or economical features characterizing the groups' members (Kerlinger 1965, p. 315). As a result, there are two kinds of similar samples, which facilitates comparison (Campbell/Stanley 1963).

TABLE1: TYPES OF SIMILAR SAMPLES

Representative samples	**Analogous samples**
Random samples	Empirical samples
Identical shape of social/economical group structures	Resembling shape of social/economical group structures
Unrestricted volume of group	Only the major group is admissible (because the occurrence of a minor change has an insignificant impact)
Equal numbers of group members	Unequal numbers of group members are acceptable
Constant composition of group members over the course of time	Limited variance of the composition of the group members is possible over the course of time
Separated subsets of members (samples) adding to a complete set (population)	Minor intersections among subsets are tolerable
Completely corresponding forms of group behavior	Strongly correlating forms of group behavior
Because of homogeneity among groups, a comparison is possible between the treatment group and the control group	Because of partial heterogeneity among groups, a comparison is possible between the treatment group and the quasi-control group

With respect to representative samples, which are typical for laboratory experiments, the comparison approach aims at obtaining a functional law or rule on what influences the groups' behavior. However, analogous samples, which are typical for field treatment or field experiments (Kerlinger 1965, p. 382), restrict the comparison approach to a probabilistic decision of whether there is a difference or not in the behavior of groups after an incident has happened. Generally, analogous samples are typical of empirical treatment in real societal settings if the existing social structure is to be analyzed in its natural diversity.

In case of comparing between the customer groups of any company and those of its competitors, only analogous samples are available because the company usually does not have sufficient information on the consistence of its competitors' customer groups to classify it otherwise. Therefore, a customer group of a company representing the test group can be compared with corresponding customer groups of its competitors representing the quasi-control groups. As a further consequence of the insufficient information in a social/economical group structure concerning the competitors' customer groups, the comparison between customer groups of both sides has to use aggregated data, that is, data on the group level and not on the individual/customer level.

Because of the fact that the market produces customer groups, there is no way to prove the internal validity of the results, which are derived from comparisons of analogous samples. In contrast to this constraint, such comparisons can possess external validity because thea are concerned with the degree of correspondence between the findings and reality. Although it is impossible to prove the external validity of the comparisons' results, the objective similarity between them and reality, which appears as general or representative or typical results, substantiates the supposition that there exists external validity. According to this pragmatic solution, such results are usually expressed as probabilistic statements.

This comparison approach has some important advantages:

- Generally, there is the possibility to analyze the development of the company's customer groups not only by itself but also in relation to its competitors' customer groups.

- In particular, the development of demand for the products or services offered can be checked for concordant and for peculiar characteristics.

- Additionally, it allows us to test for whether peculiar characteristics occurred by chance or not.

Now, an example will be presented to demonstrate the application of the described comparison approach.

3. THE EXAMPLE

3.1 DESCRIPTION

In this context, the described approach will be implemented on a comparison between two customer groups that are related to the service industry in Germany. While one of the customer groups has business connections with savings banks, the other one engages in business with cooperative banks. The object of comparison is the development of demand for all kinds of loans offered by the two bank groups. Here, the demand is related to the stock of all of the loans taken out by the specified customer groups, and it is gauged as the end-of-the-quarters' loan volumes of the savings banks and the cooperative banks, respectively.

From a theoretical point of view, the defined customer groups are analogous samples of the population representing the service industry companies. Hence, the two samples represent similar objects, that is, they comply with the comparison requirement relating to the similarity of objects. Because the data on the demand for loans of both customer groups were taken from the statistics of the Federal Reserve Bank of Germany, it may taken for granted that the requirements of comparison concerning the concept, methods, and recording of observations were also fully complied with.

In the following, the time series documenting the development of the stock of loans related to the savings banks' customer group and to the cooperative banks' customer group are presented. Figure 1 shows both graphs.

