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DOES IT MATTER HOW PEOPLE SPEAK?

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Abstract¹

Language serves two key functions. It enables communication between agents, which allows for the establishment and operation of formal and informal institutions. It also serves a less obvious function, a reassuring quality more closely related to issues linked with trust, social capital, and cultural identification. While research on the role of language as a learning process is widespread, there is no evidence on the role of language as a signal of cultural affinity. I pursue this latter avenue of research and show that subtle language affinity is positively linked with change in earnings when using English-speaking data for cities in the Golden Horseshoe area in Southern Ontario during the period 1991 to 2001. The results are robust to changes in specification, a broad number of empirical tests, and a diverse set of outcome variables.

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Key Words: Linguistics, Culture, English, Trust, Governance, Institutions, and Canada.

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1. Introduction

For many people traveling to a foreign country where their language is not commonly spoken, it is often reassuring to find someone who does speak their language. On the one hand, there is the obvious issue of being able to communicate. On the other hand, however, there is a subtler but equally relevant issue related to cultural identification and trust. In fact, commonality in language evokes commonality in culture, as it elicits a notion of shared values, beliefs, customs, and expectations.² This is also true even among individuals who speak the same language, as specific language nuances will also signal this same sense of familiarity and cultural identification within groups in societies. In fact, it may be claimed that this sense of cultural affinity may surface as strongly within people who share particular accents or nuances in a specific language as it does among people who share the same language as a whole.

A simple example may be helpful. While two Italians in the middle of Burma will be quite glad to come across each other, it is conceivable to expect that if two Italians from the same region of Italy come across each other, they will be even happier to meet than if they were just merely from the same country. In the first case, not only does speaking the same language allow them to communicate, but speaking a common language also provides these individuals with a sense of familiarity, cultural affinity, and trust as well (Chambers, 2003).³ Furthermore, in the second case, the specific nuances, tones, rhythms, and slang that these two Italians share will further create a sense of acquaintance, trust, and cultural affinity between them that typically cannot be achieved by two people from the same country who speak the same language but come from different regions.⁴

In fact, the realization that language elicits a sense of trust and cultural affinity is not new. For years, social scientists, social linguists, and cognitive scientists have emphasized the

² As several researchers argue, defining culture is quite difficult. Namewirth and Weber (1987) define it as a system of ideas that provide a design for living. For Clark (1990) culture is a distinctive and enduring pattern of behavior and characteristics. Hall and Hall (1990) describe culture as a system for creating, sending, storing, and processing information. Hofstede (1984) says that culture is the collective programming of the mind that distinguishes the members of one group from another. The implicit view of culture in this study is closer to Hill (1997), who defines it as a system of values, beliefs, and norms that are shared among a group of people and that when taken together constitute a design for living.

³ Interestingly, it would not be uncommon if these two individuals did not renew their acquaintance back in Italy. This simply highlights the power provided by having a common cultural identity.

⁴ Because of mobility, literacy, immigration, and even the mass media, English in the United States—with its rich regional differences—tends to be homogeneous relative to languages in countries that are of similar size (or even smaller) around the world. Linguists describe this as “Babel in Reverse.”

importance of language as an indicator of cultural, national, and social capital identification. In anthropology and human evolutionary biology, for instance, languages trace the history and geography of the species. In this context, the extinction of a language equals the burning of a library of historical documents or the extinction of the last species in a phylum (Pinker, 2000). Similarly, as several linguists have argued, language is so highly correlated with cultural identity that a language is considered a medium from which culture cannot be extricated, and the loss of a language is considered to be a loss of cultural diversity (Hale et al., 1992). Finally, in economics, a few researchers have argued that culture and language are implicitly linked in such a manner that language is a crucial tool that either embodies culture, or is the crucial element conducive to cultural assimilation (Lazear, 1999; Akerlof and Kranton, 2000). In fact, historical examples that support the idea that language and culture are inextricably linked are common. For instance, during the nineteenth century, peasant migrants in Bohemia and Hungary began to learn German and within a few generations their descendants became German not only in terms of language but also in terms of sentiment (McNeill, 1976). Moreover, when the number of Slav- and Magyar-speaking migrants living in the cities of the monarchy reached a certain level, newcomers had to learn Czech and Magyar for everyday life instead of German, which eventually enabled nationalist ideals to take root and make German cultural identity seem unpatriotic. The eventual result was not only that Prague became a Czech-speaking city and Budapest a Magyar-speaking one, but they both developed their own particular culturally specific features (McNeill, 1976).⁵

