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How can Language be linked to Economics? A Survey of Two Strands of Research[*]

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Abstract

As the use of languages is playing a more and more important role in economic activities with the globalization of the world economy, there is growing interest in the relationship between language and economic theory. The rapidly expanding literature in this field, however, is highly fragmented. It is difficult to tell what this field of study focuses on, what has actually been investigated, and what remains to be studied. The authors attempt to review, assess and categorize the major orientations of the research on the economics of language. Those include a traditional strand of research that has focused on language and economic status, the dynamic development of languages, and language policy and planning, as well as a new strand based on game theory and pragmatics. The authors propose the use of the term "Language and economics" to define this area of research.

Key words: *economics of language, language skill, human capital, language planning, game theory, pragmatics.*

JEL Classification: A12, J24, C79.

Résumé

Comment la langue peut-elle être reliée à l'économie ? Un survol de deux courants de recherche. *Comme l'usage des langues joue un rôle de plus en plus important dans l'activité économique avec la mondialisation de l'économie, il y a un intérêt grandissant dans l'étude de la relation entre la langue et la théorie économique. Cependant, la littérature dans ce domaine est très fragmentée et il est difficile de dire sur quoi on met l'accent, ce qu'on y étudie et ce qu'il reste à faire. Les auteurs passent en revue les principales orientations de la recherche en économie de la langue, en font une évaluation et essaient de les catégoriser. Celles-ci comprennent un courant traditionnel, qui s'est intéressé aux relations entre la langue et le statut économique, au développement dynamique des langues et à la politique et la planification linguistiques, de même qu'un nouveau courant basé sur la théorie des jeux et la pragmatique. Les auteurs proposent l'utilisation du terme « langue et économie » pour définir ce domaine de recherche.*

Mots clés: *économie de la langue, compétences linguistiques, capital humain, planification linguistique, théorie des jeux, pragmatique.*

Classification JEL: A12, J24, C79.

1 Introduction

With the globalization of the world economy, communication among people has become increasingly important. The use of a language that is understood by a sufficiently large number of people is necessary for such communication to be possible. Issues related to language and its relationships with economics have drawn some scholarly attention. As a matter of fact, the economics of language, as an interdisciplinary subject, has been quietly in the making for more than 40 years.

The term "economics of language" first appeared in 1965, when Jacob Marschak published a relatively unknown article with that title in *Behavioral Science.* Marschak (1965) asked questions such as: "[What are the] communication systems [that are] best suited to a given goal [?] [. . .] Why are the known languages of the present and the past what they are or were? [. . .] What determines the probability that a set of traits will remain in existence for a given length of time?" (p. 136). On these issues, Marschak offered his reflections from an economic perspective, viewing language as an object of choice. Further contributions on the economics of language emerged shortly after Marschak, but they did not follow on the same path. Instead, they were related to official language policy analysis in national independent states where several languages co-exist. They were interested more in the relationships *between* languages than in communication *within* a particular language.

The literature on the economics of language was surveyed by Grin (1994, 1996b, 2003), Vaillancourt (1983) and Grin, Sfreddo & Vaillancourt (2011), among others.

Those surveys played an important role in improving our understanding of the economic factors that are related to language issues. But recently, some economists analyzed language from a totally new point of view, using a game-theoretical approach (Rubinstein, 2000; Glazer & Rubinstein, 2001, 2004, 2006), bringing a new element in the literature which is perhaps closer to Marschak's initial ideas than the previous literature. While this new strand is very different from the earlier one, the title "Economics and language" used by Rubinstein (2000) suggests that it also concerned with problems of communication among economic agents. The purpose of this paper is to review the literature in those two strands of research and to provide some links between them.

The rest of the paper is structured as follow. Section 2 reviews the history of the economics of language as well as the major orientations of the traditional strand of research in the area. Section 3 examines the recent research in the second strand of research, which applies game theory to linguistic issues. Based on the above survey, section 4 discusses some critical issues concerning the nature and scope of the economics of language. Section 5 is the conclusion.

2 The Emergence of the Economics of Language and its Major Orientations

2.1 A chronological summary

The key point stressed by Marschak (1965) is that there is a close relationship between the explorations of language optimization and economics, and as an

indispensable tool in human economic activities, language has economic characteristics, such as value, utility, costs, and benefits. The fact that some characteristics of a language have been preserved or discarded as time went on mainly depends on the ability of that language to transfer the maximum amount of information with the minimum effort.