FIGURE 1: TIME SERIES OF THE QUARTERLY STOCK OF ALL LOANS (TRANSFORMED IN NATURAL LOG) FOR SAVINGS BANKS AND COOPERATIVE BANKS IN GERMANY WITH RESPECT TO THE CUSTOMER GROUPS OF GERMAN SERVICE INDUSTRY (4TH QUARTER 1968 TO 4TH QUARTER 2008)

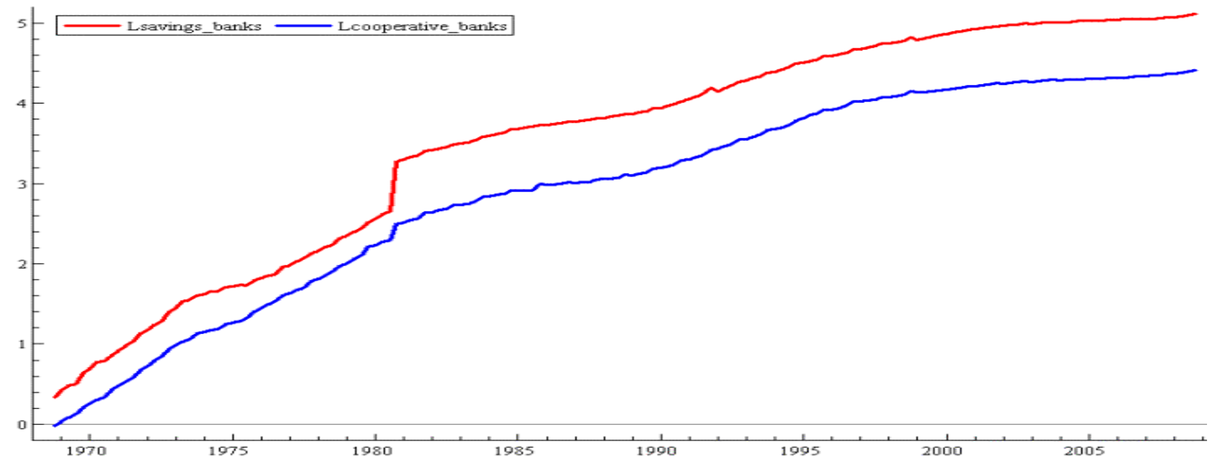


Figure 1 depicts very well the dynamic of demand for loans provided by the two customer groups, which produced an upward trend. It is remarkable that, by and large, this trend sustained during the economic downturns of 1974/1975, 1985/1986, 1994/1995, and 2004/2005 in Germany. Correspondingly, the demand for loans of both customer groups has developed in a nearly parallel fashion throughout time. As a consequence, there is a very strong correlation(R=0.9973), which means that the explained variance of time series is approximately 100%.

Furthermore, it is striking that a distinctive upward shift happened in the 4th quarter of 1980 in the stock of loans of both bank groups, which was caused by an eruption of demand. However, this shift of demand was different between them because the stock of loans of savings banks increased by approximately 87%, but that of cooperative banks increased by only approximately 22%. In other words, the customer group of savings banks needed many more loans than the customer group of cooperative banks. Concordant with that, the savings banks group was the market leader for loans given to customers of the service industry with a market share of 23.38% in the 4th quarter of 2008, while the cooperative banks group had a market share of only 11.88%.

3.2. THE STATISTICAL MODEL

With regard to the two time series, it is necessary to choose a linear multivariate State Space Model (Durbin/Koopman 2001) with the two time series set mutually dependent. This kind of dependence is obligatory because the customer groups are parts of the same population. The State Space Model comprises three components the stochastic level, the stochastic slope, and the stochastic season (Harvey/Koopman 2005, pp. 77). Figure 2 shows the results of the time series' decomposition (see also Appendix A). Incidentally, all of the computational work was performed with the help of the software package OxMetrics 5.10/STAMP8.1 (Koopman et al. 2007).

FIGURE 2: THE LINEAR MULTIVARIATE STATE SPACE MODEL OF THE TIME SERIES CONCERNING THE SAVINGS BANKS GROUP AND THE COOPERATIVE BANKS GROUP WITH THE STOCHASTIC LEVEL, THE STOCHASTIC SLOPE, AND THE STOCHASTIC SEASON (4TH QUARTER 1968 TO 4TH QUARTER 2008)