This paper exploits the existing link between language and culture and in particular, explores the extent to which cultural affinity is linked with higher economic payoffs when using spoken language as a cultural benchmark. The idea is that not only does commonality in spoken language elicit cultural identification, but it also conveys a structural or core element of trust among individuals, as illustrated in the previous example.⁶ In fact, trust among individuals does

⁵ In fact, spoken language is so powerful that it may be argued that its role as cultural marker is stronger than that of race, gender, and perhaps even social class. Alba (1990) shows that individuals who are more connected to their national community are much more likely to speak that language. Bakalian (1993) finds 71 percent of foreign-born American Armenians typically list at least one Armenian and 35.6 percent list all Armenians as their best friends. Furthermore, specific language nuances and accents appear to be important: natives of Mexico do not live in the same neighborhoods in the United States as do natives of Cuba or Puerto Rico (Lazear, 1999).

⁶ An extreme example of the relationship between language nuance and trust occurs in the biblical account of the pronunciation of “shibboleth.” The tribes living in the east of Jordan, separated from their brethren in the west by deep ravines and a rapid river, gradually came to adopt different customs, and from mixing largely with the Moabites, Ishmaelites, and Ammonites, came to pronounce certain letters differently than the western tribes. When

not exist in a vacuum; the tool that makes individuals trust each other in the context of large groups is, to a great extent, nuance in spoken language which, as seen above, serves as a signal. Cultural affinity, reflected in high trust, may facilitate the operation of markets and other economic and social institutions because of fewer disputes and lower transaction costs: detailed written contracts would not be needed as frequently, litigation costs would be lower, and resource diversion would not be as necessary (Knack and Keefer, 1997; Fukuyama, 1997). Given the nature of the link between language and culture, in this paper “trust” is considered a cultural variable in that it is one that changes very slowly over time.⁷

This is consistent with research in other disciplines, in particular sociology. Doney, Cannon, and Mullen (1998) develop a theoretical framework to demonstrate how societal norms and values influence the application of trust-building processes by identifying three key conceptual behavioral and interactive mechanisms among individuals. Phelps-Brown (1977) recognizes that different occupations have different social status and that workers benefit not only from the wage they receive but also from being associated with the status that a particular occupation provides, which may have an impact on productivity and economic growth in societies. Along these lines, Fershtman and Weiss (1993) produce a theoretical model that shows how heterogeneity among societies can play a role in determining economic development whereby cultural differences, as signaled by social status (e.g., accents in languages), act as intervening factors that can affect output. These researchers focus on the social status of occupations and show that different attitudes toward social status affect the equilibrium outcome for economic variable such as wages and output.⁸

the Ephraimites from the west invaded Gilead, and were defeated by the Gileadites and tried to escape, the Gileadites seized the fords and allowed no one to pass who could not pronounce “shibboleth” with a strong aspirate. This the fugitives were unable to do. They said “sibboleth,” as it was pronounced in the west, and thus they were detected. Forty-two thousand Ephraimites were killed (see <http://www.hyperdictionary.com/dictionary/shibboleth>). Another very illustrative example of how a common culture is linked with trust is the case of some Indian castes, which mostly conduct business among themselves regardless of whether the individuals know anything about each other except that they are from the same caste.

⁷ While there is no denying that trust may change quickly in a society, as the case of Eastern Europe after the fall of the Berlin Wall attests, the focus of this paper is on culturally related trust, which changes slowly (Knack and Keefer, 1997).

