

THE ECONOMICS OF LANGUAGE: AN EMPIRICAL VALIDATION OF SOME THEORETICAL PREDICTIONS

François Vaillancourt

I. Introduction¹

The economics of language is a new field in economics. The term appears to have been coined some twenty years ago by Marschak (1965). Since then, however, a fair amount of work—which is reviewed in Vaillancourt (1983)—has been carried out in this area. For example, our recent bibliography of works in the area (Vaillancourt, 1985) listed 181 titles.

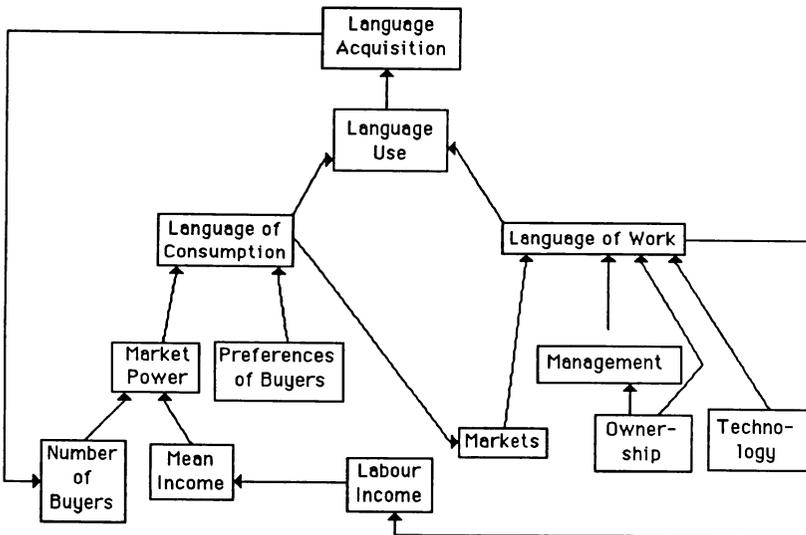
In the first part of this paper, we derive from this growing body of literature a theoretical framework that yields testable hypotheses in the areas of language acquisition and language use. We then, in the second part, use evidence from Québec to examine their validity. We chose empirical evidence from Québec because of its availability and our knowledge of it. Hopefully our results will be of interest to scholars and policy-makers from other societies where language changes have been undertaken or are being contemplated.

II. The Theoretical Framework

The analytical framework of the economics of language can be summarized as shown in Figure I. In this paper, we will examine the effect of language use on language acquisition and the determinants of language use.

Figure I

Analytical Framework of the Economics of Language:
Relationship Between Language Acquisition,
Language Use and Socio Economic Factors



Language acquisition

Most of the literature on the economics of language takes as given the stock of linguistic knowledge of a particular society, and examines the use and status of these various languages. However, Vaillancourt and Lefebvre (1981) and Grenier and Vaillancourt (1983) examine the acquisition of language skills by individuals. They argue that all languages are human capital in which individuals will invest according to the net benefits (gross benefits minus costs) of these investments. Benefits are mainly future returns associated with factors such as employability, earnings and so on, since language acquisition of a first and often a second language occurs before adulthood.² Costs are more immediate and depend mainly on the language skills of the parents and on the language environment (schools, neighbourhood, etc.) of the child. The prediction of the theory is that:

Proposition 1: an increase in the use and status of a language will increase investments in the language, mainly as a second language but also as a first language.

Language use

While language is used in a multitude of market and non-market activities, economists have limited themselves to an examination of two activities: work and consumption. In the case of the language of work, Vaillancourt (1980) argues that the determinants of the preferred language of an employer are the language of its owners, the language of its market and the language of its technology, while it is the language skills of the employees (mother tongue, second language) that determine their preferences. The interplay of these two sides of the market will determine the language of work with the employer usually determining the use of his preferred language. Thus the prediction of the theory is that:

Proposition 2: the language of work will vary between industries and through time according to a) the ownership of employers; b) their markets; c) their technology and d) the language make-up of their labour supply.

