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Document de Travail

Working Paper

2007-13

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The Structuring of Markets for Infomediation: Horizontal versus Vertical Dynamics

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Abstract: Two factors play a decisive role in the structuring of Internet based markets for infomediation (informational intermediation): network externalities and information processing. First, these are examined separately. The two-sided markets literature focuses on the impact of network externalities in a context of competition among 2-sided platforms. It explains the level of concentration/fragmentation of those markets, and explores its welfare implications. We shall call this model the "horizontal" model of structuring. Symetrically, a "vertical" process of division of labour among the infomediaries' value chain is observed. It results of the complexification of intermediation in a context of strong quality uncertainty and high codification investments. Intermediaries specialize and develop cooperative relationships with each others. Secondly, the paper examines the implications of the simultaneous co-existence of *H* and *V* dynamics on the structuring of the market for infomediation. This co-existence generates frictions. Two levels of frictions are distinguished: i) market governance (standards and certifications) ; ii) commercial interactions (the so-called 'coopetition'). Empirical illustrations are taken from the analysis of Internet based labour market intermediaries.

Key-Words: Two-sided markets; competition; vertical specialization; regulation; coopetition; labour market intermediaries.

Résumé : Deux facteurs jouent un rôle décisif dans la structuration des marchés d'infomédiation : les externalités de réseau et la codification de l'information. Dans un premier temps, ces facteurs sont examinés séparément. La littérature sur les marchés bifaces s'intéresse à la concurrence entre plates-formes d'infomédiation dans un contexte d'externalités de réseau : il s'agit du modèle de structuration "horizontale". Symétriquement, un processus de division du travail entre infomédiaires est observé le long de la chaîne "verticale" de l'information. Il résulte de l'incertitude qualitative et des efforts consentis par les infomédiaires pour mettre l'information dans un format adapté aux canaux de communication employés. Les intermédiaires se spécialisent et développent des relations contractuelles entre eux. Dans un deuxième temps, nous analysons les effets de la coexistence simultanée des logiques horizontale et verticale de structuration. Cette coexistence génère des frictions, que nous situons à deux niveaux: i) les instruments de gouvernance (mesures et standards) ; ii) les interactions commerciales (la "coopétition"). Les illustrations empiriques sont tirées de l'analyse des intermédiaires du marché du travail positionnés sur Internet.

Mots-Clés : Marchés bifaces ; NTIC ; concurrence ; spécialisation verticale ; régulation ; intermédiaires du marché du travail.

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1. Introduction

The extension of the Internet to economic activities in the mid 1990s led economists to speculate on the effects of the new technology on the market structure. One discussion concerned the potential of the Internet to cause a movement of *dis*intermediation. In many markets, two types of search methods coexist: direct search and indirect (intermediated) search. The presence of intermediaries is explained by their ability to reap a surplus associated with the reduction of buyers' and sellers' search costs (Rubinstein and Wolinsky, 1987). Gellman (1996) asserted that – due to its capacity to lower the cost of direct search – the Internet would raise the relative cost of intermediation. However, empirical evidence contradicts this assumption. The extinction of certain "brick and mortar" intermediaries was counterbalanced by a process of digital *re*intermediation (Bailey and Bakos, 1997; Burton and Mooney, 1998; Bakos, 2001). Moreover, innovative forms of intermediation are a key feature of electronic commerce: software platforms create value by bringing together multiple distinct groups of customers (Evans and al., 2006). Contrary to Gellman's prediction, information technologies reduce the relative cost of intermediation, especially when intermediation is about information – the so-called "infomediation" (Gaudeul and Jullien, 2007). In fact, infomediaries proliferate on the Internet. This acknowledged fact raises many research questions, including the following: which are the key features of markets for infomediation? How do infomediaries strategically interact? What do stabilized architecture of these markets look like?

The theory of industrial organization (IO) takes great interest in this issue. The theoretical analysis of two-sided markets (Caillaud and Jullien, 2003; Rochet and Tirole, 2003; Armstrong, 2005) focuses on competition among intermediaries whose activity consists in facilitating the interactions between two or more separate groups of customers. Two-sided markets are characterized by strong indirect externalities, defined as the dependance of the utility of *x-side* members to the presence of *y-side* members on the platform. Positive externalities are a source of concentration. However, one decisive contribution of the IO literature is to show that, under certain conditions, two-sidedness does not lead to fully concentrated trading activities (Ellison and Ellison, 2005).

Another issue is central, though less examined in the economic literature: when intermediation mechanisms become complex, a division of labour is observed along the value chain. Intermediaries specialize, new intermediaries emerge, and several actors share the mission of facilitating interactions between end-users. Examples of such a vertical specialization are numerous. The growth of advertising services on web search engines has led to the development of an industry of consultants (the "search engine optimizers", Battelle, 2005) who slipp in between announcers and advertisers. Vertical search engines aggregate results stemming from several infomediaries (Google News in the press sector; Simplyhired in the job ads business). New tastemakers, such as bloggs and communities, operate as performant filters to facilitate consumer choice in long tail businesses (Anderson, 2006). Positioning within the sector value chain is a key strategic issue for intermediaries. As a consequence, the latter must develop contractual relationships with other intermediaries and ensure the technical feasability of such relationships.

