THE DETERMINANTS OF LONG-DISTANCE BUSINESS TRAVEL IN FRANCE: AN ECONOMETRIC ANALYSIS

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ABSTRACT

This article explores the determinants that explain the propensity to engage in long-distance business travel. The data used come from the National Transport and Travel Survey conducted in 2008 with a representative sample of the French population. Following a review of the literature, a logistic regression analysis on the probability of an individual having taken at least one business trip in the last three months, shows that the most significant determinants are the socio-professional category, attachment to the public or private sector, income, gender and the nature (and especially the size) of the workplace location.

Keywords: long-distance business travel; workers; France.

INTRODUCTION

People's work-related travel practices fall into two main categories: firstly, home-to-work travel or commuting, and secondly business travel. By contrast with commuting, business travel is defined as travel to a workplace that is variable and irregular. It may be engaged in for a wide range of reasons: a meeting on another company site or with a customer, participation in a training course, motivational event (incentive travel) or conference, site maintenance, etc.

Business travel, in particular long-distance business travel (national and international, generally defined in the literature as trips in excess of 80 or 100 km), which is the subject of this paper, has received much less attention in research on the socio-economics of transport than home-to-work travel (Faulconbridge et al., 2009). Yet business travel is profoundly typical of certain modern forms of work, in which there is a reduced adherence to predefined locations (Crague, 2003; Vilhelmson and Thulin, 2001). This kind of travel is an essential and probably growing component of work activity for a number of professional categories, including some of the self-employed, executives and salespeople, as well as many company directors (Haynes, 2010).

However, it is not easy to arrive at an accurate estimate of the share of business travel in global travel demand, even if the analysis is restricted to Europe and the US. Nonetheless, various sources, particularly national travel surveys and a number of studies, amongst them the "World Travel Monitor" survey, suggest that business travel as a proportion of overall long-distance travel can currently be estimated at around 15%, both in Europe and the USA. The car, followed by the plane and train (in Europe, particularly in France), are the main forms of transport for travel of this kind. However, the role of the plane increases markedly with journey distance (Aguiléra, 2013).

The reasons behind the demand for business travel are now relatively well identified, though not so much by the literature relating to transport socio-economics, which has tended to neglect this issue (Faulconbridge et al., 2009), as work in industrial economics: the globalisation of companies and markets, the expansion of multi-facility companies, the introduction of multi-site team working, the growing reliance on outsourcing and partnerships with other companies. These different trends have effectively contributed to an overall increase in the need for companies to communicate with geographically remote interlocutors (customers, suppliers, etc., see Figure 1), and in particular their need for face-to-face communication, which has led to a growth in business travel (Haynes, 2010). Moreover, only certain communication needs can be met by information and communication technologies, largely because they fail to provide the richness of face-to-face communication when the content of discussion is complex and requires collaboration between multiple parties, but also because face-to-face meetings are essential to the process of forming relationships and establishing trust between people, factors that are essential in business relations (Storper and Venables, 2004). Face-to-face meetings thus remain essential, in particular for transnational firms

(Jones, 2007).
However, despite a number of results generated in recent work, there is still a lack of research that can genuinely explain the connections between, on the one hand, these different factors arising from corporate strategies, the nature and organisation of work and developments in ICT and, on the other hand, the actual and physical practice of business travel and the measurement of its scope (Aguiléra, 2008; Faulconbridge et al., 2009).

