CONSUMERS' SATISFACTION AND REGULATION OF LOCAL PUBLIC TRANSPORT: EVIDENCE FROM EUROPEAN CITIES

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Consumers' satisfaction and regulation of local public transport: evidence from European cities

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ABSTRACT.

In recent decades, market-opening policies in local public transport (LPT) have impacted most European countries. However, we can observe a high degree of variability in possible LPT arrangements, from public monopolies to open markets. This work addresses the following research question: How does user satisfaction correlate to alternative organisational models of LPT service provision? We use the results of a large survey conducted in 2009 in 33 European cities to analyse the likelihood of satisfaction with standard probit models. Results show that the highest levels of satisfaction correlate with the presence of a single LPT provider, as opposed to an industry structure in which multiple providers operate in the same market area.

Keywords: consumer satisfaction, privatization, deregulation policies, public transport.

JEL: L50, O18, R42.

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1. Introduction

Local public transport (LPT) includes all those passenger services provided to the public on a non-discriminatory basis according to pre-established tariffs, routes and timetables, and that are designed to meet users' mobility requirements on a small (urban) or medium (inter-urban) territorial scale (Zatti, 2012).

Prior to the 1960s, most LPT systems covered their costs through tariffs and needed only limited transfers of funds from municipalities or other government bodies. However, subsequent investments in road networks and increasing rates of motorisation led to reductions in the demand for public transport. This change created a need for new organisational forms in order to reduce operating costs without affecting service quality. Over the past three decades, many nations and urban areas introduced competition in the field of LPT service provisioning (Gómez-Ibáñez and Meyer, 1993). As a result, LPT systems now operate under a broad variety of organisational forms (Nash, 2005). Dealing with such heterogeneity, the relevant question is which such form has led to the best results for users.

Many works have attempted to address this issue by investigating the link between alternative forms of governance in LPT service provisioning and the efficient provisioning of service, as measured in terms of operating cost savings. To the best of our knowledge, however, there has been no empirical investigation of the relationship between the organisation of LPT and customer satisfaction. The aim of this paper is to fill this gap, as looking at individual satisfaction with LPT services is not only

interesting in its own right but is also relevant in relation to policy implications (Warner and Hefetz, 2008). To investigate this relationship, we will exploit a survey conducted in 2009 across several European Union (EU) cities that focused on users' satisfaction with LPT, among other issues. As for the classification of public transport systems, we suggest going beyond the ownership structure of providers, as the public-private dichotomy cannot be easily defined. As Van de Velde (1999) has pointed out, real world examples are far from being "pure organisational forms", as a large number of intermediate situations exist that are shaped by legal, regulatory and organisational frameworks, with country-specific, or even city-specific, environmental factors needing to be considered, as well. This may be a confounding factor in any empirical analysis. Hence, the number of providers may be a less ambiguous indicator of the actual organisation of a LPT system. Local transport has certain features of a natural monopoly because the time and route slots are unique and there is a need to coordinate time plans and stops.[4] Moreover, public transport operations are also subject to economies of scale (Berechman and Giuliano, 1985; Farsi et al., 2007). As a consequence, it may be assumed that the number of providers has an effect on firms' profitability and, indirectly, on the quality of the service captured by consumer satisfaction metrics. Thus, we have tested whether the latter increased when more than one company operated in a given market. While intense competition—at least in the

[4] Here we refer to market shares in the operating area and a monopoly is defined with reference to the operating area.

form of tendering for routes—should increase efficiency, cost-saving activities may affect quality of service and passengers may negatively perceive increased diseconomies of coordination.

The remainder of this paper is organised as follows. In the next section, we briefly summarise the most recent reforms undertaken in the LPT sector across the EU and discuss the literature devoted to the study of the effects of such changes. In the third section, we present our data set in greater detail. In the fourth section, we briefly present the empirical methodology applied in this study and, in the fifth section, we discuss our results. Some comments and policy implications are presented in the sixth and final section.

2. Background

2.1. New organisational models in LPT

The provisioning of LPT in Europe has undergone marked change in recent decades. These changes, which have been the results of regulatory reforms at both the EU and the national levels, have led to institutional changes and to the emergence of new organisational models. EU Regulation 1370/2007 repealed a nearly 40-year old piece of legislation devoted to public passenger transport service.[5] This regulation left local

[5] According to EU Regulation 1191/69, in order to ensure adequate transport services, transport authorities were allowed to impose some public service obligations on operators and, in return, to compensate them for the financial impact of the costs incurred in complying with these commitments.

transport authorities free to choose either to provide the transport services themselves or to delegate the role of service provider to external operators, selected through competitive tendering. This choice would have to be unambiguous in order to ensure the transparency of the management (Zatti, 2012). As Van de Velde (2008) pointed out, the EU regulatory development followed reforms carried out at the end of the 20th century in some European countries that were aimed at introducing some degree of competition into the LPT industry.

The biggest step toward deregulation in the EU was the Transport Act 1985, enacted by the Thatcher government in the United Kingdom (UK). The act introduced the deregulation of bus services in the UK, with the exclusion of Northern Ireland and the metropolitan area of London—the latter due to concerns about the effects of free entry on congestion and on the coordination between different modes of transport (Zatti, 2012). The Transport Act 1985 removed quantity licensing and forced local authorities to sell their municipally owned public transport companies. Public enterprises were privatised in small enough sections so as to prevent any one private company from gaining market dominance. Although the 1985 act constituted a landmark piece of legislation in favour of the deregulation of LPT services, the British experience has

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Nevertheless, as Van de Velde (2008) pointed out, the modality of reimbursement was not clearly defined and the issue of opening the market to international operators was not addressed.

remained an isolated example. In most EU countries, LPT systems are still operated by the local transport authorities.[6]

Those countries in which a transport authority—tasked with defining the services to be supplied—is combined with external operators selected through competitive tendering represent an intermediate situation. Examples of such a system include France—excluding Paris—London, Sweden and Denmark.[7]

Given the variety of LPT models that exist in the marketplace, the link between the alternative organisational forms and the quality of the services provided is a relevant issue. Many studies have sought to address this issue from an empirical perspective, mainly looking at the effects of institutional reforms on operating cost savings. Van de Velde and Wallis (2013) assessed the effects of British deregulation, pointing out the subsequent increase in productivity. Nevertheless, they recognised that the scope of this gain was close to that observed in the case of London, where full deregulation was never implemented. They also analysed LPT in New Zealand, a nation characterised by a deregulated regime in which commercial services and contracted—or subsidised—services coexist, and described the difficulties encountered in trying to integrate the two,

[6] Austria and Germany represent two peculiar cases as, in principle, market initiatives play a leading role (Zatti, 2012). However, such an organisational model has never worked and LPT systems almost everywhere are controlled by local transport authorities (Van de Velde, 2007).