In the case of the language of consumption, Hočevar (1975) and Vaillancourt (1980) have shown that it is the market power of a group—which depends on its spending patterns, absolute size, income and language preferences—that determines the demand for goods and services in a given language; while it is unit cost—which depends mainly on economies of scales and overhead costs (Hočevar, 1975)—that affects their supply. In general, demand factors are more determinant than supply factors. Thus the prediction of the theory is that:

Proposition 3: the language of consumption will vary through time with the market power of language groups.

III. The evidence

Language acquisition

As will be shown below, the use of the French language in Québec has increased in the 1971-1986 period. One would thus expect investments in the French language to increase over the period. Dividing Québec into its three major mother tongue-language groups, that is francophones (82.4%), anglophones (9.3%) and allophones (8.3%),³ one would expect the evidence to point out two things:

- an increase in the knowledge of French by anglophones and allophones.
- an increase in the schooling in French of anglophone and allophone students.

On the first point, evidence from census data (Paillé 1986: 37) shows that the percentage of anglophones who knew French went from 37.7% in 1971 to 53.1% in 1981, and the corresponding percentages for allophones were 47.2% and 62.3% respectively. More recent survey data shows an increase from 44% in 1979 to 62% in 1985, and from 64% to 73.6% respectively (Monier 1986: 56). This change results both from the migratory movements between Québec and English Canada, with unilingual anglophones being more likely to leave than those who know French, and from an overall increase in the level of bilingualism in the anglophone and allophone population. One example of that trend is that the percentage of young (25-34) *bilingual* anglophone males increased from 51.1% to 69.3% from 1971 to 1981.⁴

On the second point, one must be careful to present evidence about unconstrained choices: otherwise one could attribute to changes in status what in reality is explained by changes in legislation. In this case, access to English language schools in Québec was restricted by language tests (Bill 22, 1974-1977) or by requirements as to previous schooling in English in Québec (Bill 101, 1977-1982) or Canada (Constitution Act, 1982-). As a result, most allophones did not have an unrestricted access to English language schools while anglophones, for the most part, did. Thus it is appropriate to limit oneself to an examination of the language of schooling of anglophones from 1971 to 1986, the period for which data are available. In that period anglophones were able to attend French schools, or French immersion programs in English schools, or English schools. As Figure II⁵ shows, the percentage of anglophone children studying in French has steadily increased over the period.

Figure II

Percentage of Anglophone Students, Primary and Secondary, by Type of Language of Schooling, Québec, 1971 - 1986

Type of Schooling	1971	1977	1981	1986
French (1)	9.6	6.2	12.8	17.6
French Immersion (2)	5.0	11.9	16.6	17.9
English (3)	85.4	81.9	70.6	64.5

So Proposition 1—that an increase in the use of a language increases investments in that language—is supported by the evidence from Québec.

Language of work *Variations through time*. As shown in Figure III,⁶ the use of French in the workplace in Québec increased from 1970 to 1979, the years for which strictly comparable data are available.

Figure III

Use of French at Work, Percentage of Work Time,
Québec, 1970 and 1979

Year	Mother Tongue		All
	Francophones	Anglophones	
1970	87.0	17.0	77.0
1979	90.0	37.0	85.0

This increase in the use of French in the seventies, which leveled off in the eighties (Monier 1984), can be explained by an increase in the share of employment controlled by francophones, measured in terms of employment, as shown in Figure IV;⁷ and by an increase in the French market in Québec, as shown in Figure V.⁸ The little evidence available on the language of technology does not indicate that it changed over this period.

One of the mechanisms that probably led to an increase in the use of French from 1970 to 1979 is the increase in the share of managerial jobs held by francophones. For example, from 1971 to 1981 the percentage of francophone managers increased from 64.9% to 75.8%.⁹

Variation between industries. Figure VI¹⁰ presents evidence on the use of French at work by bilingual francophones in Québec for 1979, the most recent year for which data are available, for nine economic sectors. Both a simple rank correlation between these percentages and those on ownership for 1978 of Figure V (0.63), and the multivariate analysis results of Lefebvre (1981), indicate that there exists a positive relationship between the use of French by francophones who have a choice and the ownership of their employer.¹¹ Use of French by all francophones would even be more highly linked to the sector of employment.