The so-called economics of language literature that emerged shortly afterward is only partly linked to what Marschak did. After World War II, nationalism was on the rise in countries that had just gained independence. Some countries had to make choices about the official language or languages that they wanted to promote after having been a colony for many decades. In addition, one particular country, Canada, had been struggling for a long time about its official language problems, providing an ideal intellectual environment favoring the emergence of an economic analysis of language issues. A literature on language policy and the relationship between language and income gradually appeared in Canada. In particular, Breton (1964, 1978), from a perspective based on nationalism, initiated the trend of applying economic analysis to language phenomena. Based on the identity function of language used in sociolinguistics, the earlier studies considered language mainly as an ethnic attribute that explained the economic status of different language groups.

Human capital theory and economics of education played a key role in further developments of the economics of language. The core of human capital theory is investment in education and other skills. Some researchers (Breton, 1978;

Vaillancourt, 1980; Grenier, 1982) noticed that learning a language is a part of investment in human capital, providing a theoretical support for Marschak's initial idea that language has value, utility, costs and benefits. As a result, the economics of language began to develop independently of the sociology of language and started to make considerable progress. From the 1970s to the early 1980s, with a special emphasis that deliberately acquired language skills can be seen as a source of economic advantage (Grin, 2003), researchers put more focus on the communicative function and human capital attributes of languages. Starting with the hypothesis that language skills affect people's socio-economic status, several empirical studies were done on the relationship between language and earnings in Canada and the United States (Vaillancourt, 1980; Boulet, 1980; Grenier, 1982, 1984, 1987; Grenier and Vaillancourt, 1983; McManus *et al.*, 1983), and a new and primarily empirical literature emerged.

Mainly under the influence of research done in Canada and the United States, some European scholars, from Switzerland, Britain, Spain and elsewhere, became involved in research on the economics of language. There are many research results on language policy and language planning (Grin, 1990, 1996a, 2000, 2003; Ginsburgh & Weber, 2011) and on the relationship between language and earnings (Dustmann, 1999, Dustmann & Van Soest, 2001; Dustmann & Fabbri, 2003).

Although a diversity of topics on the economics of language appears in the 1990s, there are no real breakthroughs in research methods and paradigms. With the rise of

interest in interdisciplinary topics, a game theoretical approach to linguistic issues was recently developed that put forward the concepts of semantics and pragmatics (Rubinstein, 1996, 2000; Glazer & Rubinstein, 2001, 2004, 2006). This new strand of research not only widens the vision of both economists and linguists, but it expands the scope of the economics of language, which used to be the study the relationship between language and the economy, but which is now becoming the study of the relationship between language and economics.

In short, as a terminology, the “economics of language” is introduced by Marschak (1965), but as a product of the times, it is the official languages struggle in Canada that gave the impetus to the earliest research. As a discipline or field of study, it is human capital theory and economics of education that promoted the economics of language to its maturity. But a new strand of research recently emerged based on game theory.

2.2 Major orientations of the traditional strand of research on the economics of language

The research that has been inherited to date can be described as roughly falling in three major categories: language and economic status (mainly earnings), economic analysis of the dynamic development of languages, and the economic approach to language policy and planning. We assess the goals of that research, the kinds of problems that it addressed, and the main results.

2.2.1 Language and economic status

The research on the relationship between language and earnings was first carried out in the context of the relationship between the two Canadian official language groups. Early in the 1970s and in the 1980s, researchers began to notice that language skill is one of the determinants of earnings, and a great deal of empirical research was done to study wage differentials between Anglophones and Francophone as well as their socio-economic status (Boulet and Raynauld, 1977; Boulet, 1980; Vaillancourt, 1980). This is the so-called “empirical Canadian tradition”, as labeled by Grin (1994, 1996b). Subsequent research continued to study the influence of language on earnings in the contexts of various countries, such as the United States, Australia, Israel, Germany, Britain, Switzerland, South Africa, India or China (McManus, 1985; Grenier, 1984; Tainer, 1988; Chiswick, 1998; Chiswick & Miller, 1995, 1998, 1999, 2007; Dustmann, 1994, Dustmann & Fabbri, 2003; Grin, 1995; Levinsohn, 2007; Azam *et al.*, 2011; Gao & Smyth, 2011). Many of the studies focused on immigrants. More recent studies applied advanced econometric tools such as VAR (Leslie & Lindley, 2001), instrumental variables to analyze the endogeneity of language skills (Chiswick & Miller, 1999; Dustmann & Van Soest, 2001; Bleakley & Chin, 2004; Gao & Smyth, 2011), or explored the complementarity between language and other human capital (Chiswick & Miller, 1995, 2003; Berman *et al.*, 2003).

