Factors explaining local privatization: a meta-regression analysis — **Source link** ↗

Germà Bel, Germà Bel, Xavier Fageda

Institutions: Barcelona Graduate School of Economics, University of Barcelona

Published on: 01 Apr 2009 - Public Choice (Springer US)

Related papers:

- Why do local governments privatise public services? A survey of empirical studies

- Is Private Production of Public Services Cheaper Than Public Production? A Meta-Regression Analysis of Solid Waste and Water Services.

- Local Government Restructuring: Privatization and Its Alternatives

- Contracting for government services: theory and evidence from u.s. cities*: government services contracts: evidence of u.s. cities

- Competition or monopoly? comparing privatization of local public services in the us and spain

DOCUMENT DE TREBALL

CREAP2006-03

FACTORS EXPLAINIG LOCAL PRIVATIZATION:

A META-REGRESSION ANALYSIS

Germà Bel; Xavier Fageda

CENTRE
DE REFERÈNCIA
EN ECONOMIA APLICADA

FACTORS EXPLAINING LOCAL PRIVATIZATION: A META-REGRESSION ANALYSIS

Germà Bel & Xavier Fageda

(Universitat de Barcelona) [*]

Abstract: Privatization of local public services has been implemented worldwide in the last decades. Why local governments privatize has been the subject of much discussion, and many empirical works have been devoted to analyzing the factors that explain local privatization. Such works have found a great diversity of motivations, and the variation among reported empirical results is large. To investigate this diversity we undertake a meta-regression analysis of the factors explaining the decision to privatize local services. Overall, our results indicate that significant relationships are very dependent upon the characteristics of the studies. Indeed, fiscal stress and political considerations have been found to contribute to local privatization specially in the studies of US cases published in the eighties that consider a broad range of services. Studies that focus on one service capture more accurately the influence of scale economies on privatization. Finally, governments of small towns are more affected by fiscal stress, political considerations and economic efficiency, while ideology seems to play a major role for large cities.

Keywords: Meta-regression analysis, privatization, contracting-out, local governments.
JEL codes: L33, R51, H72, C25

1. Introduction

Privatization of local public services has been an important policy worldwide over the last decades. Early academic analyses of the effect of privatization on costs usually found a positive relation between privatization and cost savings. Similar results were stressed in reviews such as Domberger and Rimmer (1994) and Domberger and Jensen (1997). [1] Given this agreement, it came as a surprise that many governments were, and still are, reluctant to privatize and have continued to use public production. Consequently, over the last twenty years many empirical studies have been devoted to analyzing the factors that explain privatization. Many variables have been tested, but each can be readily grouped into one of four families: (1) fiscal restrictions, (2) economic efficiency, (3) political processes, and (4) ideological attitudes.

The results of empirical works have also displayed great diversity. Interestingly, there seems to be only one systematic result: the overall explanatory power of the estimated equations is quite low. [2] To investigate this question we undertake a meta-regression analysis of the factors looked at to explain the decision to privatize local services.

Our work relies on previous studies on meta-regression analysis, which was introduced into the economic literature in the late eighties (Stanley and Jarrell, 1989; Jarrell and Stanley, 1990) and has been increasingly applied. Stanley and Jarrell (1989) provide an extensive list of reasons that could explain large variations among the reported results of empirical studies that focus the attention on a particular topic: (a) idiosyncratic choices of statistical methods; (b) biases induced by model misspecification; (c) or the unique character of different data sets.

Recent works[3] using the technique have focused on a wide variety of issues: from the effects of public subsidies on business R+D (García-Quevedo, 2004), the β convergence hypothesis (Abreu, de Groot and Florax, 2005), the efficiency of urban public transport (Brons, Nijkamp, Peels and Rietveld, 2005), the income elasticy of money demand (Knell and Stix, 2005), the effect of immigration on wages (Longhi, Nijkamp and Poot, 2005), the effect of common currency on international trade (Rose and Stanley, 2005), and the natural rate hypothesis

---

[1] However, more recent works (e.g. Boyne, 1998; Hodge, 2000; Sclar, 2000) emphasize that the evidence is mixed and cost savings vary from one service area to another.

[2] The value of the pseudo-R^2 in the considered studies where is reported ranges from 0.05 to 0.30.

[3] Stanley (2001) provides several examples of meta-regression analyses that were undertaken in the nineties

(Stanley, 2005) to the international gender gap (Weicheselbaumer and Winter-Ebmer, 2005). To our knowledge, no meta-regression analysis has been done on the privatization decision and, particularly, such decisions in the local sphere.

To date almost thirty works have studied the privatization decision of local services with multivariate methods. Table A-1 in the appendix displays basic information on all the works that we have been able to gather. We have included all the published papers we are aware of as well as recent working papers. Overall, our results indicate that significant relationships are very dependent upon the individual characteristics of each study. The period and region analyzed, the nature of the service and the size of the municipalities included in the sample all condition the tests and prevent any conclusion of general validity concerning the hypotheses tested.