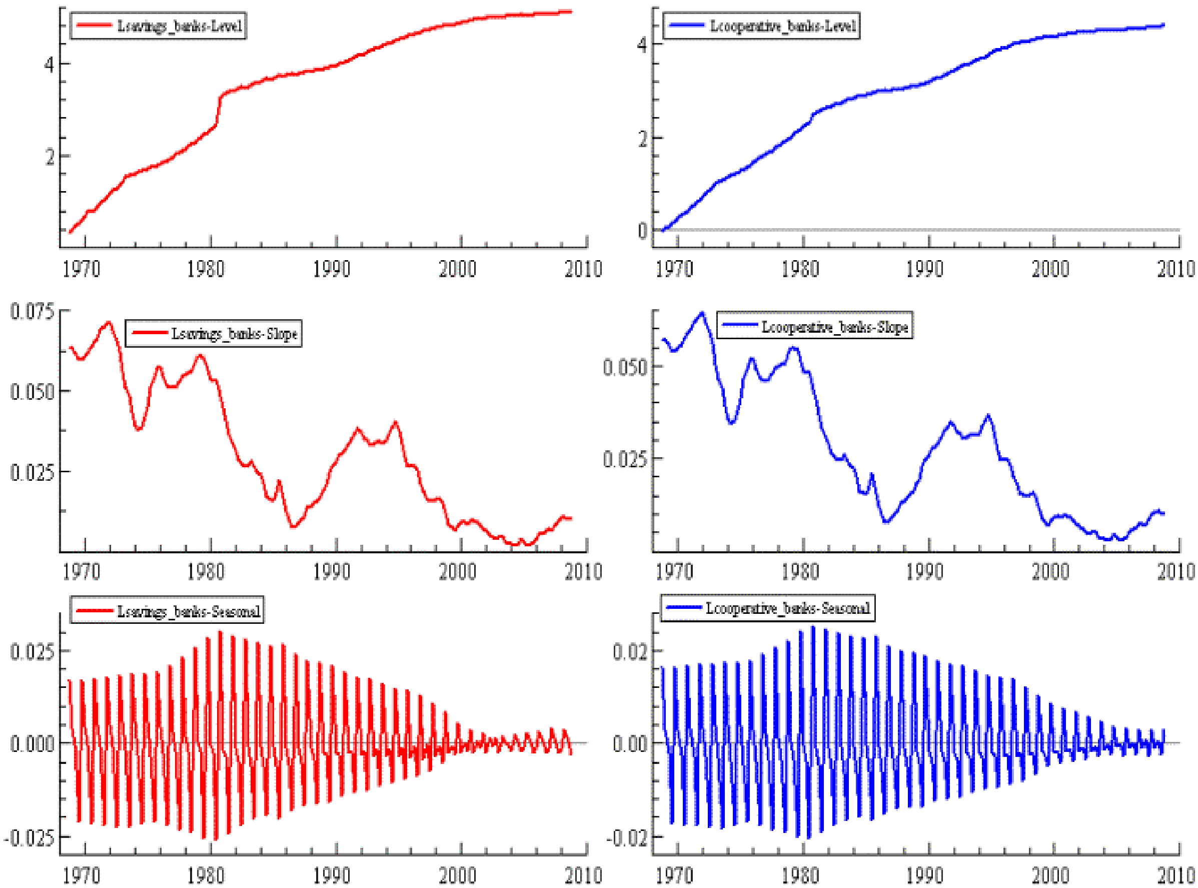


Figure 2 reveals the impressing dynamic with respect to trend and season, which is characteristic for the development of both customer groups' demand. Furthermore, it is easy to realize that both levels fit very well for the time series, and they are similar to each other with a correlation of R=0.7842. their slopes ae even much more similar with a correlation of R=1.00. This expresses that the growth of demand had declined in long waves until the year