The objective of the paper is to explore the implications of the coexistence of these two dynamics on the structuring of markets for infomediation. First, these are examined separately. The two-sided markets literature focuses on the impact of network externalities in a context of competition among 2-sided platforms. It explains the level of concentration/fragmentation of those markets, and explores its welfare implications. We shall call this model the "horizontal" (*H*) model of structuring (2). Symetrically, a "vertical" (*V*) process of division of labour among the infomediaries' value chain is observed. It results of the complexification of the intermediation process in a context of strong quality uncertainty and high codification investments. Intermediaries specialize and develop cooperative relationships with each others (3). Secondly, the paper examines the implications of the simultaneous co-existence of *H* and *V* dynamics on the structuring of the market for infomediation. This co-existence generates friction. Two levels of friction are distinguished : i) governance (standards and certifications) ; ii) commercial interactions (the so-called 'coopetition') (4).

This study builds upon a four years doctoral research on French Internet based labour market intermediaries (Mellet, 2006). Empirical sources include 24 non-directive interviews with labour market professionnals, the extensive survey of literature and professionnal documentation, and the observation of the functioning of labour market intermediaries. This material will be used to illustrate the ongoing structuring of a market for infomediation. Shall we consider the market for 'labour market services' as a particular or as a generic case? My view is that beside its distinctive features, this market has strong similarities with other markets (especially the advertising market). The possibility to extend this framework to other fields of analysis will be discussed in the summary/discussion section (5).

2. The Horizontal Structuring of markets for infomediation

The digitization of the information economy reduces the cost of intermediation, for platform users as well as for platform managers. For exemple, in 2001, the unit cost of a job ad was €9000 in a magazine (average cost in *L'Express*) and €300 on a web-based job board (average cost on *Monster.com*). A decline in newspaper advertising was observed in the late 1990s, while Internet advertising steadily grew in the same time (Valetta, 2005). Though not trifling, the cost of establishing a two-sided platform is reduced on the Internet: entry barriers associated with the holding of physical assets drop (Porter, 2001). The conjunction of these two phenomena (increasing demand for Internet advertising and lowered entry barriers) increased competition among intermediaries in the early years of electronic commerce. Did it bring the market for labour market intermediation closer to its competitive equilibrium?

This prediction ignores a central feature of information industries, namely network effects (Shapiro and Varian, 1998; Pirrong, 2003). Yet, network effects are a powerful generator of imperfect competition. In the presence of positive network effects, markets consolidate because agents prefer to interact on the same platform. When markets are subject to negative network effects, they fragment because agents and the problems they meet differ (Harris, 1995). This movement of concentration and fragmentation characterizes the horizontal structuring of markets for infomediation.

a. Consolidation and fragmentation

Shapiro and Varian (1998) show that the properties of information as an economic good (non-rivalry, non-excludability, small marginal cost of reproduction) generate strong feed-back (or network) effects. There is a positive direct network externality when the value of a good or service increases with the number of agents using it – operating systems (Windows, Linux, OSMac) illustrate this case. Otherwise, two-sided markets are characterised by indirect positive network externalities: the value of the service provided by the platform increases with the number of agents situated on the other sided of the platform. Obviously, labour market intermediation is subject to strong indirect positive feed-back effects. For a job seeker, the utility of a job board increases with the number of displayed ads; symetrically, a recruiter would prefer to reach a large number of potential applicants.

Caillaud and Jullien (2003) present a model where two identical platforms compete in order to attract two separate groups of customers. When intermediation services are exclusive, competition *à la Bertrand* leads to the complete domination of a platform. In equilibrium, one platform remains (the choice of victorious platform is arbitrary), but it makes zero profit (if the monopoly is contestable). On real markets, the first mover can gain the upper hand over challengers by attracting customers quicker. Moreover, the lock-in effect induced by the harnessing of customers reduces the contestability of monopoly: once internalized, network effects raise up entry barriers. The *Monster.com* job board illustrates this phenomenon. Founded in 1994, it rapidly built a profitable business model: recruiters paid to post job ads on the platform, and subsidized job seekers who had free of charge access to these ads. In 2001, Monster captured two thirds of the total audience of U.S. job boards. However, this predominant position was only transitory. Indeed, as shown by Caillaud and Jullien (2003), under certain hypotheses, several dominant platforms may share the market for infomediation. One of these conditions is multi-homing: intermediation services are not exclusive and end-users may benefit from addressing simultaneously several platforms. Multi-homing softens consolidation and allows several platforms to coexist and make positive profit. The U.S. job advertising market is now dominated not only by one, but by three main companies: *Careerbuilder* (which was acquired by a consortium of press conglomerates and built upon a large clientele of recruiting firms); *Hotjobs* (which was acquired by *Yahoo* in 2001 and built upon the portal's audience); and *Monster*. In 2005, these companies had about the same audience.