⁸ Lazear (1999) provides additional support for the idea that common culture and common language facilitate trade between individuals. Individuals have incentives to learn other languages and cultures so that they are able to have a larger pool of trading partners. When a society has a large majority of individuals from one culture, individuals from minority groups will be assimilated more quickly. Temin (1997) argues that Anglo-Saxon culture was a crucial factor in determining where and when industrialization began and spread. The key aspect of this culture—its celebration of individual accomplishments and mastery over nature—is viewed as having an advantage for it provided unique benefits in the presence of a particular industrial technology and its need for organization. Henrich

This study focuses on the specific nuances of spoken English in Canada and constructs a “Canadian English Index” (CEI) that serves as a cultural benchmark whereby the more “Canadian” the spoken English in a particular city is, the higher the cultural identification with Canada. If this relationship holds, it helps to explore whether commonality in nuances in spoken language at the city level is correlated with higher economic payoffs as measured by the change in city income between 1991 and 2001.⁹ This study concentrates on the geographical area known as the Canadian Golden Horseshoe, which includes the western tip of Lake Ontario from Oshawa to Niagara Falls, including the conurbations of Scarborough, Toronto, Mississauga, Oakville, Burlington, Hamilton, Saint Catharines, and Welland, which are very close to the United States border.¹⁰ This area is illustrated in Figure 1. The fact that the study centers on a highly transited area between two countries that speak the same language, and that are culturally very close, provides a higher testing bar than simply comparing two random countries.¹¹ If language affinity and thus, cultural familiarity, proves to have an impact on economic performance in Canada despite everyday spoken language influences from the United States emanating from television, movies, immigration, and constant contact between the two countries, chances are that cultural affinity will surely matter elsewhere. Notice that, unlike previous studies, the focus of this study is not on language acquisition, which has been researched extensively, but on nuances in spoken language that serve as signals among individuals that, on average, are very difficult to learn, if at all (Pinker, 2000). While specific things may be learned, such as the way Canadians say the letter “z” or pronounce the word “schedule,” this study focuses on more subtle characteristics of Canadian speech, as defined by recent literature on linguistics (Chambers, 2003). The focus is essentially on tones, rhythms, and accents, which are more difficult to imitate and learn, except through very conscious effort (e.g., the case of actors) or through long exposure to Canadian

(2000) uses experiments to show that economic decisions and economic reasoning are influenced by cultural differences.

⁹ This period of study is of particular interest as the signing of the Free Trade Agreement between Canada and the United States occurred in 1990, with all that that implies in terms of movement of goods, services, factors, and access to media on both sides of the border.

¹⁰ More than one-sixth of Canada’s population lives in this 120-mile strip (Statistics Canada, 1996).

¹¹ The cultural closeness between Canada and the United States may be illustrated by the fact that Canadians tend to have a hard time defining their cultural identity other than to assert their being “non-Americans.” In fact, several American cultural icons have had Canadian roots, such as the TV show *Saturday Night Live* and the partially Ontario-inspired “Wayne’s World” movies of the 1990s. On the other hand, Lipset (1993) has argued that Canada is “more class-aware, elitist, law-abiding, statist, collectivity-oriented, and group oriented.”

culture.¹² In fact, in this paper, language is viewed not merely as a communication tool, or even as a mechanism by which to coordinate behavior, but as a tool that helps signal commonality in culture, which may enhance trust and other mechanisms as a result of the common expectations and customs of potential traders. This may in turn be linked with changes in earnings and perhaps with long-run growth.¹³

The paper is organized as follows. The next section describes some basic characteristics of Canadian English. The third section describes the data and, in particular, details the construction of the Canadian English Index used. It provides basic data description, including some summary statistics. The fourth section provides empirical evidence on the link between language affinity and income changes at the city level. The fifth section provides robustness exercises and addresses various empirical issues. The sixth section focuses on the link between language nuances and other economic variables. The final section summarizes and concludes.

2. Characteristics of Canadian English

Canadian English is one of the oldest varieties of colonial English. Because Canada is due east of England, it was one of the first discoveries in Europe's quest for a sea route to the Orient. The English first laid claim to Newfoundland—Canada's easternmost province and thus, the nearest landmass on the Atlantic Ocean to Europe—in 1497, just five years after Columbus' trip south. The person who discovered Newfoundland was John Cabot, a Venetian who sailed under the authority of Henry VII. Most of mainland Canada on the Atlantic seaboard was wrested from the French, and thereafter settlers began to move progressively westward. It took them two centuries and four significant waves of immigration to cover the vast expanse. Each immigration wave ended up influencing the way in which English is spoken in Canada to a certain extent, but the first two were more important linguistically than the latter two (Chambers, 2001).

