SPES-Project

The Sociopolitical Decision and Indicator System for the Federal Republic of Germany

- An Overview by Ralph Brennecke -

I. Introduction

The label SPES is an acronym based on the German title of the project. Within the SPES-Project economic and statistical scientists as well as sociologists are working on a foundation of social politics. We understand social politics as an active part of public policy in a broader sense. Our researches however are concentrated on special parts of public political aspects in the Federal Republic of Germany.

(1) Within the decision system effects, side-effects and interdependencies of specific public political measures are examined. The main point consists of the development of a simulation system which is representative for the Federal Republic of Germany. The system is divided into the modules population, education and mobility, labour force participation, income, income maintenance and transfers, uses of income, health, housing and modes of traffic. The decision system connects these modules with each other and with macro-economical systems.

(2) Within the indicator system the goals of political activities and their success are examined. The goal variables of the decision system are part of the more complex goal catalogue of the indicator system.

II. Example of the indicator system

The SPES-indicator system has recently been published in a comprehensive book with the translated title: Conditions of Life in the Federal Republic of Germany. This book is the result of our specific scientific work regarding social report with respect to (I) population, (II) social status and mobility, (III) labour force and conditions of employment, (IV) income

and income distribution, (V) uses of income and maintenance, (VI) traffic, (VII) housing, (VIII) health, (IX) education and (X) participation.

Table 1 explains for example the goal dimensions and social indicators of part V, uses of income and maintenance. The indicator system is divided into three parts, firstly a system of goal dimensions of each of the subject scopes. Secondly each goal dimension is measured by specific social indicators and thirdly the indicator system contains the time series of all indicators, most of them from 1950 to 1975.

III. The data-base

The major part of the indicators has to be calculated within the decision system. In order to do this as well as for the microsimulation a data base is necessary, which contains the essential characteristics or attributes of individuals and households.

Various possibilities exist to build up such a data base, for example by establishing a continuous representative cross-section sample of the population. The SPES-Project has turned to a different direction. As original data-base the income and consumption cross-section samples of 1962 and 1969 are used, which are issued by the Federal Statistical Office. The sample of 1969 contains individual and household information for approximately 48.000 households, altogether per household 750 variables. Unfortunately the data-base was not representative in respect to German population and high income. Our group of scientists therefore has constructed an Integrated-Microdata-File (IMDAF) for 1962 and 1969 by using additional statistics like microcensus etc.

Compared with smaller population selection the benefit of this data-base with a total of 68.000 households is, that small groups like poor people, old people in one-person households can also be analysed with sufficient information. This data-base is called startfile in the following.

IV. The decision system

The structure of the decision and indicator system is reflected in table 2. The basic idea of development was to analyse the present status of the Federal Republik of Germany and also to analyse the consequences of the political activities. By following the scheme of economic policy of Fox and Tinbergen we have symbolised policy decisions and instruments by boxes.

The system itself is composed of two connected parts: the microanalytical and macroeconomical simulation system. The technical part of the macroeconomical system has been developed by our scientific group and allows the simulation and linking of various econometric models in an efficient manner. However we didn't develop macroeconomic models of our own. We use those models of well known german scientists, namely Krelle, Lüdeke, Hansen and Westphal etc. I do not intent to go into details regarding this part of the system.

The economic and social processes of the microanalytical simulator can also be seen in table 2. The simulation starts by using the IMDAF, called startfile. The characteristics of one household are read into the transformation circuit, beginning with the population module and the cross-reference procedure and continuing with education etc.

V. Population simulation with respect to the other modules

As an example I would like to describe in more detail the population module and the cross-reference procedure. Table 3 symbolises the basic structure of this module. After having read the characteristics of one household, the ages of all persons are modified. Secondly the probabilities of death, devorces, household independency of adult children and marriages are determined.

The technical reorganisation of the characteristics with respect to the results follows. After that a separate computation for characteristics of marriageable men and women is effected. These attributes are written into the cross-reference-file and the characteristics of the next household are being read.

In the case of non-probability of marriage the probability of births is simulated and in some cases the characteristics of new born (zero years old) children are determined.

Now the additional transformation process follows according to table 2. Here it should be noted that in all transformations the old and new characteristics are available, that means we use a history of one year.

According to the module education the simulation of school and university processes is effected. For persons in work, a possible change of employment is generated. Having determined this, various persons of the household receive factor income dependent on their age, their profession and the macroeconomic development.