Matching platforms may also be characterized by negative indirect network effects: the utility of the platform to *x*-side users decreases with the presence of certain groups of users on *y*-side. This effect is a source of market fragmentation (Harris, 1995). Such a situation is conceivable only if the traded good or service is not homogeneous – otherwise, the multiplication of trading partners would necessarily raise up (lower) the price of the supplied (asked) good [2]. Under heterogeneity, preliminary identification is necessary and its price raises with the number of inappropriate trading partners: the latter add "noise". This negative effect explains the emergence and success of "niche" boards which offer targeted matching. Specialization mainly concerns three domains: location, sector and profession.

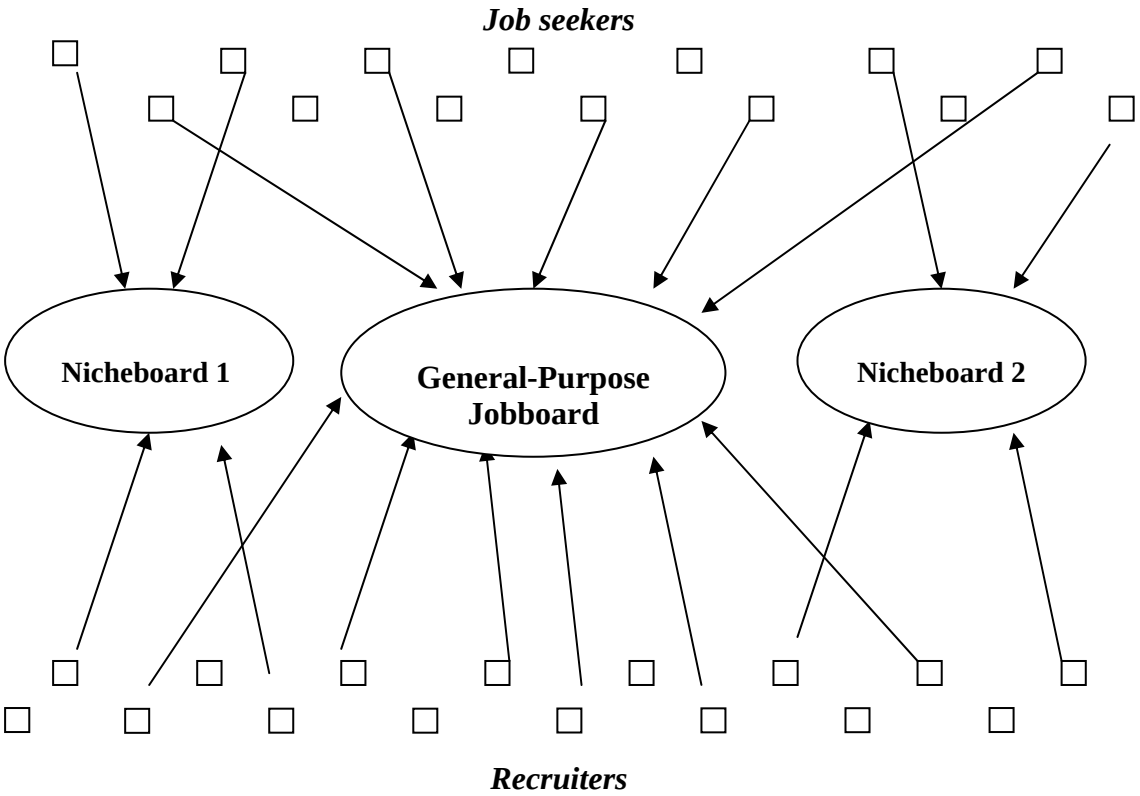
[2] Gabszevicz and Sonnac (2002) examine the implication of another sort of negative indirect externality in the TV market: congestion is caused by the negative relationship between the length of advertisements and the utility of television viewers.

Market fragmentation raises two new questions: In a labour market where all applicants' and positions' profiles differ, is there a limitation to endless fragmentation? How do general-purpose job boards react to the multiplication of niche boards? First, specialized as they are, matching platforms can only survive if they internalize positive network effects on the market segment they occupy. They must reach a critical audience on both sides in order to last. Moreover, fixed costs such as advertising are not insignificant. In order to divide these costs, niche platforms may join their forces. As an example, 16 niche sites have decided to merge into a unique platform, called *Nicheboards*. Such an actor directly competes general-purpose platforms. The latter may react by developing thematic portals (*Monster.fr*) or by improving ads' listing.

b. Synthesis : the H Structure of markets for infomediation

The dynamics of platform competition under indirect (positive and negative) network effects leads to the emergence of horizontal (H) market structures. In the labour market, job seekers and recruiters meet search costs. Internet platforms facilitate matching by reducing search costs and centralizing supplies and demands. Platforms face fierce competition, but positive externalities contribute to the concentration of the market. Negative network effects explain the fragmentation of the aggregate market into several distinct sub-markets. The combination of these two effects characterizes the horizontal (H) structure of markets for infomediation (cf. diagram 1).