Thus the empirical evidence on the language of work supports the theoretical prediction of Proposition 2.

The Language of Consumption

The percentage of francophones who found it difficult to be served in French in Québec declined from 13% in 1970 to 9% in 1979, the two years for which comparable data are available (Bouchard and Beauchamp-Achim 1980: 79). Since then, it appears to have remained stable.¹² This, in our opinion, is mainly explained by the increase in the share of total income and the potential expenditures of francophones or French speaking individuals reported in Figure V. Thus the theoretical predictions of Proposition 3 are supported by the empirical evidence.

Figure IV
Ownership of the Quebec Economy
1961 and 1978

Sector	Percentage of employment controlled by:					
	Francophones (Canadian)		Anglophones (Canadian)		Foreigners	
	1961	1978	1961	1978	1961	1978
Agriculture	91.3	91.8	8.7	8.2	0.0*	0.0*
Forest	**	33.4	**	28.9	**	37.7
Mines	6.5	9.2	53.1	17.9	40.4	73.0
Manufacturing	21.7	27.8	47.0	38.6	31.3	33.5
Construction	50.7	74.4	35.2	18.5	14.1	7.1
Transport, communication, and utilities	36.4	42.2	55.3	53.4	8.3	4.4
Trade	50.4	51.0	39.0	32.0	10.6	17.0
Finance, insurance, and real estate	25.8	44.8	53.1	43.1	21.1	12.1
Private services	65.0	63.2	35.0	29.4	0.0*	7.4
Public services (education and health)	75.4	87.3	24.6	12.7	0.0	0.0
Government	51.8	67.2	47.7	32.8	0.5	0.0*
Total	47.1	54.9	39.3	31.2	13.6	13.9

Figure V
Mean Income and Income Share, Total Income,
Quebec, 1970 and 1980

Language Group	1970		1980	
	Mean Income \$	% of Total Income	Mean Income \$	% of Total Income
Anglophone, unilingual	4 447	9.2	10 677	4.7
Anglophone, bilingual	5 760	8.6	13 475	8.1
Francophone, unilingual	2 627	37.5	8 543	42.4
Francophone, bilingual	5 056	37.2	14 420	37.7
Allophone, anglophone	4 000	2.7	10 404	2.0
Allophone, francophone	3 374	1.0	8 764	1.0
Allophone, bilingual	5 161	3.3	13 225	4.1
Allophone, other	2 127	0.5	5 045	0.3

Figure VI
Use of French at Work, Percentage of Work Time,
Bilingual Francophones, Quebec, 1979

	Agri- culture, Forest	Mining	Manufac- turing	Con- struc- tion	Transporta- tion, Com- munication, Utilities	Trade	Finance	Services	Govern- ment	Total
%	88.1	85.6	79.7	85.0	78.3	81.5	80.4	86.0	84.9	82.6

The increase in total income reported in Figure V is mainly due to a narrowing of differences in labour income. We present, in Figure VII,¹³ evidence for these differences. Two main factors explain these changes:

- The increased use of French in the workplace, which increased its market value.
- the increased schooling of francophones, absolutely and relatively to anglophones, which increased their employability and earnings.

On the first factor, the results of Vaillancourt (1988) obtained through multivariate analysis show a significant decline between 1970 and 1980 in the returns with respect to the knowledge of English, and a corresponding significant increase with respect to the knowledge of French. For example, in 1970 bilingual anglophones earned 17% more than unilingual francophones in 1970; and in 1980 they earned the same amount or less for the same level of schooling, experience or number of weeks worked.

