Fiscal Equalization in Switzerland: an Estimation, 1970

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A considerable amount of discussion has taken place in recent years on the principles that underlie equalization policy in Switzerland, but very little empirical work has been done on the effect of applying these principles [1]. The object of this paper is to propose an estimation of the equalization effects of the grant system and revenue sharing programmes in this country. There are three sections. In the first one, we review briefly the grant system and the revenue sharing programmes on which this study is based. Section two deals with the equalization effects of grants-in-aid; section three with those of revenue sharing programmes.

I. The System

The structure of the grant system in Switzerland has two components, with the result that the policy of interstate equalization depends on the characteristics of each law that includes financial aid to the cantons in a specific form. Interstate equalization is not a federal policy that is implemented separately from minimum standard expenditure programmes. The statutory rates of grant for most aided functions are divided into two components: a *basic rate*, which may be said to represent the interest of the federal government in minimum standards requirements for local public services and which varies (e.g.) according to the degree of spillover of the aided function or some other technical criteria (economies of scale); and an *equalization supplement*. This second component is generally inversely related to computed indices of financial capacity of the cantons.

In 1970 [2], computed indices of financial capacity served to rank the cantons in three groups in order to determine the respective rates of grant for each aided function. For indices $E_b \geqq 100$ ($b = 1 \ldots 25$), the rates of grant were the minimum

[1] Two empirical contributions are those of *R. Rohr* and *W. Gut*, "Bundesstaatlicher Finanzausgleich in der Schweiz: eine Bestandesaufnahme", herausgegeben vom *Redressement National*, Zürich, September 1970; and *W. Wittmann*, "Bundesstaatlicher Finanzausgleich: eine Globalbilanz", *Zeitfragen der schweizerischen Wirtschaft und Politik*, No. 101, April 1971.

For a survey of the theoretical discussion in the context of Switzerland, see my paper "Pour une définition de la capacité financière des cantons en matière de subventionnement: synthèse et propositions" (For a definition of financial capacity of the cantons in grant policy: a survey and a proposal), *Finanz- und Steuerpolitische Mitteilungen*, Finanzdirektion des Kantons Zug, No. 24, 1974.

[2] Fiscal year 1970 has been selected because it is the latest year for which all needed statistical data were available.

statutory rates of the relevant aided functions (basic rates; but they could still vary for reasons other than financial capacity); for $E_b \leq 66\frac{2}{3}$ the cantons received the larger equalization supplement; and for $66\frac{2}{3} < E_b < 100$, the canton received the smaller equalization supplement[3]. Federal grants are matching grants[4], i.e. they are alloted to a canton only to the extent that this canton can finance the balance for the aided function.

The indices of financial capacity of the cantons were computed as follows:

$$E_b^{\text{plain}} = 0.181\,(A+B+C+D+\tfrac{1}{2}+F),$$

$$E_b^{\text{mountain}} = 0.154\,(A+B+C+D+\tfrac{1}{2}E+F+G),$$

where

- A per capita yield of federal direct tax (FDT) on personal income and corporate profit,
- B per capita yield of FDT on personal income only,
- C per capita tax base for FDT (personal income and corporate profit),
- D inverse of an index of fiscal burden, as a measure of cantonal + municipal own tax effort (based on a comparison between the cantonal tax pressure and the national average tax pressure for taxation on personal income, corporate profit, capital gains, inheritance and gifts, real property and motorcars),
- E density of population,
- F cantonal + municipal own fiscal revenues, weighted by the cantonal index of fiscal burden, together with other nonfiscal own revenues of the canton and its municipalities, per capita,
- G component for the cantons with an important mountainous region: the inverse of the ratio of agricultural land in mountainous zone to total agricultural land in the canton, as long as this cantonal ratio is larger than the average national ratio (according to the cadastral register of agricultural land).

For any component, the series of the 25 cantonal values is first established, together with the national average. The average of each series is given the index value of 100, the cantonal values in the relevant series being accordingly trans-

[3] If the basic rate of grant for a particular subsidized local service varies between 20 and 30% of local expenditures according (e.g.) to the degree of spillover, and the equalization supplements are 10 and 20% for "medium" and "poor" cantons respectively, a "rich" canton could obtain between 20 and 30% of its total outlay for the aided function according to the characteristics of the service provided, a "poor" canton could receive between 40 and 50%.