Diagram 1. The H structure of markets for infomediation



3. The Vertical structuring of makets for infomediation

A central feature of the platforms presented above is that they are supposed to manage all the matching process between end-users. This specification is maintained in the IO literature on two-sided markets. However, a rapid observation of many markets for infomediation leads to another view: intermediaries interact with each others, not only as competitors but also as trading partners. In other words, they specialize vertically: they furnish different types of services and, in many cases, several infomediaries are required to interconnect end-users.
In this section, I present two interrelated sources of vertical specialization: quality uncertainty and codification. Then I present the vertical (V) structuring of markets for infomediation.

a. Sources of vertical specialization

Models of intermediation (Rubinstein and Wolinsky, 1987, Yavas, 1994, Gaudeul and Jullien, 2007) usually rely on two more or less explicit assumptions: first, goods and services traded on the platform are highly standardized; secondly, information is presented *a priori* in a format compatible with digital networks. This corresponds to a very particular case of intermediation. When relaxing these assumptions, it becomes possible to differentiate intermediaries.

i) Variation in quality and the margins of search

As seen above, variety leads to horizontal specialization: different platforms perform matching for different sub-varieties of jobs. Variety may also lead to vertical specialization. This point was clearly demonstrated by Rees (1966) who initiated a body of literature that distinguishes job search/hiring channels according to the format and the content of information they favour. Rees shows that the standard search theory – and we shall add: the preceding literature on H infomediation – is only concerned with the extensive margin of information. Now, "the search for information in any market has both an extensive and an intensive margin. A buyer can search at the extensive margin by getting a quotation from one more seller. He can search at the intensive margin by getting additional information concerning an offer already received" (Rees, 1966: 560). Rees shows that information channels are not equally effective to convey information depending on whether the extensive or the intensive margin rules the search. Formal channels are more suited for markets for highly standardized goods and services where the extensive margin is more important. On the contrary, when there is great variation in quality, informal channels (personal networks and referrals) will be favoured because of their ability to convey information at its intensive margin. Following Rees' early work, many studies have shown the importance of informal information channels in labour markets (Granovetter, 1974, see Ioannides and Datcher-Loury, 2004, for a recent survey). However, the oppositions between formal and informal channels and between the two margins of information search do not exactly cover up. Rees points out that private placement agencies develop specific screening devices, such as tests or interviews. Bessy and Larquier (2001) compare British and French labour market intermediaries. They show that 'formal' intermediaries can be differentiated according to whether they primarily operate at the extensive margin (British agencies) or at the intensive margin (French

hiring offices) of information. Within the same employement area, several intermediaries intervene in the process of connecting up employers and job seekers: some favour the extensive margin of search (press and Internet media) while others develop intensive relationships with one or both sides of the market (temporary employment agencies, professional communities) (Benner, 2002). Digitization improves the extensive margin of search while its impact on the intensive margin is mitigate (Autor, 2001, Kuhn and Skuterud, 2004).
Finally, the heterogeneity of applicants and vacancies is a source of vertical specialization among infomediaries. The latter have an impact on the favoured margin of information search.

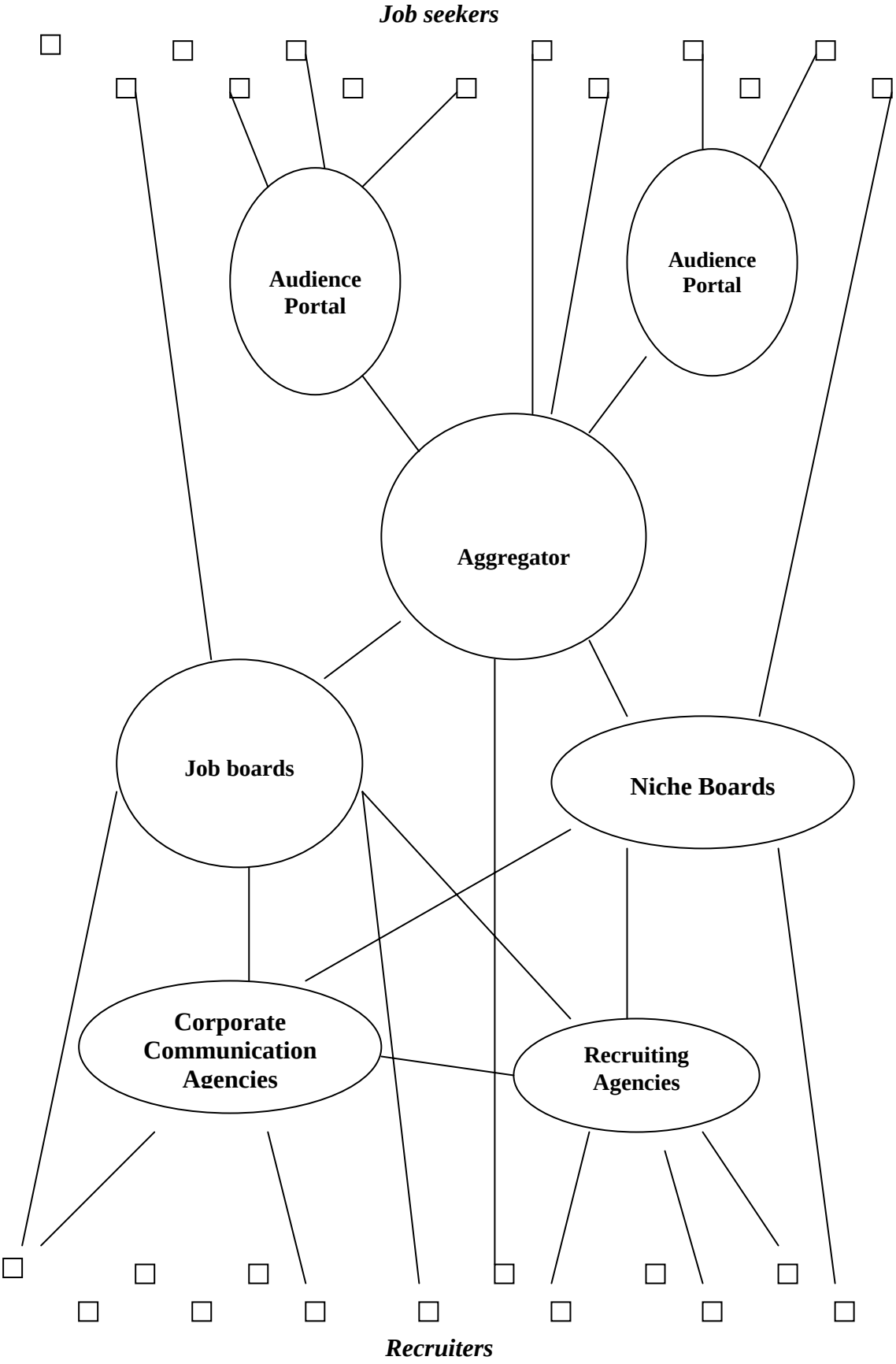
ii) Codification and the transfer of information through contexts