Figure VII

Mean Labour Income, Employed Individuals
Quebec, 1970 and 1980

Language Group	Men				Women			
	1970		1980		1970		1980	
	\$	Ratio	\$	Ratio	\$	Ratio	\$	Ratio
Anglophone, unilingual	8 171	1.59	17 635	1.22	3 835	1.24	10 271	1.17
Anglophone, bilingual	8 938	1.74	19 562	1.36	3 956	1.28	10 759	1.22
Francophone, unilingual	5 136	1.00	14 408	1.00	3 097	1.00	8 801	1.00
Francophone, bilingual	7 363	1.43	19 547	1.36	3 842	1.24	11 195	1.27
Allophone, anglophone	6 462	1.26	15 637	1.09	3 329	1.07	9 753	1.11
Allophone, francophone	5 430	1.06	13 287	0.92	3 241	1.05	8 191	0.93
Allophone, bilingual	7 481	1.46	17 946	1.25	3 881	1.25	10 868	1.23
Allophone, other	4 229	0.82	10 003	0.69	2 343	0.76	7 539	0.86

IV. Conclusions

In this paper, we were able to show that the predictions with respect to language acquisition and language use drawn from the theoretical framework of the economics of language were supported in the case of Québec. We also examined how the changes in labour income and in access to management jobs for the Québec language groups could be linked to this framework. While we could not conduct formal statistical tests of our hypothesis, due to the nature of the data, we can, in our opinion, still conclude that the theoretical framework that has been, implicitly or explicitly, proposed in the economics of language literature is useful in explaining changes in the status of languages in a society over time.

This does not mean that other factors such as political will, social consciousness or legislative changes do not play a role in explaining these changes in status both directly and indirectly through their impact on economic variables. But it does mean that economics, as foreseen by Hočevár (1975), can say something about language issues.

Département de sciences économiques et
Centre de recherche et développement en économie,
Université de Montréal

NOTES

1. Professor Toussaint Hočevár was a pioneer in the field of the economics of language; his 1975 article in *Kyklos* (see *List of Publications by Toussaint S. Hočevár*, item 29) remains one of the main contributions to this field. It thus seems appropriate to honor his memory by writing a paper in this area.
2. More than 75% of bilingual Québec francophones report having learned English before they reached twenty years of age (Vaillancourt & Lefebvre 1981: 344).
3. 1981 Census of Canada, *Population, Mother Tongue, Official Language and Home Language* (Ottawa: Statistics Canada) 92-910, Table 2. The term *allophones* is used for persons whose mother tongue is neither French nor English.

4. These percentages are calculated using data in tables B-1 and B-3 of Vaillancourt (1988).
5. Data for Figure II: sources for regular schooling in French—in 1971: Claude St.-Germain, *La situation linguistique dans les écoles primaires et secondaires: 1971-1972 à 1978-1979* (Québec: Conseil de la langue française, 1980), dossier 3, table A-3; in 1977: *Statistiques de l'enseignement, clientèles scolaires 1977-1978* (Québec: Ministère de l'Éducation, 1980), Table 5.1; in 1981: *Statistiques de l'enseignement effectifs scolaires 1981-1982* (Québec: Ministère de l'Éducation, 1984), Table 10; in 1986: *Statistiques de l'éducation préscolaire, primaire et secondaire, 1986-1987* (Québec: Ministère de l'Éducation, 1987) Table 2.3.3.. Sources for immersion schooling in French—as above, plus as follows: in 1971, set at the 5.00% level occurrent in subsequent years; in 1977: from Édith Bédard and Claude Saint-Germain, *La cohabitation linguistique en milieu scolaire au Québec* (Québec: Conseil de la langue française, 1980) notes et documents 1, Table 5; in 1981 and 1986: set at 18,000, as stated in *Minority and Second Language Education: Elementary and Secondary, 1985-1986* (Ottawa: Statistics Canada, 1987) 81-257, page 11. A conversation with R. Maheu of the Québec Ministry of Education on March 3, 1988 confirmed that this is a reasonable number. The figure for regular schooling in English = 100% minus the preceding two lines.
6. Source for Figure III: Vaillancourt 1982.
7. Sources for Figure IV: for 1961—A. Raynauld, *La propriété des entreprises au Québec, les années 60* (Montréal: Presses de l'Université de Montréal, 1974) 62, 64; for 1978—A. Raynauld & F. Vaillancourt, *L'appartenance des entreprises: Le cas du Québec en 1978* (Québec: Conseil de la langue française, 1984), Tables 2.3, 2.7, 2.24, 2.30. Note the following with respect to this table: (a) figures marked with an asterisk [*] are assumed; (b) the figures for the forestry sector have not been calculated for 1961; and, consequently, (c) the totals given here exclude figures for the forestry sector.
8. Source for Figure V: Vaillancourt 1988.
9. These percentages are calculated using data in tables B-26, B-28, B-30 and B-32 of Vaillancourt 1988.
10. Source for Figure VI: Lefebvre 1981.
11. If one examines the two sets of percentages, one finds a very smooth relationship between francophone ownership and use of French with one striking exception, viz., in the case of mining, where this reflects the fact that the population of Québec's mining region is overwhelmingly unilingual French.
12. Monier reports that the percentage of francophones who could not be served in French very often or often in a six month period in 1985 was 5% (1986: 21). However, slight differences in the formulation of this question and those of Bouchard and Beauchamp-Achim (1980) make it impossible to strictly compare these results.
13. Source for Figure VII: Vaillancourt 1988. Note that the *ratio* figures given here are with respect to *Unilingual francophones*.