The module income maintenance and transfers has several functions. Transfer payments e.g. pensions are calculated, but also unemployment relief, additional social payments etc. The total income sum is subject to the valid tax system. The payments for health-, old age- and unemployment-insurance are likewise computed by this module.

The net income of the household now established can be used for simulating the distribution and uses of income. We are working on a solution for calculating the expenditures together with other modules for durable commidities e.g. cars and refrigerators. For the time being the personal requirements for foods, clothing and other expenditures are determined.

The remaining modules deal with specific questions, especially with regard to the development of values of the social indicators within the years. The use of medical facilities are simulated in the health module, the housing module places criteria of the population maintenance with living space of different levels at our disposal. Purchases and expenditures of cars are simulated in the traffic module.

Upon transformation of the characteristics of the household the result is stored into the resultfile. After this it is determined - as illustrated in table 3 - whether new households

are founded by grown-up children. In this case the attributes of the new household are calculated according to the results of homogeneous equal groups. These characteristic combinations are also transmitted through the transformation cicuit.

After all processes have been concluded resulting from the characteristics of the read household including the storage into the resultfile, the attributes of a new household are read.

This sequence continues until all attributes of all households of the startfile have finished the transformation process. Now a complete cross-reference-file is available which can be used for the constructing of new households by marriages. As stated above, for each new household the probability of births and the transformation of all other variables are simulated too (compare table 2, right circuit). Here the possibility should be checked if the newly weds remain with their parents or if they found a new household. Therefore, the characteristics of two or three households have to pass the transformation circuit.

Upon finalisation of the cross-reference process, the result-file contains a new fictive random sample of the year t+1, which can be used for evaluation and as a new startfile. As an example for an evaluation table 4 illustrates the aggregated simulation results of the population module for the living births and the deaths up to the year 2000.

VI. Technical remarks

We have divided the decision system technically into three parts. The microanalytical simulation is developed as a separate system. The macroeconomic simulator represents a second part of the system, whereby the connections with the microsimulator and vice versa is effected automatically. Finaly a separate evaluation system is used for analysing the resultfile.

The separation of the microanalytical evaluation from the simulation has two reasons. Firstly a flexible adaption of the evaluation to specific questions and examination goals is possible. Secondly the direct evaluation within a simulation run would consume a lot of time and core storage and thus the instability of the simulation by external effects would be

too extensive.

VII. Further developments

We hope that the system in its essential parts will be finished by the end of 1978. Later on the following work has to be done: the integration of a new data-base (the IMDAF of 1973), the further development of those modules which up to now could only be constructed incompletely and the continuous application of the system. Moreover we have planned to investigate whether subjective social indicators for instance satisfaction measurements can be integrated into the simulation process. These problems however include a research perspective of approximately 10 years.

Table 1: Summary of Part V of the SPES-Indicator System 1976

Uses of Income and Maintenance

Source: W. Zapf: Angewandte Sozialberichterstattung: Das SPES-Indikatorensystem, SPES-Working paper No. 70, 1977, p. 9

goal dimension	No.	SPES-Indicator 1976	Measure	Values 1955	1960	1965	1970	1975
1. Level and growth of maintenance	95	private consumption per capita	DM	2507	3304	4042	4921	5582
	96	growth rate of private consumption per capita	%	9,2	6,9	5,4	7,3	2,6
	97	tax burden quota of the private consumption	%				(9)	
	98	private energy consumption per capita	Tsd,kWh			12,2	16,5	18,5
	99	protein consumption per day and per capita	g	79	80	80	81	83
	100	daily time for housework per household	h	10,5		10,1	8,8	
	101	average daily space-time	h	2,7	2,9	3,2	3,5	
	102	portion of vacationess	%		26,4	33,9	37,5	
	103	households with telephone	%			8,3	19,9	46,8
	104	households with freezer	%			2,0	18,5	52,2
	105	households with dish-washer	%			1,1	2,1	9,5
2. Steadiness and security of maintenance	106	average assets	a)	3,2	7,3	7,7	10,3	
	107	charges of the maintenance security	%				35,3	40,1
3. Liberty in the usage of income	108	non-comitted income portion	%	33,9	38,8	43,3	47,6	54,7
	109	consumption-relevant income portion	%		88,9	88,4	85,6	85,2
	110	free disposable income portion	%		30,0	31,7	33,2	39,9
	111	savings quota of private households	%	13,4	15,0	15,9	16,6	14,6
4. Dissimilarity in the maintenance	112	concentrationrate of basic requirements	a)				0,278	
	113	lower group portion of private consumption	a)%				8,2	
	114	upper group portion of private consumption	a)%				12,3	
5. Poverty in the maintenance	115	poverty quota of basic requirements	a)%				23,4	
	116	poverty quota of available income	a)%				5,3	