As Chambers (1995, 2001) explains, the first linguistic immigration wave began in 1776 and reached its peak in about 1793, when hundreds of refugees from the thirteen colonies of the

¹² It has been commonly argued that not even in such a case will a full absorption of accent occur, on average (Chambers, 2003).

¹³ Interestingly, virtually all studies on language and economic outcomes are inspired by Becker's (1975) human capital theory in which language is viewed as an investment that yields return later in life. Examples are Chiswick (1978), who shows that the earnings of immigrants converge and even exceed those of native-born individuals as a result of language and customs acquisition; McManus, Gould, and Welch (1983), who show that fluency in English affects earnings; and Church and King (1993), who find that when language acquisition is costly, the related decisions may be inefficient.

United States entered Canada. They were known in Canadian history as “Loyalists” or citizens of southern colonies who chose to maintain their allegiance to the imperial mother country, England. The second wave began in 1815 and peaked in the 1850s when thousands of immigrants from England, Scotland, and Ireland arrived in the country as a result of large-scale recruitment by Canada’s British governors who wanted to counteract pro-American sentiments among settlers in the face of American border incursions during the War of 1812. The third wave of immigration occurred from the 1890s to the 1910s when immigrants from Scotland, Ireland, and several non-English speaking countries, such as Italy, Germany, Ukraine, and the Scandinavian nations, arrived in Canada, recruited as farmers for the wheatlands of the Prairie provinces and laborers for the manufacturing centers in Ontario and Quebec. Finally, from 1946 to 1960, a highly diverse immigrant population arrived as a result of the post-War diaspora in Europe. It consisted of Italians, Portuguese, Greeks, Ukrainians, Poles, and Finns in particular, though immigrants from Hungary, Korea, China, Vietnam, and the United States also arrived later.

As a result, Canadian English speech has developed a set of distinctive features, some of which, depending on the region, tend to be more notable than others and, in any case, are usually, although not always uniquely, identified with being Canadian. North American linguists (Chambers, 1995, 2003; Clarke, 1991; Labov, 1991) agree that there are several distinguishable differences, which linguists have grouped into four broad categories, namely, (i) unification of diphthongs, (ii) presence of phonetic rising, (iii) differences in vocabulary, and (iv) conjugation and “*wh*” differences. The first refers to the Canadian practice of merging the two low back vowels, though most other standard varieties of English keep them separate. For instance, pairs of words such as *cot* and *caught*, *bobble* and *bauble*, *don* and *dawn*, *stocking* and *stalking*, have no phonological distinction in many parts of Canada, though they do in most of the United States.¹⁴ Similarly, words like *news*, *student*, and *coupon* sound “British” to American visitors in Canada because such words tend to sound as if they have a double “o” as in “*nooz*” instead of *nyooze*.

The second broad characteristic of Canadian English is called “raising,” whereby Canadians pronounce the diphthongs in some words in a singular way. For non-Canadians and,

¹⁴ Phonologically this is possibly the most structurally significant feature of Canadian English, since it has been noted in records as early as 1850. In linguistic circles this is typically known as “yod-dropping” (Chambers, 1993).

in particular, Americans, the phrase *about the house* would sound something like “*aboot the hoose*” when spoken by Canadians. In fact, linguists explain that this perception is not phonetically accurate, since what it is being noticed is the higher vowel at the onset of the diphthong.¹⁵

The third characteristic refers to words that have become typical of the country as the result of indigenous influence; migration from different countries, especially England, Ireland, and Scotland; and, in some cases, isolation. Examples of indigenous influence are words such as tobacco, potato, tamarack, skunk, raccoon, beaver, grizzly, and caribou. Indigenous influence in city names is common, too. This is the case with Ottawa, Toronto, and Oshawa. In other cases, the indigenous names have been translated, such as Medicine Hat, Moose Jaw, and Yellowknife. There are also some words that are typical Canadianisms and are thus identifiable mostly with Canadian culture, such as *chesterfield* instead of *sofa* or *couch*, *serviette* instead of *napkin*, the British *zed* instead of the American *zee*, and in some cases *pop* instead of *soda*.¹⁶