[7] Even if the latter two countries could be considered a homogeneous group, differences exist in their respective tendering procedures (Van de Velde, 2008).

as well as the low level of competition for the provisioning of contracted transport services. Preston and Almutairi (2013) contrasted the broader British experience with evidence from London. In the former, the authors claimed that the decline in the demand for public transport—and the corresponding decline in consumer welfare—was more than compensated for by the savings in operating costs. On the other hand, they pointed out the simultaneous gains realised by both customers and providers in London. Cox and Duthion (2001) presented case studies from both US and European contexts that suggested that full deregulation—such as the regime adopted in the UK outside of London—has led to significant savings in operating costs, coupled with a sharp increase in fares and a decline in service quality. Boitani et al. (2013) performed a Total Factor Productivity (TFP) analysis on a set of companies operating in large EU cities. Their findings suggested a strong link between low levels of productivity and public ownership. Piacenza (2006) investigated how subsidisation mechanisms affect the cost efficiency of public transit systems by applying a cost frontier model to an Italian data set. Piacenza highlighted a scope for transport policy to increase X-efficiency (Leibenstein, 1966), stressing the importance of incentive theory and modern regulatory economics for the production analysis of regulated utilities. Iseki (2004), focussing on the US experience with LPT privatisation, was cautious in making statements concerning the link between form of governance and efficiency. Gómez-Ibáñez and Meyer (1997), based on a comparison of LPT systems in three countries, claimed that privatisation can be said to have led to lower operating costs only if a minimum amount of competition was introduced.

From a theoretical point of view, the relative advantages and disadvantages of different privatisation and liberalisation reforms has depended on the nature of the industry (Small and Verhoef, 2007). Several authors (e.g., Ceriani and Florio, 2011; Florio, 2013; Willner and Grönblom, 2011) have analysed the effects of regulatory reforms in network industries, concluding that a shift from public to private ownership cannot be said to be certain to improve welfare, as its effects on consumers' surplus depends on a variety of issues and conditions (Winston, 1998).

2.2. Customers' satisfaction with LPT

Most of the works reviewed in the previous section analysed the role of organisational form in LPT from the perspective of the firm—i.e., by focussing on indicators of efficiency and productivity. To the authors' knowledge, however, there is no paper that has directly examined the association between consumers' subjective satisfaction with the LPT sector and the LPT sector's organisational form. This paper aims to address this gap. Even if this perspective is new to the literature, several previous papers have been devoted to the investigation of the determinants of customer satisfaction with urban public transport.

A first group of works includes studies focused on comparisons undertaken of LPT systems operated in different cities. Fellesson and Friman (2008), for instance, used the results of a cross-national survey of LPT satisfaction among residents of nine large EU cities to claim that the perceived quality of the service was dependent on the industry characteristics, which were defined in terms of the infrastructure and technology employed. Diana (2011) employed the results of a survey on multimodal travellers—i.e.,

those who used both a private car and urban public transport in their daily commute—across a set of Italian cities to find a clear association between satisfaction and city size, with more satisfied travellers tending to live in smaller towns. Hine and Scott (2000) presented evidence from Scotland that focused on interchange and travel choice, in which context they pointed out the relevance and quality of information and the coordination of services as determinants of customer satisfaction. Wisniewski (2001) applied the SERQUAL survey model to Scottish data,[8] stressing the importance of survey analyses in assessing customer satisfaction.

A second set of contributions focused on a single environment, and therefore presented scenarios in which the quality of the service could be more easily measured and assessed. Cantwell et al. (2009) presented the results of a study on Dublin and suggested that the reliability of the service and the trip duration—in particular, trip duration during rush hours versus trip duration during the rest of the day—had a significant effect on customer satisfaction. Thompson and Schofield (2007) considered the Greater Manchester region in indicating that ease of use—rather than efficiency or safety—was the main component of satisfaction. Friman et al. (2001) analysed the results of a survey about customer satisfaction with public transport conducted in Sweden to suggest a strong link between satisfaction, reliability and simplicity of information. Also using Swedish data, Pedersen et al. (2011) analysed the differences in perceived quality between occasional and regular users of LPT. Their results showed that habitual car

[8] See Parasuraman et al. (1988) for further details on the SERQUAL survey model.

users reported greater satisfaction than they had initially expected after using public transport for a period of one month. The shift from one transport mode to another, in general, seems to make people more conscious of their travel happiness. A similar conclusion was reached by Abou-Zeid et al. (2012) in a survey conducted in Switzerland. Outside of Europe, Ji and Gao (2010) estimated a logistic model that included socio-economic characteristics of the respondents in their set of explanatory variables and found significant results for age and income. Jen and Hu (2003), in their study on the Taipei LPT system, underscored the role of service quality and price in explaining customer satisfaction.

3. The data

3.1. Survey data on customer satisfaction

The collecting of Eurobarometer survey data in recent decades has allowed the European Commission to monitor the evolution of public opinion in EU Member States, thereby aiding in the evaluation of different EU policies meant to address various topics, such as intent to vote and media use as well citizens' satisfaction with life in general. Flash Eurobarometer surveys are *ad hoc* thematic telephone interviews conducted at the request of any service of the European Commission and enable the Commission to relatively quickly obtain results.

In 2009, a Flash Eurobarometer survey was conducted that was devoted to assessing the quality of life in a selection of major European cities (European Commission, 2010). A random sample of 500 respondents in each city was asked about their satisfaction with

services such as public transport, health-care services and sport facilities. Respondents were asked to choose from among four possible answers: very unsatisfied, rather unsatisfied, rather satisfied and very satisfied; they were also asked how often they used public transport and/or how much time they spent travelling. Considering LPT, both satisfaction and attitudes were found to significantly vary across Europe. Figure 1 shows the ratio of satisfied respondents (i.e., those who answered either “very satisfied” or “rather satisfied”) and unsatisfied respondents (i.e., those who answered either “rather unsatisfied” or “very unsatisfied”). The data reported in Figure 1 clearly illustrates the huge gap that exists between the city characterised by the lowest level of satisfaction—Palermo—and the metropolitan area with the highest reported level of satisfaction, Rennes. The same applies to respondents’ preferences: Figure 2 depicts the ratio of interviewees who reported using public transport every day and the number of respondents who reported doing so either “less than once a month” or “never”. Again, Palermo residents reported the lowest use of LPT of any city included in the survey.

The empirical analysis will also take advantage of information about respondents’ characteristics such as age, gender, education, etc., which are available in Flash Eurobarometer survey data to control for observable individual characteristics. In our models we also control for a set of city-level characteristics—namely per capita GDP as expressed in Purchasing Power Parity (PPP), unemployment rate and population density. All such variables are defined at the NUTS III level and were obtained from the Eurostat Regional Database.

3.2. LPT organisation in EU cities

To the best of our knowledge, no source exists that provides complete information either about the governance and structure or about the number of LPT providers across European cities. We therefore had to build our own database, which drew upon a number of sources. By using the websites both of municipalities and LPT service providers, as well as the Amadeus database maintained by Bureau Van Dijk, we were able to gather data about ticket prices and the characteristics of LPT service providers in 33 cities across nine European nations.