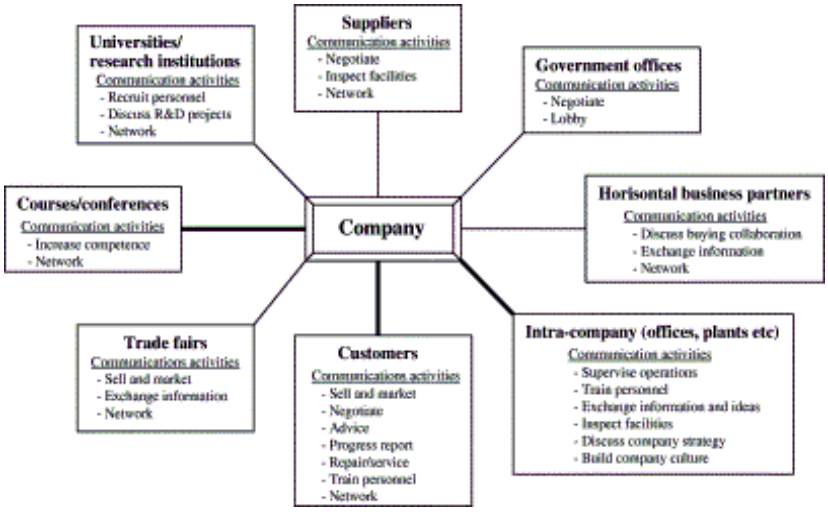

Figure 1 - Major contacts and communication activities within business travel (from Lian and Denstadli, 2004)

In particular, there is a dearth of knowledge about the factors that determine why certain people travel for business, and others do not. A number of empirical studies have identified certain determinants (such as socio-professional category or gender), but these studies mainly consider a particular category of worker, often senior executives, a particularly mobile group (Brown and O'Hara, 2003; Lian and Denstadli, 2004), or a specific business sector, such as the software industry (Wickham and Vecchi, 2008). However, we believe that there exists no research that considers all workers within a country and seeks to explain why some travel regularly on business and others do not. Yet this is an important question at a time when a shift towards more sustainable travel practices has become an international priority (Aguiléra, 2013).
The purpose of this article is to identify the main determinants that help to explain the propensity of French workers to travel for work-related reasons. Only long-distance business travel (defined here on the basis of available data as trips in excess of 80 kilometres) are considered, because intercity business travel brings very different criteria into play (Aguiléra et al., 2010). In addition, we hypothesise that the factors that determine the propensity for long-distance business travel are not exactly the same for national and international travel, in particular because international travel entails higher

financial and time costs and is only associated with global scale economic activities.
The paper is structured in three parts. In the first part we conduct a review of the available research to identify the variables that differentiate between workers in respect of long-distance business travel. The variables identified are socio-economic (relating to the type of work and company, age, gender and income) and spatial (size of the urban zone of residence) in nature. Several hypotheses are then formulated and subsequently tested empirically. The second part presents the data used, which come from the 2008 National Transport and Travel survey, and more specifically from the analysis of the file on business trips taken by French workers over distances in excess of 80 kilometres from their home in the three months preceding the survey. This part also describes our test sample and the variables that will be tested in the econometric model. The third part of the paper provides a logistic regression analysis that tests the explanatory power of these variables for the probability of someone having made at least one business trip in the previous three months. The conclusion summarises the main findings and explores a number of areas for improvement.

LITERATURE REVIEW AND HYPOTHESES

This first part provides a review of the literature with the aim of identifying the variables, relating both to the individual and his or her company, that may explain why certain workers need to travel for business. We use this analysis to formulate the hypotheses that will be tested using a logistic regression model.

Company characteristics

Business sector

The available empirical research suggests that some business sectors generate more travel than others, either because they have more mobile workers, or because their mobile workers travel more than in other sectors. The results obtained are not always explicit on this point.
However, this research, which largely consists of company monographs or focuses on samples of very specific workers (e.g. questions in airports), cannot be used to establish a kind of classification of the most mobile sectors, but only to identify a few, such as the IT and petroleum sectors. More generally, the sectors that generate the most business travel are, firstly, those that have a significant need to exchange complex data both with their customers, suppliers and partners and within the company (which can generate mobility if the company has several sites); secondly those whose marketplaces extend beyond their individual location; and finally those that have substantial training and information needs, which contribute significantly to mobility demand. Thus, for the