Finally, a fourth broad category in which Canadian English differs from American English has to do with the conjugation of specific words when using the past tense or past participle, such as *drank* versus *drunk*. Though it has become less common in recent decades, some Canadian regions still pronounce the “*wh*” sound using an “*unaspirated w*”, whereby words like *whine* and *wine*, or *witch* and *which* tend to sound differently because the “*wh*” sound retains an *[hw]* phonetic property.

3. Data

The data on Canadian English in this study come from a large individual-level representative survey conducted by the Department of Linguistics at the University of Toronto in 1991 and funded by the Social Sciences and Humanities Research Council of Canada, involving the cities of the Canadian Golden Horseshoe area, which are illustrated in Figure 1.¹⁷ Overall, the

¹⁵ Phonetically the onset vowel is mid, back and unrounded, the same vowel that occurs in simple form in words like “*but*” and “*rust*.” Exactly how this feature originated in Canadian English is uncertain although it bears some similarity to Scottish English (Chambers, 2001).

¹⁶ Interestingly, the earliest generations of schoolchildren in Canada used the American pronunciation *zee* and not *zed*, as a result of the presence of American teachers and American schoolbooks in the 1850s. It was removed from use in Canada in the wave of anti-Americanism brought by British immigrants. As a result, only since the mid-nineteenth century, has the standard name for the letter Z in Canada been *zed* (Angus, 1938).

¹⁷ The cities in Ontario’s Golden Horseshoe area considered are: Ajax, Ancaster, Aurora, Brampton, Brantford, Burlington, Caledon, Caledonia, Clarington, Dundas, Dunnville, East Gwillimbury, Etobicoke, Flamborough, Fort Erie, Glanbrook, Grimsby, Haldimand, Halton Hills, Hamilton, King, Lincoln, Markham, Mississauga, New

questionnaire includes 76 questions seeking linguistic information in the following categories: pronunciation, general vocabulary, special vocabulary, morphology, syntax, and usage. The full survey includes about 1,000 respondents, with 11 personal records and 81 linguistic records for each.¹⁸ In particular, a large section of the survey is structured along the lines of the four basic speech differences of Canadian English with respect to American English described in the previous section, namely, (i) differences in diphthong usage, (ii) presence of phonetic raising, (iii) differences in vocabulary, and (iv) differences in verb tenses.

The questions are designed in a manner that allows a great deal of confidence as to the objectivity of the responses. While typical questions on vocabulary or differences in verb tenses are asked in a straightforward manner (*e.g., what is the past tense of dive? What do you call an upholstered piece of furniture placed in a living room?*), the questions used to elicit the presence of diphthong usage or phonetic rising are somewhat more elaborated because phonetic synonyms are employed (*e.g., does leisure rhyme with measure or seizure? Does news sound like nyooze or nooze?*). While respondents must use their own judgment to assess their speech, particularly for the latter types of questions, objectivity is hardly compromised because studies have shown that individuals have a very clear sense of the correct and incorrect ways in which words should be pronounced in their social context (Pinker, 2000).¹⁹ Furthermore, in a survey subsample, supervisors reported virtually no divergence between the way a particular word was pronounced and the corresponding answer chosen (Chambers, 2003).²⁰ Table 1 presents all the speech questions used in this study, grouped according to the four basic Canadian English categories described above.

The key variable of interest, the Canadian English Index (CEI), is constructed according to the four categories described above, as shown in Table 1. For each question in each category a value of 1 is assigned when the answer coincides with the characteristic described as more

Tecumseth, New Market, Niagara Falls, Niagara-on-the-Lake, North York, Oakville, Oshawa, Pelham, Pickering, Port Colborne, Richmond Hill, Scarborough, Saint Catharines, Stoney Creek, Thorold, Toronto, Uxbridge, Vaughan, Wainfleet, Welland, West Lincoln, Whitby, Whitechurch-Stouffville, and York.