The organisation of LPT providers was captured by two dimensions. The first concerned the number and ownership of public transport providers. According to this criterion, the 33 cities that comprised our sample were classified into three groups. The first was composed of those cases—numbering 15 out of the 33—in which a single firm supplied all services. The ownership in such instances was typically entirely public, although it might also take the form of a public-private partnership in which private stakeholders were under the control of a public—usually municipal—institution. The second group of 18 cities can be considered as two separate groups of nine cities; one such group included those cities in which LPT services were supplied by more than one operator. In these cities, all of the service providers were publicly owned; the German city railways (the *S-bahn*) constitute an example of this type—they are fully integrated into the public transport network even if they are not all owned by the same firm that provides other services such as buses, trams and subways. Finally, the remaining cities were characterised by the presence of multiple operators, both publicly and privately owned. Table 1 reports the classification of cities according to this criterion.

The second dimension across which we were able to capture different organisational schemes involved the rules that governed new operators' entry to the market. As mentioned in Section 2, three main models coexist in Europe: full deregulation—exemplified, in our sample, by the UK apart from London and Belfast; competitive tendering—e.g., London, Belfast and France excluding Paris; and the direct involvement of transport authorities in supplying LPT services. The number of companies can differ across these three types of models. In instances in which municipal authorities function as operators, for instance, there can be a public monopoly as well as a market split among different publicly and privately owned companies, each usually with a low market share. Despite the complex range of empirically observed cases (e.g., Van de Velde, 2008), this classificatory scheme represents an attempt to assess the impact of deregulation on customer satisfaction. The final column in Table 1 reports the degree of deregulation of urban LPT services for each city and distinguishes between fully deregulated markets (e.g., high level of deregulation), cities in which competitive tendering models prevail (medium level), and cities in which public authorities are the dominant service providers (low level).

4. The empirical model

Eurobarometer respondents were asked to assess their level of satisfaction with each service—i.e., whether they were very satisfied, rather satisfied, rather dissatisfied or very dissatisfied; the responses were only ordinally comparable. As we do not know the

exact level of individual satisfaction, S_i^*, for each service, we assume that satisfaction is generated by a latent variable model:

$$S_i^* = \beta_0 + \mathbf{x}_i'\boldsymbol{\beta} + e_i \quad (1)$$

where $i = 1,...,N$ for a sample of N individuals, $\mathbf{x}_i'\boldsymbol{\beta} = \beta_1 x_{i1} + ... + \beta_k x_{ik}$ includes individual characteristics that account for observed individual heterogeneity (i.e., gender, occupation, etc.) and city-specific variables that account for city-specific heterogeneity (i.e., GDP level, city size and population, etc.). We transformed the four-level individual satisfaction variable into a dichotomous variable, *S*, which took a value equal to 1 if an individual was very or rather satisfied and equal to 0 otherwise.[9] Finally, e_i is a continuously distributed variable independent of $\mathbf{x}_i$ and accounts for unobserved heterogeneity. Because S_i^* is a latent variable, for each individual, *i*, one can only observe that:

$$S_i = 1[S_i^* > 0]$$

[9] Although the ordinal nature of the four-level individual satisfaction variable could be seen to suggest the suitability of using an ordered estimation model, such as an ordered probit, we preferred to transform the satisfaction variable into a dichotomous variable for two main reasons. First, it is easier to interpret, as it allowed us to distinguish between satisfied and unsatisfied respondents while leaving aside discussions concerning the degree of satisfaction or dissatisfaction. Second, because the results were easier to present, we were therefore able to comment on various different specifications of the estimated model and the robustness of results as they depended on the included variables, whereas the marginal effects of ordered models would have required the presentation of four columns of estimates—one for each level of satisfaction—for each single model specification. However, although not presented here, the main conclusions were robust to the estimation of ordered probit models, where the probability of satisfaction was measured on a four-item scale; these results can be obtained from the authors upon request.

where $1[.]$ is equal to 1 if the argument is true and equal to zero otherwise. Assuming that e_i is distributed as a standard normal we obtain the probit model:

$$\begin{aligned} \Pr(S=1|\mathbf{x}) = \quad & \Pr(S^* > 0|\mathbf{x}) = \Pr(e > \boldsymbol{\beta}_0 - \mathbf{x}\boldsymbol{\beta}|\mathbf{x}) = \\ & 1 - \Phi(\boldsymbol{\beta}_0 - \mathbf{x}\boldsymbol{\beta}) = \Phi(\mathbf{x}\boldsymbol{\beta} - \boldsymbol{\beta}_0) \equiv p(\mathbf{x}) \end{aligned} \tag{2}$$

where Φ is the standard normal cumulative density function. The partial effect of $x_j, j = 2,...,k$, on $p(\mathbf{x})$ depends on $\mathbf{x}$ through the standard normal density function, $\phi(\mathbf{x}\boldsymbol{\beta})$, as $\partial p(\mathbf{x}) / \partial x_j = \phi(\mathbf{x}\boldsymbol{\beta})\beta_j$.

We used four sets of variables as controls: (i) individual demographic characteristics to account for individual observed heterogeneity (i.e., respondents' gender, age, occupation status, education, household type, and whether they were born in the same city as their current residence); (ii) city-specific aggregate variables (i.e., per capita GDP in PPP, population size, city size in square kilometres); (iii) characteristics of individuals' travel (i.e., frequency of use of a given means of transport, time to work); (iv) a variable that recorded whether transportation was considered one of the top three priorities for the city and an average measure of individual satisfaction on issues other than public transport, the aim of which was to account, albeit imperfectly, for the idiosyncratic fixed effect that might bias the final estimates; and (v) two sets of dummy variables that corresponded to the taxonomy of organisational models and degrees of deregulation described in Section 3.2 and listed in Table 1.

To test the robustness of our estimates, we estimated a set of different specifications of the model while also introducing the average fare for a single ticket on public

transportation in PPP and the per capita number of cars owned by residents, which provided a proxy measure of congestion once we had controlled for population and city size. This also allowed us to assess whether satisfaction was negatively correlated with the price of a fare and with the level of traffic congestion experienced. Our estimates were always clustered at the city level to correct for likely within-city correlations of the error term.[10]

5. Results

Table 2 shows the robust marginal effects of the probit model (2) described in the previous section. The key group of variables for the current analysis concerns the number of service providers; a service franchised to a single firm is taken as a reference.[11] The first column shows the simplest specification, in which satisfaction probability is conditioned by the number of service providers; it shows no significant

[10] As our data refer to a sample of approximately 15,000 EU citizens living in a group of 33 European cities, it is very likely that heteroskedasticity arose as a consequence of the fact that a respondent living in a given city—a cluster, in standard econometric terminology—was likely to share more characteristics with a respondent living in the same city than with a respondent living in another city. Estimated coefficients remained unbiased and consistent but their standard errors were biased, and clusterisation was an effort to correct for this. Although not necessarily the case here, in most applications cluster-corrected standard errors are larger than standard errors without such corrections, which can lead researchers to erroneously or prematurely reject the null assumption of a non-significant coefficient. This was the case in our research and we have opted instead to provide estimates with cluster-corrected standard errors, this being the more conservative solution because unbiased standard errors and the correct assessment of the statistical significance of the main coefficients of interest are crucial to our argument (for a standard description and discussion of cluster-corrected standard errors, see Cameron and Trivedi, 2005).

