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Short Paper

Public Library Fees in Germany

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Abstract. This paper studies the impact of different payment schemes for public library borrowings in Germany. The number of borrowings is directly related to the holdings and the financial means of a library. Per medium fees lower the number of borrowings. However, a fixed fee just reduces the number of users. As this is counterbalanced by an increase in borrowings per user, the net effect on total borrowings is zero or even positive. Offering an alternative to a yearly fee for those who borrow only few media does not change results. From that, we conclude that a fee mainly eliminates nominal users and increases the library's effort.

Key words: access pricing, demand for media, public library fees

JEL-Classification: H 40, H 52, L 32, Z11

1. Introduction

This paper studies the demand for public libraries, focussing on the impact of fees. Note that we concentrate on fees for lending media. We do not consider other fee-based services and fines. Within the last twenty years, almost 50% of public libraries in Germany have introduced user fees. The main argument that is put forward in the political debate against public library fees is that they reduce demand. However, we find that while fees reduce the number of borrowers, total borrowings do not decrease due to either the existence or the level of fees. The main determinants of the number of borrowings in a public library turn out to be the financial means of the library and the size of the media stock.

Most German libraries have user fees that are structured as a fixed fee per year, independent of the number of books or other media borrowed. In order not to put off rare users, libraries sometimes offer a per medium fee or something similar. Examples for such a pricing scheme abound, not only in the public sector, but also in the private sector. In a number of service industries, it is common to charge a fixed fee per year, e.g. for the usage of gyms. A moderated form of buffet pricing that allows users to choose between a fixed fee and a fee per unit consumed is common for internet and telephone connection services as well as for public transportation.

Charging a fixed fee may be a profit-maximizing pricing strategy under certain conditions like excess capacity or high costs to collect fees.[2] However, public

libraries do not maximize profits. Instead, the local council that runs the library decides whether to charge fees or not. If they charge fees, the level and structure of fees are the result of a bargaining process between politicians and librarians. According to the principle of non-appropriation of public funds to specific purposes, which holds for all German public households, revenues from fees are not at the library's disposal. Instead, they go into the general budget of the community. Accordingly, there is no correlation between the per capita financial means of a library and the existence of fees in our data. However, we find that, given that there are fees for the usage of a library, per capita financial means are directly related to the level of fees. This suggests that as the bargaining power of a library increases so does the amount of money it collects.

The main argument that is put forward in the political debate against public library fees is that they reduce demand, i.e., the number of borrowings. In this paper, we investigate whether this is true or not. So far, there have only been time series comparisons for single libraries and statements in professional library journals, which typically say that the introduction of a fee leads to a sharp reduction in the number of users and a smaller, yet considerable reduction in the total number of borrowings.[3] As the introduction of user fees typically comes with a number of measures in order to save costs, like a reduction in opening hours, it is hard to attribute the reduction in demand entirely to the introduction of fees. Therefore, we analyze the effect of public library fees in a cross section. Using data from German library statistics, we are able to investigate the degree to which demand for public libraries is affected by fees. Our main conclusion is that fixed fees do not decrease circulation; rather they increase demand. However, per medium fees do reduce the number of borrowings.

Another argument that is put forth against fees in the public debate says that charging fees is costly itself, and the costs of collecting the money exceed the revenues. Although we think that this objection might be true in exceptional cases, this should not usually be the case. However, note that lower collecting costs may be an additional argument in favor of a fixed yearly fee as opposed to unit pricing, apart from the demand effects that we describe in this paper.

To our knowledge there are no econometric analyses of the effects of public library fees, but a number of papers do look at the efficiency of public libraries, estimating cost functions. Vitaliano (1998) finds that the main source of inefficiency for public libraries in the State of New York is too many hours of opening. In contrast, we find that circulation in German public libraries increases with the number of opening hours. Yet, this is not surprising, as public libraries in Germany are open 18 hours a week on average, while in Vitaliano's sample, libraries are open 53 hours. Hammond (1999, 2002) concentrates on economies of scale and economies of scope for public libraries.