[4] Except the grant for primary school expenditures, which is a block grant based on the number of children aged 7 to 15.

formed into indices. Any cantonal index lower than 33⅓ is automatically given that value. The value of the indices thus obtained are represented by the symbols A, B, ... G, for the relevant canton [5].

The cantonal indices of financial capacity are given in table 1, column 3, for 1970. It may be seen that there were 6 cantons in the group of "rich" cantons ($E_b \geq 100$), 11 cantons in the "intermediate" group and 8 cantons that were deemed to be "financially weak" ($E_b \leq 66\frac{2}{3}$).

Revenue sharing programmes in Switzerland are an additional feature of equalization policy. In 1970, there were five main revenue sharing programmes which accounted for 99% of the funds available for this purpose. These funds consisted of:

30% of the FDT on personal income and corporate profit,

6% of the withholding tax (WT) (tax at source on the earnings from personal capital assets),

20% of the federal stamp duty (FSD) (on the issuance of shares and bonds, and on the transfer of securities, bills of exchange and other commercial documents),

50% of net revenue from alcohol monopoly (AM),

20% of the military tax (MT) (payment in lieu of compulsory military service not performed or only partly performed).

At the time of introduction of these revenue sharing programmes, the canton-by-canton distribution for each of them was arranged according to the method of tax collection and, basically, it has remained so. When the tax collection is not administred by the cantons, but directly by the central administration (WT, FSD, AM), there are normally no statistical data of tax yields on a cantonal basis. The distribution formulas, therefore, are based on population: each canton receives an *equal amount per resident*. The appropriation of funds is always given as a percentage of *net* revenues, i.e. total tax revenue minus administration costs. When statistical data of the cantonal yields exist, because a particular federal tax is collected by the cantons (FDT, MT), then the available funds, given as a percentage of *gross yield* of the tax, are distributed on the basis of *return-to-origin*, i.e. each canton receives the same percentage of the gross cantonal yield of the tax.

Consideration of the cantons' revenue raising capacities for the apportionment of shares was first introduced in the Equalization Law of 1959, as a component of the distribution formula of the FDT sharing. These funds were alloted to the cantons inversely to a measure of *tax capacity* (i.e. to the cantons whose per capita average yield from FDT was below average; as distinct from the indices of financial capacity, tax capacity is a measure based on FDT yields only). Despite this belated recognition of the need for purpose of equalization policy to allote

[5] For a critical discussion of the concept of financial capacity used in the Swiss context and the problems raised by its implementation, see *B. Dafflon, op.cit.*, 1974.

revenue sharing funds inversely to capacity, a certain amount of interstate equalization existed prior to 1959 for those programmes where redistribution was on the basis of resident population, because the per capita cantonal contribution to these funds (WT, FSD, AM) was higher in richer cantons whereas each canton received an equal amount per resident.

In fiscal 1970, federal funds appropriated for revenue sharing were thus distributed:

1. return-to-origin	25% FDT, 20% MT;
2. resident population	$1\frac{1}{4}$% FDT, 6% WT, 50% AM;
3. tax capacity	$3\frac{3}{4}$% FDT.

The amount of revenue sharing in the three categories mentioned above corresponded to respectively 54%, 38% and 8% of aggregate funds available for revenue sharing [6].

II. Equalizing Effects of Federal Grants-in-Aid

Through the use of grants, the federal government has sought to enable all cantons to establish certain types of expenditure programmes. It has therefore provided funds so that at least minimum programmes are feasible even for "poor" cantons. In addition, explicit recognition is also given to differences in the financial capacity of the cantons in determining the apportionment of federal aid to subcentral governments and the matching requirements, if any. The interstate redistribution thus produced may be called "*formula equalization*" and it is of primary importance in the discussion of interstate equity to attempt to evaluate the equalizing incidence of the conditional grant system [7].

For equalization to have occured, we should expect a statistically significant α_1 in equation $X_b = \alpha_0 + \alpha_1 (E_b)$, where X is the grant per capita (table 1, column 5) and E the index of financial capacity (table 1, column 3) by canton ($b = 1, \ldots 25$). The results are given in table 2 below. For fiscal 1970, α_1 for total grant differed significantly from zero at a 85% level of confidence only. While an inverse relationship existed between grants per capita and financial capacity, the low R^2 value (0.09) implies that the amount of variance explained by financial capacity was

[6] The amount of revenue sharing from the withholding tax (WT) has been modified as from 1976. It will correspond to 12% of net yield when the rate of tax is 30%, and to 10% when the rate is 35% (1976–1979). Apportionment will be made half on the basis of resident population and half inversely to financial capacity.