There are two major theoretical foundations for the interpretation of the relationship between language and earnings. The first one is human capital theory, and the other is the theory of discrimination

First**,** knowledge of a language can be seen as a skill. To learn one or more other languages is an investment in human capital that brings economic benefits. Since the 1980s, many empirical studies have supported the fact that language, as human capital, plays a critical role in the determination of earnings (Carliner, 1981; Shapiro & Stelcner, 1981; Grenier, 1987, McManus, 1985; Chiswick & Miller, 1995, 1998, 1999, 2003, 2007; Trejo, 1997), especially for immigrants (Dustmann, 1994; Dustmann & Fabbri, 2003; Leslie & Lindley, 2001; Shields & Price, 2002; Bleakley & Chin, 2004; Aldashev *et al.*, 2009). Other things being equal, the more fluent an employee, the higher the wage he or she can get. Taking the United States as an example, the loss of wages and the difference in unemployment rate caused by the lack of English proficiency were estimated to be respectively between 3.8% and 38.6% and between 1% and 6.5% (Gonzalez, 2005). In addition, specific language skills (such as listening, reading and writing) all have positive effects on income (Chiswick, 1991; Carnevale *et al.*, 2001). Therefore, from the perspective of human capital, the desire and motivation of people's learning a language are performed under pure economic incentives (Zhang, 2008a). Using data from Switzerland, Grin, Sfreddo & Vaillancourt (2011) recently extended the analysis by using a general equilibrium model to estimate the impact of language skills on the creation of value in the economy as a whole.

Second, the members of minority language groups may be marginalized in the labor market due to discrimination so that they cannot obtain a good job, and naturally, their income cannot be high. Lang (1986) had a model where the cost of learning a language and language discrimination explained wage differentials among members of different language groups. The relationship between language and earnings is also related to ethnicity. Pendakur and Pendakur (1998, 2002) found that the low income of minority language groups in Canada was partly brought about by labor market discrimination against minorities. Levinsohn（2007）examined the return to speaking English in South Africa along with globalization, and found that the return to speaking English increased overall; however, it increased primarily for Whites but not for Blacks. This suggests that the return to language skills is influenced by race and discrimination.

2.2.2 Economic analysis of the dynamic development of languages

Language shifts, language decline and language maintenance have traditionally been the subjects of the discipline of sociolinguistics. The question first proposed by Marschak (1965) – “Why are the known languages of the present and the past what they are or were?” (p. 136) - is directly related to this issue. In the modern context of economic globalization, this problem is becoming increasingly perceptible with the use of English as the *lingua franca*. In particular, some wonder to what extent the extinction of languages is related to economic changes. Sociolinguists generally view language as cultural heritage and tend to advocate the protection of endangered

languages, like environmentalists want to protect endangered species. The economic approach supplements the sociolinguistic approach by improving the understanding of the dynamic development of languages and of the reasons why they should be preserved or allowed to die. So far, two types of issues have been the subject of economic analysis: language convergence and minority languages survival.

Language convergence is one of the key issues in the dynamic development of languages. All languages have an important common purpose, that is, they are a tool for communication. Suppose there is a situation in a group of *n* people where each person speaks a different language, but everyone has the desire to communicate with the others. In order to ensure communication, there are two possible extreme arrangements: first, everyone learns the *n-1* other languages within the group; second, everyone chooses to learn a common second language. There is no doubt that, from both the welfare of the individual or of the society as a whole, the second arrangement is more effective and easier to achieve than the first. Therefore, under economic driving forces, an initial diversity of languages develops a trend towards a common language, the *lingua franca* (Breton & Mieszkowski, 1977). From the economic point of view of maximizing the efficiency of communications, a common language reduces costs, especially transaction costs. In person-to-person exchanges, different groups of individuals can choose the language to use as their common vehicle for communication, and different *lingua francae* can exist simultaneously at different places. However, factors such as the development of science and technology, the emergence of political, economic and cultural powers, and social changes tend to

reduce the number of *lingua francae* over time (Breton, 1998). For those reasons, a dominant *lingua franca* usually emerges at the international level, such as Latin in the earlier times, French from the 18th century to the beginning of 19th century, and English today.

Survival of minority languages, or endangered languages, is another major topic related to the dynamic development of languages. It is closely associated to language convergence because minority languages are usually the ones that are threatened by the *lingua franca*. People have an attachment to their language, which must be taken into account and weighted against the use of a single *lingua franca* as a tool of communication. Economic analysis can help explain what affects people's choices of language. Pioneered by Hocevar (1975, 1983) in the economic modeling on this topic, various models of language behavior have been developed, yielding implications for language dynamics (Grin, 2003). For example, Grin (1990) discussed minority language use under Becker's model of the allocation of time. He treated language activities as endogenous variables. When people can use two or more languages, the limited time available has to be distributed among those languages; thus, the choice of which language to use for specific activities is the outcome of utility maximization under these conditions. Grin (1993) developed another model to analyze the question of the "survival threshold" of minority languages, which is often discussed in sociolinguistics. The model showed that, even though such thresholds can be defined formally, they cannot be measured with a one-dimensional index (such as the proportion of the population speaking the minority languages in a given period). Carr

(1985) and Grin (1993) estimated the possible impacts that European market integration might bring to the survival conditions of traditional minority languages. Zhang (2008b), based on Breton (2000) and Lazear (1999), presented a further study of the effect of economic factors on the survival of minority languages, based on a critical point that determines whether minority languages survive or are assimilated.