Norwegian employees (travelling by air) interviewed by I. Lian and J.M. Denstadli (2004), 42% of domestic business travel was generated by conferences, courses and conventions. In Sweden, about one fifth of long-distance business trips are taken for the purpose of conferences and other events, whereas meetings, customer visits, etc. account for about half (Frändberg and Vilhelmson, 2003). Generally speaking, it would seem that the business sectors that generate the most mobility are those that deal with the higher corporate echelons (such as consulting) and, in industry, sectors with a large technological component (Hugoson, 2001).
However, the business sector is probably not the most relevant variable for explaining corporate mobility needs, in particular because organisational strategies (sites, functions) and marketplace geography strategies can vary greatly within a single sector, as has been shown, for example, for the business services sector (Aguiléra, 2003).

Public sector versus private sector

A company's adherence to the public or private sector seems a greater differential factor than its business sector, with the private sector logically generating more travel than the public sector, in particular international travel (Crague, 2003; Lian and Denstadli, 2004). Moreover, the reasons for business travel differ between the public sector, where long-distance business travel is much more likely to relate to conferences and courses, and the private sector, where the main reasons for travel are sales, marketing and consulting (Lian and Denstadli, 2004).

Company strategies: marketplace, location(s), use of ICT and control of travel costs

Apart from the business sector and the distinction between public and private, the company's specific characteristics and strategy (in particular: operational organisation, number of sites and marketplace geography) are, as we have previously shown, fundamental for assessing the travel needs of certain employees (Aguiléra, 2008). Yet there has so far been little exploration of these questions in the literature, although a number of parameters can be proposed on the basis of available research.
One parameter is company size: studying interregional travel from Jönköping airport in Sweden, P. Hugoson (2001) shows that the need for business travel grows with company size, probably because of the links between size, marketplace geography (globalisation) and multisite organisation.
A second parameter is the company's spatial and functional organisation, whether it has one or more sites, and if so, how far apart they are, and also whether or not the different functions (production, management, etc.) are represented on each of the sites. Little research has been done on this subject, but a study on an automotive subcontractor shows that having specialised production sites and management functions concentrated at head office, generates a great deal of travel between sites in order to ensure that they

are operating properly and in particular to synchronise their activities (Aguiléra et al., 2007).

The way a company organises its work (in particular the work of mobile employees), and in particular its use of Information and Communication Technologies (ICT), is a third important parameter. Research conducted by A. Aguiléra and V. Lethiais (2011) has shown that by using certain communication tools it is possible to reduce long-distance business travel significantly. However there is no evident substitution effect between ICT use and business travel in companies. In particular it recent empirical studies have demonstrated that videoconferencing does not in general reduce the number or frequency of business travel, unless the company has developed an explicit strategy in this area (Lu and Peeta, 2009). Otherwise videoconferencing appears supplementary to business contacts *i.e.* those who videoconference the most are also those who travel the most for business purpose (Arnfalk and Kogg, 2003; Denstadli et al., 2013).

Other factors retaive to work organization but are less easily measurable because they are linked with the organisational proximity between interlocutors (such as degree of familiarity and trust, etc.), help to degree of need for face-to-face contact, and therefore for mobility (Aguiléra et al., 2012a; Boshma, 2005). Another potentially significant parameter is how much flexibility employees have in organising their work-related travel. Several studies have shown that business travel is highly time-consuming and also has a significant negative impact on health and the balance between working and family life (Espino et al., 2012; Gustafson, 2006). As a result, some employees employ strategies to reduce the number of business trips they take, notably by assigning them to their subordinates (Aguiléra et al., 2007).

Company policy on the management of the costs generated by business travel is a fourth parameter to consider. Business travel is often the second largest expenditure item in corporate budgets, and firms are therefore increasingly introducing strategies aimed at reducing spending on travel (Anderson et al., 1999). However, the available research shows that so far these strategies (called corporate travel management schemes) designed not so much to cut down the amount people travel as to reduce the unit costs of travel (e.g. by travelling economy class).