Another source of vertical specialization (one that is closely linked to variety) is codification. Search costs analyses present infomediaries as neutral information transmitters between suppliers and demanders. Implicitely, this means that information is *a priori* presented in a format compatible with its circulation in digital networks. However, in order to circulate as information, data must be beforehand formatted and structured. Cowan and Foray (1997) call this operation codification. Codification is the process by which tacit knowledge is articulated and converted into a message. According to Polanyi (1966), tacit knowledge is ineffable outside its context of expression. On the contrary, codified or general knowledge, which is detached from persons and attached to media, can be converted into bits, stored, processed and transferred.
Codification is a central issue in the labour market. Indeed, job seekers cannot present themselves in person to hundreds of potential employers. They have to translate their applicant profile into a *curriculum vitae* that retains only the relevant information. Conversely, a vacant position can circulate across contexts if and only if it is codified into a job advertisement. In both cases, codification implies a loss: not any information about a person and its life (or about a firm and its specificity) is relevant. Favoured markers are the one that enable comparison among and matching between vacancies and applicants: wage rate, tasks, diploma, experience, etc.
This complex process can be outsourced to several intermediaries. Consulting firms take advantage of their position at the junction of firms and markets: they are able to translate the specific characteristics of a vacant position into general information; they can identify the relevant media to circulate ads within the market; they are able to negotiate a wholesale price when buying advertising space (Eymard-Duvernay and Marchal, 1997). Press and Internet media only welcome formatted information: they are capable of transmitting information across local contexts. Thus, they focus on search at its extensive margin. However, the increase in the number of Internet sites led to the development of vertical search engines (such as *Keljob.com* or *Simplyhired.com*) whose mission consists in aggregating ads stemming from different sources. Vertical engines seldom interact with end-users. On the one side of the market, their partners are announcers and Internet advertisers (job boards) who may pay for their ads to be pushed. On the other side, their partners are audience portals (such as Msn, Orange or TF1) to whom they rent they "employment pages". Consequently, complex information processes lead to a vertical division of labour along the intermediation value chain.

b. The vertical value chain

On the labour market, agents face a double uncertainty: uncertainty on the location of suppliers and demanders and quality uncertainty. The first one is reduced by search at the extensive margin of information while the second one requires search at the intensive margin. Intermediaries specialize in order to improve search at its different margins. The use of several intermediaries enables agents to solve the dilemma between both margins of search: consultants make translations (of a specific position into an ad; of a codified curriculum into a singular applicant) while media improve information transfer across contexts. Some transactions can be carried out directly between intermediaries. Business arrangements are a source of transaction costs economies, and may improve the organization of the labour market. Technical agreements secure the compatibility of systems and guarantee fluid information flows. As a consequence, infomediaries position along the vertical value chain.
The matching of suppliers and demanders of work is made effective by the general consistency of these local bilateral agreements. The resulting structuring dynamics is vertical, since every infomediary is a link in the information chain (cf. diagram 2).