In short, economics helps to better understand the essence of the dynamic development of languages. Of course, if a society wants to reach some goals with respect to language, appropriate policies are needed.

2.2.3 Economic analysis of language policy and language planning

Language planning refers to conscious human intervention in the process of language selection within a given group of people. It includes not only the corpus planning of a language, but also the planning of various issues that involve language choices of individuals or groups of people. There is no universal theory of language planning applicable to all nations at present. So far, the traditional analyses of language policy and language planning have been primarily based on sociolinguistic theories. Economic theory can bring new insight by providing effective tools and methods when it comes to evaluating quantitatively whether a language policy is good or not. What are the evaluation criteria? These questions have been stumping both language planners and sociolinguistic researchers for a long time. However, the deficiency of the sociolinguistic approach to language policy and language planning is balanced by the economic rational-choice theory and cost-benefit analytical method.

Generally, economics is useful for language policy and language planning for at least two reasons. One is in the understanding of the decision processes that are related to language. Economics helps us to understand how language selection affects economic outcomes (for instance, learning a second language leads to higher income), or how economic factors affect language selection (for example, international trade promotes the spread of some languages and the decline of others; Melitz, 2008; Fidrmuc & Fidrmuc, 2009; Grin, Sfreddo & Vaillancourt, 2011). The second reason is in the selection, design, implementation and evaluation of language policy. Economics can make seemingly completely different language policies comparable through cost-benefit analysis. Of course, one important limitation of the analysis is that it is hard to allocate monetary values to the benefits and costs that are mostly psychic. In that sense, the economic approach provides a good framework, but there remains some uncertainty in the way it is applied.

In addition, the economic approach can help language planners decide what should be done and guide them on how to do it. For example, if a language policy must determine how to allocate resources or language rights, economic theory, more precisely, rational choice theory, can help to find a reasonable effective method of doing so. Grin & Vaillancourt (1999) suggested that fiscal expenditure of language policies be funded from taxation by the government and be re-distributed just like education, health, urban planning or environmental policy. Pool (1991) proposed that language planners select the language that has the minimum total cost. As to the costs, they can be allocated in proportion of the population of a language group or

community. Though there are technical difficulties, it is still a valuable attempt for the exploration of the cost distribution in language policy. As for the allocation of language rights, both the geographical multilingual model (Grin, 1996d) and the analysis of "language disenfranchisement", i.e., the failing of a language to be recognized officially (Ginsburgh *et al.*, 2005; Ginsburgh & Weber, 2005, 2011), have provided proposals for multilingual polity. In short, the economics of language can help to answer the practical questions concerning the selection and design of language policy and language planning. With the expansion of studies on the economics of language regarding the rate of return to languages (Grin, 1995; Azam *et al.*, 2011; Gao & Smyth, 2011), the evaluation on language policy effects (Grin & Vaillancourt, 1999), and the costs and benefits of language policy (Vaillancourt, 1996; Vaillancourt & Coche, 2009), many problems which have been bothering the language planning researchers may get a better answer or explanation.

At present, language policy and language planning are not simply issues of linguistics, but they involve other disciplines such as sociology, political science, education science, and economics. The interdisciplinary nature of language planning indicates that it has to continue to absorb the matured theories and methods of various disciplines. The involvement of the economics of language will bring new ideas to language policy and language planning.

2.3 Summary

From the above review, the traditional approach of the economics of language focuses on three major types of issues that can be summarized as follows: the effect of language on economic variables such as earnings; the effect of economic variables on the dynamic developments of languages; and the mutual interactions between language and economic variables, such as the economic approach to language policy and language planning.

Grin (1996a, 2003) defined the economics of language as the field of research that "[. . .] refers to the paradigm of mainstream theoretical economics and uses the concepts and tools of economics in the study of relationships featuring linguistic variables; it focuses principally, but not exclusively, on those relationships in which economic variables also play a part" (Grin, 1996a, p 6). Therefore, it can be inferred that the research on language and earnings, on the dynamic development of languages, and on the economic approach to language policy and planning, are all related to the use of economic methods or theories that take language as a variable in economic functions.

