

Regional economic impacts of the research institutes in Davos

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BACKGROUND

Four internationally recognized research institutes are located in Davos: AO Foundation, SLF, SIAF and PMOD/WRC. Their main benefit is knowledge creation for a global society and economy. In addition, they provide employment opportunities in Davos, stimulate economic activities by purchasing goods and services, generate demand for the accommodation sector and finally enhance the municipalities' human capital. Yet, some politicians argue that this benefit on local scale is not sufficient to justify public funding by local bodies. This discussion is closely related to the shortage of public funds (Bieger 2002). With the abolition of the "Stiftungstaxe"¹ and the discussion about the institutes' future financing scheme, these questions became an important issue in Davos too.

OBJECTIVE

The aim of this study is to analyze the economic significance of the research institutes for the community of Davos. The main focus lies in the evaluation of the measurable monetary effects. However, first steps in analyzing non-monetary qualitative effects are made.

MATERIAL & METHODS

Two different methods were combined to capture the economic impacts of the research institutes: incidence analysis and input-output analysis. With this combination we obtain a comprehensive analysis of the economic significance with respect to short term monetary demand effects.

Incidence Analysis

The incidence analysis serves to identify the institutes' effect on the regional income. For this purpose, all expenditure and income from the institutes were captured and assigned to the region of origin (for the income account) and destination (for the expenditure account). The balance of monetary flows for each region shows which region takes advantages, respectively disadvantages of the institutes' existence (Frey and Brugger 1984). Within the incidence analysis the institutes' direct effects are captured.

Input-Output Analysis

The input-output analysis (IOA) is used to capture indirect effects from the institutes' expenditure on local scale. Indirect multiplier effects result from each research institutes expenditure, induced congress activities as well as consumer expenditure of staff members.

The database of an IOA is an input-output table (IOT)², which provides data on the monetary value

¹The "Stiftungstaxe" was until 2006 part of the „Gästetaxe“. The largest part of the municipal financial support was made through it.

²This study is based on the IOT, which was created within the NFP 48 ALPSCAPE Project, carried out at the SLF in Davos 2002.

of all products and services as well as their origin and destination within the regional economy. The input-output table can be used to calculate the effect of an increase in demand on the regional economy, especially on the output and value added of the different industries (Armstrong and Taylor 2000).

The following table shows the different steps undertaken to gain the required data.

Table 1: Empirical steps

gained data	empirical steps
Balance of monetary flows.	Analysis of the annual reports and the accountings and/or expert interviews with the head of accounting.
Expenditures of "guests" due to Institutes congress activities or guided tours.	Expert interviews or interrogation by questionnaire of the responsible person for congress activities.
Consumer expenditure of staff members. Qualitative Information of staff members.	Questionnaire (either directly distributed to the persons or sent by post).
Municipal taxes paid by staff members.	Estimation based on accounting data (payroll).
Indirect multiplier effects and resulting value added from the gross output.	Calculations within Input-Output Analysis.

RESULTS

The table below shows the balance of monetary flows for each of the institutes for the year 2006. Only real monetary flows were taken into account. Reserves and suchlike have been ignored. The analysis of the accountings show that more money flows from each institute to the community of Davos than in the other direction. The net accrual of money for Davos amounts to CHF +27'749'800 or in other words to CHF +2580 per capita. By contrast the total balance of monetary flows for the other communities of Graubünden is only slightly positive and is negative regarding the remaining regions.

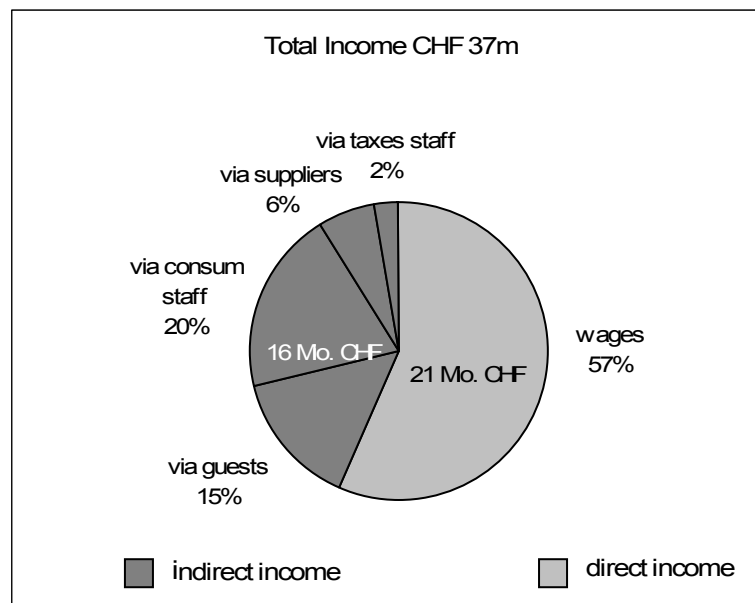
The reason for the positive balance for Davos lies mainly in the institutes' ability to attract third-party funds from outside Davos as well as in the fact that the main part of expenditures are personal costs (wages) and therefore go mainly to Davos' households.

