STUDIECENTRUM VOOR ECONOMISCH EN SOCIAAL ONDERZOEK

VAKGROEP ARBEIDSECONOMIE

THE ECONOMIC IMPACT OF SPORT
an input-output approach for Belgium*

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Report 89/228

april 1989

* We wish to thank the Government of the Flemish Community in Belgium for the financial support.

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D/1989/1169/04

ABSTRACT

In this paper we examined the macroeconomic importance of sport, using the expenditure approach and input-output analysis. By this method we were able to estimate national income, industry output, total employment and government tax returns, that are generated, directly and indirectly, by total sport activity, including spectator sport.

An empirical research for the Flemish Community in Belgium showed that total sport product amounts to 1.35 % of total regional product, and that the private and public service industry is the major employer. Total government tax returns from sport are larger than total government expenditures and transfers to sport, which should not lead to wrong conclusions about the tax returns of any extra money, government spends on sport.

The aim of this research was to determine both **employment** and **tax returns** induced or generated by the final demand in Flanders (Dutch-speaking northern part of Belgium) for goods and services directly or indirectly related to sport. To do this we used input-output analysis, first proposed by W. LEONTIEF (1941) and well-known in economic literature.

After a short survey of the methodology in chapter one, we explain about the data on final sport expenditures in Flanders in chapter two and present the input-output results for Belgium in chapter three.

1. Input-Output analysis.

In the National Accounts system one distinguishes, among other sectors, the 'Productive sector'. Obviously, this sector consists of a great many firms or industries. Input-output analysis studies the complex network of relationships between those industries. A small introduction will hopefully clarify this.

It is easily understood that the output of one industry may serve as the input for a number of other industries. Take the electricity sector for example. Its output is undoubtedly used by a large number of enterprises in **their** production process. In other words, the raw materials and intermediary goods (or services) that one firm buys are actually goods or services produced by other productive units.

These flows of intermediary goods and services can be visualized or represented in an input-output table or matrix. This table is published by the N.I.S. (National Institute for Statistics) at least for certain years. However, the output of an industry is not always used as an intermediary input waiting to be processed. Sometimes the output finds it final destination as a consumption good. For example, the shoes the final consumer buys are, generally speaking, not used to produce other goods or services. In this instance we speak of 'Final expenditures'. On the other hand, in order to produce something you need more than raw materials alone, you also need labour, capital, infrastructure and imports. These are called 'Primary Inputs'.

What are the advantages of using the input-output method? Suppose the demand for a certain good, say X, increases. This means that industry 'X' will have to increase its production. To do this it needs a certain amount of 'labour'. Now, one of the main assumptions of the input-output model is that if e.g. the production of an industry doubles, then all the inputs it needs also double. So stepping up production means that it will have to buy more intermediary goods and/or services from other industries, which in return will have to increase their production, thereby needing a certain amount of 'labour'. Therefore, using the input-output method, we will be able to determine the employment directly and indirectly generated by the final demand for a certain good or service.

Since we are not interested in any technical details in this presentation, it suffices to say that we finally end up with a fairly simple

mathematical equation. To solve this equation we need the inverse of the technological matrix, a diagonal matrix of input-coefficients, and the final demand vector. The technological matrix is given by the National Institute for Statistics. (1983) It's a 50 by 50 matrix, 50 being the number of sectors in which the Belgian economy has been divided. In this day and age of the computer inverting a 50 by 50 matrix is not much of a problem anymore. The input-coefficients are equally easily determined using the available statistical data. In the case of employment such an input-coefficient tells you how many 'units of labour' an industry needs in order to produce one unit of a good or service (in currency units). To determine the tax returns we use similar coefficients, i.e. the amount of a given type of tax the industry has to pay to produce one unit.
So all that remains to be done is to determine the final demand for goods and services directly and indirectly related with sport, in Flanders. This is the subject of the second chapter.

We do need to draw the reader's attention to a few limitations of the method used.
Firstly, we had to determine the final demand for the year 1982, mainly because the survey we used to determine household expenditure dated from 1982. Unfortunately, the most recent input-output table available at the moment is the table for 1975. Using the 1975 matrix implies that we assume that the technology has not changed in those seven years. This assumption may be a bit tenuous.
Secondly, we were only interested in the final demand in Flanders, whereas the input-output table is a table for the <u>whole</u> of Belgium. This means that our results

actually apply to Belgium as a whole. There is a slight loss in consistency here.

