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MACROECONOMIC EFFICIENCY OF A SMALL PROVINCIAL PUBLIC LIBRARY

Abstract. The macroeconomic efficiency of a public library in a small town near Warsaw has been calculated in the form of benefit/cost ratio. The benefits have been estimated by the method of contingent valuation of the library services and by the revealed preferences expressed by the costs of travel to and from the library as well as the costs of library deposit fees. The macroeconomic costs have been assumed equal to the microeconomic costs, except for labour costs which have been estimated as social opportunity costs of labour and therefore corrected downwards because of the persistent unemployment in town. The BCR ratio turned to be far below zero (depending on assumptions varied between 0.37 and 0.76). However only the direct benefits accruing to the library customers have been included.

Key words: public library, macroeconomic efficiency, contingent valuation

Introduction

Public libraries render a set of social services [Bibliotekarstwo... 1994], which in terms of economics can be treated as a way of the human capital formation, also in rural areas. In this way they partly contribute to the development of human factor in agriculture and stay within the field of interest of agricultural sociologists and agricultural economists.

Library services in this country are so far a public good (though the ideas of their commercialisation arise [Platne... 2005]). Therefore methods of economic valuation of these goods might be adapted from those used for valuing public goods in the environmental economics [Manteuffel Szoega 2005]. In this case a combination of the so called contingent valuation and the travel cost methods has been applied.

Contingent valuation has been used in surveying the library customers in order to determine their willingness to pay for the library services. This willingness has been taken for their individual valuation of these services, including their consumer surplus. Extra costs which they bear for getting an access to these services have been added in the form of costs of travelling to and from the library (analogous to the travel cost method in environmental economics) and the costs of borrowing the most demanded books in the library, for which a deposit fee had been established. The cost in the last case equals the opportunity cost of the own capital immobilized for some time without interest in the deposit fee.

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As an example of calculation of the macroeconomic (judged from the general social perspective) efficiency of a provincial library has served the case of a Municipal Library in a little town located near Warsaw. Except for its main siege it has four district branches.

Costs of the public library investigated

The cost used in calculation has been the average for years 2003, 2004 and 2005. Before averaging they had been recalculated into the 2005 price level by using as multipliers the appropriate consumer price indexes (CPI). They are demonstrated in table 1.

Table 1. Municipal library costs, PLN, price level 2005

Cost item	Year			average	%
	2003	2004	2005		
Book purchases	32 800	43 516	56 854	44 390	5.3
Materials and equipment	12 952	70 876	66 066	49 965	5.9
Electricity, water, gas and heating	29 228	31 119	32 000	30 782	3.7
Material and immaterial services	53 040	73 633	47 998	58 224	6.9
Salaries (including overheads)	682 887	618 025	625 487	642 133	76.3
Other payments	1 491	15 393	18 630	16 313	1.9
Total	825 823	852 562	847 035	841 806	100.0

Source: [Informacja... 2004, Informacja.... 2005, Informacja... 2006].

In the first estimate the macroeconomic costs were assumed equal to the microeconomic ones, basing on assumption that all prices of inputs, including labour, were free market prices and therefore reflected their social value (table 1).

On the second thoughts an amendment to this general presumption has been made by valuing the labour input at its opportunity cost.

This has been done by taking into consideration the high unemployment level of 21.6 % among women in the town, otherwise not differing much from the country average [Dąbrowska-Majewska 2005, p. 10]. The social cost of employing an unemployed person can roughly be set equal to zero, since the society does not loose his/her net productivity in the alternative employment. This loss of productivity is the true opportunity cost to the society, while the salary and overheads can be treated not as costs but just as money transfers from one part of the society to another.

The share of potentially unemployed persons in the library staff was assumed equal to the town average rate of unemployment. In this way the labour costs have shrunk to

$$642\,133 * (1 - 0,216) = 503\,432 \text{ PLN/year}$$

With this correction the total social average costs amounted to 703 106 PLN per annum.

Social value of library services

Social utility of the library services has been valued at the willingness to pay declared by the library customers.