The rest of the paper is organized as follows. Section 2 explains the relationships more commonly analyzed in this literature. Section 3 summarizes the main features of the empirical works on factors explaining privatization. Section 4 presents our own empirical analysis and results. Section 4 summarizes the main conclusions.

2. Main hypothesis in the empirical literature about factors explaining local privatization

The main objective of a meta-regression analysis is to provide a statistical explanation of differences in the reported results of the empirical literature concerning a particular topic. In comparison to narrative literature reviews, meta-regression analysis mitigates the subjectivity of inferences about a large group of studies (Stanley and Jarrell, 1989).

Our goal is to explain variation in the results obtained in the empirical studies of factors influencing local services privatization. While there is no absolute agreement on what factors might influence privatization, the hypotheses in the literature may be comfortably grouped into two economic and two political families. To this regard, we analyze results obtained in multivariate regressions that test the following relationships:

$$PRIVATIZATION = F\ (FS,\ EE,\ PC,\ ID,\ Z), \qquad (1)$$

where the dependent variable refers to local government choice to produce a service either internally or through external providers. The explanatory variables are fiscal stress (*FS*), economic efficiency (*EE*), political processes (*PC*) and ideological attitudes (*ID*). *Z* refers to

other explanatory variables that cannot be included in our meta-regression analysis. Usually, these variables concern city-specific characteristics.[4]

Fiscal stress

In the seventies tax revolts and states legislation limiting increases in local taxation put an end to the increase of tax burdens in USA municipalities. Hence, local restrictions reduced the ability to raise revenues. At the same time, transfers from federal and regional governments to municipalities decreased, because of the economic crisis. Similar fiscal restrictions would later apply to other countries. Most studies of privatization included fiscal variables designed to measure the effects of such restrictions. The conventional hypothesis is a positive relation between fiscal constraints and privatization.

Economic efficiency

According to public choice theory, overproduction and inefficiency will be the outcome when politicians and bureaucrats monopolize public services delivery (Niskanen, 1971). Thus, contracting out was expected to lead to cost reductions because it broke that monopoly. The public choice remedy for inefficiency is competition in the markets for public services, which it is expected, will reduce oversupply and costs. Under this hypothesis large cities will privatize more often since they can take advantage of competition from a larger number of service providers.

Besides public choice insights, some authors have suggested exploiting economies of scale as a rational for privatization (Donahue, 1989). When a public service is delivered in a suboptimal jurisdiction, the exploitation of scale economies requires the aggregation of jurisdictions for the delivery of the service. Since one firm can deliver services in several municipalities, privatization can be a useful tool in such aggregation. This would take operations to a more efficient scale. The population of municipalities is the variable usually used for testing whether exploiting scale economies induces privatization of local services.[5] The specific hypothesis is that small municipalities should use contracting out more frequently, because they can take more advantage of the scale economies provided by private firms or public agencies producing in several jurisdictions.

---

[4] In this sense, it is worth noting that some additional aspects have also been recently considered as possible relevant explanatory factors of local privatization, such as political patronage or transaction costs. However, the scarce number of studies that analyze those aspects does not allow using the meta-regression technique to assess in which scenarios they should be relevant.

[5] Usually, the variable for demand, which is the most appropriate for testing the scale economies hypothesis, is not available.

Political processes and ideological attitudes

Political processes and ideological attitudes that might influence the decision to privatize local services have also been analyzed as possible explanatory factor of local services delivery choices. Within the domain of political interests, the decision to privatize is influenced by the existence of pressure groups with a particular interest in the rents derived from a given form of service delivery. The variables more usually considered for capturing the influence of interest groups are the degree of unionization of public employees (assumed to be opposed to privatization) and the income level of households (assumed to be in favour of privatization).[6]

Privatization of local services can be influenced too by ideological attitudes. Left-wing parties are usually associated with public values, whereas right-wing parties are usually linked to more pro-private business values. Following these views, right wing governments should be positively associated to privatization. On the contrary, left-wing governments would be associated with public production.

3. Empirical studies on local services privatization: Main features

As far as we know, the sample used here includes all studies, both published and unpublished, that use multivariate regression techniques to examine the factors explaining local services privatization decisions. Individual studies may involve several observations, as long as they contain several estimations with different data sets, different variables or different services analyzed. Most of studies that account for several observations in our sample refer to estimations implemented on different sets of services. Table 1 shows how we have constructed dependent variables and which variables are used as moderator variables in the meta-regression analysis.

Insert table 1 about here

As done in García-Quevedo (2004), our strategy of comparing results across studies relies on identifying whether the relationship of interest is significant. To this end, we construct a set of dependent variables as dummy variables that take value 1 if a study finds a significant

---

[6] Several studies use the variable for the weight of public employees as possible explanatory factor of local services delivery choices. However, results for this variable may be statistically biased since there is a simultaneous determination of service delivery choices and the percentage of public employees. Indeed, a more intense use of external suppliers implies *per se* a reduction in the number of public employees

relationship between production choices of local governments and the corresponding family of explanatory variables (fiscal, economic, politic and ideology aspects):[7]

- We consider a significant relationship between privatization and fiscal stress when any variable that captures such effect influences positively privatization.