3 Applying Game Theory to Linguistic Issues: a New Trend

A new strand of research recently emerged in the economics of language. The previous literature was mainly involved in studying choices made when several languages interact with each other. The new strand is perhaps closer to Marshack's

original contribution in the sense that it is concerned about how ideas are expressed within one language. Generally, the analysis of such issues as semantics and grammar is the task of linguistics, but Rubinstein (1996, 2000) changed the traditional analytical methods and styles. He attempted to use game theory models such as optimal selection and evolutionary game to explore the nature, mechanism and evolution of a language, with the purpose of explaining how the features of natural language are consistent with the optimization of certain "reasonable" target functions.

3.1 The game-theoretical approach to language

Some previous research on game theory (Crawford & Sobel, 1982; Farrell, 1993, 1995) studied language. In that literature, language is treated as a signal sent by players in a cheap talk game and words are given *a priori* meanings. However, no one had such a strong motivation to analyze language itself as Rubinstein (1996, 2000). He considered binary relations (i.e., connections between elements in a set) in a language. For example, "person x knows person y", or "tree x is to the right of tree y" are sentences that express binary relations (Rubinstein, 2000, p. 9). He found that some but not all properties of binary relations are shared in natural languages. In other words, certain relations in natural languages are better served by relations satisfying these properties. Why then, asked Rubinstein, do so many binary relations satisfying the property of linear orderings (i.e., completeness, asymmetry and transitivity) exist in natural language? Is the semantic structure defined by Rubinstein dictated by the rules of optimization? Is this arrangement in line with the rules of economic

optimization a coincidence? After a careful logical deduction, Rubinstein (1996, 2000) concluded that linear orderings are the most efficient binary relations under three inherent premises, which are *indication-friendliness*, *informativeness* and ease of *describability* respectively. More simply, optimal binary relations of linear orderings actually exist in human language or thinking structure, that is, "[. . .] a binary relation enables the user to indicate any element in any subset of the grand set if and only if it is a linear ordering. Linear orderings are the most efficient binary relations for indicating every element in every subset." (Rubinstein, 2000, p. 13)

How words in a language got their identified meanings was also discussed in Rubinstein (2000). His explanation is related to evolution: that is, language is a behavioral phenomenon and if it does not serve the needs of the population, evolutionary forces will act to improve its functioning. Then a "good" equilibrium will emerge and the information will be transmittable and utilizable. In other words, the specific meanings of words are determined by the evolution equilibrium that comes into being through the optimization process of the development of a language. Using game-theoretic terms, the way in which an utterance is commonly understood may be thought of as an equilibrium outcome of a game between speakers of a language.

Similarly to Rubinstein, Blume (2000) explored how efficiency promotes the use of structure in language. He starts from the premise that one central characteristic of a language is to provide a means of saying novel things about novel circumstances.

Then, it is reasonable to expect that in a rich and changing environment, languages always remain incomplete. This encourages reliance on structure. Blume analyzes how creative language use emerges from common knowledge structures, even if those structures are consistent with an *a priori* absence of a common language. This is very similar to Rubinstein (2000)'s discussion: there are forces (evolution or a planner) which make it more likely that structures which are "optimal" with regard to the functions of binary relations will be observed in natural languages.

In contrast to Rubinstein and Blume, there is also a literature discussing the vagueness of language. Lipman (2009) analyzes why there is prevalence of vague terms in natural language. He argues that there is suboptimality of the vagueness, and that we cannot explain the prevalence of vague terms in natural language without a model of bounded rationality. De Jaegher (2003) presents a game-theoretic rationale for vagueness and shows how vagueness can assure that communication still takes place between a speaker and a listener with conflicting interests. He claims that vagueness that pre-existed for epistemic reasons may be exploited to solve conflicts of interest.

3.2 Game theory and pragmatics

Pragmatics is the discipline that studies the influence of context on the interpretation of utterances, in which Grice (1989)'s cooperative principle of conversation plays an important role. A central concept of Grice's theory is

conversational implicature, which is essentially the description of an agent's thinking about how another is thinking. Rubinstein (2000) argues that this is precisely the definition of strategic reasoning that is the essence of game theory. Therefore, it seems to him that pragmatics explores the rules that determine how people interpret an utterance made in the course of a conversation.

Parikh (1991) was the first to combine game theory with Grice's cooperative principle by developing game pragmatics, an emerging branch of pragmatics. Game pragmatics mainly examines optimal linguistic strategy in communication. As for optimization of strategy in communication, the early relevant literature in economics includes Milgrom & Roberts (1986), Austin-Smith (1993), Shin (1994), and Lipman & Seppi (1995). However, that literature mainly focused on game theory instead of pragmatics. This is a divergence of views between linguistics and economics. The new literature in game pragmatics is concerned with the application of game theory in pragmatics and tries to use game theory to interpret or guide linguistic phenomena, while the economic literature is more inclined to study strategy in a game.