2. The final demand for sports in Flanders.

First we had to determine the final expenditures. These are the sum of the following categories: consumer expenditure, Government final consumption, gross fixed capital formation, the value of physical increase in stocks and work in progresss, and exports. From this we had to deduct the imports of similar goods and services, because for practical reasons we could not use the distinction made in the Belgian input-output table between the flows of nationally produced goods and imported goods.

As already mentioned, we used a 1982 survey to determine the household consumption. We adopted the broad definition of sports consumption and so consumer's expenditures included club subscriptions, membership fees, equipment, clothing and footwear, travel, food and drink (active sport), next to admission fees, travel, food and drink (spectator's sport), books and magazines, television licence fees, lotteries for sport, and so forth. All we had to do then was to allocate these expenditures to the 50 different sectors of the Belgian input-output table, after subtracting VAT, since in the Belgian table VAT is not taken into account.

For the Government consumption we used the budgets of the government of the 'Flemish

Community', the provinces and the municipalities. N o t surprisingly, the problem here was that the distinction between expenditure for sports goods and services, and expenditure for other leisure or cultural activities was not always made. In those instances we partitioned as best as we could, using external information if available.

We used the same budgets to determine the public investments. Private investments were estimated using the information on local government investments and the information available on the structure of the privately owned swimming pools, sports centers, or sports infrastructure in general.

Finally, the data on exports and imports were obtained from the statistical tables of the National Institute of Statistics. We only took into consideration the sports goods that were clearly mentioned in the statistical tables as such.

You may have noticed that the value of physical increase in stocks and work in progres is not included. We were unable to find any reliable information on this category.

The final results are given in table 1.

TABLE 1. Final demand categories at market prices.
(million BF)

1. Consumer expenditure.....	22,008
2. Government consumption.....	8,036
3. Gross fixed capital formation.....	2,472
4. Exports.....	1,673
5. **minus** Imports.....	- 3,110
TOTAL.....	31,079

This sums up to approximately 1.35 % of the Flemish GDP in 1982, a figure that corresponds to the values, found for other Western European countries. See: The Henley Centre for Forecasting (1986)

3. The employment figures.

Substituting the vector of final demand in our equations we obtained the results for the employment in 50 different industries. Afterwards, we aggregated the 50 sectors of the Belgian input-output table to 10 sectors. In table 2 we give the figures for

these 10 aggregated sectors, they do **not** include the voluntary work.

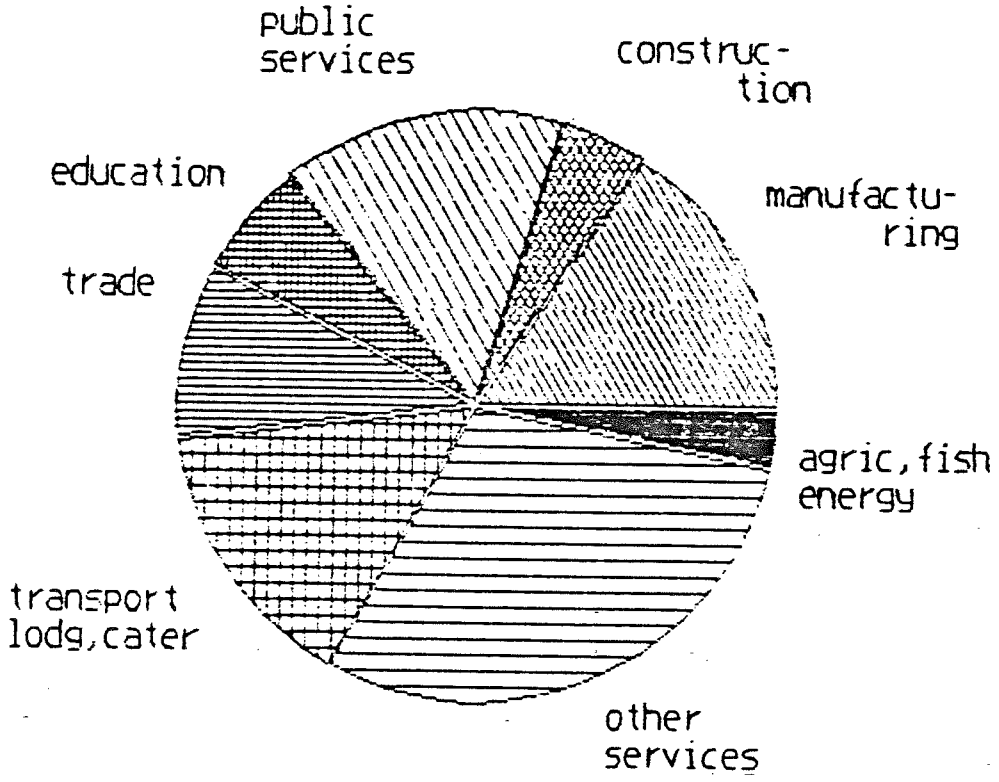
TABLE 2. The employment figures.