- The relationship between privatization and economic efficiency is considered significant when such effect refers to the exploitation of scale economies: a) the coefficient of the variable for population (or demand) is both statistically significant and carries a negative sign and b) variables for the alternative hypothesis (large cities have available a higher number of external providers) are not significant.[8]

- Political considerations are usually tackled through variables for the relative strength of interest groups in favor of (or against) privatization. Thus, we assign a value of 1 to the dummy variable for political considerations when any of the variables for the relative strength of interest groups are statistically significant with the expected sign. In the majority of cases, such relative strength refers to the degree of unionization in the public sector and/or the percentage of high-income (low-income) households.

- Finally, the value of the ideology variable depends on the statistical significance of the ideological orientation of the incumbent party or elected officials. To this regard, right-side parties are usually considered more prone to privatization.

The independent variables, usually called moderator variables, concern particular characteristics of the empirical studies. The number of observations, year of data collection, geographical area and estimation method are typical variables used in meta-regression analysis. In this sense, differences in the results across studies for the period and region of the study can be capturing the role of managerial learning of public managers and the specific institutional framework of the country in explaining those differences. Additionally, the quality of the data set and the technique used may affect the estimation.

In our context, two additional characteristics of the studies should be included. First, the range and type of services considered may go far toward explaining differences in results across

---

[7] Political processes and ideological attitudes were introduced together in the previous section. Nonetheless, the very different nature of the variables used to check these hypotheses makes it advisable to analyze results on political processes and on ideological attitudes in a separate way.

[8] It is worth noting that the effect related to the availability of external providers is analyzed in a few number of studies.

studies. In this way, we differentiate between works that study delivery choices of local governments for a broad range of services and works that put the attention on just one service.

Second, the size of municipalities can lead to different conclusions regarding explanatory factors of privatization. Indeed, we distinguish between studies that include or not small towns in the sample used for the empirical analysis. We consider as small towns municipalities with lower than 5,000 inhabitants. In this way, it is sensible to argue a different behaviour of policy-makers of small towns and large cities with respect to the factors commonly considered to explain privatization choices.

Overall, our sample includes 28 studies that account for 60 observations. However, most of studies are concerned with just some of the hypotheses associated with the dependent variables. Hence, the total number of observations for each dependent variable ranges from 27 to 54 observations.[9] In this regard, it must be remarked that observations regarding the relationship between ideology and privatization are so scarce that our sample could not allow robust estimations for this type of relationship. In fact, two studies (López de Silanes et al., 1997; Martínez Rodríguez, 2004) account for almost half of the total observations for the ideology variable. This fact must be taken into account when interpreting the results of estimates in the following section.

Table 2 indicates the correlation between the dependent variables and the continuous moderator variables, and the number of observations that find a significant relationship between the dependent variables and the characteristics of the studies according to the binary-type moderator variables.

Insert table 2 about here

Some interesting facts can be be obtained from data shown in table 2. Regarding the dummy variables used as moderator variables, it is worth mentioning that a large majority of observations: 1) look at the US, 2) analyze just one service, and 3) use a discrete choice model for estimation. Indeed, 76 per cent of observations refer to studies for US cases, 75 per cent of observations refer to studies that analyze just one service, and 88 per cent of observations refer

---

[9] The dependent dummy variable takes value 0 when a study does not find a significant relationship between privatization and the corresponding family of variables. Where a study does not analyze a relationship, it is not counted as an observation for the meta-regression analysis.

to studies that made estimations within a discrete choice framework. Additionally, it must be said that 78 per cent of observations refer to the period 1980-2000.

In general terms, several studies find that the set of dependent variables are both relevant and not relevant explanatory factors of local services privatization.[10] Indeed, with regard to economic factors, 49 per cent of observations for studies that analyze fiscal stress find a significant relationship between fiscal stress and privatization and 40 per cent of observations for studies that contrast the scale economies hypothesis find a significant relationship between the size of the municipality and privatization. Concerning non-economic factors, 48 per cent of observations for studies that try to capture the influence of political considerations find a significant relationship between the relative strength of interest groups and privatization, while 37 per cent of observations for studies that analyze the influence of the ideology find a significant relationship between the ideological attitude of elected officials and privatization.

4. Estimation and results

In this section, we comment on the results of the meta-regression estimation for each set of dependent variables. We regress the set of dependent variables against the moderator variables using the Probit model, since each dependent variable is of a discrete choice nature. In particular, we estimate the following set of relationships:

Fiscal stress = F (*Sample, Year, Region, Service, Method, Size*). (2)

Economic efficiency = F (*Sample, Year, Region, Service, Method, Size*). (3)

Political considerations = F (*Sample, Year, Region, Service, Method, Size*). (4)

Ideology = F (*Sample, Year, Region, Service, Method, Size*). (5)

---

[10] It is worth noting here that publication bias is an important limitation of meta-regression analysis (Stanley, 2001; García-Quevedo, 2004; Roberts, 2005) as papers usually tend be published when significant relationships between the variables of interest are effectively found. In our context, several studies have not found statistically significant relationships for all the dependent variables of our meta-regression analysis. Additionally, our sample of studies covers some unpublished materials.