Table 2: Results from the incidence analysis

in CHF		Davos	other parts of GR	remaining CH/abroad
PMOD/WRC	income (outflow of funds)	472'700	206'900	2'918'000
	expenditures (accrual of funds)	2'081'900	345'500	1'168'000
	balance of monetary flows	1'609'200	138'600	-1'750'000
SIAF	income (outflow of funds)	526'100	177'000	2'499'300
	Expenditures (accrual of funds)	1'506'000	187'200	1'463'000
	balance of monetary flows	979'900	10'200	-1'036'300
SLF	income (outflow of funds)	194'200	168'900	14'714'200
	expenditures (accrual of funds)	7'884'900	1'324'400	3'517'700
	balance of monetary flows	7'690'700	1'155'500	-11'196'500
AO	income (outflow of funds)	130'000	130'000	95'840'000
	expenditures (accrual of funds)	17'600'000	5'100'000	60'200'000
	balance of monetary flows	17'470'000	4'970'000	-35'640'000
Total balance		27'749'800	6'274'300	-49'622'800
per capita		2'580	35	

However, as indirect effects are not yet included, this is only a first hint of how the institutes may affect the regional income. Figure 1 shows the total regional value added in terms of additional income for Davos due to the economical activities of the research institutes.

Fig. 1: Total income-effects for the year 2006



CHF 21m or 57% of total income are generated through wages which are going to households in Davos. Indirect income in the amount of CHF 16m or 20% of total income is generated through expenditures of staff members and congress attendees, through institutes' relations with other firms in Davos and finally through taxes staff members are paying to the community of Davos. Particularly the hotel and restaurant industry, the real estate industry and retail business benefit from these indirect effects.

Bringing the public funds from Davos in relation to the generated income in Davos, it becomes visible that supporting the institutes is economically valuable for the community of Davos: In 2006 the four institutes received together subsidies from Davos in the amount of nearly CHF 980'000. In other words this means that CHF 1 of subsidy results in CHF 38 of additional income for Davos. Only considering the two smaller institutes SIAF and PMOD/WRC which receive more subsidies regarding their induced value added, the ratio is still about 1: 6.

Furthermore, with about 5% of all employees in Davos, the research institutes play an import role as employer, both quantitatively and qualitatively. The evaluation of the questionnaires shows this in several ways: The employees are mainly young (average age 37) and have a good education (47% hold a university degree) and most of them are not originally from Davos but only moved there because of their work (86%). Therefore the research institutes attract highly qualified employees who otherwise would not live in Davos. However, it is not clear how long they stay in Davos on average. Thirty percent of the sample intends to work for no longer than four years, probably mostly due to the completion of a diploma thesis or dissertation.

CONCLUSIONS

The main goal of this study was to examine the measurable economic impacts of research institutes on the regional economy. The major achievements can be summarized as follows:

The regional income is positively affected by the research institutes. There are two reasons for this:

First, research institutes have the ability to attract third party funds from outside Davos and second, the lion's shares of the institutes' expenditures are wages which flow directly to Davos households. The wages raise the regional income directly. In addition, staff members satisfy their need for consumer goods mainly in Davos (2/3 of consumer spending goes to the economy of Davos) which in turn leads to additional income in Davos. In contrast, the material expenses mainly do not remain in Davos, which means that the institutes are not very strongly linked with the local suppliers. In an economic sense, the institutes' congress activities, which assure a lot of over night stays to the local hotel industry every year, are very valuable.

OUTLOOK

This study focused on the monetary demand effects research institutes have on the regional economy in the short-run. A main objective for further studies in this field could be to examine the non-monetary effects, which often result from the institutes supply and take effect in the long-run. For example the research institutes supply scientific know-how and create human capital which can be of use for the regional firms. For example, young professionals working for one of the research institutes may later start working for a regional firm and cause innovation which increases the firm's productivity and results in economic growth.

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