Johannsen (2004) discusses the impact of fee-based services in Danish libraries. In Denmark, media in public libraries are available free of charge by law. However, a growing number of libraries charge fees for additional services that they offer.

Whereas it seems that the budgetary effect of fee-based services is quite small, they seem to have a large impact on the library's management. Resource awareness, entrepreneurial spirit and innovation are stimulated among the library's staff. One might also make the argument that the positive effect of fees on demand may be due to an increase in the quality of librarian services.

The paper is structured as follows. In Section 2, we introduce our data. In Section 3, we present our hypotheses on library demand. We discuss our estimation results in Section 4 and conclude in Section 5.

2. Public Libraries in Germany: The Data

In Germany, there are about 12,000 public libraries. Most of them are run by municipalities, some of them by one of the Christian churches. They are so-called level 1 or level 2 libraries, which are supposed to meet basic needs for media. Most of them offer access to the internet as well as some printing and copying services. They have an electronic catalogue and are connected to an interlending service. Apart from books, they can be expected to offer a stock of current periodicals and important new publications in both the book and the new media sectors. Level 3 and level 4 libraries include research and university libraries, which are typically run by one of the 16 federal states and are situated in larger cities (Lux, 2003). In contrast to most other European countries, there is no library law at either the federal or at the state level in Germany. Thus, as each municipality can completely decide on its own, variety in the supply of librarian services is high.

Concerning the offering of books and journals, most public libraries can be considered as local monopolists. Private book clubs or reader circles hardly exist in Germany. However, video stores that borrow videos and DVDs are quite widespread. In big cities, citizens also have access to level 3 and level 4 libraries, so that the respective community libraries face some competition in the area of books and journals as well.

The data we use for our analysis come from the German Library Institute,[4] which has collected annual information on public libraries for many years. We use the latest year available, namely 2001. The data set includes information on the stock of books, journals and "new media", i.e., electronic data carriers like CDs, CD-ROMs, DVDs, videos, and cassettes. It gives the circulation of books, new media and journals, the number of opening hours, the number of events, the size of the library, and many other details. As to fees, the data only indicate whether fees are levied or not. So we looked up the fees for those libraries who state that they collect fees on the Internet.

Table I summarizes our general information on public libraries in Germany. On average, the stock of new media in a library is about one tenth of the stock of books. However, whereas a book is borrowed 2.2 times per year, new media are borrowed 6.7 times per year on average. This reflects the attraction of new media, but also

Table I. Summary statistics on our sample of public libraries in Germany.

Variable	Mean	Standard deviation
Stock of books	41,103	107,114
Stock of new media	4,046	10,411
Number of newspaper and journal subscriptions	59.4	238
Book circulation (per year)	91,559	282,748
New media circulation (per year)	27,078	96,948
Newspaper/journal circulation (per year)	6,564	22,854
Opening hours (per year)	947	496
Events (per year)	71.6	210
Financial means (per year) [in €]	318,806	1,219,529
Number of users/total population	0.153	0.105
Number of borrowings/user	34.5	15.0
Share of libraries collecting fees for all media	0.436	
Share of libraries collecting fees only for new media	0.024	
Share of libraries collecting fees/borrowing for new media	0.079	

differences in the standard borrowing length. Whereas books are usually lent for 4 weeks, new media often have a shorter borrowing length of 2 weeks or even fewer, which quite often also differs between types of media within one library. Libraries subscribe on average to 60 newspapers and journals. As this includes everything from a daily newspaper to a quarterly edited magazine, it is not possible to give an average number of borrowings per issue. Note also that in many libraries it is not possible to borrow daily or weekly edited media; they have to be read on site. Libraries open for fewer than 20 hours per week on average and offer more than one "event" per week. "Events" include, for example, courses on Internet usage, which are quite popular, and readings by German-speaking authors. On average, 15% of the residents in a community are registered as users borrowing an average of 34 media per year.

Apart from 44% of libraries levying fees on all media, another 2.4% levy fees on the borrowing of new media only. New media fees usually come as fees per medium borrowed. In total, 7.9% have per media fees for new media. New media fees differ considerably between libraries and between kinds of media. For example, videos are typically more expensive than cassettes.