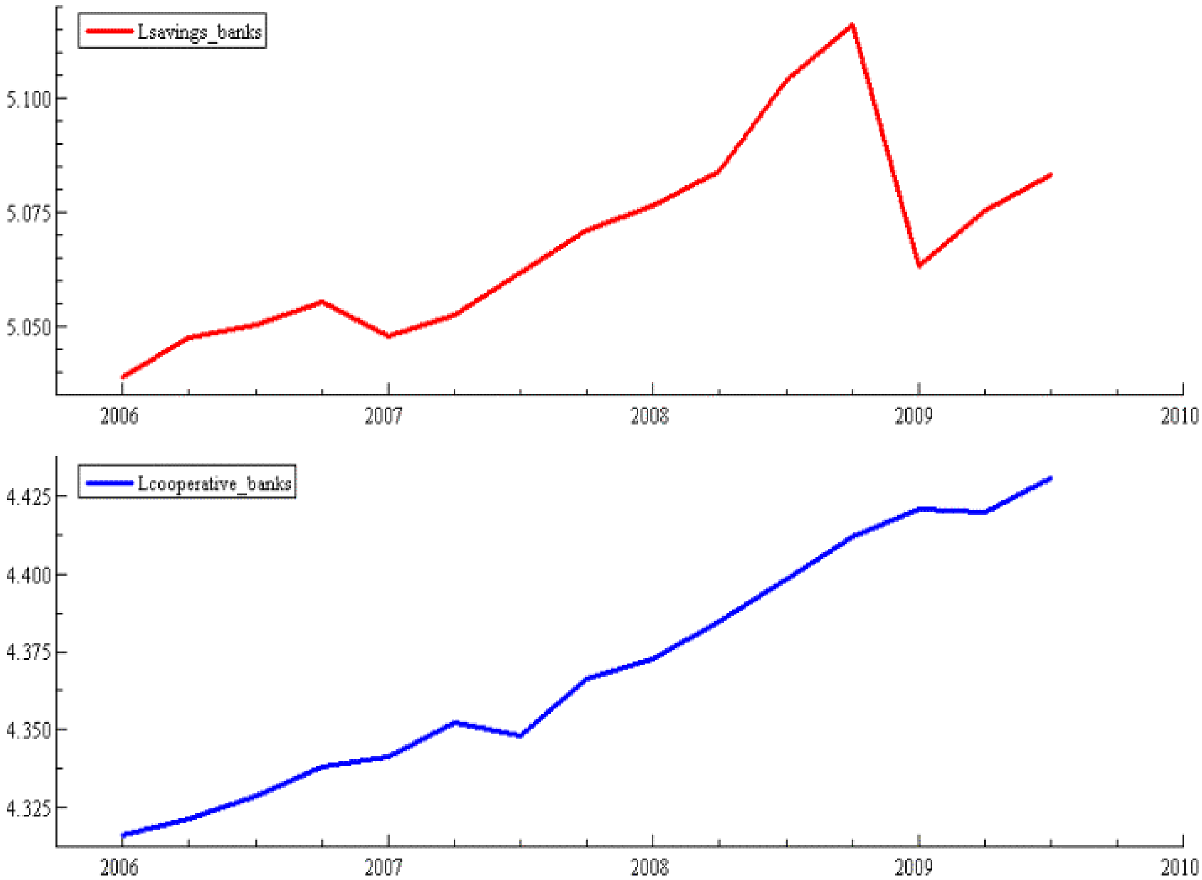
1999, when it then turned into a sideways movement. The latest development is a sign that the demand for loans calmed at a high level. Irrespective of that, the slopes always moved in the positive value region. The seasons of the time series were also completely similar with a correlation of R=1.00. Both showed increasing amplitudes until the year 1980, but after that the amplitudes started to decrease. The season of the savings banks group's time series turned into a sideways movement in the year 2000, while the one of cooperative banks group's time series turned in the year 2005. The sideways movement is a sign of a relative recession of short-term and medium-term loans in favor of long-term loans.

In summary, one can say that the customer group of cooperative banks is a suitable quasi-control group in relation to the customer group of savings banks, which is the central object of monitoring. They both developed a similar demand for loans reflecting in the correspondence of trends and seasons.

3.3. THE DEVELOPMENT OF DEMAND FOR LOANS IN 2009

The previous discussion of the chosen example focused on the development until the 4th quarter of 2008. Now, we will regard the times series until the 3rd quarter of 2009, which is depicted in the following Figure 3.