[11] It is a matter of fact in our sample that, when the industry is monopolistic, the franchisee is a publicly controlled enterprise.

results. Moreover, the likelihood ratio (LR) test suggests that this simple estimated model is not significant as its likelihood is not statistically different from that of an intercept-only model. However, the coefficient of the number of service providers became statistically significant once more complete specifications were estimated including, among the regressors, individual characteristics of the respondents, per capita GDP in PPP at the city level, population, city size and other variables, including a measure of how important LPT was to respondents, their individual overall satisfaction (measured as an average of satisfaction in relation to issues other than public transport), and the frequency with which they used various modes of transportation and their reasons for doing so. These results show that having more than a single provider reduced satisfaction by 6–8 per cent as opposed to having only one provider, which is consistent with the findings of Fiorio and Florio (2011) concerning the effects of liberalisation in the electricity sector.

In Table 3, we tested similar models distinguishing between cases in which all operators were publicly owned and cases in which some were publicly and others were privately owned. We found that having access to only a single provider—here, the omitted category—was correlated with higher satisfaction compared in particular with many all publicly owned providers. However, we found no statistically significant difference with services provided by a single provider versus many public and private providers.

As for the other variables included in the analysis, our results show that per capita income, population, city size and even the average fare paid for public transport were not statistically significant variables in determining the probability of satisfaction. On

the contrary, the number of registered cars—a proxy for congestion—reduced satisfaction: inspection of the coefficients suggested that a 1 per cent increase in the average number of cars, which would correspond to an increase of approximately 5,000 cars in a given city, would lead to a 0.55 per cent decrease in the probability of satisfaction across all specifications. Respondents who rated transport as one of their top three priorities tended to be less satisfied with it,[12] whereas respondents who reported high levels of satisfaction in the Eurobarometer data set for items other than public transport were 18–20 per cent more likely to be satisfied with LPT in their city. Being able to reduce the average commute time to the workplace by 10 minutes suggested only a 1 per cent increase in satisfaction; those respondents who used LPT more often tended to like it more than those who never used it. This evidence was considered reasonable at the individual level, as unsatisfied respondents would likely evaluate other travel alternatives in order to reduce their use of public transport.

Finally, the models reported in Table 4 test the relationship between different degrees of deregulation and customer satisfaction. The results link competitive tendering procedures with the highest levels of satisfaction. It is worth noting that, in all the cities included in this category—excepting London—LPT services were provided by a single public operator. The dominant role of the public authority was not based on legal restrictions, however, as the markets were, from a legal perspective, open to external competitors, albeit to varying extents from one city to another. This finding was

[12] We also tested models without the variable that recorded whether transportation was one of the

consistent with much of the body of literature focused on the British experience, where fully and partially-deregulated models coexist. As mentioned in Section 2, most such studies have suggested that intermediate levels of deregulation lead to the best results, both in terms of efficiency and social welfare (e.g., Preston and Almutairi, 2013; Van de Velde and Wallis, 2013). This result is also consistent with the outcomes summarized in Table 3, as none of the LPT systems characterised by competitive tendering were managed by publicly-owned operators.

The inclusion of some individual characteristics as further controls largely increased the pseudo R-squared across all of the estimated models,[13] showing a much improved fit of the model to the data on satisfaction. Although detailed results for individual characteristics of respondents are not presented here, we can briefly mention our main findings.[14] All specifications showed that female respondents were less likely to be satisfied than males, consistent with the related literature on customer satisfaction (e.g., Fiorio et al., 2007); that age was not a significant variable; and that respondents with a higher level of education were less likely to report a positive opinion of public transport. While no occupation variable was consistently significant across the different specifications, single-with-children households were less likely to be satisfied than

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respondent's top three priorities and found no significant change in the relevant estimated coefficient.

[13]The pseudo R-squared is defined here as $1 - L_1 / L_0$, where L_1 is the log likelihood of the full, estimated model and L_0 is the log likelihood of the model including the constant only (McFadden, 1974). It is simply the log likelihood on a scale where 0 corresponds to the constant-only model and 1 corresponds to perfect prediction for a discrete model (in which case the overall log likelihood is 0).

[14] Results are available from the authors upon request.

single-with-no-children households. A dummy variable equal to one for respondents born in the city in which the interview was conducted and zero otherwise suggested that native residents were less satisfied than non-natives.

6. Conclusions and policy implications

This paper has presented new evidence on the satisfaction of LPT users in 33 European cities. Our research question was straightforward: Is satisfaction correlated to the number of providers of local transport services?

We found that a monopolistic, integrated service organisation was correlated with higher user satisfaction. This finding was statistically significant after controlling for a number of individual and local circumstances. In the interpretation of this finding—which, as far as is known to the authors, represents a novel contribution to the literature—there are some important remarks to be considered:

(i) the Eurobarometer survey was not intended as a direct test of social attitudes toward the different dimensions of the public transport service. The question (in the English version of the questionnaire) read: "*Generally speaking, please tell me if you are very satisfied, rather satisfied, rather unsatisfied or not at all satisfied with public transport*." Hence we were not testing whether users were happy with monopolistic LPT providers or public/private partnerships among LPT service providers. Answers to such questions may be biased because of the political orientation of respondents or the information available to respondents on the ownership of the LPT providers. Here we have been testing only the

generic level of customer satisfaction with LPT service, a procedure that can be seen as more neutral than something designed to test social attitudes.

(ii) The EU context offered some variability in the governance model of the service, and we sought to take advantage of this feature. Ideally, we would have liked to have had a larger number of cities to use in creating governance clusters; this will instead have to be left to future research efforts, assuming Eurobarometer or other cross-country surveys will be available.

(iii) The statistical approach used here was well suited to the European urban context and can be easily replicated for other regions and cities, provided appropriate data are made available.

The core policy implication of the paper for planners and public administrators is that one additional piece of evidence should be added to the long-running debate on the advantages and drawbacks of competition in local public transport. In some countries, and particularly in the United Kingdom—although not in London (see Glaister 1985, 2003)—the privatisation of local bus companies has been combined with an attempt to introduce competition "within the market". Elsewhere there has either been "competition for the market" (Demsetz, 1968; Crain and Ekelund, 1976), or a continued public monopoly. In some cases, licensing a plurality of actors—whether private or public—has been a move seen by regulators or city administrators as an advantage relative to monopoly, a way to introduce a degree of competition into the system.

While we have not directly tested the outcome of these reforms, we interpret our findings as suggesting that users seem to be more satisfied in instances in which the

LPT systems preserve a strongly integrated structure of provision. If customer satisfaction reflects their experience—even if only to a limited extent—then our findings can be added, with due caution, to the case in favour of franchised monopoly of provision to a single, integrated LPT authority.

Figure 1. Public transport: Ratio of satisfied to unsatisfied respondents (Source: European Commission, 2010).