A fifth factor in distinguishing between companies in terms of how much business travel they generate, relates to their location strategy. Apart from the number of sites (and the distance between those sites), the effects of which we have already referred to, the characteristics of the location of the company (or more specifically, of each site) need to be considered. Indeed, companies that have the highest demand for long-distance business travel are well advised to locate themselves in places that give them good access (in terms of time and transport costs) to the areas with which they need to establish relations. However, there are significant differences in accessibility, firstly between urban and rural areas, with few companies, and above all few global companies, choosing a rural location, and secondly between urban areas, not all of which are equally accessible, particularly when the international dimension is considered (McCann and Acs, 2011). Metropolitan areas, which offer excellent access to both

transport networks (in the direction of other big cities) and telecommunications networks (the two being largely complementary in corporate practices (Aguiléra et al., 2012b)), are best placed for companies with international networks (Sassen, 2002). In small and medium-sized towns, accessibility is not as good and moreover the majority of the economic fabric is geared to the needs of the local population rather than of global companies. Concomitantly, the availability of rapid transport systems (plane and train, particularly in France) reduces the incentives on companies and employees to rationalise their business travel practices, compared with areas where mobility constraints are tougher (Aguiléra et al., 2007). Cities and large towns are therefore areas where the propensity of companies to generate business travel, in particular international business travel, will in principle be greater than in small and medium-sized towns, and of course in rural areas, even though little empirical work has been done to explore this question (Charlot and Duranton, 2006; Hugoson, 2001).

The worker's professional and personal characteristics

Position held and level of responsibility

Certain professions and, more specifically, certain positions within companies, involve (substantial) travel, whereas others do not (Wickham and Vecchi, 2008). The available research on the subject identifies two differential variables: the first is the function held, i.e. the nature of the tasks performed, whereas the second is the level of responsibility in the exercise of that function. These two variables are linked with the need for business travel because they help to distinguish between jobs that do or do not involve interchanges with internal and external interlocutors, as well as the content of those interchanges (simple or complex, i.e. entailing a degree of face-to-face communication).
Management functions, sales functions and functions in which there is a powerful need for complex information (design, research and development, etc.) seem to be amongst the most mobile (Aguiléra, 2008). As regards management functions, mobility is associated in particular with the need to monitor multiple company sites and to negotiate with customers and more broadly with the company's different partners. Sales functions also demand direct relations with customers, which entail travelling. And finally, functions associated with complex information (i.e. information that cannot be exchanged by ICT) need to work in collaboration with various interlocutors in developing knowledge and/or products (because of their complexity and/or the customer's needs for personalisation). The self-employed, who often combine several of these functions, are in general particularly mobile (Arnfalk and Kogg, 2003).
Moreover, the need to travel tends to increase with the level of responsibility. However, this parameter can also bring greater flexibility in controlling, and in particular reducing, the degree of mobility required (Aguiléra et al., 2007). So the links between responsibility and mobility are complex, though the literature suggests that company directors and

senior executives are the categories that take the most business trips, in particular abroad (Arnfalk and Kogg, 2003; Lian and Denstadli, 2004).
Finally, although there is little research on the subject, it seems that the need for travel can also, to some degree, be high in certain technical positions within companies, for example in connection with the maintenance needs of different sites (Aguiléra et al., 2007).