The names of the SPES-Indicators come to a compromise between an abbreviation and a definition. The definition of the indicators which are labeled with a) is very complex

Table 2: SOCIOPOLITICAL DECISION AND INDICATOR SYSTEM FOR THE FEDERAL REPUBLIC OF GERMANY

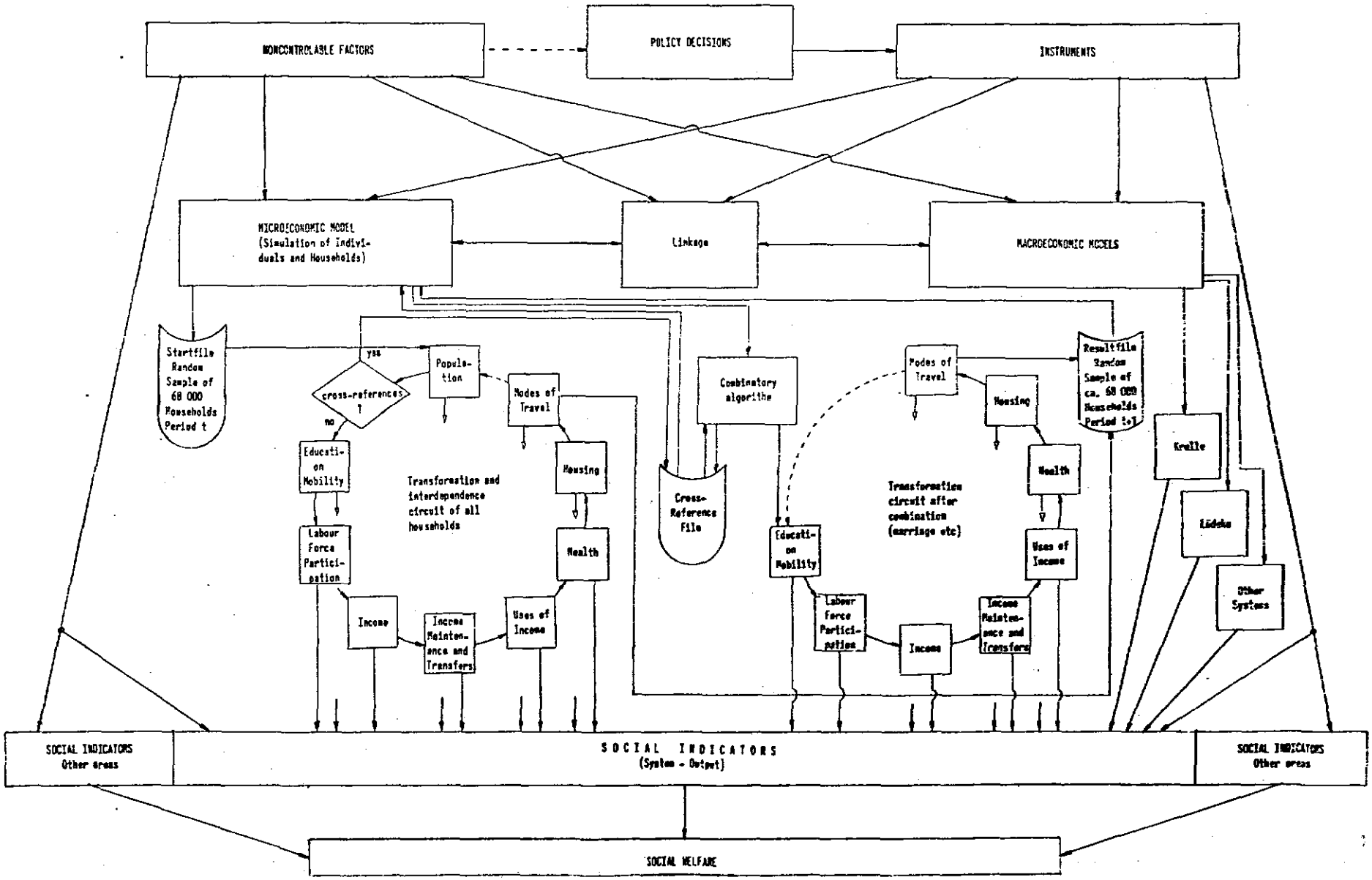


Table 3: Basic structure of the population module

Drawing according to: H.P. Galler, A. Steger: Mikroanalytische Bevölkerungssimulation als Grundlage sozialpolitischer Entscheidungen - Erste Ergebnisse, in: H.J. Krupp, W. Glatzer (ed.), Umverteilung im Sozialstaat, Campus, will be published Feb. 1978