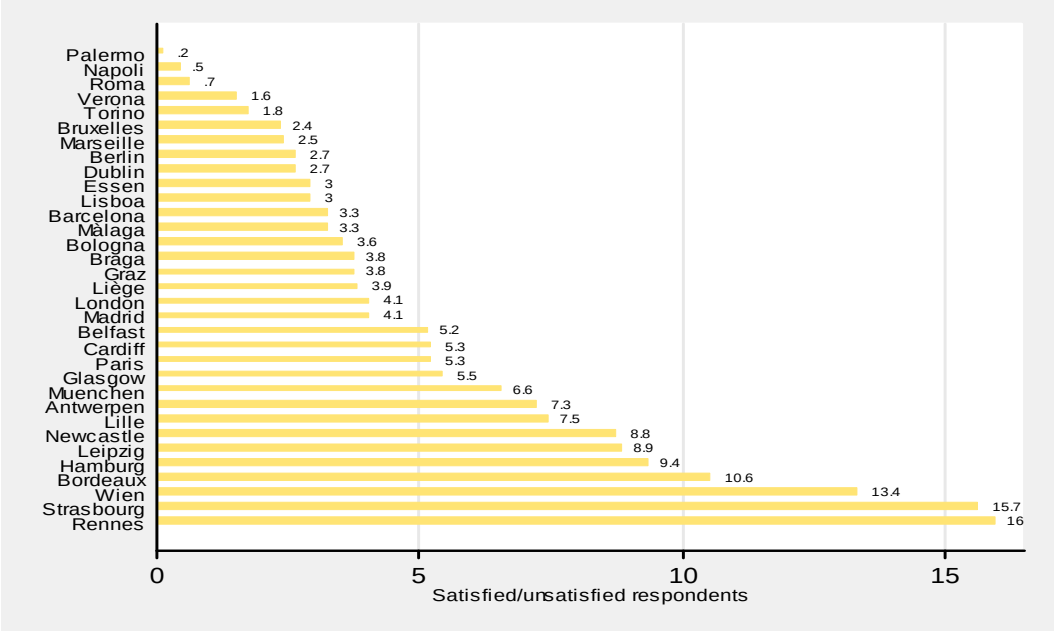

Figure 2. Ratio of daily travellers to respondents who use public transport less than once a month (Source: European Commission, 2010).

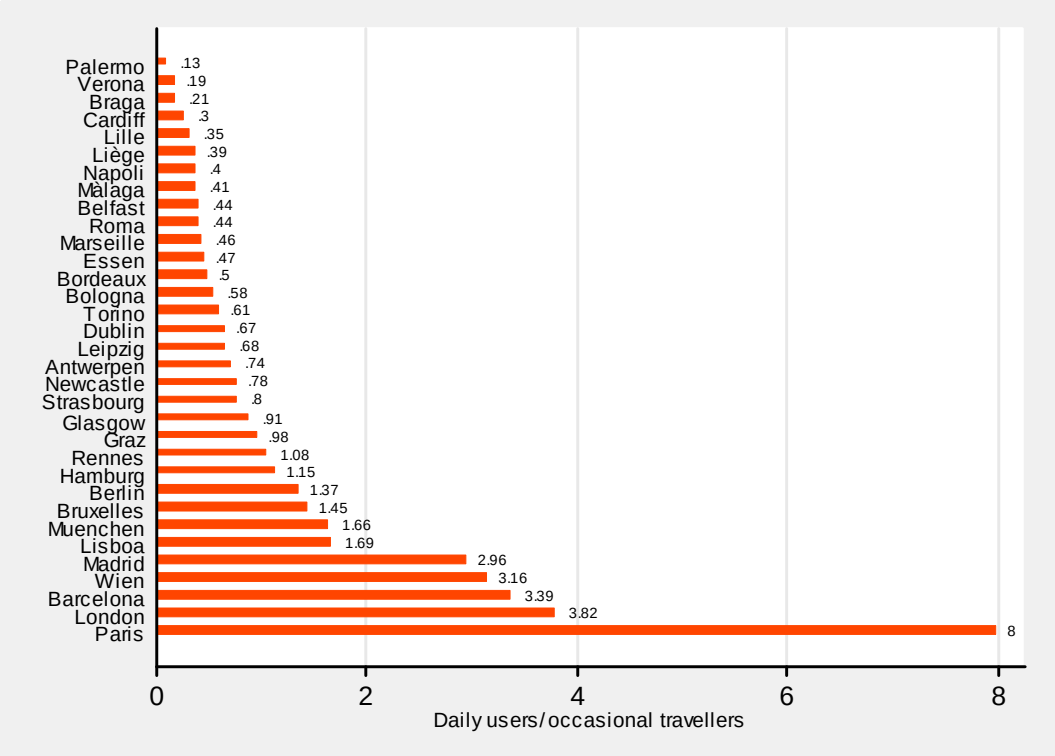

Table 1: Public transport in some European cities – some descriptive statistics.

Country	City	Single ticket (euro)	Organzation	Degree of deregulation
Belgium	Antwerpen	1.20	One public provider	Low
Belgium	Bruxelles	1.70	One public provider	Low
Belgium	Liège	1.40	One public provider	Low
Germany	Berlin	1.30	Many providers, all publicly owned	Low
Germany	Essen	1.30	One public provider	Low
Germany	Hamburg	1.30	Many providers, all publicly owned	Low
Germany	Leipzig	1.50	Many providers, all publicly owned	Low
Germany	Muenchen	1.20	Many providers, all publicly owned	Low
Spain	Barcelona	1.40	Many providers, public and private	Low
Spain	Madrid	1.00	Many providers, public and private	Low
Spain	Màlaga	1.20	One public provider	Low
France	Bordeaux	1.40	One public provider	Medium
France	Lille	1.30	One public provider	Medium
France	Marseille	1.26	One public provider	Medium
France	Paris	1.70	Many providers, public and private	Low
France	Rennes	1.20	One public provider	Medium
France	Strasbourg	1.40	One public provider	Medium
Ireland	Dublin	1.50	Many providers, public and private	Low
Italy	Bologna	1.00	One public provider	Low
Italy	Napoli	1.10	Many providers, all publicly owned	Low
Italy	Palermo	1.30	Many providers, all publicly owned	Low
Italy	Roma	1.00	Many providers, all publicly owned	Low
Italy	Torino	1.00	One public provider	Low
Italy	Verona	1.10	One public provider	Low
Portugal	Braga	1.35	One public provider	Low
Portugal	Lisboa	0.85	Many providers, all publicly owned	Low
United Kingdom	Belfast	1.67	One public provider	Medium
United Kingdom	Cardiff	1.79	Many providers, public and private	High
United Kingdom	Glasgow	1.43	Many providers, public and private	High
United Kingdom	London	2.15	Many providers, public and private	Medium
United Kingdom	Newcastle	1.67	Many providers, public and private	High
Austria	Wien	1.80	Many providers, public and private	Low
Austria	Graz	1.90	Many providers, all publicly owned	Low

Table 2: Marginal effects of satisfaction with public transport: One public provider versus many providers.