For books and journals, an overwhelming majority of libraries offer a fixed fee per year. Only 2% of libraries offer a fee per medium borrowed only. However, libraries that charge high fixed annual fees usually offer an alternative in order not to drive away users that borrow only very few media. In this case, users can choose between a fee per year and a fee per medium, a sub-annual fee or a fee per visit. In our sample, the most frequent fee levied per year is 10€; the average fee per

year is 9.45€; the highest fee per year is 38€; and the lowest is 1€. Libraries that have only an annual fee charge 8.01€ on average, whereas libraries that offer an alternative charge 11.10€ per year on average. Most libraries do not charge user fees for children. Usually, there is also a reduced fee for students.

3. Some Hypotheses on Library Usage

Borrowing books in a library implies two decisions. In a first step, a potential user decides whether to use the library at all. In a second step, she decides how many and which media to borrow. Assume that there are no fees. The fixed cost of using a library at all – i.e., going there, and applying for a user card – suggests that usually only those who plan to borrow several media get registered as users. A potential user trades off the costs of using the library against its benefits. Conditional on going to the library anyway, the marginal cost of borrowing an additional medium is close to zero.

Discussing the impact of fees, the key figure a decision maker might be interested in is the number of borrowings divided by the total population. The total population is the population in the library's catchment area, which is equal to the number of residents in the respective city or village. By giving access to media, libraries offer a pure consumption benefit to readers. However, the consumption of media is supposed to increase human capital as well, which is the most common justification given for public libraries to be more or less financed by the general public, i.e., the tax payer. The link between the key figure, number of borrowings divided by the total population, and the alleged increase in human capital is that borrowed media are assumed to be read, viewed, or listened to, and thus increase the user's amount of human capital. As there are no numbers on the actual consumption of media, borrowings per capita seem to be a useful proxy to measure the success of a library.

If there is a fixed fee for using the library without any alternative for those who use the library only rarely, this might deter potential users. As those who borrow only few media are more likely to be put off by the fee, the number of borrowings per user is expected to increase due to a selection effect. The total number of borrowings is expected to decrease slightly. Another potential effect of a fee is that users try to share user cards, in particular among family members. This reduces the number of registered users as well as increases the number of borrowing per registered user. The net effect on the total number of borrowings is zero. The introduction of fees also eliminates nominal users. Without fees, everybody who once visited the library counts as a user. If there are fees, those who did not come within the last year are eliminated in the data automatically. This effect reduces the number of users as well. As the number of borrowings remains the same, the average number of borrowings per user increases accordingly. Last but not least, the introduction of fees increases attention to the library's services. Customers may be more demanding if they pay for what they get.[5] Also, the existence of fees increases the likelihood that librarian issues are discussed in the municipal council and key figures are looked at. If a

library is thus forced to exert more effort, output is expected to increase in every respect.

Imagine that users can choose between a fixed annual fee and an alternative that makes usage cheaper if you borrow only few media. This may be a sub-annual fee, a fee per medium or a fee per visit. In this case, price-sensitive users that borrow only few media are less likely to be put off. Consequently, the selection effect that leads to an increase in the average number of borrowings per user is lower as well. The total number of borrowings decreases slightly. We expect less user card sharing as well. As to the elimination of nominal users, offering an additional alternative does not change any of the expected effects. The same holds true for increases in effort due to fee charging.

This discussion is summarized in Table II, which lists the potential effects of the two pricing schemes on three ratios, i.e., borrowing per population, users per population and borrowings per number of users.