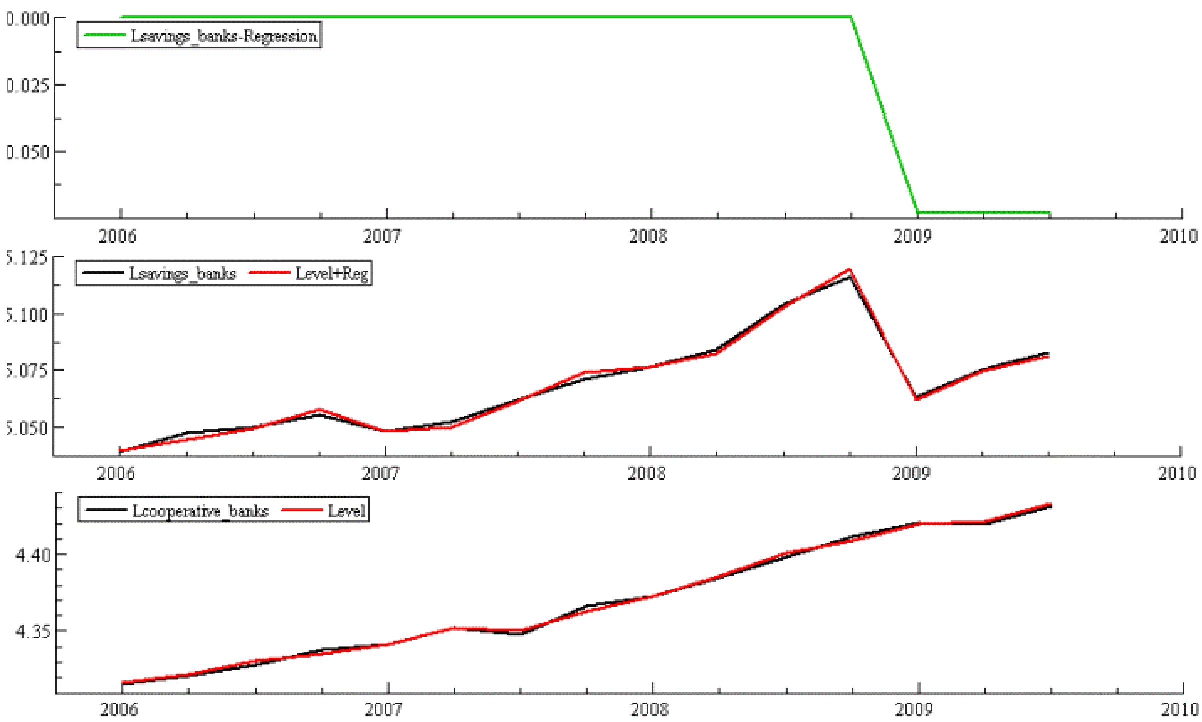
FIGURE 3: TIME SERIES OF THE QUARTERLY STOCK OF ALL LOANS (TRANSFORMED IN NATURAL LOG) OF SAVINGS BANKS AND COOPERATIVE BANKS IN GERMANY WITH RESPECT TO THEIR CUSTOMER GROUPS OF THE GERMAN SERVICE INDUSTRY (1ST QUARTER 2006 TO 3RD QUARTER 2009)



In Figure 3, it is discernible that the development of the savings banks group's lending business suffered a downward shift, which means that the borrowing by its customer group of the service industry decreased suddenly by approxemately 5% in the 1st quarter of 2009. This was obviously a unique incident because the positive trend of development continued on that lower level for the next two quarters. In contrast to the savings banks' customer group, the quasi-control group represented by cooperative banks' customer group showed no changes such as an impulse, a shift, or a new trend in those quarters of 2009. This proves that this downward shift of demand for loans was an original reaction of the savings banks' customer group, and the reasons for it need to be examined in the particular economical situation of this customer group. Additionally, the cooperative banks group could not have benefited from the savings banks group's loss.

In connection with this result, we want to find whether the observed erratic reaction is expected to be in the range of or to exceed the demand's variation. To answer this question, a dummy variable must be added to the applied State Space Model (Enders/Prodan 2008, pp. 231). It consists of a time series, which equals zero until the 4th quarter of 2008 and is set to 1 for all quarters after the 4th quarter of 2008 to take into account the observed shift. By means of this dummy variable, the hypothesis that the shift expressed a significant excess of the variation range is tested against the null hypothesis of no (sufficiently significant) excess (Commandeur/Koopman 2007, pp. 113). Figure 4 shows the result of the regression (see also Appendix B).