Aggregated sector	units of labour
1. Agriculture, forestry & fishing....	1,056
2. Energy and Water supply.....	728
3. Manufacturing.....	8,697
4. Construction industry.....	2,577
5. Trade.....	5,304
6. Lodging and catering services.....	4,210
7. Transport services.....	4,080
8. Other services.....	16,425
9. Public services.....	8,604
10. Education.....	3,452
TOTAL.....	**55,133**

One can see that total employment in **Belgium**, due to the sports expenditures in **Flanders**, adds up to 55,133 full time equivalences. It is clear that the service sector is the major employer, as could be expected. Figure 1 shows the distribution of total employment over the different industries.
We have to point out, however, that the 1975 input-output table is also used for the employment coëfficients, based on the average labour productivity, back in 1975. If a first and rude correction is made for the general productivity increase between 1975 and 1982,

total employment has to be adjusted to approximately 45,000 .

FIGURE 1.



4. The tax returns.

The total **tax returns** to the Belgian Government, including social security contributions, that are based on sports consumption, income and production in Flanders are summarized in table 3.

TABLE 3. Tax returns (million BF)

Direct taxes (income tax, corp. tax)....	6,313
Indirect taxes (VAT, excise, import)....	3,610
Social security contributions.....	4,247
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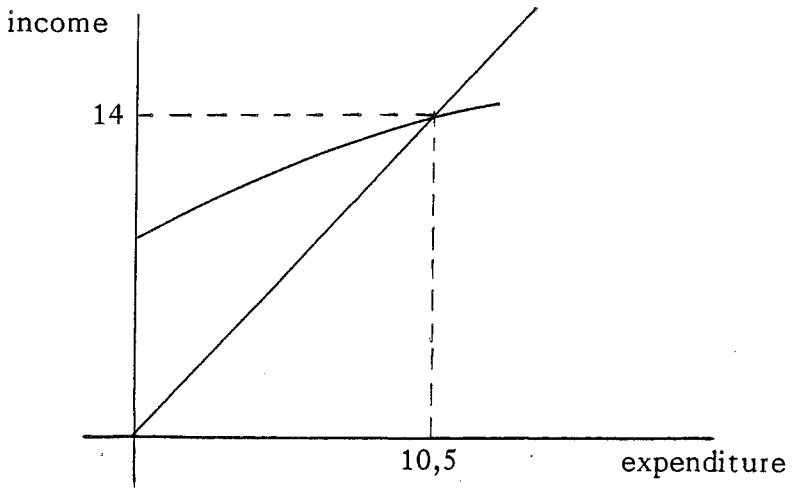
TOTAL.....	14,170

The Belgian Government got ± 14 billion BF out of sport, in the shape of tax returns. On the other hand, total government expenditures, including government consumption, investment and transfers, amounted to approximately 10.5 billion BF. in 1982.

It would be very unwise, however, to draw far-reaching conclusions from a simple comparison of these costs and returns. It is tempting to conclude that for every 105 BF the government spends on sport,

140 BF returns as tax income. As Figure 2 shows, this economic impact study is only able to fix one single point in the income/expenditure diagram, and nothing can be concluded concerning the relationship between public sports expenditures and government tax income.

FIGURE 2.



Only if this relationship can be represented by a straight line through the origin, this conclusion is correct. But obviously, even without government expenditure, a great number of people would still spend money on sports goods and services, resulting in a certain amount of tax returns, notwithstanding the fact that the government did not spend a penny on sports.

If so, the true relationship looks more like the bended curve in figure 2 , so that less money returns to the government then the extra amount spend.

5. Conclusion

Although the sport industry has reached a level of output and employment, that leaves few responsible politicians unimpressed, and it still is a growthing sector in the national economy, one should be careful to use the economic impact argument in defending public spending on sport. It actually is a knife that cuts both ways. The financially healthy industry does not need any government support, and sport is to important on its own to be defended on purely economic grounds.

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