In principle, the above considerations apply to all kinds of media. The fact that a considerable number of libraries charge per medium fees for new media enables us to examine the effect of a per medium fee as well. A per medium fee does not increase the fixed cost of using a library. However, the cost per medium increases by the amount of the fee. If there is no capacity constraint, we expect the number of borrowings per user and the number of borrowings over the total population to decrease. Note, however, that there are capacity constraints for some media in a library, which is, for example, reflected in high numbers of reservations. The high numbers for the circulation of new media also suggest the existence of capacity constraints. In this case, a medium may be lent most of the time independently of the existence of a fee; however, the fee might allocate the medium to other users than the queuing process would otherwise select.[6]

Though interesting to an economist, fees are probably not the main determinants of whether and how much a public library is used, in particular as fees are not very high. We expect borrowings to depend mainly on the size and the quality of the media stock. If it is higher, the benefit from using the library is higher. Thus, we expect the number of users to increase with holdings. We also expect the number of borrowings per user to increase if users have more choice. Note, however, that this effect can be counteracted by a selection effect. If the holdings are larger and of higher quality, people who do not consume many media become users as well. This leads to a decrease in the average number of borrowings per user.

Opening hours should increase the number of borrowings, because it makes visiting the library easier. We also expect the number of events to have a positive impact on borrowings, because events like guided tours for schools and readings make the library's offerings known to potential users and act as a marketing measure.

In our data, it is hard to measure the quality of a library, either with respect to its holdings or with respect to its services. As to holdings, the attractiveness of the stock can vary considerably. We assume that the amount of financial means,

Table II. Hypotheses on the impact of fees.

	Only yearly fee			Yearly fee + Alternative		
Fees. . .	Borrowings/ population	Users/ population	Borrowings/ user	Borrowings/ population	Users/ population	Borrowings/ user
. . .put off (rare) users	−−	−−	+	−	−	0
. . .increase user card sharing	0	−−	++	0	−	+
. . .eliminate nominal users	0	−−	0	0	−−	0
. . .increase library's effort	+	+	+	+	+	+

Note: +(+): (strong) positive impact, −(−): (strong) negative impact, 0: no impact.

which is the main source of income for a library, can act as a proxy for the quality of the stock. Higher financial means enable a library to buy more new media and replace old editions. The quality of the service depends on the effort of the library staff, which we cannot observe. However, there is anecdotal evidence that fees increase the effort of the library staff, because they make customers more demanding.

4. Estimation Results

Estimation results are presented in Tables III and IV. First, we do not distinguish between different kinds of media, running regressions to analyze the impact of the existence and the level of fees, conditional on their existence. Table III looks at the number of borrowings per population, the number of users per total population and the number of borrowings per public library. It uses the existence of fees, among others, as an explanatory variable. In Table IV, we repeat our regressions, but include only libraries that charge fees using the annual level of fees and a level that is less than the annual fee if there is no alternative way to pay as two explanatory variables.

Table III. The effect of the existence of fees on media borrowing.

	Borrowings/population	Users/population	Borrowings/user
Existence of fees	0.079 (0.107)	−0.025 (0.004)***	6.44 (0.681)***
Per medium fee for new media	0.164 (0.173)	0.021 (0.007)***	−2.72 (1.02)***
Per medium fee	−0.120 (0.338)	0.015 (0.027)	−6.90 (3.78)
Yearly financial means/capita	0.254 (0.022)***	3.44×10^{-3} (0.51×10^{-3})***	0.440 (0.065)***
Population	-4.72×10^{-6} (1.15×10^{-6})***	-1.57×10^{-7} (0.35×10^{-7})***	1.58×10^{-5} (1.08×10^{-5})
Opening hours/ year	4.46×10^{-4} (1.23×10^{-4})***	6.81×10^{-6} (4.41×10^{-6})	2.61×10^{-3} (0.68×10^{-3})***
Events/year	1.44×10^{-3} (0.812×10^{-4})	1.48×10^{-5} (1.75×10^{-5})	2.39×10^{-3} (3.69×10^{-5})
Size of media stock	0.694 (0.083)***	0.034 (0.003)***	−0.669 (0.279)*
Mobile library	0.708 (0.552)	−0.028 (0.011)*	7.95 (2.15)***
Federal state dummy	Yes	Yes	Yes
Number of observations	1,789	1,795	1,785
R^2	0.58	0.43	0.18

Note. Robust standard errors shown in parentheses.
*Significant at 5% level.
***Significant at 1% level.