Gender, age and income

The literature also shows that the need for business travel is affected by a number of individual characteristics of workers, which in certain cases coincide with the previous variables.
The first is age, which is partially linked with the level of professional responsibility (which generally rises with time, at least for executives). Research suggests that the need for business travel, particularly long-distance travel, is generally greater at the end of a person's career, but also that the level can also be high in mid-career (Mason, 1999). There are two possible explanations: firstly, young executives generally have fewer family responsibilities and therefore find it easier to travel, and secondly, older executives sometimes become tired of travelling, in particular because of the family stresses it generates (Gustafson, 2006), and may choose to allocate some of their business trips to younger colleagues (Aguiléra et al., 2007).
Income level is another variable that particularly affects mobility: the income levels of long-distance business travellers are markedly higher than the average (Mallet, 1999), in keeping with their high professional status. In the United States in 2002, for example, the national travel survey indicates that 27% of business trips were made by people belonging to households with annual income in excess of $100,000, i.e. more than double the proportion that these households represent in the US population as a whole.
A final characteristic of business travellers is the very significant overrepresentation of men (Collins and Tisdell, 2002; Frändberg and Vilhelmson, 2003; Harris and Ateljevic, 2003). In the USA, the 2002 figures show that 77% of business trips were taken by men. This marked male overrepresentation is explained by the fact that men occupy the majority of positions of responsibility. This is coupled with a certain reluctance on the part of women to travel far from the workplace, particularly when they have children, because of the pressures it places on their work-life balance (Connel and Wood; Espino et al., 2012; Gustafson, 2006).

Hypotheses

This literature review prompts us to formulate the hypotheses listed below, which will then be tested in a logistic regression model on the mobility database for French workers.

(H1) The probability of making a long-distance business trip is greater among socio-professional categories with responsibilities involving (face to face) contacts within and outside their organization, and is also greater in the private sector and the self-employed than in the public sector;
(H2) The probability of making a long-distance business trip is greater at the beginning and at the end of one's career;
(H3) The probability of making a long-distance business trip is greater in men than in women;
(H4) The probability of making a long-distance business trip increases with income;
(H5) The probability of making long-distance business trip increases with the use of videoconferencing;
(H6) The probability of making a long-distance business trip is greater in urban areas than in rural areas, and increases with the size of the urban area.
We have not formulated a hypothesis on the impact of the business sector in which the worker's company operates, or of the number of sites the company has, or the location of its main partners, because the data we subsequently use do not provide this information.

DATA, SAMPLE AND VARIABLES

The 2008 National Transport and Travel Survey

The French National Transport and Travel Survey (ENTD) is conducted approximately every 10 years by the Ministry of Transport, INSEE (national institute of statistics and economic studies) and Ifsttar (French institute of science and technology of transport, planning and infrastructures). The purpose of this survey is to obtain information on the travel patterns of individuals living in mainland France. The description of trips (a trip being defined by a motive) distinguishes between regular short-distance trips and long-distance trips.
As in many surveys on travel practices, ENTD makes a distinction between local mobility (daily) and long-distance mobility (less frequent than local mobility). Local mobility is defined as all trips that individuals make within a radius of 80 kilometres around their home as the crow flies. Long-distance mobility refers to trips over distances greater than 80 kilometres from home, in France or abroad. This distinction is justified by the numerous factors that differentiate the two types of mobility, in particular the choice of transport method, the forced or unforced nature of the journey, the categories of individuals travelling, the degree of seasonality, etc. Local mobility accounts for almost 99% of travel by French people, but only 60% of traveller-miles (Quételard, 2010). This means that long-distance travel accounts for 40% of the miles covered by French people (Armoogum et al., 2010).
The sample in the 2008 ENTD (national transport and travel survey) consists of 20,178

households, encompassing 44,958 individuals aged 6 and above who were asked about their regular travel practices, and 18,632 randomly selected individuals who described their long-distance travel practices. The random selection of the respondents guarantees the representativeness of this subsample (Armoogum et al., 2010).

Long-distance business travel

French long-distance travel includes private purposes (shopping, leisure, etc.) and work-related purposes, which distinguish between the two categories we described in our introduction: home-to-work travel and business travel, the latter itself covering four categories of purpose:

- Work other than in a fixed and regular location, excluding rounds (worksite, professional contacts, meetings, visits to customers or suppliers, business lunches…);
- Courses, conferences, conventions, training, exhibitions, etc.
- Professional rounds (sales reps) or visit to patients;
- Other work-related reasons.