[7] The method used here has been developed by *J. A. Maxwell, Financing State and Local Government*, The Brookings Institution, Washington, 1965, pp. 61–66 (with reference to the United States), and later by *G. E. Carter, Conditional Grants since World War II*, the Canadian Tax Foundation, Toronto, 1971, pp. 50–55 (with reference to Canada).

statistically small. Factors other than financial capacity influenced the distribution of grants. Indeed, a taxonomy of grants-in-aid would show that specific regulations allow payment of special supplements in relation to particularly difficult situations, most of which are geographically centred in cantons with low per capita income (most are mountainous cantons) [8].

To test the value of such measures, taken in addition to consideration of financial capacity, it is necessary to regress grants per capita on national per capita income by canton (table 1, column 2). The results are given for $X_b = \alpha_0 + \alpha_1(Y_b^p)$ in the second line of table 2. The values obtained are comparatively better than those of the previous regression: the amount of variance explained by income remains statistically small, yet it represents more than twice the value of R^2 in the first line. On the whole, equation II confirms the results previously obtained with equation I, but higher values in the former reveal that specific rules of grant contributed to equalization as much as the use of capacity-related grant formulas.

The foregoing analysis is limited to equalizing effects that are produced by allocation of the grants, but no explicit account is taken of the federal tax system. Yet, redistribution is produced also by the process of collecting through the federal tax system the money which is spent in grants. This may be called *tax equalization.* The combined result constitutes an approximate measure of total redistribution.

Measurement of tax equalization requires the use of estimates of canton-by-canton federal tax incidence. Unfortunately, calculation of incidence requires assumptions which are disputable and, accordingly, the results are approximations dependent on these assumptions [9]. The object of this estimation is to establish the per capita total federal tax by canton; with these figures, we may compute the ratios of per capita tax incidence by canton to the average national tax incidence. These ratios are given in table 1, column 4, and indicate how much the federal government collected in taxes from the average resident of each canton when the

[8] A taxonomy is given in *B. Dafflon, "Federal Finance in Theory and Practice, with special reference to Switzerland"*, Ph. D. Thesis, York University, 1975, pp. 127–183.

[9] These assumptions were first discussed by *W. Wittmann, op. cit.*, 1971. They are the following. FDT and MT: proportional to cantonal yield. WT: proportional to its reimbursement to the cantons (the federal WT is reimbursed to the cantons when cantonal residents declare the tax base for cantonal taxation). FSD: proportional to cantonal yield of FDT on corporations and legal entities. Taxes on tobacco and alcohol: proportional to resident population aged 20 to 65. Other taxes and customs duties on food: proportional to cantonal population. Turnover Tax: 2/5 on the basis of building activity in the cantons and 3/5 on the basis of national income of the cantons (apportionment chosen because of the technical nature of the receipts from this tax). Customs duties on motor fuel: proportional to the number of motor vehicles registred by canton. Customs duties on motor-cars: proportional to the increase in the number of registred motor-cars. Other customs duties: proportional to the national income of the cantons. Sources: *FDT, statistique de la 15e période*, Berne, Book 492, p. 12; *Finances et impôts 1970*, Berne, Book 482, pp. 32 and 73; *Subventions fédérales* 1970, Berne, 1971, p. 90; *Annuaire statistique de la Suisse*, 1972, pp. 13, 35, 167, 219, 422, 423; *La Suisse en chiffres*, Union Bank of Switzerland, 1971.

average resident of the nation paid 1.00 SFr. With the aid of this information, we may now compute the overall equalizing effect of federal grant-in-aid programmes.

Estimating the overall redistribution brought about by the allocation of the grants plus the federal taxes required to finance these grants involves three steps: (1) computing the total redistribution accomplished in fiscal 1970 by tax collection plus grant formulas; (2) estimating what part of the total interstate redistribution is affected by the grant system itself; (3) substracting (2) from (1) to determine the redistribution attributable to federal taxes alone.