BIBLIOGRAPHY

- Bouchard, Pierre & Sylvie Beauchamp-Achim. 1980. *Le français langage des commerces et des services publics*, Dossier 5. Québec: Conseil de la langue française.
- Grenier, Gilles & François Vaillancourt (1983). "An Economic Perspective on Learning A Second Language", *Journal of Multicultural and Multilingual Development* 4/6: 471-483.
- Hočevar, Toussaint (1975). "Equilibria in Linguistic Minority Markets", *Kyklos* 28/2: 337-357.
- Lefebvre, Lise (1981). *Une analyse économique des facteurs influençant les choix linguistiques sur le marché du travail québécois*, research report (M.Sc.), Montréal, Université de Montréal: Département de sciences économiques.
- Marschak, Jacob (1965). "Economics of Language", *Behavioral Science* 10: 135-140.
- Monier, Daniel (1984). *La situation de la langue française au Québec*, Notes et Documents 40, Québec: Conseil de la langue française.
- (1986). *La perception de la situation linguistique par les québécois*, Documentation 23, Québec, Conseil de la langue française.
- Paillé, Michel (1986). *Aspects démolinguistiques de l'avenir de la population du Québec*, Notes et documents 53, Québec: Conseil de la langue française.
- Vaillancourt, François (1980). *Difference in Earnings by Language Groups in Québec 1970. An Economic Analysis*, Québec: Centre international de recherche sur le bilinguisme, publication B-90.

- . (1982). "Le statut socio-économique des francophones et du français au Québec à la fin des années 1970," *Revue de l'ACELF* 11: 9-12.
- . (1983). "The Economics of Language and Language Planning", *Language Problems and Language Planning* 7/2.
- . (1985). *Economie et Langue: Recueil de textes*, Documentation 20, Québec: Conseil de la langue française.
- . (1988). *Langue et disparités de statut économique au Québec: 1970 et 1980*, Dossier, Québec: Conseil de la langue française, 1988.
- . & Lise Lefebvre (1981). "Antécédents familiaux et connaissance de l'anglais chez les francophones du Québec", *L'Actualité économique* 57: 343-358.

POVZETEK

EKONOMIJA JEZIKA: EMPIRIČNO VREDNOTENJE NEKATERIH TEORETIČNIH NAPOVEDI

V prvem delu razprave, posvečenem ekonomiji jezika, avtor poskuša zgraditi teoretični okvir, ki naj omogoči testiranja zmožnih hipotez na področjih poučevanja-učenja in rabe jezika. Drugi del obravnava primer kanadske province Québec, na podlagi katerega naj bi preveril njih veljavnost.

Čeprav avtorju ni uspelo formalno statistično testirati svojo hipotezo, si še vedno upa zaključiti, da je teoretični okvir, ki je bil - implicitno in eksplicitno - predlagan v literaturi ekonomije jezika, koristen za obrazložitev spremembe statusa jezika v neki družbi nekega časa. To sicer še ne pomeni, da ni tudi drugih faktorjev, ki lahko prispevajo k pojasnjevanju teh sprememb v statusu; pomeni pa vsekakor to, kar je predvideval Toussaint Hočevar, da nam tudi ekonomija lahko kaj pove o vprašanih jezika.