Recall that the observations are the studies that analyze motivations for local privatization. As we mention above, the dependent variables are dummy variables that take value 1 when an study find a significant relationship between privatization and the corresponding family of variables, that is, fiscal stress, economic efficiency, political considerations and ideology. The independent variables (moderator variables) are the number of municipalities included in the sample (*Sample*), the year of data collection (*Year*), the geographical area of the study (*Region*), the range of services considered (*Service*), the method of estimation (*Method*) and the inclusion or not of small municipalities in the empirical analysis (*Size*).

Positive coefficients of the moderator variables indicate that the associated characteristic of the study tend to provide a significant relationship between the corresponding dependent variable and privatization. A negative sign implies that, in such a case, the associated characteristic of the study tend to provide a non significant relationship between the corresponding dependent variable and privatization. Finally, a non significant coefficient implies that the characteristic of the study do not influence in the analysis of the relationship between the corresponding dependent variable and privatization.

Table 3 shows the results of the meta-regression estimates regarding the influence of fiscal stress on privatization.

Insert table 3 about here

The variables for sample size, method of estimation and geographical area are not significant. Thus, it seems that these characteristics play no significant role in the relationship the included studies find or do not find. In contrast, the variables for the year of data collection, the plurality of services studied, and the inclusion of municipalities with fewer than 5,000 inhabitants imply that those moderator variables affect the empirical analysis of the influence of fiscal stress on privatization.

Indeed, modern studies tend to invalidate the hypothesis that fiscal stress is a major explanatory factor of privatization. One possible explanation is that European studies, which are united in finding no relationship, were all undertaken in recent years. Additionally, fiscal stress in the U.S. could have been more intense in the eighties, the period analyzed in many of those studies that do not reject the hypothesis. Indeed, after Proposition 13 was passed in California in 1978

many states passed legislation that restricted the freedom of local governments to manage their budgets.

Studies that analyze several services, rather than just one, tend to validate the hypothesis that fiscal stress is a major explanatory factor of privatization. This result could be easily explained by the fact that the internal or external production of just one service should not affect the overall financial situation of local governments. Fiscal considerations should loom larger when local governments are considering a broader range of services.

Finally, it seems that studies that use a sample that includes municipalities of fewer than 5,000 inhabitants are more likely to find a positive relationship between fiscal stress and privatization. Small municipalities have more difficulty generating the revenues needed to justify expenditures associated with the internal production of services. Hence, privatization can be used to increase payments by users and reduce funding from the general budget (Bel and Miralles, 2005).

Table 4 shows the results of the meta-regression estimates of the influence of scale economies on privatization. The variables for sample size, year of the data collection, and the geographical area play no role in explaining differences across the studies. On the other hand, the variables for the range of services analyzed, the method of estimation and the inclusion of small municipalities are significant, although results for the latter two moderator variables are only statistically significant at the 10 per cent level.

Insert table 4 about here

Studies that analyze just one service find more evidence that scale economies are a major determinant of privatization. Indeed, the influence of scale economies should vary with the size of fixed costs involved in the production of services. Thus, the analysis of just one service should better capture the economic efficiency effect. Works that account for several services can include services with low fixed costs, while many of the works that focus the attention on one service refer to solid waste collection. Several studies show the relevance of scale economies for this sector (Stevens, 1978; Callan and Thomas, 2001; Bel and Costas 2006).

Studies that use Ordinary Least Squares (OLS) for estimation are more likely to validate the scale economies argument. In these studies, the dependent variable is usually the percentage of services privatized rather than the decision to privatize or not. The use of the percentage seems

to capture the effect more effectively. However, not many studies use the OLS technique, and we must be cautious regarding the interpretation of this variable.

Finally, studies that include small municipalities in their sample tend to find a positive relationship between scale economies and privatization. The potential for finding scale economies is greater for small municipalities, since privatization allows integration of service across different suboptimal jurisdictions.

Table 5 shows the results of the meta-regression estimates of the influence of political considerations on privatization. Recall that this variable is constructed from the relationship between privatization and the relative strength of interest groups affected by such a policy. As we have mentioned above, the variable used to capture this effect are usually the degree of unionization of public employees or the weight of high-income (or low-income) households.

Insert table 5 about here

The variables for the sample size and the geographical area of the study are not significant. The variable for the estimation method must be excluded as it predicts success perfectly. The variables for year of data collection, range of services considered and inclusion of small municipalities play a role in explaining differences across studies.