	Dep. var.: Satisfied with the use of public transport				
	(1)	(2)	(3)	(4)	(5)
Many providers	-0.055	-0.062	-0.059*	-0.075**	-0.075**
	(0.316)	(0.305)	(0.090)	(0.011)	(0.012)
Per capita GDP (in PPP)		0.004	0.001	-0.000	-0.000
		(0.125)	(0.409)	(0.970)	(0.955)
City size (in million sq. km)		-0.054	-0.074	-0.001	-0.001
		(0.755)	(0.334)	(0.983)	(0.990)
Population size (in million)		0.003	0.011	-0.007	-0.007
		(0.928)	(0.526)	(0.596)	(0.600)
Commute to work by public transport			0.010	0.017	0.017
			(0.488)	(0.230)	(0.215)
Time to work			-0.001***	-0.001***	-0.001***
			(0.000)	(0.000)	(0.000)
Frequency of usage: Less than 1x per month			0.119***	0.100***	0.100***
			(0.000)	(0.000)	(0.000)
Frequency of usage: At least 1x per month			0.156***	0.142***	0.142***
			(0.000)	(0.000)	(0.000)
Frequency of usage: At least 1x per week			0.200***	0.185***	0.185***
			(0.000)	(0.000)	(0.000)
Frequency of usage: Daily			0.196***	0.185***	0.185***
			(0.000)	(0.000)	(0.000)
Transit is one of respondent's top 3 priorities			-0.139***	-0.133***	-0.133***
			(0.000)	(0.000)	(0.000)
Individual overall satisfaction			0.215***	0.190***	0.190***
			(0.000)	(0.000)	(0.000)
Number of cars (in million)				-0.478***	-0.476***
				(0.000)	(0.001)
Fare					0.003
					(0.956)
Individual characteristics	no	yes	yes	yes	yes
Observations	14,926	14,537	13,973	13,973	13,973
Log-likelihood	-8024	-7574	-6277	-6184	-6184
Pseudo R-squared	0.004	0.033	0.169	0.181	0.181
LR test P-value	0.302	0.000	0.000	0.000	0.000

Notes: calculations were conducted on Flash Eurobarometer data. Omitted variables were: does not work; frequency of use: never; one provider; transportation not listed among respondent's top 3 priorities; and city is not congested. Individual characteristics include: gender, education, age, employment status, household type and born in the city.

Robust p values in parentheses. Errors corrected for clusters at the city level.
*** p<0.01, ** p<0.05, * p<0.1

Table 3: Marginal effects of satisfaction with public transport. One public provider versus more than one public or more than one public and private provider.

	Dep. var.: Satisfied with the use of public transport				
	(1)	(2)	(3)	(4)	(5)
Many providers, all publicly owned	-0.138	-0.126	-0.101**	-0.106**	-0.106**
	(0.131)	(0.119)	(0.030)	(0.010)	(0.011)
Many providers, public and private	0.030	0.027	-0.004	-0.035	-0.035
	(0.398)	(0.595)	(0.912)	(0.290)	(0.296)
Per capita GDP (in PPP)		0.003	0.000	-0.000	-0.000
		(0.173)	(0.673)	(0.691)	(0.697)
City size (in million sq. km)		0.062	-0.001	0.043	0.043
		(0.748)	(0.994)	(0.467)	(0.465)
Population size (in million)		-0.028	-0.009	-0.019	-0.019
		(0.499)	(0.649)	(0.183)	(0.185)
Commute to work by public transport			0.014	0.019	0.019
			(0.320)	(0.175)	(0.161)
Time to work			-0.001***	-0.001***	-0.001***
			(0.000)	(0.000)	(0.000)
Frequency of usage: Less than 1x per month			0.115***	0.099***	0.099***
			(0.000)	(0.000)	(0.000)
Frequency of usage: At least 1x per month			0.152***	0.140***	0.140***
			(0.000)	(0.000)	(0.000)
Frequency of usage: At least 1x per week			0.195***	0.183***	0.183***
			(0.000)	(0.000)	(0.000)
Frequency of usage: Daily			0.194***	0.185***	0.185***
			(0.000)	(0.000)	(0.000)
Transit is one of respondent's top 3 priorities			-0.140***	-0.134***	-0.134***
			(0.000)	(0.000)	(0.000)
Individual overall satisfaction			0.208***	0.188***	0.187***
			(0.000)	(0.000)	(0.000)
Number of cars (in million)				-0.430***	-0.428***
				(0.001)	(0.002)
Fare					0.005
					(0.933)
Individual characteristics	no	yes	yes	yes	yes
Observations	14,926	14,537	13,973	13,973	13,973
Log-likelihood	-7865	-7482	-6238	-6165	-6165
Pseudo R-squared	0.024	0.045	0.174	0.183	0.183
LR test P-value	0.098	0.000	0.000	0.000	0.000

Notes: calculations were conducted on Flash Eurobarometer data. Omitted variables were: does not work; frequency of use: never; one provider; transportation not listed among respondent's top 3 priorities; and city is not congested. Individual characteristics include: gender, education, age, employment status, household type and born in the city.

Robust p values in parentheses. Errors corrected for clusters at the city level.
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Marginal effects of satisfaction with public transport. Low vs. medium or high levels of deregulation.

	Dep. var.: Satisfied with the use of public transport				
	(1)	(2)	(3)	(4)	(5)
Deregulation: medium	0.133***	0.145***	0.108***	0.098***	0.102***
	(0.007)	(0.002)	(0.000)	(0.003)	(0.004)
Deregulation: high	0.134***	0.127***	0.045**	-0.022	-0.026
	(0.001)	(0.001)	(0.031)	(0.462)	(0.423)
Per capita GDP (in PPP)		0.004*	0.001	0.000	0.001
		(0.051)	(0.203)	(0.714)	(0.578)
City size (in million sq. km)		0.006	-0.028	0.032	0.030
		(0.974)	(0.752)	(0.591)	(0.604)
Population size (in million)		-0.022	-0.013	-0.030*	-0.030*
		(0.573)	(0.533)	(0.099)	(0.087)
Commute to work by public transport			0.014	0.014	0.013
			(0.377)	(0.322)	(0.350)
Time to work			-0.001***	-0.001***	-0.001***
			(0.000)	(0.000)	(0.000)
Frequency of usage: less than 1x per month			0.112***	0.097***	0.096***
			(0.000)	(0.000)	(0.000)
Frequency of usage: at least 1x per month			0.150***	0.138***	0.138***
			(0.000)	(0.000)	(0.000)
Frequency of usage: at least 1x per week			0.195***	0.183***	0.182***
			(0.000)	(0.000)	(0.000)
Frequency of usage: Daily			0.198***	0.186***	0.184***
			(0.000)	(0.000)	(0.000)
Transit is one of respondent's top 3 priorities			-0.145***	-0.136***	-0.136***
			(0.000)	(0.000)	(0.000)
Individual overall satisfaction			0.202***	0.186***	0.188***
			(0.000)	(0.000)	(0.000)
Number of cars (in million)				-0.429***	-0.449***
				(0.001)	(0.001)
Fare					-0.039
					(0.529)
Individual characteristics	no	yes	yes	yes	yes
Observations	14,926	14,537	13,973	13,973	13,973
Log-likelihood	-7884	-7429	-6226	-6159	-6156
Pseudo R-squared	0.021	0.052	0.175	0.184	0.185
LR test P-value	0.001	0.000	0.000	0.000	0.000

Notes: calculations were conducted on Flash Eurobarometer data. Omitted variables were: does not work; frequency of use: never; one provider; transportation not listed among respondent's top 3 priorities; and city is not congested. Individual characteristics include: gender, education, age, employment status, household type and born in the city.