Diagram N°2: The V structure of markets for infomediation



4. The conflicting coexistence of H and V dynamics

I have presented in the preceding sections two perpendicular modes of structuring of a market for infomediation. The horizontal one focuses on competition among infomediaries in a context of indirect network effects. The vertical one stresses the division of labour along the infomediation value chain. Each model depicts a stabilized but only partial representation of the market. A new question is raised: what results from the simultaneous coexistence of H and V structuring logics?
In this section I will show that the coexistence of H and V dynamics generate tension. Since these interrelations are uneasy to model, I use an inductive method which consists in ascribing relations based on the observed case, the market for labour market infomediation. I shall distinguish two levels of interaction: i) the establishment governance instruments; ii) the setting of a business strategy. These levels will be successively examined.

a. Obstructed market governance

The (individually and collectively desirable) improvement of the market equilibrium relies on the establishment of governance instruments[3]. These instruments act as rules of the game that frame market transactions (North, 1990). This general argument applies in both dynamics. Indeed, horizontal competition would benefit from a unique and certified measurement of market share (i). Symmetrically, the establishment of a unique and certified technical standard would improve compatibility along the vertical value chain (ii). However, the ambiguous coexistence of these dynamics complicates the adoption of these instruments.

i) <u>From the H perspective: The delicate measurement of a market for infomediation</u>

Market trade is only possible if agents are able to appraise goods and services. Indeed, exchange will not take place if the parties do not have the perception that what they receive has more value than what is given. This perception depends on the ability to measure the quality of the traded good or service (Akerlof, 1970, Barzel, 1982). As a consequence, a supplier or a demander will address an intermediary if he is able to measure the quality of the service and to compare it with incurred costs. Yet, because of positive network externalities, the utility of a site is an increasing function of the number of agents on the other side of the platform. Two variables come into the picture: the number of displayed ads and the audience of the site. The latter is particularly significant to announcers who pay the platform and subsidize work suppliers – the former being an indirect measure of the capability of the site to attract new applicants. However, this figure is open to manipulation.
In order to be recognized as legitimate, the measure of audience must be established by an independent third party. Hence, Internet infomediaries turn to audience measurement companies. However, the multiplicity of measuring methods (site centric versus user centric; simple viewings versus unique visitors) and companies (Nielsen-Netratings, Médiamétrie, Xiti, Webtrends, etc) does not facilitate the adoption of a common standard. Job boards are incited to keep the most favourable

[3] The prisonner's dilemma illustrate the difficulty to reach a satisfactory outcome when interactions result from purely strategic behaviours. Apart from infinitely repeated games (Axelrod, 1981), cooperation will be reached if and only if each player binds his hands and acknowledges the authority of a third party, exterior to the game (Dupuy, 1994).

measure and to use it as a promotion instrument. For example, in 2004, five private French web sites claimed on their advertising brochure to be holding the first rank in terms of audience (Mellet, 2006). Indeed, the position of leader acts as a self-reinforcing signal of quality in presence of positive network effects (Katz and Shapiro, 1985).

Apart from this reputation effect, another source of division among infomediaries is the ambiguity of their relationship: vertical structuring complicates comparison. Certain infomediaries denounce the relevance of measurement and regard other players as unfair competitors. For instance, *Monster.fr* (and other general-purpose job boards) refused to be added to the monthly audience ranking published by FocusRH-Xiti[4]. The quality of the measurement was not in question. Rather, these job boards refused to be compared to not comparable sites: public employment services (*Anpe.fr* and *Apec.fr*) and a vertical search engine (*Keljob.com*). The latter is a pure media player and derives his audience (as well as the volume of posted ads) from his upstream position in the value chain. Symmetrically, *Monster.fr* managers directed similar criticism to another vertically specialized infomediary: *Cadremploi* displays large numbers of ads because it is owned by labour market players, including a newspaper (Le Figaro), corporate media and recruiting agencies. Finally, French labour market infomediaries did not succeed in reaching an agreement on a unique and certified measure.

ii) <u>From the V perspective: Interoperability as a decisive economic issue</u>

The setting up of governance instruments is also a central issue from the vertical structuring perspective. Indeed, the adoption of a unique and certified technical standard should facilitate information flows along the infomediation value chain. Such a standard does exist but its adoption comes up against obstacles.

A cooperative approach seems *a priori* easier to implement in the vertical framework than in the horizontal one. Interactions are based on contractual agreements and firms may have a shared interest in building a common framework. This framework could noticeably reduce coordination and transaction costs (Katz and Shapiro, 1994). Indeed, interoperability, based on the compatibility of heterogeneous information systems is preferable to a series of locally negotiated, *ad hoc* agreements. However, to establish a common standard in a cooperative manner requires upstream negotiation (Farrell and Saloner, 1988)[5]. Standardization committees meet this prerequisite: they involve explicit communication and negotiation before irrevocable choices are made. Hence participants tie their hands in order to avoid defection. In the human resource field, such a committee exists at the international level: the HR-XML Consortium[6].

The HR-XML Consortium is an independent, non-profit organization based on voluntary membership. Committee members take part in the negotiation process. They must be distinguished from adopters, which are the firms that use the certified standard. Indeed, the two groups (members and adopters) surprisingly do not cover up (Mellet, 2006). The committee, which is essentially made up of large firms, includes:

[4] Interview with *Monster.fr* manager, June 2004.

[5] Farell and Saloner contrast this cooperative mechanism with unilateral choice: a standard succeeds if one agent chooses first and the others follow. This second mechanism, which correspond to horizontal competition, is called by the authors "market leadership".