Only 13% of workers in France in 2008 said that they had taken at least one long-distance business trip in the previous three months, and only 2% had travelled abroad at least once on business.

As regards the reasons for travel, slightly over half the workers who had taken at least one business trip (53%) declared that one or less of these trips was for work away from their fixed and regular workplace, 31% of them mentioned a course, conference, etc., whereas 22% mentioned another activity, and 12% a work-related round. The total is greater than 100%, because some may have taken more than one business trip.

The analytical sample

The purpose of this article is to identify the determinants that explain the propensity of French working people to take long-distance business trips. Our analytical sample therefore consists of all working age individuals (in employment) surveyed in 2008, who were questioned on their long-distance travel over the previous three months, in all slightly over 8600 people. This subsample is representative in that it is constructed from the sample of all French working age individuals who had made at least one long-distance trip.

Variables employed

In references to the hypotheses above, and on the basis of the data available in the 2008 ENTD, we selected several relevant variables that might explain the probability of long-distance business travel. It should be recalled here that the ENTD only provides information on individuals, not on the characteristics of their employers (not even their

business sector).
The ENTD therefore provides standard data, such as the age, gender and income of each respondent, but also information about the area where their workplace (fixed and regular) is located.

Function held, level of responsibility and status (self-employed, public, private)

The ENTD provides the socio-professional category of the worker. 17 categories are provided, which correspond to the usual categories used by INSEE for the Population Census. This variable gives information about the function held, the level of responsibility and also indicates if the individual is employed by the public sector or is self-employed or employed by the private sector. Hence this variable will be used to test the hypothesis H1.
Table I provides the 17 modalities of this variable. We have classified them roughly into 4 categories according on the one hand to their belonging to the public sector or to private/self-employed category, on the other hand, to whether they involve high/medium or low face to face contacts (and long-distance trips).

Table I: The 17 socio-professional categories provided by the ENTD (classification made by the authors)

	Public sector	Private sector and self-employed
High/medium level of face to face long-distance contacts	Executives Intermediary professionals	Company directors Executives Intermediary professionals Technicians Self-employed professionals
Low level of face to face long-distance contacts	Public service employees	Farmers Craftsmen Tradespeople Private service employees Foremen Shopfloor employees Qualified workers Non qualified workers Workers in the agricultural sector

Gender, age and income

For each working age individual, the ENTD specifies their gender and their age in 5 ranges: under 30, 30 to 39, 40 to 49, 50 to 59, 60 and above. In addition, income levels are divided into four brackets (first quartile to fourth quartile of income).

Use of videoconferencing

The ENTD indicates whether the respondent has used videoconferencing (for work purpose) within the last three months (answer = yes or no).

Characteristics of the area of location

The ENTD provides indications about the area containing the community where the respondent's fixed and regular workplace (i.e. employer in the case of an employee) is located. On the one hand, the survey identifies municipalities within an urban area (which send at least 40% of their working population to an urban centre, i.e. a large city and its suburbs). In this case, it specifies the size of the urban area in question: under 100,000 inhabitants, between 100,000 and 10,000,000 inhabitants, and finally the Paris urban area (approximately 10,000,000 inhabitants). On the other hand, rural areas constitute a second category.
So ultimately, the variable that we will consider in the model and that describes the nature of the workplace area comprises the following modalities: rural areas / urban area with under 100,000 inhabitants / urban area with 100,000 to 10,000,000 inhabitants / Paris urban area.