Robust p values in parentheses. Errors corrected for clusters at the city level.
*** p<0.01, ** p<0.05, * p<0.1

Appendix A. List of variables.

Name	Description	Source
Variables at the individual level		
Commute to work	Dummy variable equal to 1 if the respondent uses public transport to go to his/her place of employment and equal to 0 otherwise	European Commission, 2010
Time to work	Time (in minutes) needed by the respondent to reach their place of work	European Commission, 2010
Frequency of usage	Set of dummy variables equal to 1 if the respondent used public transport less than once per month/at least once per month/at least once per week/daily/never, respectively	European Commission, 2010
Transit is one of top 3 priorities	Dummy variable equal to 1 if the respondent included public transport among the most important issues for the city and equal to 0 otherwise	European Commission, 2010
Individual overall satisfaction	Average score of individual satisfaction on the issues covered in the survey apart from public transport. These issues include health care, sport, culture, beauty of streets, buildings, public spaces and green spaces, and outdoor recreation	European Commission, 2010
Variables at city-level		
Per capita GDP	Per capita GDP as measured in Parity Purchasing Power (PPP)	Eurostat (2012)
City size	Size of the city, expressed in millions of square kilometres	Eurostat (2012)
Population size	Number of residents in the city	Eurostat (2012)
Number of cars	Per capita number of registered cars in the city	Eurostat (2012)
Fare	Price of a public transport ticket	Operators' websites

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Appendix

This appendix shows Tables 2–4 and also includes coefficients regarding the individual characteristics, as per the request of an anonymous referee. However, we do not suggest publishing these in the final version of this paper.

Table 4A: Marginal effects of satisfaction with public transport. One public provider versus many providers.

	Dep. var.: Satisfied with the use of public transport				
	(1)	(2)	(3)	(4)	(5)
Many providers	-0.055	-0.062	-0.059*	-0.075**	-0.075**
	(0.316)	(0.305)	(0.090)	(0.011)	(0.012)
Per capita GDP (in PPP)		0.004	0.001	-0.000	-0.000
		(0.125)	(0.409)	(0.970)	(0.955)
City size (in million sq. km)		-0.054	-0.074	-0.001	-0.001
		(0.755)	(0.334)	(0.983)	(0.990)
Population size (in million)		0.003	0.011	-0.007	-0.007
		(0.928)	(0.526)	(0.596)	(0.600)
Commute to work			0.010	0.017	0.017
			(0.488)	(0.230)	(0.215)
Time to work			-0.001***	-0.001***	-0.001***
			(0.000)	(0.000)	(0.000)
Less than 1x per month			0.119***	0.100***	0.100***
			(0.000)	(0.000)	(0.000)
At least 1x per month			0.156***	0.142***	0.142***
			(0.000)	(0.000)	(0.000)
At least 1x per week			0.200***	0.185***	0.185***
			(0.000)	(0.000)	(0.000)
Daily			0.196***	0.185***	0.185***
			(0.000)	(0.000)	(0.000)
Transit is one of respondent's top 3 priorities			-0.139***	-0.133***	-0.133***
			(0.000)	(0.000)	(0.000)
Individual overall satisfaction			0.215***	0.190***	0.190***
			(0.000)	(0.000)	(0.000)
Fare of mass transit (in PPP)					0.003
					(0.956)
Number of cars (in million)				-0.478***	-0.476***
				(0.000)	(0.001)
Female		-0.032***	-0.037***	-0.033***	-0.033***
		(0.000)	(0.000)	(0.000)	(0.000)
Age		-0.000	-0.000	-0.000	-0.000
		(0.953)	(0.293)	(0.789)	(0.792)
High school		0.005	-0.011	-0.016	-0.016
		(0.721)	(0.379)	(0.207)	(0.189)
College		-0.019	-0.023	-0.024	-0.025*
		(0.342)	(0.149)	(0.105)	(0.100)
Employee		0.010	0.007	0.005	0.005
		(0.468)	(0.562)	(0.747)	(0.746)
Manual-worker		-0.015	-0.013	-0.012	-0.012

		(0.376)	(0.442)	(0.522)	(0.526)
Student		0.063***	0.020	0.025	0.025
		(0.000)	(0.254)	(0.130)	(0.130)
Unemployed		0.043**	0.016	0.015	0.015
		(0.031)	(0.528)	(0.565)	(0.567)
Not working		0.033*	0.014	0.019	0.019
		(0.072)	(0.523)	(0.397)	(0.396)
Couple		-0.024**	-0.009	-0.001	-0.001
		(0.015)	(0.392)	(0.899)	(0.902)
Single with kids		-0.066***	-0.035***	-0.033***	-0.033***
		(0.000)	(0.008)	(0.009)	(0.009)
Couple with kids		-0.057***	-0.019**	-0.005	-0.005
		(0.000)	(0.048)	(0.604)	(0.611)
Other family types		-0.097***	-0.056***	-0.029**	-0.028**
		(0.000)	(0.000)	(0.040)	(0.047)
Born in the city		-0.057***	-0.026***	-0.021***	-0.021**
		(0.000)	(0.003)	(0.009)	(0.011)
Observations	14,926	14,537	13,973	13,973	13,973
Log-likelihood	-8024	-7574	-6277	-6184	-6184
Pseudo R-squared	0.004	0.033	0.169	0.181	0.181
LR test P-value	0.302	0.000	0.000	0.000	0.000

Notes: calculations were conducted on Flash Eurobarometer data. Omitted variables were: does not work; frequency of use: never; one provider; transportation is not listed among respondent's top 3 priorities; city is not congested; male; primary school; self-employed; single; and born in another city.

Robust p values in parentheses. Errors corrected for clusters at the city level.
*** p<0.01, ** p<0.05, * p<0.1

Table 5A: Marginal effects of satisfaction with public transport. One public provider versus more than one public or more than one public and private provider.

	Dep. var.: Satisfied with the use of public transport				
	(1)	(2)	(3)	(4)	(5)
Many providers, all publicly owned	-0.138	-0.126	-0.101**	-0.106**	-0.106**
	(0.131)	(0.119)	(0.030)	(0.010)	(0.011)
Many providers, public and private	0.030	0.027	-0.004	-0.035	-0.035
	(0.398)	(0.595)	(0.912)	(0.290)	(0.296)
Per capita GDP (in PPP)		0.003	0.000	-0.000	-0.000
		(0.173)	(0.673)	(0.691)	(0.697)
City size (in million sq. km)		0.062	-0.001	0.043	0.043
		(0.748)	(0.994)	(0.467)	(0.465)
Population size (in million)		-0.028	-0.009	-0.019	-0.019
		(0.499)	(0.649)	(0.183)	(0.185)
Commute to work			0.014	0.019	0.019
			(0.320)	(0.175)	(0.161)
Time to work			-0.001***	-0.001***	-0.001***
			(0.000)	(0.000)	(0.000)
Less than 1x per month			0.115***	0.099***	0.099***
			(0.000)	(0.000)	(0.000)
At least 1x per month			0.152***	0.140***	0.140***
			(0.000)	(0.000)	(0.000)
At least 1x per week			0.195***	0.183***	0.183***
			(0.000)	(0.000)	(0.000)
Daily			0.194***	0.185***	0.185***
			(0.000)	(0.000)	(0.000)
Transit is one of respondent's top 3 priorities			-0.140***	-0.134***	-0.134***
			(0.000)	(0.000)	(0.000)
Individual overall satisfaction			0.208***	0.188***	0.187***
			(0.000)	(0.000)	(0.000)
Fare of mass transit (in PPP)					0.005
					(0.933)
Number of cars (in million)				-0.430***	-0.428***
				(0.001)	(0.002)
Female		-0.031***	-0.036***	-0.033***	-0.033***
		(0.000)	(0.000)	(0.000)	(0.000)
Age		0.000	-0.000	-0.000	-0.000
		(0.601)	(0.546)	(0.986)	(0.994)
High school		0.010	-0.007	-0.013	-0.013
		(0.466)	(0.544)	(0.288)	(0.256)
College		-0.010	-0.018	-0.021	-0.021
		(0.566)	(0.236)	(0.150)	(0.133)
Employee		0.002	0.005	0.003	0.003
		(0.863)	(0.714)	(0.829)	(0.828)
Manual-worker		-0.021	-0.016	-0.014	-0.014
		(0.182)	(0.350)	(0.431)	(0.437)