Early studies for US cases seem to give stronger support for the hypothesis that interest groups influence privatization. On the other hand, the hypothesis does tend to be validated more often when a broad range of services is analyzed. This makes sense since pressure from these groups should focus on the whole activity of a local government rather than on just one service (regardless of its economic and political relevance). Finally, the influence of the interest groups seems to be higher when small municipalities are included in the sample. Indeed, local governments in small municipalities are particularly vulnerable to pressures coming from interest groups.

Insert table 6 about here

Table 6 shows the results of the meta-regression estimates of the influence of ideology on local services privatization. The variables for the year of the data collection and range of services considered are not significant, while the variables for the geographical area, sample size and the

11

inclusion of small municipalities seem to be relevant. The variable for estimation method must be excluded as it predicts success perfectly.

Our estimates suggest that studies of European cases tend to find more often ideological influence on privatization of local services. Additionally, the statistical significance of the variable that captures the inclusion of small municipalities seem to be sensible since ideological influence should be lower for smaller governments. The politics of large cities are more dependent on ideological orientation, while personal interaction between politicians and citizens is crucial in small towns. Finally, studies that use a large sample of municipalities find a more significant relationship between ideology and privatization. However, the fact that sample size is not significant for any of the other dependent variables calls this interpretation into question. In any case, we must stress that a few number of studies find a systematic relationship between ideology and privatization.

5. Concluding remarks

In this paper, we have undertaken a meta-regression analysis of motivations for local privatization decisions. Overall, the following patterns can be inferred from the results of our empirical analysis.

First, fiscal stress and political considerations have been found to contribute to local services privatization in the studies of US cases published in the eighties. In more recent works, which include studies of several European countries, the relationship between privatization and fiscal and political factors is less clear. The results for the influence of economic efficiency, on the other hand, are not conditioned upon the period or the geographical area of the study. Finally, it seems that studies of U.S. cases tend to find a lower influence of ideology on privatization of local services.

Second, studies that consider a broad range of services more accurately capture the influence of fiscal stress and political considerations on the privatization choices of local governments than do studies that examine just one service. On the other hand, studies that focus on one service more accurately reflect the influence of economic efficiency on privatization than do studies devoted to several services. Results for the ideology hypothesis are not conclusive.

Third, governments of small towns are more affected by fiscal stress, political considerations and economic efficiency than are governments of large cities. In contrast, ideology seems to play a major role for large cities.

Finally, meta-regression results for the variables of sample size and estimation method are not conclusive. This may be because all the studies considered have a rich enough sample of observations and most of the empirical analyses are made within a discrete choice framework.

In short, the likelihood that a particular relationship is found to be significant is quite sensitive to the characteristics of the study. In fact, it is not possible to reach general conclusions about explanatory factors of local services privatization. The period analyzed, the nature of the service, and the size of the municipality determine the results. Thus, any empirical study of local privatization should be made conditional upon the case specifically analyzed. Researchers must be cautious in generalizing from the results of any specific analysis.

References

Abreu, Maria, de Groot, Henri L. F. and Florax, Raymond J. G. M. (2005) A Meta·Analysis of β·Convergence: the Legendary 2%. *Journal of Economic Surveys* 19, 389-420

Bel, Germà and Miralles, Antonio (2003) Factors influencing privatization of urban solid waste collection in Spain. *Urban Studies* 40, 1323-1334.

Bel, Germà and Miralles, Antonio (2005) *Political and economic determinants of public services financing*. Working Paper. Universitat de Barcelona.

Bel, Germà and Costas, Anton (2006). Do public sector reforms get rusty? Local privatization in Spain. *Journal of Policy Reform* 9, 1-24.

Benton, J. Edwin and Menzel, Donald C. (1992) Contracting and franchising county services in Florida. *Urban Affairs Quarterly* 27, 436-456.

Boyne, George A. (1998) Public Choice theory and local government: A comparative analysis of the UK and the USA. New York: St. Martin's Press

Brons, Martijn, Nijkamp, Peter, Pels, Eric and Rietveld, Piet (2005) Efficiency of urban public transit: A meta-analysis. *Transportation* 32, 1-21

Brown, Trevor, Potosky, Matthew and Van Slyke, David (2006) *Changing modes of service delivery: Costs and constraints*, paper presented at International workshop on Local government reform: Privatization and public-private collaboration, Barcelona, June 12-13th 2006

Callan, Scott J. and Thomas, Janet M. (2001) Economies of scale and scope: A cost analysis of municipal solid waste services. *Land Economics* 77, 548-560.

Chandler, Timothy D. and Teuille, Peter (1994). Cities, unions, and the privatization of sanitation services. *Journal of Labor Research* 15, 53-71.

Christoffersen, Henrik and Paldam, Martin (2003). Markets and municipalities: a study of the behavior of the danish municipalities. *Public Choice* 114, 79-102.

Dijkgraaf, Elbert, Gradus, R.H.J.M and Melenberg, Bertrand (2003) Contracting out refuse collection. *Empirical economics* 28, 553-570.

Domberger, Simon and Jensen, Peter (1997) Contracting out by the public sector: theory, evidence, prospects. Oxford *Review of Economic Policy* 13, 67-78.