FIGURE 4: THE MULTIVARIATE STATE SPACE MODEL WITH THE LEVEL OF THE SAVINGS BANKS GROUP'S LOANS VOLUME UNDER THE INFLUENCE OF THE ADDED DUMMY VARIABLE AND THE LEVEL OF THE COOPERATIVE BANKS GROUP'S LOANS VOLUME (1ST QUARTER 2006 TO 3RD QUARTER 2009)



The conducted regression analysis of State Space Model partially depicted in Figure 4 results in a coefficient of –0.07298 (related to the t-value as -2.39114 with a p-value as 1.8 that is less than the 5% significance level). This means the hypothesis that the shift expressed an extraordinary reaction of the savings banks' customer group can be accepted at the chosen significance level.

3.4 FORECASTING THE SHORT-TERM FUTURE

After obtaining an adequate statistical model of demand for loans generated by the two customer groups, a forecast was conducted for the next 6 quarters. Because the time series are dependent of each other, forecasts for both were made in one step of estimation. The result of the forecast was compared with the real data of the forecast period to check for differences between them. Table 2 presents the forecast from the 4th quarter of 2009 to the 1st quarter of 2011.

TABLE 2: FORECAST DATA FOR THE PERIOD BETWEEN THE 4TH QUARTER OF 2009 TO THE 1ST QUARTER OF 2011 COMPARED WITH THE REAL DATA OF THE STOCK OF ALL LOANS FOR SAVINGS BANKS AND COOPERATIVE BANKS IN GERMANY CONCERNING THEIR CUSTOMER GROUPS OF THE GERMAN SERVICE INDUSTRY (IN BN OF EUROS)

Quarters	Savings Banks Group			Cooperative Banks Group		
	Forecast	**Real Data**	**Difference %**	**Forecast**	**Real Data**	**Difference %**
4/2009	161.698	161.688	**+0.01**	85.067	85.127	**-0.07**
1/2010	163.745	162.551	**+0.73**	85.612	85.647	**-0.04**
2/2010	165.012	164.109	**+0.55**	86.107	86.862	**-0.88**
3/2010	166.472	165.326	**+0.69**	86.801	87.669	**-1.00**
4/2010	166.903	167.568	**-0.40**	87.905	89.214	**-1.49**
1/2011	169.015	168.241	**+0.46**	88.469	89.991	**-1.72**

It can be inferred from table 2 that the forecast shows an upward trend of development for savings banks and for cooperative banks. The differences between forecasts and real data are within the bounds of +/-2.00% in all quarters, that is, the short-term forecast from the applied State Space Model was accurate and reliable (see also Appendix C). In other words, the forecast predicted that the two customer groups' demand for loans would continue to grow, which eventually came true despite the economic downturn of 2009/2010.

Additionally, this outcome warrants the practice of using the cooperative banks' customer group of the service industry as a control group in relation to the kindred customer group of savings banks. Thus, the example gives convincing evidence that the observed behavior of the companies in the analogous samples facilitates not only valid comparisons but also accurate forecasts in consequence of the analogous samples' similarity.

4. CONCLUSION

In the context of this paper, it was proven that the controlling of a customer group needs, above all, the monitoring of the development of its demand, for the present status of demand results generally from its history. Furthermore, it was demonstrated that the monitoring of the customer group's demand gains objectivity by comparing it with an adequate quasi-control group. This kind of comparison provides terms of reference to the evaluation of the demand's variance.

Additionally, it was shown that the linear multivariate State Space Model is a useful tool to analyze time series documenting the demand development of customer groups. Having applied this tool, it was found out that the observed trend shift of demand for loans in the 1st quarter of 2009 concerning the savings banks' customer group was caused by an original reaction because the quasi-control group did not show a similar reaction. Moreover, the State Space Model made it possible to prove that this trend shift expressed an extraordinary reaction in the savings banks' customer group because it exceeded the given bounds of demand's variance.

The described way of analyzing the results of monitoring customer groups allows controlling to realize realistic findings and solid expectations with regard to the customer group' s development. This serves as a basis for decisions yielding efficient consequences to intensify relations with customer groups.

APPENDIX A

UC(3) Estimation done by Maximum Likelihood (exact score)

The selection sample is: 1968(4) - 2008(4) (T = 161, N = 2)

The dependent vector Y contains variables:

Lsavings_banksLcooperative_banks

The model is: Y = Trend + Seasonal + Irregular

Component selection: 0=out, 1=in, 2=dependent, 3=fix

	Lsavings_banks	Lcooperative_banks
Level	1	1
Slope	1	1
Seasonal	1	1
Irregular	1	1

Steady state........... found without full convergence

Log-Likelihood is 1186.86 (-2 LogL = -2373.72).