Rubinstein (2000) and Glazer & Rubinstein (2001, 2004, 2006) tried to reconcile the two, the starting point being the logic of language use in a debate. Rubinstein (2000) noted that Grice's cooperative principle does not apply to debates. A debate can be seen as a situation in which two parties who disagree regarding some issue raise arguments in an attempt to persuade a third party of their positions. In other words, a debate has the characteristics of a conflict of interest. Grice's logic of

conversation, however, is based on the principle of cooperation, that is, on the assumption that the speaker and the listener have common interests. It follows that arguments in debates differ from statements in ordinary conversations. The strength of arguments with almost equivalent evidence sometimes varies with the different strategies of participants; furthermore, the audience may judge incorrectly. Therefore, the fact that the audience uses strategies to minimize the probability to make the wrong decision is neglected by game pragmatics (Glazer & Rubinstein, 2005). This is what Glazer & Rubinstein have been particularly concerned about in recent years. Rubinstein (2000) formally defined a debate as an extensive game, a mechanism designed to extract information from debaters. Studies have shown that any optimal debate is sequential and has a persuasion rule that does not treat the players symmetrically (Rubinstein, 2000; Glazer & Rubinstein, 2001, 2005). In the sequential game, an optimal mechanism exists, that is, an optimal strategy exists for the speaker that induces beliefs that make it optimal for the listener to follow the mechanism (Glazer & Rubinstein, 2004). Glazer & Rubinstein (2006) further proved that all optimal persuasion rules are ex-post optimal.

In general, the current game theory approach to pragmatic strategies in debate falls into two categories of issues. First, the speaker tries to convince the listener to take some action or accept the speaker's position; that is, there is mutual influence on both sides, rather than towards a third party (Glazer & Rubinstein, 2004, 2006). Second, debate or cheap talk takes place between the two debaters in order to influence the third party (see Rubinstein, 2000; Glazer & Rubinstein, 2001, 2005;

Spector, 2000; Krishna & Morgan, 2001). The research on the strategy of pragmatics of persuasion has theoretical implications in both linguistics and economics. In the linguistics literature, they belong to game pragmatics. Pragmatic rules determine a game between the participants in the discourse. Whatever the process that created these rules, it is of interest to compare it with the rules that would have been chosen by a rational designer seeking to maximize the functionality of the discourse (Glazer & Rubinstein, 2006). In the economic literature, they are related to two areas of research. One is about signaling game or sender-receiver game, in which the typical question is whether an information sequential game exists. The other is related to the principal-agent model, where a principal tries to elicit verifiable information from the agent; however, the agent can choose which pieces of information to convey. In particular, it is worth mentioning that the optimal principal-agent incentives rarely are as follows, namely, that the principal would like to meet the terms of the agent. Glazer & Rubinstein (2004, 2006), however, have shown that such cases did occur, even after the agent has taken the action.

3.3 Summary

In this part, we have introduced a new trend in the economic research on language, namely, applying game theory to linguistic issues. If it can be said that the traditional economic analysis of language looks at language as a variable in an economic model, then in Rubinstein's series of studies, language itself is a function rather than a variable. What he tries to do is to "demonstrate the relevance of

economic thought to the study of language by presenting several ‘economic-like’ analyses to address linguistic issues”. It needs to be pointed out that this is Rubinstein’s innovation. In a sense, Rubinstein has made a useful attempt to open up new areas of research in the economics of language, and to put the subject into a new theoretic height.

4 The Scope of the Economics of Language Re-examined

So far, we have summarized the history and the major orientations of the economics of language as well as some recent relevant developments. Obviously, there are different study strands related to the economics of language. Two of them were discussed in this paper. One is the economics of language under the framework of human capital theory, namely, the application of human capital theory in issues where agents are confronted to situations where they have to learn a new language. The other is applying economics to linguistic issues and pragmatics, which mainly uses game theory to analyze the structure of a language.

At first glance, as a field of study, the economics of language is intricate. This brings two questions: what does the economics of language study? Can these seemingly fragmented strands be gathered under the single title of the economics of language? To better understand these questions, it is necessary to re-examine the scope of the economics of language.