A survey among the library customers was executed at the beginning of 2006. It covered 130 respondents. The respondents were selected according to their characteristics in such a way that the sample reflected roughly the characteristics by sex, age and occupation of the general population of customers. 80% of respondents declared a positive value for their willingness to pay.

The willingness to pay has been calculated in the case of book lending services by taking the willingness declared by particular respondents (or the average willingness in an appropriate group of respondents) as a unit valuation by a specific category of customers defined by sex, age and occupation, as they are registered in the library files. The unit valuations have been multiplied by the number of customers in a given category and then summed up for all the categories. Since the readers in the reading room are not registered by their sex, occupation and age, the same distribution among groups of customers in the reading room as the distribution of the book lending facility customers has been assumed. The value of the reading room services have been calculated by multiplying the number of visits by readers of a particular category times unit value per visit in this category.

The book lending services (table 2) and the reading room services (table 3) have been valued separately and finally summed up.

In the case that no representative for a particular category was interviewed, an average valuation from the adjacent categories was applied. For example the valuation by pupils (high school students) aged 19 years was replaced by an average valuation by pupils aged 15 to 19 years and students aged 19 to 25 years; valuation by white collar employees aged 19 to 25 years was represented by the average value estimated for students of the same age and white-collar workers aged 25 to 45 years.

Above the individual valuations of the library services also the costs of frequenting the library should have been included into their value. For this purpose the costs of travelling by car to and from the library have been calculated. This has been done by multiplying the mileage by a unit cost of a car ride set equal to the average remuneration for 1 kilometre of car travel in a business trip, reimbursed to the car owner by the state-owned institutions. If the

reader visited the library on foot no cost was calculated because of treating it as a healthy walk.

Another cost included into calculation has been the book deposit fee opportunity cost. For some most demanded books a deposit fee is required by the library and this means freezing the liquid capital in the fee. The opportunity cost of this capital has been set equal to the long term deposit rate of interest, average in the Polish banking system. For the period of investigation this rate amounted to 2.95 % [Średnie... 2005]. The real rate was calculated by excluding from the nominal rate the inflation component equal for this time to 2.2 % [Wskaźniki... 2005].

The recalculation followed the standard formula:

$$R_{\text{real}} = \frac{1 + R_{\text{nom}}}{1 + R_{\text{infl}}} - 1$$

where:

R_{real} – real interest rate,

R_{nom} – nominal interest rate,

R_{infl} – inflation rate, equal to CPI - 1.

Real rate of interest on the own capital then became

$$R_{\text{real}} = \frac{1 + 0.0295}{1 + 0.022} - 1 = 0.007$$

The capital costs of book borrowing have been then calculated for individual respondents as the number of books requiring deposit borrowed per year times the deposit fee times the above rate of interest times 1/12 (one month of lease each time was assumed).

Total social value of library services being the sum of the three above components became then for the book lending services 262 567 PLN/year and for the reading room services 47 927 PLN/year which makes a total of 310 494 PLN/year. This is their value for the library customers.

Table 2. Annual value of the book lending services in the library

Calculation item	Category of customers													total
	pupil		student	white-collar employee			other employment			non employed				
	15<A<19	A=19	19<A<=25	19<A<=25	25<A<=44	44<A<60	19<A<=25	25<A<=44	44<A<60	19<A<=25	25<A<=44	44<A<60	A>=60	
number of customers registered	1597	62	1295	81	1060	623	63	376	221	31	578	339	391	6717
number surveyed	29	0	29	0	25	9	2	4	6	3	7	8	8	130
Unit values, PLN														
value of annual borrowings	3.24	13.05	22.86	17.95	66.72	53.78	28.00	3.25	2.17	56.00	56.14	12.56	26.25	x
deposit fee cost	0.00	0.00	0.08	0.00	0.03	0.04	0.00	0.02	0.00	0.09	0.00	0.02	0.01	x
commuting cost	0.00	0.00	6.77	0.00	37.07	20.38	0.00	4.78	0.00	5.10	10.41	0.64	0.00	x
annual value of visits	3.25	13.05	29.70	17.95	103.82	74.20	28.00	8.04	2.17	61.19	66.55	13.22	26.26	x
Total values, PLN														
value of annual participation	5 184	809	38 467	1 454	110 048	46 226	1 764	3 024	479	1 897	38 468	4 481	10 267	262 567