PROPENSITY TO ENGAGE IN LONG-DISTANCE BUSINESS TRAVEL

This third part proposes a logistic regression analysis incorporating the variables we have just presented. The model explains the likelihood of a worker having taken at least one long-distance business trip in the previous three months.
The variable explained is then dichotomous: its value is 1 if the person took at least one business trip in the previous three months. The explanatory variables are the ones we have just presented.
The results are shown in Table II, which specifies, for each modality of the explanatory variables, its significance, its coefficient (value and sign) and its marginal effect. In addition, the level significance of each modality is indicated in the test column.
Most of the modalities of the variable that combines socio-professional activity and status (self-employed/public/private) are significant, except for 3 categories: tradespeople, company directors and self-employed professionals. All categories are less mobile than the executives from the private sector which have the highest likelihood having taken at least one long-distance business trip in the previous three months. In addition, Table II indicates that the most mobile categories are, as expected (hypothesis H1 and classification proposed in the previous section): company directors (but the modality is not significant), self-employed professionals (not significant), executives from the public sector and, to a lesser extent: intermediary professional (private and public

sector) company technicians. Two other categories are particularly mobiles but had not identified as such in our classification: farmers and tradespeople. It seems that a significant proportion of farmers and tradespeople have clients located at distance and have to make regular face to face encounters. Finally, the less mobile categories are the following: public and private service employees, foremen, shopfloor employees and the three categories of workers.

Table II - Likelihood of a worker having taken at least one long-distance business trip in the previous three months

Explanatory variables *(modality of reference in Italics)*	Modalities of the variables	N	Coeff	Test (p-values)	Marginal effect (%)	Odds ratio
Constant *Modality of reference*			-0.7581		31.9	
Gender *Woman*	Man	4056	0.6793	< 0.001	+16.1	1.972
Socio-professional category *Executives from the private sector*	Farmers	246	- 0.6909	< 0.05	- 12.9	0.501
	Craftsmen	186	- 1.7236	< 0.001	- 24.2	0.178
	Tradespeople	211	- 0.4201	n.s.		0.657
	Company directors	52	- 0.6031	n.s.		0.547
	Self-employed professionals	147	- 0.0516	n.s.		0.950
	Executives from public sector	641	- 0.4396	< 0.05	- 8.7	0.644
	Intermediary professionals from public sector	986	- 0.9391	< 0.001	- 16.4	0.391
	Public service employees	951	- 1.7600	< 0.001	- 24.4	0.172
	Intermediary professionals from private sector	616	- 0.7966	< 0.001	- 14.5	0.451
	Company technicians	376	- 0.9338	< 0.001	- 16.3	0.393
	Foremen	166	- 1.9770	< 0.001	- 25.8	0.138
	Employees from private sector	634	- 1.3539	< 0.001	- 21.1	0.258
	Shopfloor employees	366	- 1.7292	< 0.001	- 24.2	0.177
	Private service employees	650	- 1.8789	< 0.001	- 25.2	0.153
	Qualified workers	1061	- 2.0350	< 0.001	- 26.1	0.131
	Non qualified workers	401	- 2.1371	< 0.001	- 26.7	0.118
	Workers in the agricultural sector	68	- 1.8707	< 0.005	- 25.2	0.154
Income *4th quartile*	1st quartile	1756	-0.6082	< 0.001	- 11.6	0.544
	2nd quartile	1941	-0.5118	< 0.005	- 10.0	0.599
	3rd quartile	2181	-0.4503	< 0.005	- 8.9	0.637
Workplace location *Urban area from 100,000 to 10,000,000.*	Rural areas	1606	- 0.4397	< 0.005	- 8.7	0.644
	Urban areas with less 100,000 inhabitants	1167	- 0.1962	n.s.		0.822
	Paris urban area	2769	- 0.8241	< 0.001	- 14.9	0.439
Age *50 to 59*	Under 30	1393	0.0633	n.s.		1.065
	30 to 39	2151	0.2532	< 0.10	+ 5.7	1.288
	40 to 49	2457	0.0080	n.s.		1.008
	60 and more	303	-0.2149	n.s.		0.807
Videoconferencing *No*	Yes	497	0.5821	< 0.001	+13.7	1.790
	No response	1594	0.2945	< 0.05	+ 6.7	1.342
Sample : 8666 French workers from ENTD Concording predictions : 74.7 Non concording predictions : 24.7 ddl : 32 P : < .0001 Mcfadden rho-square : 0.136						