4.1 Why is the current state of economics of language so fragmented?

Breton (1998) said: "What we may call the economic approach to language is not, as yet, constituted of many well-defined propositions. […] If an economics of health, of family, or of culture exists, there is still no field of language economics." Furthermore, there are a variety of interests within the research related to the so-called economics of language, and consequently there are variations in the titles or names that are used to refer to the field, such as "economics of language", "economics of languages", "language economics", or "economics and language". It is not clear whether it is those different titles that partly contribute to the current fragmented state of the economics of language, or whether it is the other way around. Nevertheless, making a distinction between those terms is helpful to better understand why the current state of the so-called economics of language is so fragmented.

As mentioned earlier, the term "economics of language" was first proposed by Marschak (1965), but as far as the scope of the study is concerned, he did not go further than to distinguish between a normative and an explanatory branch of the economics of language, the first one concerned with the efficiency of a communication system, and the other one concerned with the origin and survival of a communication system.

According to Grin (2003, 2008), "language economics" seems to be just another name for "economics of language", and in concept, there is no difference between the two, due to the fact that they are often used alternately by Grin (2003, 2008). Back to

the definition of “economics of language” given by Grin (1996a, 2003), and just as he puts it, though economics of language uses the concepts and tools of economics in the study of relationships featuring linguistic variables, it focuses principally on those relationships in which economic variables play a part. It seems that Grin has limited the “economics of language” to the study of relationship between language (or languages) and the economy, instead of the relationship with economics itself. At this point, Chiswick is even more restrictive. He defines the “economics of language” as the study of the determinants and consequences of language proficiency using the methodology and tools of economics (Chiswick, 2008; Chiswick and Miller, 2007).

Another title is “Economics and language”. Henderson *et al.* (1993) edited a book of collected works entitled *Economics and Language*, but it included mainly contributions on the rhetoric of economics. Although the word “language” is used, the subject matter is not really related to what we do in this survey. The same title is used by Rubinstein (2000), in his game-theoretical analysis of the structure of language. It can be noted that the reasons why Rubinstein chose “economics and language” as his collection’s title lie in: first, the essays in the collection not only involved the semantics, pragmatics and the evolution of language, but they also included a reflection on the language of economics itself; second, Rubinstein wanted to make clear that there is no causal connection between his study and the previous studies of economics of language.

Rubinstein (2000) puts it frankly. Despite the similar headings with “economics

of language", the traditional "economic variables" and issues such as "the economic costs and benefits of multi-language society" and "language and nationalism" are very far from his interests as expressed in his book. In addition, he emphasizes that though his book covers several distinct issues under the heading of "economics and language", it by no means covers all the subjects that might be subsumed under this rubric. Using his own words, Rubinstein does not discuss the literature labeled the "economics of language" which was surveyed by Grin (1996b). That is to say, according to him, "economics and language" is a broader concept than "economics of language". However, on this point, Grin holds the opposite view. Based on Becker (1976), Grin (1996c) added that, "[. . .] economics is not so much characterized by the topics with which it deals as with the method by which it deals with them. In this sense, the application of economic reasoning to linguistic issues is part of the economics of language."

4.2 What are the subjects of study and methods of the economics of language?

Language is a social phenomenon. When it comes to the subjects of investigation of the economics of language, we have to distinguish between theoretical studies and applied studies. On the theoretical side, the economics of language focuses on the analysis and interpretation of language itself as a social phenomenon, which we can separate in three phases: first, the analysis with economic theory of the origin and emergence of a language as well as of its development and change; second, the study

of the role of linguistic factors in economic activity; and third, the study of the integration of the theories and methods of economics and linguistics. The applied studies are concerned with the application of the theory to economic and social realities, which include language policy and language planning.

As to the methods of study, Grin (1996a) emphasizes that the economics of language has adopted the methods of neo-classical economics, including its assumptions and arguments. Other related methods include empirical analysis, normative analysis, quantitative analysis, qualitative analysis, cost-benefit analysis and comparative analysis (Grin, 2002, 2003).

The methodology of economics can be thought of as having three levels (Huang, 2004): first, the philosophical basis for economics or the methodology in philosophy, which is the basic methodology; second, the methods related to the thinking of principle in economics, i.e., the methods that economists used for theoretical research and system construction; and third, the technical methods of economics, i.e., the methods used in specific study objects in order to make economic theory more accurate and more mature. In accordance with this classification, empirical analysis and normative analysis are on the second level, and cost-benefit method and comparative analysis belong to the third level.

All the methods should be used; the more, the better. For example, at the second level, these include inductive and deductive, historical, dynamic and static, macro and micro, and evolutionary analyses; at the third level, they include case studies,

mathematical, game-theoretical, marginal, equilibrium, and psychological analyses. In addition, economics of language should consider the methodological issues at the first level because they have great impact on both economists' thought and the development of the discipline. The basic methodological issues in economics of language involve the philosophical thinking of the study subjects, the nature and scope of language and economics as a discipline. These will help economists put forward and choose reasonable assumptions.