Table IV. The effect of the level of fees on media borrowing.

	Borrowings/population	Users/population	Borrowings/user
Level of fees	0.039 (0.026)	-4.84×10^{-4} (5.90×10^{-4})	0.543 (0.145)***
Level of fees if no alternative exists	−0.003 (0.018)	3.48×10^{-4} (5.52×10^{-4})	−0.018 (0.115)
Per medium fee for new media	0.368 (0.219)	0.022 (0.009)*	−2.04 (1.34)
Yearly financial means/capita	0.217 (0.039)***	2.99×10^{-3} (0.73×10^{-3})***	0.271 (0.116)*
Population	-5.27×10^{-6} (1.66×10^{-6})***	-1.45×10^{-7} (0.52×10^{-7})***	1.58×10^{-5} (0.93×10^{-5})
Opening hours/year	2.14×10^{-4} (1.48×10^{-4})	0.18×10^{-6} (4.30×10^{-6})	2.47×10^{-3} (0.87×10^{-3})***
Events/year	1.08×10^{-3} (0.901×10^{-4})	1.92×10^{-5} (2.43×10^{-5})	1.03×10^{-3} (2.65×10^{-5})
Size of media stock	1.14 (0.174)***	0.033 (0.006)***	1.28 (0.782)
Mobile library	2.17 (1.41)	−0.0042 (0.029)	7.42 (3.63)*
Federal state dummy	Yes	Yes	Yes
Number of observations	699	701	699
R^2	0.61	0.40	0.18

Note: Robust standard errors in parentheses.
*Significant at 5% level.
***Significant at 1% level.

We find that the existence of fees significantly reduces the share of users in the population. The level of a fee, however, does not have a significant impact on the share of users. The number of borrowings per user increases both with the existence and with the level of a fee. The net effect on the number of total borrowings is not significantly different from zero. Alternative ways to pay do not influence any of our results, the variable is far from being significant in any case. The only explanation that is in line with these results is that fees lead to the elimination of nominal users and increase quality, from which only frequent readers benefit. If users are put off by fees or if there is a considerable amount of card sharing, the negative effect should be higher in case there is no alternative to a fixed annual fee.

A per medium fee for borrowing new media increases the share of users in the population. This might be due to a reduction in user card sharing, which is more difficult with a per medium fee. More likely, the positive effect reflects the fact that the existence of new media fees is correlated with the attractiveness of the new media stock in a library. The number of borrowings per user decreases if there are

per medium fees for new media. The coefficient for the impact of per medium fees for all media has the expected sign, but is not significant. Note that only a handful of libraries use that pricing scheme.

Opening hours have a positive impact on borrowings. The impact of events is insignificant. The impact of financial means per capita and the size of the media stock are highly significant and have the expected sign. The fact that the impact of the media stock on the number of borrowings per user is insignificant or even negative suggests that an increase in holdings increases the attractiveness of the library mainly for those who use only a few media. Users of mobile libraries borrow more media. Finally, people in big cities use their library less. This may be due to differences in the population structure. Also, as mentioned above, big cities usually have higher-level libraries besides the public municipal library as well, so that residents can choose where to go.

To make our analysis more precise, we look at each of the three media groups, books, new media and journals, separately.[7] The share of users in the population cannot be split up by the type of media borrowed. First, we find that book borrowings, new media borrowings and journal borrowings divided by the total population do not depend on fees. On the other hand, higher financial means, longer opening hours and larger holdings increase total borrowings per capita. Also, the existence of fees increases borrowings per user significantly. We discussed explanations for this above. Not surprisingly, per medium fees for new media reduce new media borrowings. Fees per medium also decrease the number of journal borrowings. In German libraries, the fee per medium is typically the same for books and journals. Thus, the fee relative to the cost of purchasing the medium is much higher for journals than for books. This might explain why we find a per medium fee coefficient that is significantly negative for journals, but not for books.