Source: Author's calculation from the French National Transport and Travel Survey (ENTD 2008).
Note: Income classes are calculated from the whole sample and not the subsample. This explains why the number of observations is not exactly the same for each quartile.
How to read the Table: for individuals corresponding to the reference situation, the probability of having made at least one long-distance business trip in the previous three months is 31.9%. Other values in the column "marginal effect" correspond to deviations from the reference category. For example, all things being

equal the probability for men of having made at least one long-distance business trip in the last three months is 48.0%; and the difference compared to women is: 48.0%-31.9%=16.1%.

Conversely, hypothesis H2 can not be confirmed. Indeed most of the age-related modalities are not significant: the model only shows that workers aged between 30 and 39 are more likely to have travelled for business than workers aged between 50 and 59 which could confirm that at the end of the career people try to reduce long-distance travel.

The model confirms that gender is a significant and important variable. In keeping with hypothesis H3, men are substantially more likely to have travelled at least once for business in the previous three months. As expected, income is also a big differential factor, since mobility increases with income (H4).

In addition Table II confirms that videoconferencing does not substitute with business travel. However, according to hypothesis H5, the model shows a positive relationship between business travel and the professional use of videoconferencing.

Finally, spatial variables are significant, except the “urban areas with less 100,000 inhabitants” modality. However, in contradiction to hypothesis H6, the probability of a worker having taken a long-distance business trip does not increase with the size of the urban area. The probability of this is effectively smaller in rural areas, but also in Paris compared with large urban areas (100,000 to 10,000,000 inhabitants). France’s still highly centralised urban hierarchy, and its transport network, in particular the high-speed railway linking Paris to the big urban areas, explain this high level of mobility from the big urban areas in the direction of the capital (Klein, 2003).

CONCLUSION

Business travel has been less analyzed by researchers than home-to-work commuting behaviour. In particular, the determinants that explain the propensity to engage in long-distance business travel have not been clearly identified, particularly at a national level.

This paper tried to identify the main determinants (characteristics of the worker and characteristics of his or her job, including its location) explaining the propensity to engage in long-distance business travel over a three months periods. The data used came from the National Transport and Travel Survey conducted in 2008 with a representative sample of the French population. Following a review of the literature, we have tested several hypotheses by using a logistic regression analysis on the probability of an individual having taken at least one business trip in the last three months.

Results show that the most significant determinants are the socio-professional category, attachment to the public or private sector, income, gender and the nature (and especially the size) of the workplace location. As expected, mobility increases with work responsibility and with the complexity of knowledge required, and also with income. In addition, mobility is higher for men compared to women. This can be explained by the fact that men occupy the majority of positions of responsibility. Moreover women show a

certain reluctance to travel far from the workplace because of household responsibilities. In addition, our work confirms the complementarity between videoconferencing and business travel. Finally, people working in medium-sized to big urban areas are more mobile than people working in rural areas and also (and surprisingly) than people having their job in the Paris urban areas. The possible explanation is that the centralisation of both French urban hierarchy and the transport network (high speed rail) explain the existence of a high level of mobility in the direction of the Paris urban area.

Although interesting, these results are limited because they concern only French workers. It would be interesting to compare these results with data coming from other European countries and from north-America. In addition, our model explains only the propensity to engage in long-distance business travel. The next step will be to identify the determinants of the number of trips made during the previous three months. In addition, it should be interesting to test whether there is a difference between national and international business trips. In particular there should be a difference between the Paris urban area, which belongs to the network of the international cities, and the other urban areas.

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