There is another issue that needs to be considered when applying economics to language. While the methods and theories of economics have a strong explanatory power, economic models should not be blindly applied to all language issues, especially when the concepts are ambiguous. For instance, quantitative analysis should not be imposed too strongly on factors related to language which are qualitative in nature, such as emotion or psychology. Language is a very complicated system that includes many ingredients: spiritual, psychological, emotional, cognitive, ethnological, as well as economic, political and social.

4.3 The interdisciplinary orientation of economics of language

The relationship between economics of language and other relevant disciplines must be discussed. From the perspective of subjects and methods, economics of language has some connections with sociolinguistics and the philosophy of language.

The purpose of sociolinguistic is to study language in the context of a society. It consists mainly of two branches. One is social linguistics, of which the basic meaning is, from the social attributions of language, to study language with sociological methods and to explain language change and language evolution; the second one is sociology of language, which explains social phenomena in relation to language variations and language evolution. In short, they study respectively language from the perspective of society and society from the perspective of language. Some studies in economics of language have similarities with those in sociolinguistics. Compared to the existing results achieved in sociolinguistics, economics provides a novel point of view. It also brings about new analytical tools, which are complementary to sociolinguistics. There is a mutual benefit from using the different disciplines. Economists have assisted linguists to broaden their vision, and language issues help economists find new topics. There is every reason to believe that the economic analysis of language will prove helpful to both linguists and economists.

One of the central propositions of the discipline of philosophy of language is to explore the relationship between language and the world. Philosophers of language are interested in the speculative thinking of concepts, which can provide a foundation or methodological guidance for the economics of language. In contrast, economists also use their methods or tools to prove or disprove some philosophical methodology. In fact, the language issues that have been analyzed by Rubinstein are fundamental questions that lie between linguistics and philosophy: Why do human beings have a common or a particular form of thinking? Why do words have definite meanings?

Addressing these questions, linguists, philosophers and economists started their study along their own lines of thinking. Consequently, the analysis of language issues provided by economists is likely to expand the research ideas of the philosophy of language. Taking the meaning of words as an example, philosophers and economists have different understandings. Wittgenstein once asserted, "A word hasn't got a meaning given to it, as it were, by a power independent of us, so that there could be a kind of scientific investigation into what the word really means. A word has the meaning someone has given to it" (1958, p. 28). Rubinstein (2000) concluded that the specific meaning of any word is formed by the evolutionary equilibrium caused by the optimization of language evolution.

4.4 Toward a New Terminology and Definition

In summary, there should be a distinction between broad and narrow economics of language. In a broad sense, economics of language studies the language itself (including its origin, development and change) from an economic point of view. In a narrow sense, it involves such specific fields as language and economic status, economic analysis of the dynamic development of languages, economic analysis of language policy and language planning, game-theoretical approach to language, and game theory and pragmatics. We propose that the economics of language in a broad sense deserves the use of the term "**Language and Economics**", which seems to express its meaning the best.

Here we propose the following definition:

Language and economics is a branch of economics that uses economic theory, principles and methods to study language and speech acts, which are considered as widespread social and economic phenomena.

5 Conclusions

In this paper, we have attempted to provide an overview of the economic approaches to language issues. Following an exploration of the history of the economics of language, we reviewed the major orientations of the traditional strand of economics of language, as well as those of a new strand, which consists in applying game theory to language issues. On the basis of this review, we re-examined the scope of the economics of language by discussing its subjects of study, its methods and its interdisciplinary orientations. The terminology of "language and economics" was proposed to integrate the current issues.

This review has emphasized both positive and negative characteristics of the field of language and economics. The positive features lie not only in the rising importance of the economics of language in the context of economic globalization, but also in the new point of view that it brings to both economics and linguistics. The negative aspects are mostly derived from its birth defects: lack of methods and means, and especially lack of unity in research. **S**o far as the development of economics of language has been concerned, there are both opportunities and challenges. The notion

of language and economics needs to be broadened to change its current state so that the field of study can flourish.

The research on language and economic status, on the dynamic development of languages, and on language policy and planning has reached a relative maturity. One can hope that, while continuing with the existing inquiries, the applications of game theory to linguistic issues will be given more importance. This is a promising area because game theory is a bridge that effectively links economics to linguistics, especially pragmatics. Following the discussion in Section 3, pragmatics examines the influence of context on the interpretation of an utterance, while game-theoretical concepts about the "solution" are most suited to stable real-life situations that are "played" often by large populations of players. Thus, game theoretical tools may function effectively when used to explain linguistic phenomena.

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