Domberger, Simon and Rimmer, Stephen (1994) Competitive tendering and contracting in the public sector: A survey. *International Journal of the Economics of Business* 1, 439-453.

Donahue, John D. (1989) The privatization decision. Public ends, private means. New York: Basic Books.

Dubin, Jeffrey A. and Navarro, Peter (1988) How markets for impure public goods organize: the case of household refuse collection. *Journal of Law, Economics & Organization* 4, 217-241.

Feldman, Tammy R. (1986) *Efficiency and the provision of municipal services*. Harvard University: unpublished doctoral thesis

Ferris, James M. (1986) The decision to contract out: an empirical analysis. *Urban Affairs Quarterly* 22, 289-311.

Ferris, James and Graddy, Elizabeth (1988) Production choices for local government services. *Journal of Urban Affairs*, 10, 273-289.

García-Quevedo, José (2004) Do public subsidies complement business R&D?: A meta-analysis of the econometric evidence. *Kyklos* 57, 87-102

Greene, Jeffrey D. (1996) Cities and privatization: examining the effects of fiscal stress, location, and wealth in medium-sized cities. *Policy Studies Journal* 24, 135-144.

Hart, Oliver, Shleifer, Andrei and Vishny, Robert W. (1997) The proper scope of government: theory and an application to prisons. *Quarterly Journal of Economics* 112, 1127-1161

Hebdon, Robert and Jalette, Patrice (2006) *The restructuring of Municipal services: A Canada – United States Comparison*, paper presented at International workshop on Local government reform: Privatization and public-private collaboration, Barcelona, June 12-13th 2006

Hirsch, Werner Z. (1995) Factors important in local governments' privatization decisions. *Urban Affairs Review* 31, 226-243.

Hodge, Graeme A. (2000) Privatization. An international review of performance. Westview Press: Boulder Co.

Knell, Markus and Stix, Helmut (2005) The Income Elasticity of Money Demand: A Meta-Analysis of Empirical Results. *Journal of Economic Surveys* 19, 513-533

Kodrzycki, Yolanda K. (1998) Fiscal pressures and the privatization of local services, *New England Economic Review*. January/February, 39-50.

Levin, Jonathan and Tadelis, Steven (2005) *Contracting for government services: theory and evidence from U.S. cities*. Stanford University, Mimeo.

Longhi, Simonetta, Nijkamp, Peter and Poot, Jacques (2005) A Meta Analytic Assessment of the Effect of Immigration on Wages. *Journal of Economic Surveys* 19, 451-477.

López-de-Silanes, Florencio, Shleifer, Andrei and Vishny, Robert W. (1997) Privatization in the United States. *Rand Journal of Economics* 28, 447-471.

Martínez Rodríguez, Javier (2004) *Los determinantes de la contratación externa de servicios municipales en España*. Asociación Murciana de Ciencia Regional, Murcia.

McGuire, Robert. A., Ohsfeldt, Robert L. and Van Cott, T. Norman (1987) The determinants of the choice between public and private production of publicly funded service. *Public Choice* 54, 211-230.

Ménard, Claude and Saussier, Stéphane (2000) Contractual choice and performance: the case of water supply in France. *Revue d'Économie Industrielle* 92, 385-404.

Miranda, Rowan A. (1994) Explaining the privatization decision among local governments in the United States. *Research in Urban Policy* 5, 231-274.

Morgan, David R., Hirlinger, Michael W. and England, Robert E. (1988) The decision to contract out city services: a further explanation. *Western Political Quarterly* 41, 363-372.

Miralles, Antonio (2006) *Political economy of municipal water service privatization in the Spanish region of Catalonia: a duration model analysis*, Ph Dissertation, Chapter 3, Universitat de Barcelona.

Nelson, Michael A. (1997) Municipal government approaches to service delivery: an analysis from a transaction cost perspective. *Economic Inquiry* 35, 82-96.

Niskanen, William A. (1971) *Bureaucracy and representative government*. Chicago, IL: Aldine

Ohlsson, Henry (2003) Ownership and production costs. Choosing between public production and contracting-out in the case of swedish refuse collection. *Fiscal Studies* 24, 451-476.

Roberts, Colin J. (2005) Issues in Meta-Regression Analysis: An Overview. *Journal of Economic Surveys*, 19, 295-298.

Rose, Andrew K. and Stanley, Tom. D. (2005) A Meta Analysis of the Effect of Common Currencies on International Trade. *Journal of Economic Surveys* 19, 347-365.

Sclar, Elliot (2000) *You don't always get what you pay for: The economics of privatization*. Ithaca, NY: Cornell University Press.

Stanley, Tom D. (2001) Wheat from chaff: Meta-analysis as quantitative literature review. *Journal of Economic Perspectives* 15, 131-150

Stanley, Tom D. (2005) Integrating the empirical tests of the natural rate hypothesis: A meta-regression analysis. *Kyklos* 58, 611-634.