[6] The HR-XML Consortium develops and promotes a standard suite of XML specifications to enable e-business and the automation of human resources-related data exchanges (*http://www.hr-xml.org*). The XML is a general-purpose markup language that supports a wide variety of applications. Its primary purpose is to facilitate the sharing of data across different information systems, particularly systems connected via the Internet.

general-purpose (Cisco, IBM, Microsoft, Oracle) and specialized (Peoplesoft, SAP) software companies; temporary work agencies (Adecco, Manpower, Vedior); job boards (Monster, Careerbuilder) and Public Employment Services (German and Swedish). In constrast, adopters are in the majority small size HR software companies. How to explain this difference? Katz and Shapiro (1985) show that firms' size and network have a decisive influence on the individual choice to adopt (or not) a compatible standard. They maintain that firms with large existing networks will tend to be against compatibility, while firms with small networks will favour compatibility. This strategy is consistent with horizontal competition in a context of network externalities: large firms bet they will impose their own standard. However, we observe that large firms take part in the negotiation process. This case corresponds to Farrell and Saloner's hybrid mechanism: "everyone would prefer any proposed coordinated (standardized) outcome to the result of each going his own way, but in which the participants disagree on which the coordinated outcome is better" (1988, 237). This situation, which has the structure of a "battle of the sexes" game, can be formulated in our words: there is a tension between "first rank" preference for compatibility – vertical positioning – and "second rank" preference for a proprietary standard – horizontal competition. This tension results in a half-cooperative (within the committee) / half-unilateral strategy (in the market).

b. Tense coopetition

How do firms manage the duality (competition and partnership) of their relationships with other infomediaries? Is this mechanism of "coopetition"[7] practicable? In order to answer these questions, I go one level down in this section and focus on individual business strategies. First, I investigate the isolated choice of an infomediary. I show that H and V structuring correspond to two pure, separate but unbearable strategies. Infomediaries must reach compromises. Secondly, I consider strategic interactions between infomediaries. Coopetitive relationships are difficult to maintain and may lead to open conflict.

i) <u>To H or to V, that is the question…</u>

I investigate the simultaneous coexistence of H and V structuring dynamics. These can be grasped by infomediaries as modes of action in the market for infomediation. Consider a new entrant: Should she develop a general-purpose or a specific matching technology? Shall she consider other infomediaries as competitors or as partners? Two pure strategies go against each other. However, none of them is bearable. I will illustrate this argument with two infomediaries who initially chose a "pure" mode of action but turned into a "hybrid" strategy: *Monster.com* and *Keljob.com*.

Monster.com is the paradigmatic illustration of "horizontalism". Its development is closely related to the self-reinforcing dynamics of network externalities, from a "first mover" to a dominant position. Monster is a general-purpose job board: its scope is the entire labour market. Moreover, since its acquisition by TMP in 1999, Monster is a business unit of a larger company (TMP Worldwide) which intends to manage all the recruiting process. Other divisions include: corporate promotion (comRH); human resources consulting (eResourcing); executive recruitment (Executive Search). From 2000 on, TMP Worldwide embarks on an acquisition campaign of recruiting agencies. The aim of this strategy is to provide any service a recruiting firm could ask for and to

[7] Contraction of cooperation and competition.

make economies of scale by globalising these services. However, in 2002, TMP Worldwide announces the demerger of the business units eResourcing and Executive Search – which become Hudson Highland Group. Two main reasons are put forward in order to explain this sudden turn. First, economies of scale did not occur because recruitment consulting is a local and weakly digitized activity. Secondly, conflicts of interest arrose between business units. Indeed many recruiting agencies post ads on Monster. Meanwhile, these firms compete with TMP's consulting units. Not only they pay a competitor, but they also furnish him precious information (such as *curriculum vitae*, which are usually deposited in the job board's database). This conflict of interest illustrates the tension between H and V dynamics. Indeed, incomplete digitization – related to tacit intra-firm information – and vertical specialization characterize the second mode of structuring. Finally, Monster's business model is a hybrid between H and V positioning.

The next case illustrates the reverse phenomenon: an infomediary who (more gradually than Monster) renounced to pure "verticalism". *Keljob.com* is a vertical search engine whose activity consists in aggregating job ads stemming from different sources. It is vertically positioned between Internet portals and job boards. A central issue for these pure Internet players is to define a relevant pricing strategy. By contrast with the canadian vertical search engine *Simplyhired.com* whose unique source of revenue is advertsing, French vertical search engines (Keljob and its unique competitor *Optioncarriere.com*) are remunerated by announcers. However, their pricing strategies differ. On Optioncarriere, ads indexing is free of charge, but announcers pay a fixed amount every time a job seeker clicks on the ad (pay per click). This pricing method incites Optioncarriere to direct marketing towards Internet job searchers. On the contrary, Keljob prices each advertisement, with a bulk discount: the more ads I "push", the less I pay per ad. By way of compensation, expensive ads have more visibility: they appear on the top of listed results. A consequence of this pricing strategy is that Keljob directs marketing towards announcers. Initially, Keljob's objective was to benefit from network externalities by bringing both sides (announcers and job seekers) on board. Keljob favoured announcers who displayed large volumes of ads on their own web site (public employment services, job boards, temporary work agencies). Yet, this clientele gradually dried up. The growth potential was to find somewhere else: small announcers are numerous and pay more. Keljob's marketing targeted recruiting firms who post ads on their own corporate web site. Thus, Keljob became a direct competitor to "traditional" job boards, most of whom renounced to be indexed by Keljob. Keljob's listing numbers illustrate this evolution: Keljob declared to index 357.000 ads in 2001, 149.000 in 2004, 50.000 in 2006 and 80.000 in 2007 (after its merger with Cadremploi, see below). So, the pursuit of profit led Keljob to gradually abandon his positioning as a pure vertical search engine to operate matching between end-users and compete with job boards.