¹⁸ The data are the basis for several published articles in the linguistics literature and numerous conference presentations, newspaper articles, web discussions, and other products based on them. For a comprehensive review of the articles written using these data, please refer to Chambers (2003).

¹⁹ While a native Canadian will have a strong sense of the correctness of the pronunciation of a word, he or she will also be aware that what they deem as a “correct” pronunciation in their context may not be so in different regions. In this sense, the word “correct” should be interpreted in a relative manner.

²⁰ Additionally, other linguists who have used oscillators to test the Hertz-frequency pattern of speech show that again, the responses given by individuals coincide with the patterns shown by the oscillators (Labov, Ash, and Boberg, 2003).

typical of Canadian English speech. A value of 0 is assigned otherwise. For instance, in the case of the first question in the diphthong index category, *Does news sound like nyooze or nooze?*, a value of 1 is assigned if the respondent answers *nooze* rather than *nyooze*, since the former reflects a characteristic more typically associated with Canadian English speech. A similar straightforward approach is applied for all the other questions. In total, there are 30 questions in the four broad categories considered.²¹ They are summarized in an aggregate index, which is simply the simple sum of the 1 values assigned to each question. Thus, in theory this index ranges from 0 to 30 for each respondent.

The data also include specific socioeconomic information to match the linguistic information, such as the respondent's age, gender, occupation, number of years of education, place raised, place born, and place currently living, as well as the parents' birthplace and occupation. In the context of the linguistics literature, one critically important variable in any linguistic research is the degree of indigenusness or background mobility of the individual. In fact, there is a belief among linguists that mobility may be a leveler of accent and dialect. When people from different regions come together, they bring with them numerous differences, some great, some small, in the way they talk. This mixing has long been assumed to be a force in language change. Thus, it is important to consider this variable in order to test whether the CEI is not merely capturing the effect of factor regional mobility on income. To test for this, we follow the literature in linguistics (Chambers, 1994) to construct a measure of indigenusness or background mobility index.²² The questions pertaining to regional mobility on the questionnaire are: (i) *Where were you raised from ages 8 to 18?*²³ (ii) *Where were you born?* (iii) *Where do you live now?* (iv) *Where was your father born?* (v) *Where was your mother born?* Following Chambers and Heisler (1999), the base score for each respondent is 1, determined by the place where the person was raised from 8 to 18.²⁴ To that score of 1, a score between 0 and 2 is added for each of the following: (i) the place where the respondent was born, (ii) the place where the respondent lives now, and (iii) the place where the respondent's parents were born. For instance,

²¹ Not all categories include the same number of questions. The diphthong and conjugation indexes have five questions each, while the raising and vocabulary indexes have four questions each.

²² In fact, the population inevitably includes some subjects who reside in the survey region but were born and/or raised outside of it. Admitting non-natives requires implementing mechanisms for identifying them in order to compare their language use and the corresponding impact on economic payoffs. Among others, Chiswick (1978, 1991) has shown that non-natives who learn English will quickly converge with native individuals in terms of income, mainly as a result of human capital accumulation.

²³ This includes the following sub-questions: What town? What city? What district? Name of province.

²⁴ These are considered the crucial formative years for dialect development (Chambers and Heisler, 1999)

a native-born, second-generation resident of a particular region would earn a total score of 1: if, for example, a woman lived in Toronto from ages 8 to 18, then Toronto is the region she represents, and she receives a 1. If she was also born in Toronto, she receives an additional 0. If she lives in Toronto now, she gets another 0. Furthermore, if one or both of her parents were born in Toronto, that is another 0. Therefore, her “background mobility index” is 1, which is the sum of $1 + 0 + 0 + 0$. At the other extreme, a man who is a long-time resident of Toronto but was raised in Montreal from 8 to 18 would receive a 2 in addition to his base score of 1. If he was born in Montreal, he would receive 2 more. Moreover, if one or both of his parents were born in Peru, that would be another 2. His background mobility index would be $1 + 2 + 2 + 2 = 7$. Thus, based on the individuals’ answers to the questions, the index can provide a gross measure of the subjects’ ties to a particular region, whereby those with lower scores are more representative of the region, while those receiving higher scores are less indigenous to the region.²⁵ This is illustrated in Table 2.