Prediction error variance/correlation matrix is

	Lsavings_banks	Lcooperative_banks
Lsavings_banks	0.00209	0.74708
Lcooperative_banks	0.00049	0.00021

Summary statistics

	Lsavings_banks	Lcooperative_banks
T	161.00	161.00
p	3.0000	3.0000
std.error	0.045675	0.014348
Normality	4778.5	81.194
H(52)	0.016387	0.18855
DW	2.0266	2.0663
r(1)	-0.014442	-0.038978
q	14.000	14.000
r(q)	0.015772	0.079430
Q(q,q-p)	1.1983	8.9971
Rs^2	0.21485	0.64384

Variances of disturbances in Eq Lsavings_banks

	Value	(q-ratio)
Level	0.00201183	(1.000)
Slope	2.18385e-005	(0.01086)
Seasonal	8.81664e-007	(0.0004382)
Irregular	0.000000	(0.0000)

Variances of disturbances in Eq Lcooperative_banks

	Value	(q-ratio)
Level	4.89808e-005	(1.000)
Slope	0.000000	(0.0000)
Seasonal	0.000000	(0.0000)

Irregular 0.000000 (0.0000)

Level disturbance variance/correlation matrix

	Lsavings_banks	Lcooperative_banks
Lsavings_banks	0.002012	0.7842
Lcooperative_banks	0.0003967	0.0001272

Slope disturbance variance/correlation matrix

	Lsavings_banks	Lcooperative_banks
Lsavings_banks	2.184e-005	1.000
Lcooperative_banks	1.923e-005	1.693e-005

Seasonal disturbance variance/correlation matrix

	Lsavings_banks	Lcooperative_banks
Lsavings_banks	8.817e-007	1.000
Lcooperative_banks	5.939e-007	4.001e-007

Irregular disturbance variance/correlation matrix

	Lsavings_banks	Lcooperative_banks
Lsavings_banks	0.0000	0.0000
Lcooperative_banks	0.0000	0.0000

State vector analysis at period 2008(4)

Equation Lsavings_banks

	Value	Prob
Level	5.11906	[0.00000]
Slope	0.00981	[0.25252]
Seasonal chi2 test	0.51383	[0.91584]

Seasonal effects

Period	Value	Prob
1	-0.00137	[0.82561]
2	0.00371	[0.54180]
3	0.00077	[0.89680]
4	-0.00311	[0.61109]

Equation Lcooperative_banks

	Value	Prob
Level	4.40898	[0.00000]
Slope	0.01001	[0.14859]
Seasonal chi2 test	1.19361	[0.75454]

Seasonal effects

Period	Value	Prob
1	-0.00086	[0.79912]
2	0.00044	[0.89242]
3	-0.00241	[0.44312]
4	0.00282	[0.39078]

APPENDIX B

UC(2) Estimation done by Maximum Likelihood (exact score)

The selection sample is: 1968(4) - 2009(3) (T = 164, N = 2)

The dependent vector Y contains variables:

Lsavings_banksLcooperative_banks

The model is: Y = Trend + Seasonal + Irregular + Explanatory vars

Component selection: 0=out, 1=in, 2=dependent, 3=fix

	Lsavings_banks	Lcooperative_banks
Level	1	1
Slope	1	1
Seasonal	1	1
Irregular	1	1

Steady state........... found without full convergence

Log-Likelihood is 1208.05 (-2 LogL = -2416.1).

Prediction error variance/correlation matrix is

	Lsavings_banks	Lcooperative_banks
Lsavings_banks	0.00205	0.74469
Lcooperative_banks	0.00048	0.00020

Summary statistics

	Lsavings_banks	Lcooperative_banks
T	164.00	164.00
p	3.0000	3.0000
std.error	0.045259	0.014240
Normality	4904.8	83.032
H(53)	0.014825	0.17681
DW	2.0242	2.0691
r(1)	-0.013516	-0.041223
q	14.000	14.000
r(q)	0.014841	0.076449
Q(q,q-p)	1.2411	8.6095
Rs^2	0.22808	0.64525

Variances of disturbances in Eq Lsavings_banks

	Value	(q-ratio)
Level	0.00198041	(1.000)
Slope	2.09819e-005	(0.01059)
Seasonal	8.68629e-007	(0.0004386)
Irregular	0.000000	(0.0000)