ii) Am I your H or your V?

The simultaneous coexistence of H and V structuring dynamics generates hybridation. But sometimes it also leads to open conflict between infomediaries. The Cadremploi-Keljob lawsuit (2000-2001) illustrates the ambivalence of coopetitive relationships: each firm interprets differently its relationship to the other.

The conflict was brought to court by Cadremploi who refused his advertisements to be indexed by the vertical search engine Keljob. It created a legal precedent on deep links – hypertext links that point to specific pages or images on another website, instead of that website's main or home page. The inquiry, finally judged by a court,

concerned the technical and economic nature of the link established by Keljob's search engine with Cadremploi's pages that listed job ads: is this link allowed or does it fall under parasitism and/or unfair competition? Keljob argued that both societies were not competitors. Keljob only listed Cadremploi's ads without transferring them to its own site. The Internet user was invited, by a hypertext link, to consult the content on Cadremploi's site. Moreover, a visible message indicated the move from one site to the other. On the contrary, according to Cadremploi, both companies were effective competitors. Keljob violated the integrity of its database, and proceeded, through deep links, to the misappropriation of Cadremploi's site traffic. Finally, the Tribunal de Grande Instance de Paris (TGI) recognized the act of parasitism but dismissed the act of unfair competition[8]. Regarding parasitism, the TGI stated that Keljob reused a substantial part of ads' content. Regarding unfair competition, the TGI set up the relationship of competition, but noticed the absence of confusion between both sites. Finally, Keljob had to stop indexing Cadremploi's ads and to pay 900 000 francs as damages. A Keljob manager points out that "Keljob's youth mistake was not to sign up a contract". Indeed, this contract – if Cadremploi had accepted it – would have positioned both infomediaries in the vertical value chain. Conversely, Cadremploi clearly identified Keljob not as a business partner (that would bring him traffic), but as an unfair competitor[9]. Ironically, Cadremploi and Keljob merged in 2006.

5. Summary and discussion

The principal aim of the paper was to show the significance of vertical specialization in markets for infomediation. Vertical specialization results from the increasing complexity of information making, processing and transfer. This dynamics disturbs the "usual" mechanisms of competition – as we have seen with vertical search engines. Vertical search engines present themselves as business partners, but they also undoubtly act (at least partially) as competitors. This ambivalence is difficult to catch in models that focus on horizontal competition. On the contrary, my approach clarifies this ambivalence by distinguishing and confronting horizontal and vertical structuring mechanisms.

This approach raises many regulatory issues. This remark is obvious at the upper, governance level. Authorities now have to take the complexity of market relations into account. But it applies also to commercial relationships (the second, middle level). Indeed, spontaneous, emerging regulation is not sufficient. Conflicts appear that may sometimes be brought into court. A clear understanding of the underlying economic mechanisms is required to improve decisions taken by judges and legislator. Finally, a third level of H and V interactions was not investigated: the level of information formats and contents. This issue would require longer exposition and is examined elsewhere (Marchal and al., 2005; Mellet, 2006 and 2006b). It is shown that intermediaries distribute access to information, and thus market power among both sides of the market. While horizontal intermediation favours bilateral, symetrical interaction, vertical specialization accentuates selection to the detriment of information.

[8] TGI Paris, Troisième Chambre, Jugement rendu le 5 septembre 2001.

[9] Concerning the establishment of a certified audience measure, Monster's managers also argue that Keljob is an unfair player that distorts the "good" functioning" of the market.

Shall we consider the market for 'labour market services' as a particular or as a generic case? My view is that beside its distinctive features, this market has strong similarities with other markets, such as the advertising market. Advertising is organized as a two-sided market. It is subject to horizontal competition as well as vertical specialization. Regulatory issues in this market concern measurement (audience certification), standards (ad-XML[10]), and coopetition (see the Belgian newspapers - GoogleNews case). Finally, the advertising market resembles more and more the labour market. Indeed, Varian (2007) modelizes Google's targeted advertising model as a matching market. The advertising market constitutes an interesting field to pursue the investigation of H and V structuring dynamics.

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[10] "adXML is meant to describe the way advertising data is formatted and exchanged between agencies, advertisers, publishers and other value added advertising specific products and services over the Internet. It addresses online advertisers as well as print, magazines, television, and other advertisers." (http://www.xml.com/pub/r/252).

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