(1) Since the federal government paid out an average 169.38 SFr. in grants per capita to the cantons in 1970 (table 1, column 5), it must have collected this amount from the average national resident. The assumption is made here that taxes collected in 1970 provided the funds for grants distributed in the same year. Residents in Bâle-Ville paid $1.45 \times 169.38 = 245.60$ SFr. per resident (tax ratio, table 1, column 4, $\times$ average grant per capita, column 5). Bâle-Ville actually received only 108.07 SFr. per resident in the same year (column 5), hence the difference between the two sums was a negative 137.53 SFr. per capita (column 8). Figures for the other cantons are obtained in the same way and given in table 1, column 8.

(2) In order to estimate in these figures the amount of redistribution attributable to the formulas used in the grant programs, we assume that an acceptable scheme would consist of uniform grants per resident for all cantons. Under this scheme, the difference between the grant per capita of a canton and the national average shows how much the allocation process favoured a canton (for a positive differential) or inversely (column 6).

(3) The differential in grant allocation (2) is then substracted from the total redistribution accomplished in fiscal 1970 (1) to find what portion to attribute to federal taxes alone (column 8 minus column 6; results by canton are given in column 7).

As table 1 shows, the relative distribution accomplished by grant programmes was considerably larger than that accomplished by federal taxes in 18 cantons. In addition, in 5 cantons (Argovie, Schaffhouse, Neuchâtel, Soleure and Thurgovie), the equalizing effect of grant allocation was even strong enough to reverse an otherwise favourable tax incidence. There are, however, a few exceptions: in three cantons (Bâle-Ville, Zoug and Berne) the distributional effect of federal taxes was more important than that of grant allocation. In St-Gall, Appenzell Rhodes-Extérieures and Lucerne, three cantons with lower per capita national income than average, benefit from a favourable incidence of federal taxes outweighted the negative redistribution accomplished by federal grant programmes. Inversely, Geneva, a state with high per capita national income, received above-average grants per capita and this reduced slightly the negative tax premium.

Except for these few cases, the general pattern is that both the "formula equalization" and the "tax equalization" contributed to the total redistribution of public revenue among the cantons in the same direction, whether negative or positive. The equalizing effects that are produced by allocation of the grants, however, are more important than the effects of taxation. This might have been expected since the portion of interstate redistribution which is achieved through taxation is wholly an accidental by-product. The Legislature shapes the tax system without considering the redistributive incidence of the grant programmes that taxation in general has to finance, whereas grant programmes specifically contain equalizing formulas.

III. Equalizing Effects of Revenue Sharing

Estimating the overall redistribution produced by revenue sharing programmes implies a different method, shorter than the one used above for grants. In the first place, per capita federal tax by canton, previously used to compute the tax ratios, cannot serve directly because revenue sharing programmes are not paid out of general revenue, but out of specific federal sources and according to specific formulas. Thus, to calculate the revenue sharing tax ratios, we have not used all federal fiscal revenues, but only those specific revenues for which there is a revenue sharing programme. In addition, each of them is weighted according to the proportion of federal fund available for revenue sharing, so that the weighted per capita federal tax by canton equals $(0.3\ \mathrm{FDT} + 0.06\ \mathrm{WT} + 0.2\ \mathrm{MT} + 0.2\ \mathrm{FSD} + 0.5\ \mathrm{AM})_b \cdot \frac{1}{H_b}$, $(b = 1, \ldots 25)$ and H_b is the number of residents in canton "b".

The figures of weighted per capita federal tax by canton, transformed into ratios to national average are given in table 1, column 10. For 1.00 SFr. paid by the average national resident to finance revenue sharing, the average resident in Bâle-Ville paid a contribution of 2.04 SFr., whereas residents in Obwald paid the smallest contribution (0.50 SFr.). By comparison to the tax ratios computed for financing federal grants, it appears that the contributions of the average resident of "richer" cantons were much higher for revenue sharing than for grant programmes; inversely, the average resident of "poorer" cantons contributed less to revenue sharing than to grant programmes.

This may be explained by the prominence of the FDT financing revenue sharing, where only five sorts of fiscal sources are considered, as compared with the financing of subventions, for which all federal revenue sources are considered. In 1970, the FDT represented 67% of the aggregate revenue sharing funds, but only 15% of the total financial resources that served to pay federal grants-in-aid [10].