Borrowings per population increase with the level of fees for both books and new media. This might be because higher fees have a positive and significant impact on the number of borrowings per user. Again, the impact of fees does not differ depending on whether there is only a yearly fee or a pricing scheme that offers a choice. Thus, we conclude that the positive effect on the total number of borrowings is due to a higher effort level of the library staff, not due to selection. Remember also that libraries manage to get at least part of their revenues for themselves. If these are used to improve the library's offerings in a way that is not reflected in one of the variables included in the regression, the effect shows up in the fee coefficient. Maybe the quality of holdings improves with the level of fees.

5. Conclusions

We look at the demand for German public libraries. The main determinants of borrowings per capita of the population are media holdings and the financial means of the library. Fixed fees reduce the number of borrowers. This effect is

counterbalanced by an increase in the number of borrowings per registered user. Thus, the net effect of fees on borrowings per capita is not significantly different from zero in most cases. For books and new media, we even find that the level of fees has a slightly positive effect on the number of borrowings. This is consistent with the higher quality of fee-charging libraries, while at the same time eliminating nominal users. In contrast, per medium fees reduce the number of borrowings per user. If libraries were able to keep revenues from fees, borrowings might increase even more by charging higher fees and by using revenues to increase holdings.

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Notes

1. The author is working for the Federal Monopoly Commission, Germany, and is a research fellow at the Institute for the Study of Labor (IZA).
2. See Essegaier et al. (2002) and Nahata et al. (1999) for further examples of buffet pricing schemes and formal models of access pricing.
3. When anticipating revenues after introducing library fees, the city of Bonn experienced a 20% decrease in the number of borrowings (BuB, 1992). Reichelt (1993) considers a 30% reduction in the number of borrowers and a 17.5% reduction in the number of borrowings as realistic.
4. The data and questionnaires (in German) can be downloaded from http://www.bibliotheksstatistik.de/. The library statistics are now provided by the University Library Center of Northrhine-Westfalia (Hochschulbibliothekszentrum des Landes Nordrhein-Westfalen).
5. For example, Klauser-Dreßler (1996) uses the increase in customer complaints as an argument against the introduction of fees.
6. Library users are willing to pay if they can avoid queuing: Some German libraries offer a "bestseller service". Best-sellers are offered both in the normal stock, which means that the marginal cost of borrowing is zero, and in a special bestseller shelf for an extra fee of about 2€. Nevertheless, the bestseller shelves are very popular among users.
7. The estimation results are available from the author upon request.

References

BuB (1992) "Stadtbücherei Bonn – Die Ausleihe wird wieder gebührenpflichtig." *BuB – Forum für Bibliothek und Information* 44: 526–527.

Essegaier, S., Gupta, S. and Zhang, Z.J. (2002) "Pricing Access Services." *Marketing Science* 21(2): 139–159.

Hammond, C.J. (1999) "The Technology of Library Service Provision: A Cost Function Analysis of Public Library Systems in the United Kingdom." *Information Economics and Policy* 11: 271–259.

Hammond, C.J. (2002) "Efficiency in the Provision of Public Services: A Data Envelopment Analysis of UK Public Library Systems." *Applied Economics* 34: 649–657.

Johannsen, C.G. (2004) "'Money Makes the World Go Around' – Fee-Based Services in Danish Public Libraries 2000–2003." *New Library World* 105: 21–32.

Klauser-Dreßler, U. (1996) "Fossiler Standpunkt." *BuB – Forum für Bibliothek und Information* 48: 641–642.

Lux, C. (2003) "The German Library System: Structure and New Developments." *IFLA Journal* 29(2): 113–128.

Nahata, B., Ostaszewski, K. and Sahoo, P. (1999) "Buffet Pricing." *Journal of Business* 72(2): 215–228.

Reichelt, K. (1993) "Zwölf Thesen gegen die Einführung von Benutzungsgebühren." *BuB – Forum für Bibliothek und Information* 45: 778–781.

Vitaliano, D.F. (1998) "Assessing Public Library Efficiency Using Data Envelopment Analysis." *Annals of Public and Cooperative Economics* 69(1): 107–122.