Table 3. Annual value of the reading room services in the library

Calculation item	Category of customers													total
	pupil		student	white-collar employee			other employment			non employed				
	15<A<19	A=19	19<A<=25	19<A<=25	25<A<=44	44<A<60	19<A<=25	25<A<=44	44<A<60	19<A<=25	25<A<=44	44<A<60	A>=60	
number of visits	947	40	769	40	632	355	40	197	118	20	355	197	237	3 947
number surveyed	21	0	28	0	6	2	1	1	2	3	1	3	0	68
Unit values, PLN														
value of visits	2.00	6.50	11.00	8.75	6.83	4.00	36.00	13.00	9.50	22.67	22.00	4.00	13.00	x
commuting cost	0.00	0.00	12.19	0.00	4.67	3.82	0.00	1.27	0.00	1.70	0.00	0.00	0.00	x
annual value of visits	2.00	6.50	23.19	8.75	11.51	7.82	36.00	14.27	9.50	24.37	22.00	4.00	13.00	x
Total values, PLN														
value of annual participation	1 894	260	17 836	350	7 271	2 776	1 440	2 812	1 121	487	7 810	788	3 081	47 927

Source for tables 2 & 3: survey

Economic efficiency

Benefit / cost ratios for several variants of costs and benefits calculation are inserted into table 4. The social costs have been estimated in two ways as explained above and the social benefits have been also estimated in two different ways. One has been described above, another one has taken into consideration that most of the customers were pupils and students who did not earn their own money and therefore can be classified as poor. Also, because of their age, they probably tend to underestimate the value of library services. Therefore, in an alternative run, the unit valuations by pupils aged 15 to 19 years have been replaced by unit valuations by white-collar workers of age 25 to 44 years and the valuations by students aged 19 to 25 years have been replaced by valuations by the white-collar employees aged 44 to 60 years. The estimated annual value of the borrowing activity then became 486 431 PLN/year and the reading room services 47.200 PLN/year which gives the total value of 533 631 PLN/year.

Table 4. Benefit / cost ratios for the library, alternative calculations

Calculation variant	BCR ratio
Social cost equal to microeconomic cost, straightforward benefits	0.37
Social cost corrected by opportunity cost of unemployed labour, straightforward benefits	0.44
Social cost equal to microeconomic cost, benefits corrected by revaluating the young people estimates	0.63
Social cost corrected by opportunity cost of unemployed labour, benefits corrected by revaluating the young people estimates	0.76

In either case the library turned out to be macroeconomically inefficient.

Discussion

The negative outcome of the calculations is no doubt saddening for the authors as well as, probably, the readers. To improve the economic efficiency of the institution in the investigated case the first idea is to cut the costs by reducing the number of branches and firing a part of the personnel. The labour costs count for three quarters of the total costs in the library (table 1). The move would probably result also in a decrease in the number of customers and all the same in the social benefits. Another possible way of action is trying to

attract a greater number of customers. In the most simple variant of calculation this would require an increase of 2.7 times, a number rather difficult to reach. In the most favourable variant an increase of 1.3 times would become sufficient. In view of the dwindling numbers of customers since 2001 [Jóźwiak 2006] a growth of this size would probably also be difficult to obtain. But in the recent times the necessity of changing the traditional role of public libraries into that of modern information extension centres has been stressed [Górska & Lewandowicz 2003; Wołosz 2002] and this might be the way of increasing the number of customers. However this would probably require also a big increase in the equipment costs.

Only a direct value of library services has been included into the calculation, i. e. the value for the library customers. We should however keep in mind that these services have also their indirect value for the rest of society, who does not necessarily frequent the library themselves. This value is connected with the recognition of the library's merits in education of the young generation and the role of the library as a cultural centre, where cultural events of various sorts, as in the case of the investigated library, take place. These events are exhibitions, lectures, discussion meetings and concerts. The role of libraries in the broader sense seems to be also appreciated by the local authorities who subsidize the libraries from their budgets.

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