Student		0.064***	0.023	0.026	0.026
		(0.000)	(0.154)	(0.102)	(0.102)
Unemployed		0.040*	0.016	0.015	0.015
		(0.056)	(0.517)	(0.559)	(0.560)
Not working		0.028	0.013	0.018	0.018
		(0.136)	(0.534)	(0.412)	(0.411)
Couple		-0.025***	-0.010	-0.003	-0.003
		(0.009)	(0.307)	(0.763)	(0.767)
Single with kids		-0.071***	-0.040***	-0.037***	-0.037***
		(0.000)	(0.003)	(0.004)	(0.004)
Couple with kids		-0.059***	-0.022**	-0.009	-0.008
		(0.000)	(0.019)	(0.362)	(0.376)
Other family types		-0.094***	-0.055***	-0.031**	-0.030**
		(0.000)	(0.000)	(0.029)	(0.032)
Born in the city		-0.057***	-0.026***	-0.022***	-0.022***
		(0.000)	(0.001)	(0.004)	(0.006)
Observations	14,926	14,537	13,973	13,973	13,973
Log-likelihood	-7865	-7482	-6238	-6165	-6165
Pseudo R-squared	0.024	0.045	0.174	0.183	0.183
LR test P-value	0.098	0.000	0.000	0.000	0.000

Notes: calculations were conducted on Flash Eurobarometer data. Omitted variables were: does not work; frequency of use: never; one provider; transportation is not listed among respondent's top 3 priorities; city is not congested; male; primary school; self-employed; single; and born in another city.

Robust p values in parentheses. Errors corrected for clusters at the city level.
*** p<0.01, ** p<0.05, * p<0.1

Table 4A: Marginal effects of satisfaction with public transport. Low vs. medium or high levels of deregulation.

	Dep. var.: Satisfied with the use of public transport				
	(1)	(2)	(3)	(4)	(5)
Deregulation: medium	0.133***	0.145***	0.108***	0.098***	0.102***
	(0.007)	(0.002)	(0.000)	(0.003)	(0.004)
Deregulation: high	0.134***	0.127***	0.045**	-0.022	-0.026
	(0.001)	(0.001)	(0.031)	(0.462)	(0.423)
Per capita GDP (in PPP)		0.004*	0.001	0.000	0.001
		(0.051)	(0.203)	(0.714)	(0.578)
City size (in million sq. km)		0.006	-0.028	0.032	0.030
		(0.974)	(0.752)	(0.591)	(0.604)
Population size (in million)		-0.022	-0.013	-0.030*	-0.030*
		(0.573)	(0.533)	(0.099)	(0.087)
Commute to work			0.014	0.014	0.013
			(0.377)	(0.322)	(0.350)
Time to work			-0.001***	-0.001***	-0.001***
			(0.000)	(0.000)	(0.000)
Less than 1x per month			0.112***	0.097***	0.096***
			(0.000)	(0.000)	(0.000)
At least 1x per month			0.150***	0.138***	0.138***
			(0.000)	(0.000)	(0.000)
At least 1x per week			0.195***	0.183***	0.182***
			(0.000)	(0.000)	(0.000)
Daily			0.198***	0.186***	0.184***
			(0.000)	(0.000)	(0.000)
Transit is one of respondent's top 3 priorities			-0.145***	-0.136***	-0.136***
			(0.000)	(0.000)	(0.000)
Individual overall satisfaction			0.202***	0.186***	0.188***
			(0.000)	(0.000)	(0.000)
Number of cars (in million)				-0.429***	-0.449***
				(0.001)	(0.001)
Fare of mass transit (in PPP)					-0.039
					(0.529)
Female		-0.026***	-0.034***	-0.031***	-0.031***
		(0.001)	(0.000)	(0.000)	(0.000)
Age		0.000	-0.000	0.000	0.000
		(0.162)	(0.858)	(0.898)	(0.943)
High school		0.000	-0.014	-0.018	-0.017
		(0.997)	(0.266)	(0.129)	(0.169)
College		-0.018	-0.023	-0.027*	-0.025*
		(0.310)	(0.123)	(0.063)	(0.088)
Employee		-0.002	0.001	0.001	0.000
		(0.887)	(0.927)	(0.946)	(0.975)
Manual-worker		-0.007	-0.011	-0.010	-0.011
		(0.692)	(0.503)	(0.554)	(0.512)
Student		0.068***	0.023	0.024	0.023
		(0.000)	(0.178)	(0.160)	(0.168)
Unemployed		0.049***	0.020	0.016	0.015
		(0.009)	(0.400)	(0.510)	(0.556)
Not working		0.026	0.010	0.013	0.012

		(0.148)	(0.645)	(0.530)	(0.566)
Couple		-0.012	-0.002	0.003	0.003
		(0.196)	(0.856)	(0.782)	(0.801)
Single with kids		-0.069***	-0.039***	-0.035***	-0.035***
		(0.000)	(0.004)	(0.008)	(0.008)
Couple with kids		-0.043***	-0.013	-0.002	-0.003
		(0.001)	(0.173)	(0.802)	(0.732)
Other family types		-0.075***	-0.045***	-0.024*	-0.027*
		(0.000)	(0.000)	(0.061)	(0.053)
Born in the city		-0.045***	-0.020**	-0.017**	-0.018**
		(0.001)	(0.018)	(0.044)	(0.043)
Observations	14,926	14,537	13,973	13,973	13,973
Log-likelihood	-7884	-7429	-6226	-6159	-6156
Pseudo R-squared	0.021	0.052	0.175	0.184	0.185
LR test P-value	0.001	0.000	0.000	0.000	0.000

Notes: calculations were conducted on Flash Eurobarometer data. Omitted variables were: does not work; frequency of use: never; low level of deregulation; transportation is not listed among respondent's top 3 priorities; city is not congested. Individual characteristics include: gender, education, age, employment status, household type, born in the city.

Robust p values in parentheses. Errors corrected for clusters at the city level.
*** p<0.01, ** p<0.05, * p<0.1