Stanley, Tom D. and Jarrell, Stephen B. (1989) Meta-regression analysis: A quantitative method of literature surveys. *Journal of Economic Surveys* 3, 54-67

Stein, Robert M. (1990) *Urban Alternatives. Public and private markets in the provision of local services*. Pittsburgh, PA: University of Pittsburgh Press.

Stevens, Barbara J. (1978) Scale, market structure, and the cost of refuse collection. *Review of Economics and Statistics* 60, 438-448.

Walls, Margaret, Macauley, Molly and Anderson, Soren (2005) Private markets, contracts, and government provision. What explains the organization of local waste and recycling markets?. *Urban Affairs Review* 40, 590-613.

Warner, Mildred E. and Hebdon, Robert (2001) Local government restructuring: privatization and its alternatives. *Journal of Policy Analysis and Management* 20, 315-336.

Warner, Mildred and Hefetz, Amir (2002) Applying market solutions to public services: An assessment of efficiency, equity and voice. *Urban Affairs Review*, 38, 70-89

Weichselbaumer, Doris and Winter-Ebmer, Rudolf (2005) A Meta Analysis of the International Gender Wage Gap. *Journal of Economic Surveys* 19, 479-511.

Zullo, Roland (2005) *Determinants of public service privatization and inter-municipal contracting*. University of Michigan, Mimeo.

TABLES

Table 1. Variables used in meta-regression Analysis

Dependent Variable	Description	Number of Observations
Fiscal Stress (FS)	Dummy variable that takes value 1 if an study finds a significant relationship between any variable for fiscal stress and privatization	54
Economic efficiency (EE)	Dummy variable that takes value 1 if an study finds a significant relationship between the size of the municipality and privatization	50
Political considerations (PC)	Dummy variable that takes value 1 if an study finds a significant relationship between the relative strength of interest groups and privatization	52
Ideology (ID)	Dummy variable that takes value 1 if an study finds a significant relationship between the ideological orientation of the incumbent party and privatization	27
Moderator variables	**Description**	**Number of Observations**
Sample	Number of municipalities included in the considered sample	60
Year	Year of collection of data for dependent variables	60
Region	Dummy variable that takes value 1 when studies refer to US, otherwise refer to European countries	60
Service	Dummy variable that takes value 1 when different services are considered, otherwise just one sector is considered	60
Method	Dummy variable that takes value 1 when a discrete choice method is used, otherwise Ordinary Least Squares is used	60
Size	Dummy variable that takes value 1 when the considered sample includes municipalities with a population lower than 5,000 inhabitants	60

Table 2. Summary of the distribution of the empirical evidence

	FS (54)	**EE** (50)	**PC** (52)	**ID** (27)
Sample[1]	0.15	-0.26	0.08	0.18
Year[1]	-0.20	-0.10	-0.13	0.28
USA (46)[2]	25	15	22	4
Other countries (14)[2]	1[3]	5	3	6
Several services (16)[2]	12	3	8	1
One service (44)[2]	14	17	17	9
Logit (53)[2]	20	17	20	10
OLS (7)[2]	6	3	5	0
Size = 1 (26)[2]	10	14	9	2
Size =0 (34)[2]	16	6	16	8

Note 1: Correlation Index

Note 2: Number of observations reporting a significant relationship between privatization and the corresponding dependent variable.

Note 3: We include as a non-USA study the work of Hebdon and Jalette (2006). This study is devoted both to USA and Canada but the authors focus the attention on the latter country. In any case, results of the meta-regression analysis are not affected when considering this study as a USA study.

Note 4: In parenthesis, we indicate the total number of observations concerning the dependent variable and the specific characteristic of the moderator variable

Table 3. Meta-regression estimates (probit). N = 54

Moderator variables	Dependent variable: Influence of fiscal stress on privatization
Sample	0.0004 (0.0005)
Year	-0.16 (0.08)**
Region	0.44 (0.86)
Service	1.89 (0.75)**
Method	-0.74 (0.78)
Size	1.57 (0.70)**
Intercept	317.81 (155.04)**
Pseudo R^2	0.31
χ^2 (joint sig.)	17.73**
Log pseudolikelihood	-25.75

Note 1: Standard errors in parentheses (robust to heteroskedasticity)

Note 2: Significance at the 1% (***), 5% (**), 10% (*)

Table 4. Meta-regression estimates (probit). N = 50

Moderator variables	Dependent variable: Influence of economic efficiency on privatization
Sample	-0.0008 (0.0006)
Year	-0.06 (0.05)
Region	0.80 (0.79)
Service	-1.47 (0.76)**
Method	-1.50 (0.84)*
Size	1.99 (1.09)*
Intercept	128.41 (99.35)
Pseudo R^2	0.13
χ^2 (joint sig.)	8.34
Log pseudolikelihood	-28.65

Note 1: Standard errors in parentheses (robust to heteroskedasticity)
Note 2: Significance at the 1% (***), 5% (**), 10% (*)

Table 5. Meta-regression estimates (probit). N = 52

Moderator variables	Dependent variable: Influence of political considerations on privatization
Sample	6.52e-06 (0.0004)
Year	-0.11 (0.06)*
Region	-0.65 (0.89)
Service	1.25 (0.57)**
Method	-
Size	1.20 (0.73)*
Intercept	232.84 (126.58)*
Pseudo R^2	0.10
χ^2 (joint sig.)	6.37
Log pseudolikelihood	-32.27

Note 1: Standard errors in parentheses (robust to heteroskedasticity)
Note 2: Significance at the 1% (***), 5% (**), 10% (*)
Note 3: The variable for method is excluded as predicts success perfectly.