[10] Since the federal direct tax is levied in competition with the cantons' direct tax on personnel income and corporate profit, and to reduce the effect of this competition, minimum taxable income is much higher for the FDT (in effect, it is a direct tax on higher incomes).

In fiscal 1970, the federal government distributed to the cantons 90.11 SFr. per resident. In order to finance the programme costs, it collected this amount from the average resident. Thus, it is estimated that individuals in Bâle-Ville paid 183.82 SFr. (i.e. 2.04 × 90.11 SFr.), while in the same year the canton received 156.82 SFr. per resident in revenue sharing. The negative differential between the two amounts (−27.00) represents the total redistribution incidence; it is entirely due to the allotment formulas if it is assumed that a neutral formula would allocate the funds according to origin. This assumption seems reasonable enough here. Under the return-to-origin plan, there is no net impact from the shared tax, no geographical redistribution of public revenues. The amount provided to each canton corresponds to what it would have been able to derive within its own jurisdiction.

The results obtained canton by canton are consistent with what might have been expected in the study of the allotment formulas of revenue sharing since, in fiscal 1970, 8% of the total available funds were distributed inversely to capacity and 34% in equal per capita payment by canton. The principle of equal per capita payment itself results in a significant redistribution of revenue among the cantons, favouring the "poorer" states relative to the "richer" ones. The main reason for this is that "rich" cantons contribute a larger per capita amount to federal income taxes than "poor" cantons; hence they contribute indirectly a larger-than-average per capita share to the funds available for revenue sharing.

Table 1, column 12, indicates clearly that, in fiscal 1970, the "rich" cantons contributed to equalization in the sense that per capita payments from revenue sharing were smaller than what could have been expected if the allotment formulas had been arranged according to the "return-to-origin" principle only. The diminution ranged from 10.53 SFr. in Bâle-Campagne to 113.48 SFr. in Zoug. On the other hand, all the cantons but Vaud, Glaris and Nidwald, in the intermediate group and the group of "poor" cantons, received net equalizing transfers varying between 0.82 SFr. in Grisons and 47.28 SFr. in Obwald.

Conclusions

In conclusion, we may consider the added equalizing effects of grant and revenue sharing programmes. The figures of aggregate interstate redistribution, per capita, are given in table 1, column 13. It appears that 11 out of the 12 cantons with higher indices of financial capacity (Vaud is the exception) contributed to equalization for amounts varying between 13.49 SFr. in Neuchâtel and 279.53 SFr. in Zoug, per resident, so that more monies could be paid to the other 14 cantons. Benefits from aggregate redistribution ranged from 5.26 SFr. per resident in Thurgovie to 487.29 SFr. in Grisons.

If we study the relative equalizing effects of subventions and revenue sharing programmes together, the following picture emerges:

Aggregate effect	Dominant redistribution programmes	Cantons: Rich	Cantons: Medium	Cantons: Poor
Negative	Subvention	all	Glaris	–
	Revenue sharing	–	Nidwald	–
	Subvention reversed revenue sharing	–	Neuchâtel, Schaffhouse, Soleure	–
Positive	Subvention	–	Berne, Appenzell Rh.-Ext.	all
	Revenue sharing	–	St-Gall, Tessin	–
	Subvention reversed revenue sharing	–	Vaud	–
	Revenue sharing reversed subvention	–	Thurgovie	–

"Rich" and "poor" cantons (respectively: Bâle-Ville, Genève, Zoug, Zurich, Bâle-Campagne and Argovie for the "rich"; Appenzell Rh.-Inf., Obwald, Valais, Fribourg, Schwyz, Lucerne, Uri and Grisons for the "poor" cantons) form two compact groups with inverse aggregate redistribution effect, but in both cases with grant programmes as the main component of equalization. The cantons in the financially medium group are well divided into the two categories of negative and positive aggregate effect, but there is no clear group pattern of redistribution in which either grant programmes or revenue sharing programmes are decisive in shaping equalization. In Glaris, Berne and Appenzell Rh.-Ext., redistribution effects of grants are larger than those of revenue sharing, and inversely in Nidwald, St-Gall and Tessin. In the five other cantons (Neuchâtel, Schaffhouse, Soleure, Vaud and Thurgovie), the effects of revenue sharing programmes were divergent from those of grant programmes; in Thurgovie, they were even important enough to reverse the effects of grants-in-aid.