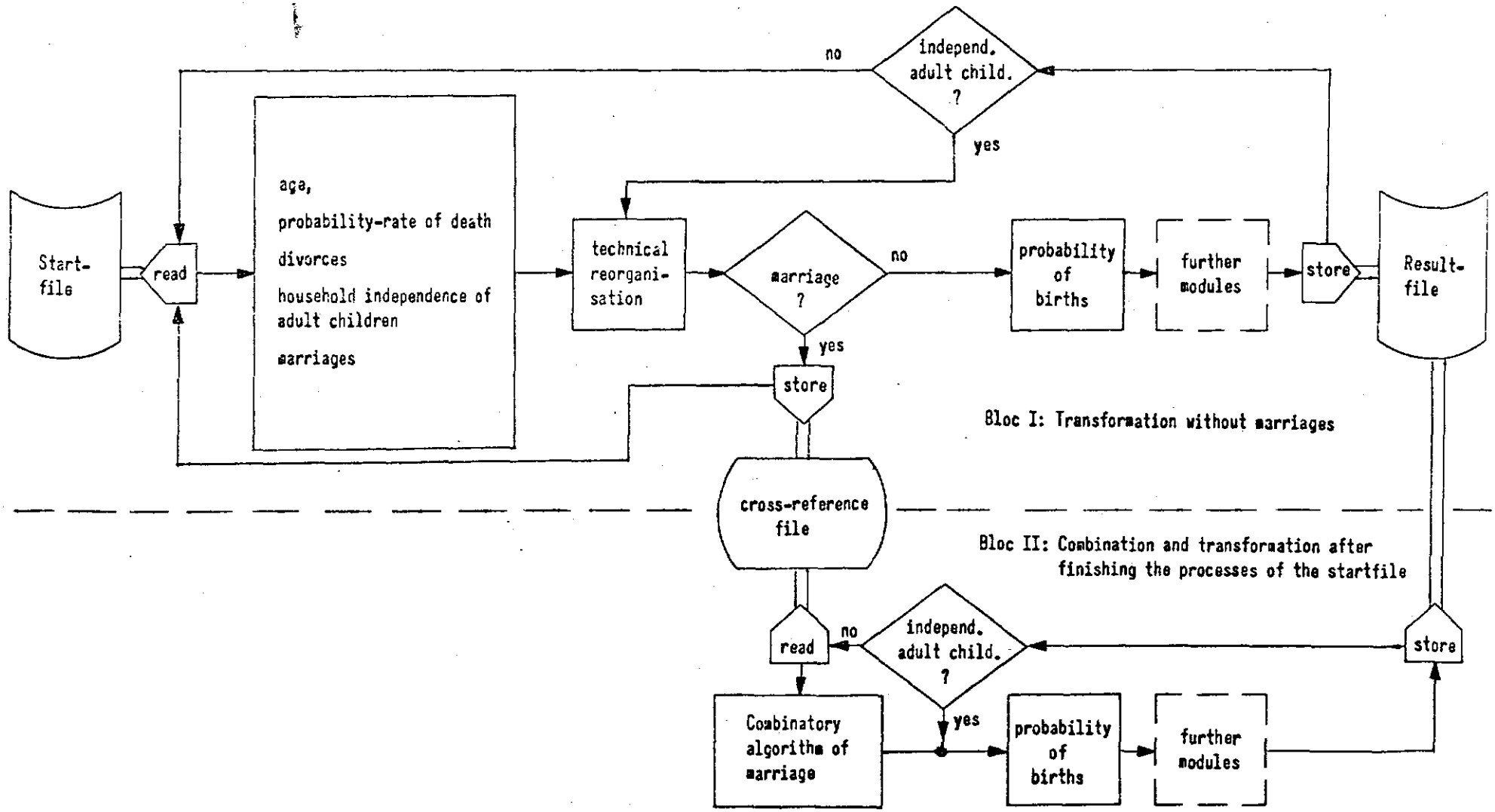
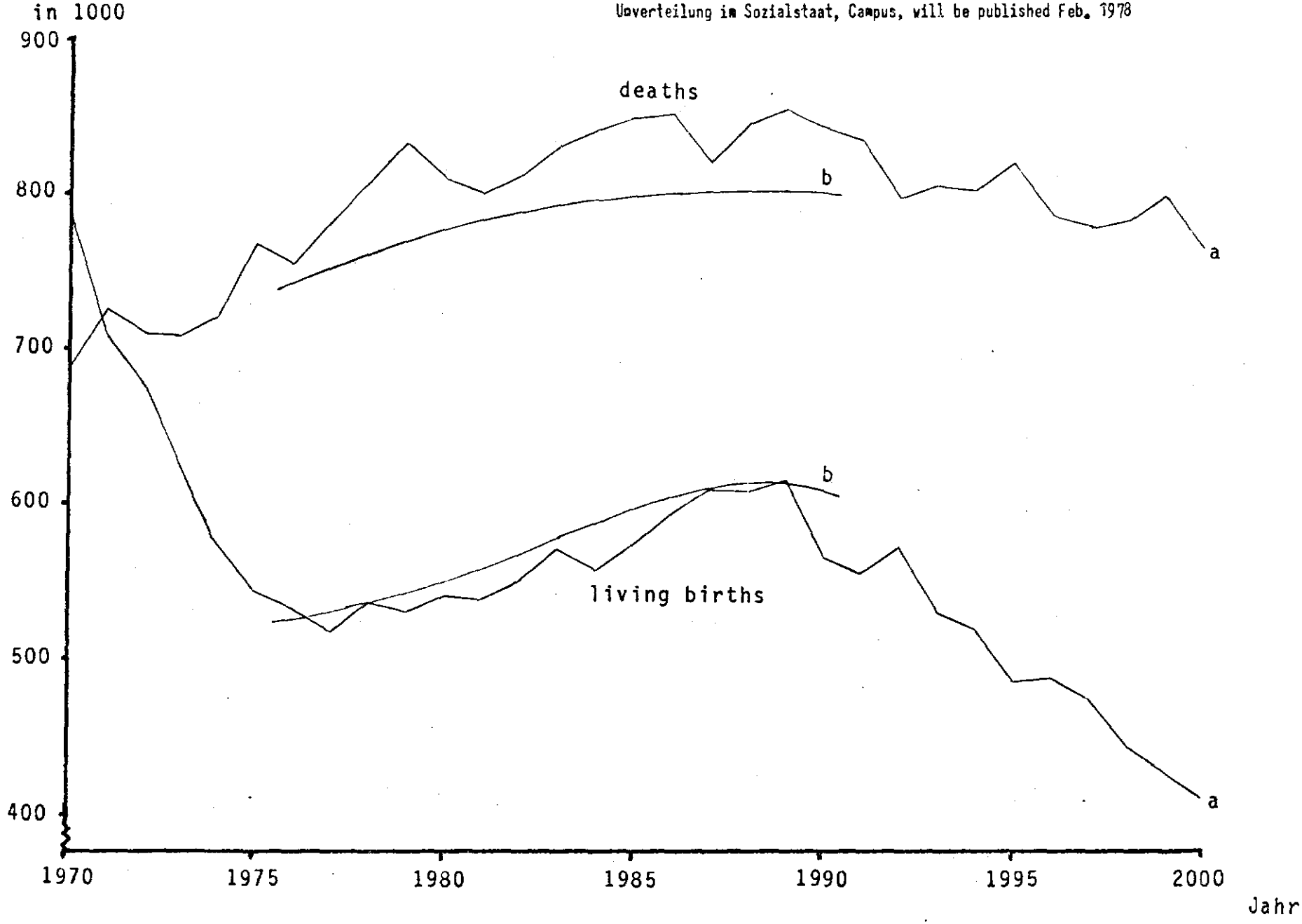


Table 4: Development of living births and deaths from 1970 to 2000

Source: H.P. Galler, A. Steger: Mikroanalytische Bevölkerungssimulation als Grundlage sozialpolitischer Entscheidungen - Erste Ergebnisse, in: H.J. Krupp, W. Glatzer (ed.), Umverteilung im Sozialstaat, Campus, will be published Feb. 1978



a - simulation b - 5. co-ordinated projection