Table 6. Meta-regression estimates (probit). N = 27

Moderator variables	Dependent variable: Influence of ideology on privatization
Sample	0.002 (0.0009)**
Year	0.04 (0.04)
Region	-1.95 (1.10)*
Service	-2.69 (1.70)
Method	-
Size	-2.89 (1.32)**
Intercept	-95.72 (85.87)
Pseudo R^2	0.35
χ^2 (joint sig.)	9.66*
Log pseudolikelihood	-11.47

Note 1: Standard errors in parentheses (robust to heteroskedasticity)
Note 2: Significance at the 1% (***), 5% (**), 10% (*)
Note 3: The variable for method is excluded as predicts success perfectly.

APPENDIX

Table A1. Main characteristics of the studies analyzed

Study	N[1]	Country	Year data	Service	Num. municipalities	Method
Ferris (1986)	1	USA	1982	43 services	447	OLS
Mcguire, Oshfeld and Van Cott (1987)	1	USA	1979-80	School bus	51	Logit
Feldman (1986)	1	USA	1980	Urban buses	67	Probit
Morgan, Hirlinger & England (1988)	1	USA	1982	56 services	447	OLS
Ferris & Graddy (1988)	8	USA	1982	Solid waste, street repair, bus, street ligths, recreational services, programs for the elderly, hospital services, public health	178-995	Logit
Dubin & Navarro (1988)	1	USA	1974-75	Solid waste	204	Logit
Stein (1990)	13	USA	1982	64 services, libraries, water, airports, residential-commercial waste[2]	1433	Logit
Benton & Menzel (1992)	1	USA-Florida	1988-9	76 services	57	OLS
Miranda (1994)	1	USA	1982	64 services	263	OLS
Chandler & Feuille (1994)	1	USA	1973-1988	Sanitation	740	Logit
Hirsch (1995)	1	USA	1980	Solid waste	93	OLS
Greene (1996)	1	USA	1988	70 services	188	OLS
Nelson (1997)	1	USA	1992	63 services	1221	Logit
López-de-Silanes, Shleifer & Vishny (1997)	6	USA	1987	12 services	3042	Probit, OLS, Random Effects
Kodrzycki (1998)	1	USA	1992	Several services	644	Logit
Ménard & Saussier (2000)	1	France	1993-5	Water	2019	Logit
Warner & Hebdon (2001)	1	USA-New York	1997	8 service areas	201	Logit, Tobit, OLS
Warner & Hefetz (2002)	1	USA	1997	8 service areas	1025	Probit
Bel & Miralles (2003)	1	Spain	1979-1998	Solid waste	41-90	Probit
Dijkgraaf, Gradus & Melenberg (2003)	1	Nether-land	1998	Solid waste	540	Logit
Ohlsson (2003)	1	Sweden	1989	Several services	115	Probit
Martínez Rodríguez (2004)	7	Spain	2000	Several services, street repair, solid waste, water, street lighting, parks, sanitation	576	Logit
Walls, Macauley & Anderson (2005)	2	USA	2001	Solid Waste (recycling, disposal)	980-912	Logit
Levin & Tadelis (2005)	1	USA	1997	30 services	914	Probit, Logit
Zullo (2005)	2	USA	2002	Several services, solid waste	1530-2183	Logit
Miralles (2006)	1	Spain	1996	Water	133	Duration
Brown, Potosky and Van Slyke (2006)	1	USA	1997	Several services	625	Logit
Hebdon and Jalette (2006)	1	USA & Canada	2004	Several services	1493	OLS

Note 1: Number of observations obtained from the corresponding study.

Note 2: Additionally, there are estimations for the services analyzed in the study of Ferris & Graddy (1988) except public health

2006

CREAP2006-01
Matas, A. (GEAP)**; Raymond, J.Ll.** (GEAP)
"Economic development and changes in car ownership patterns"
(Juny 2006)

CREAP2006-02
Trillas, F. (IEB)**; Montolio, D.** (IEB)**; Duch, N.** (IEB)
"Productive efficiency and regulatory reform: The case of Vehicle Inspection Services"
(Setembre 2006)

CREAP2006-03
Bel, G. (GPRE)**; Fageda, X.** (GPRE)
"Factors explaining local privatization: A meta-regression analysis"
(Octubre 2006)

creap@pcb.ub.es