On the whole, the conclusion is that interstate equalization in Switzerland needs further improvements rather than fundamental changes. One improvement might well be giving more emphasis to national income by canton and less to the computed indices as measures of the cantons' fiscal capacity. This can be clearly seen in table 1 from the fact that three odd cantons in aggregate redistribution (column 13: Vaud, Nidwald, and Glaris) have computed indices of financial capacity which do not reflect their position in relation to per capita national income of the cantons.

Table 1

Equalizing Effects of Federal Grants-in-Aid and Revenue Sharing Programmes, in 1970, in SFr. [11]

Cantons	Per capita national income of the cantons SFr.	Indices of financial capacity	Grants-in-aid					Revenue sharing				
			Tax ratio	Grants per capita	Grant allocation	Tax premium	Total redistribution	Weighted per capita federal tax	Tax ratio	Revenue sharing per capita	Redistribution	Aggregate redistribution
1	2	3	4	5	6	7	8	9	10	11	12	13
Bâle-Ville	17 410	520	1.45	108.07	– 61.31	–76.22	–137.53	183.82	2.04	156.82	– 27.00	–164.53
Genève	15 170	230	1.38	173.08	3.70	–64.36	– 60.66	153.18	1.70	120.34	– 32.84	– 93.50
Zurich	13 800	152	1.14	97.70	– 71.68	–23.71	– 95.39	119.84	1.33	106.27	– 13.57	–108.96
Zoug	13 380	174	1.53	93.10	– 76.28	–89.77	–166.05	244.20	2.71	130.72	–113.48	–279.53
Bâle-Campagne	12 935	137	1.08	108.95	– 60.43	–13.55	– 73.98	90.11	1.00	79.58	– 10.53	– 84.51
Vaud	11 820	96	0.99	203.63	34.25	1.69	35.94	87.41	0.97	87.13	– 0.28	35.66
Argovie	11 100	108	0.99	101.12	– 68.26	1.70	– 66.56	83.80	0.93	70.94	– 12.86	– 79.43
Neuchâtel	11 050	86	0.94	139.26	– 30.12	10.17	– 19.95	77.49	0.86	83.95	6.46	– 13.49
Schaffhouse	10 835	99	0.92	106.82	– 62.56	13.55	– 49.01	77.49	0.86	79.11	1.62	– 47.39
Thurgovie	10 560	75	0.88	143.70	– 25.68	20.33	– 5.35	63.07	0.70	73.68	10.61	5.26
Berne	10 515	77	0.87	173.09	3.71	22.01	25.72	63.98	0.71	81.65	17.67	43.39
Soleure	10 440	86	0.90	100.54	– 68.84	16.94	– 51.90	68.48	0.76	79.31	10.83	– 41.07
Appenzell Rh.-Ext.	10 410	67	0.85	225.65	56.27	25.40	81.67	63.07	0.70	81.97	18.89	100.56
St-Gall	10 245	80	0.83	147.86	– 21.52	28.79	7.27	58.57	0.65	79.67	21.10	28.37
Lucerne	9 840	64	0.82	148.44	– 20.94	30.48	9.54	64.88	0.72	66.42	1.54	11.08
Nidwald	9 765	85	1.05	158.51	– 10.87	– 8.46	– 19.33	109.93	1.22	80.15	– 29.78	– 49.11
Tessin	9 695	71	0.88	156.06	– 13.32	20.33	7.01	63.98	0.71	72.16	8.18	15.19
Grisons	9 685	66	0.96	649.08	479.70	6.77	486.47	82.00	0.91	82.82	0.82	487.29
Uri	9 675	65	0.76	258.42	89.04	40.65	129.69	43.25	0.48	84.28	41.03	170.72
Valais	9 195	51	0.78	416.31	246.93	37.26	284.19	55.87	0.62	86.71	30.84	315.03
Glaris	9 160	93	1.17	138.95	– 30.43	–28.79	– 59.22	164.00	1.82	136.75	– 27.25	– 86.47
Schwyz	9 120	59	0.78	240.35	70.97	37.26	108.23	48.66	0.54	78.97	30.31	138.54
Fribourg	8 650	59	0.80	284.58	115.20	33.87	149.07	68.48	0.76	81.37	12.89	161.96
Obwald	8 165	36	0.75	297.71	128.33	42.34	170.67	45.06	0.50	92.34	47.28	217.95
Appenzell Rh.-Int.	7 635	33	0.69	350.45	181.07	52.51	233.57	45.96	0.51	89.89	43.93	277.50
Ø Switzerland	11 625	100	1.00	169.38				90.11	1.00	90.11		