Variances of disturbances in Eq Lcooperative_banks

	Value	(q-ratio)
Level	4.93428e-005	(1.000)
Slope	0.000000	(0.0000)
Seasonal	0.000000	(0.0000)
Irregular	0.000000	(0.0000)

Level disturbance variance/correlation matrix

	Lsavings_banks	Lcooperative_banks
Lsavings_banks	0.001980	0.7802
Lcooperative_banks	0.0003899	0.0001261

Slope disturbance variance/correlation matrix

	Lsavings_banks	Lcooperative_banks
Lsavings_banks	2.098e-005	1.000
Lcooperative_banks	1.855e-005	1.639e-005

Seasonal disturbance variance/correlation matrix

	Lsavings_banks	Lcooperative_banks
Lsavings_banks	8.686e-007	1.000
Lcooperative_banks	5.819e-007	3.898e-007

Irregular disturbance variance/correlation matrix

	Lsavings_banks	Lcooperative_banks
Lsavings_banks	0.0000	0.0000
Lcooperative_banks	0.0000	0.0000

State vector analysis at period 2009(3)

Equation Lsavings_banks

	Value	Prob
Level	5.15440	[0.00000]
Slope	0.00792	[0.35059]
Seasonal chi2 test	0.37763	[0.94482]

Seasonal effects

Period	Value	Prob
1	0.00105	[0.86261]
2	0.00084	[0.88632]
3	0.00173	[0.77608]
4	-0.00361	[0.55999]

Equation Lcooperative_banks

	Value	Prob
Level	4.43261	[0.00000]
Slope	0.00820	[0.23548]
Seasonal chi2 test	0.97444	[0.80744]

Seasonal effects

Period	Value	Prob
1	0.00081	[0.80395]
2	-0.00163	[0.60008]
3	-0.00181	[0.57993]
4	0.00263	[0.43920]

Equation Lsavings_banks: regression effects in final state at time 2009(3)

	Coefficient	RMSE	t-value	Prob
dumm2009	-0.07298	0.03052	-2.39114	[0.01797]

APPENDIX C

Equation Lsavings_banks: forecasts with 68% confidence interval from period 2009(3) forwards

	Forecast	stand.err	leftbound	rightbound
1	5.08573	0.04651	5.03923	5.13224
2	5.09831	0.06639	5.03192	5.16470
3	5.10602	0.08266	5.02336	5.18869
4	5.11483	0.09679	5.01804	5.21161
5	5.11741	0.11180	5.00561	5.22921
6	5.12999	0.12582	5.00417	5.25581

Equation Lsavings_banks: forecast accuracy measures from period 2009(3) forwards

	Error	RMSE	RMSPE	MAE	MAPE
1	0.00006	0.00006	0.00011	0.00006	0.00110
2	0.00732	0.00518	0.01017	0.00369	0.07248
3	0.00549	0.00529	0.01037	0.00429	0.08421
4	0.00691	0.00573	0.01125	0.00495	0.09697
5	-0.00398	0.00543	0.01064	0.00475	0.09311
6	0.00459	0.00530	0.01038	0.00473	0.09253

Equation Lcooperative_banks: forecasts with 68% confidence interval from period 2009(3) forwards

	Forecast	stand.err	leftbound	rightbound

1	4.44344	0.01453	4.42892	4.45797
2	4.44983	0.02256	4.42727	4.47240
3	4.45559	0.03076	4.42483	4.48635
4	4.46362	0.03868	4.42494	4.50230
5	4.47626	0.04882	4.42743	4.52508
6	4.48265	0.05886	4.42379	4.54151

Equation Lcooperative_banks: forecast accuracy measures from period 2009(3) forwards

	Error	RMSE	RMSPE	MAE	MAPE
1	-0.00070	0.00070	0.00158	0.00070	0.01580
2	-0.00040	0.00057	0.00129	0.00055	0.01239
3	-0.00873	0.00506	0.01134	0.00328	0.07344
4	-0.00995	0.00663	0.01483	0.00494	0.11068
5	-0.01478	0.00888	0.01982	0.00691	0.15437
6	-0.01706	0.01069	0.02381	0.00860	0.19183

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