Table 2

Regressions

Equation	α_0	α_1	R	R^2	t	tS
I. $X_b = \alpha_0 + \alpha_1(E_b)$	53.9	−0.390	−0.30	−0.09	1.50	85%
II. $X_b = \alpha_0 + \alpha_1(Y_b^p)$	5.8	−0.026	−0.46	0.21	2.49	90%

where R = coefficient of correlation, t = the value of the Student test for α_1 and tS = the level of significance for t for α_1 with N = 23. The coefficient of determination R^2 shows the amount of improvement, in term of reducing the total error, brought about by filling the regression line, i.e. the proportion of the X variance explained by the linear influence of E_b, respectively Y_b^p.

Zusammenfassung

Finanzausgleich in der Schweiz: eine Schätzung für das Jahr 1970

In diesem Aufsatz werden die Wirkungen des Finanzausgleichs zwischen Bund und Kantonen des Fiskaljahres 1970 geschätzt. Was das Subventionsprogramm des Bundes betrifft, bezieht sich die Schätzung auf die ausgleichende Wirkung, welche einerseits durch die ausbezahlten Beträge an die subventionierten Regionen – wobei die Subventionsansätze umgekehrt proportional zu den regionalen Vermögensindexen stehen – und andererseits durch das Verfahren der Steuererhebung durch die Eidgenossenschaft für Subventionsgelder bewerkstelligt wird. Was den Verteilungsplan der Steuereinnahmen anbelangt, bezieht sich die Schätzung auf die Neuverteilung der Gelder an die verschiedenen Regionen, entsprechend deren Einwohnerzahl und Steuerkraft.

Die Untersuchung führt zum Schluss, dass die Subventionsprogramme des Bundes die entscheidenden ausgleichenden Wirkungen zwischen den Kantonen hervorrufen. Währenddem sich dies bei den sechs reichsten Kantonen im negativen und den acht ärmsten im positiven Sinne auswirkt, ergibt die Analyse für die elf übrigen Kantone keine eindeutige Zuordnung.

Résumé

La peréquation fiscale en Suisse:
une appréciation portant sur l'année 1970

Cet article évalue les résultats de la péréquation fiscale entre la Confédération et les cantons pour l'année fiscale 1970. En ce qui concerne les programmes de subventions de l'Etat fédéral, l'appréciation porte sur l'effet d'égalisation produit d'une part par les allocations aux régions subventionnées – les taux de subventions étant inversement proportionnels aux indices régionaux de capacité – et, d'autre part, par le procédé appliqué par le système d'imposition fédéral pour la perception de l'argent dépensé en subventions. En ce qui concerne les plans de partage des recettes fiscales, l'appréciation se rapporte à la redistribution des fonds aux diverses régions en fonction de leur population résidente et de leur capacité fiscale, et non pas selon la provenance des fonds.

Il en résulte que les programmes de subvention de l'Etat produisent les effets égalisateurs dominants entre les Etats cantonaux. Tandis que ces effets sont négatifs pour les six cantons les plus riches et positifs pour les huit cantons les plus pauvres, il n'existe par contre aucun modèle de péréquation clairement défini pour les onze autres cantons.

Summary

Fiscal Equalization in Switzerland: an Estimation, 1970

This paper estimates the effects of interstate equalization in Switzerland for fiscal 1970. For grant-in-aid programmes, the estimation concerns the equalizing effect produced by allocation to the regions of grants, the rates of which are inversely related to regional indices of capacity, and by the process of collecting through the federal tax system the money which is spent in grants. For revenue sharing programmes, the evaluation relates to the redistribution of funds to the regions according to resident population and tax capacity, as opposed to origin.

The result is that grant-in-aid programmes produce the dominant interstate equalizing effects, negative for the 6 richest cantons and positive for the 8 poorest cantons, but there is no clear equalization pattern for the other 11 cantons.