Since the Canadian English survey did not ask for the income or consumption patterns of individual respondents, this research is performed at the city level, using the annual average change in per capita income during the 1991-2001 period for the sample of cities in the Golden Horseshoe area covered in the survey as the dependent variable. Additional city-level data are used as explanatory variables, in particular, percentage of immigrants from the United States, percentage of television viewing of non-Canadian programs, initial income, initial population, change in population, family size, whether English is spoken at home, whether English is the mother tongue, and a few others that are also employed in order to test the robustness of the findings. All these city-level data are from Statistics Canada. Summary statistics of these data as well as of the Canadian language survey data are summarized in Table 3.

4. Rate of Growth in Cities

This section tests the impact of the Canadian English Index on income change at the city level during the period 1991-2001. Whereas there is abundant evidence on the link between acquisition of language skills and economic returns, following recent research in both sociology and, to a lesser extent, economics, the idea posed here is that language, as a mechanism that helps signal cultural affinity, reflects trust (Doney, Cannon, and Mullen, 1998) and thus helps

²⁵ Linguists have devised similar metrics on broad aspects related to language. In her survey of lexical stability and change in Germany, Von Schneidemesser (1979) rated her subjects in three categories of indigenesness.

achieve higher economic payoffs in a society.²⁶ This has not been tested before. In fact, while both the United States and Canada share many roots, including language, it is clear that although they are culturally similar, the two countries have their share of differences. The question is whether such differences are merely skin deep or whether they signal a more fundamental distinction in terms of cultural affinity and trust between these two countries that is reflected in distinct economic performance. Given the slight differences in spoken English between the two countries—particularly in the region under study and in the context of a period of increased openness between the two countries due to a 1990 Free Trade Agreement—focusing on these two countries may be viewed as an extreme test of this paper’s hypothesis. If there are statistically significant differences in income change due to language differences that reflect cultural affinity, chances are that cultural and structural trust issues likely are quite important not only among other countries but also within them.

Reverse causality issues appear to be of little concern, since most linguists agree that speech changes very little once a particular accent is acquired.²⁷ In fact, it has been argued that economic performance does not have a bearing on structural speech patterns and if so, speech will change very slowly through time, with no noticeable effects for at least one generation (Grin and Vallaincourt, 1997; Clarke, 1991).²⁸ The South-North migration that occurred after World War II in Italy provides an ideal example. As a result of unprecedented economic growth in the north and poverty in the south, massive numbers of workers migrated from cities such as Sicily and Calabria to Turin and Milan and, in particular, to the industrial triangle of Lombardy-Piedmont-Liguria. Since city-states predominated in Italy long before the country was unified, each region had developed deeply ingrained and distinct dialects influenced by the several cultures to which regions were exposed, so much so that to this day it is not uncommon for people from different, even neighboring regions, to be unable to understand each other when speaking in dialect.²⁹ This resulted in distinct Italian accents that are clearly identifiable,

²⁶ As seen above, heterogeneity through social status is another related mechanism (Fershtman and Weiss, 1993, and Phelps-Brown, 1977).

²⁷ Linguists agree that once an individual reaches teenage years, nuances in speech become very ingrained.

²⁸ Moreover, even if economic performance had an impact on speech, it is by no means clear what the sign of such impact would be. For instance, if immigration were the key channel, the sign might depend on the growth differential between the Golden Horseshoe area and other areas. Fershtman and Weiss (1993) and Cozzi (1998) provide theoretical explanations on how culture may affect economic outcomes.

²⁹ In academic circles, some dialects are considered languages in their own right. For instance, this is the case of Sardinian (in Sardinia, in the south), Ladin (in Trentino and Tyrol, in the North), and Friulan (in Veneto, in the north).

depending on the city and region of origin of the individual (Scherer, 2005). In fact, southerners were widely discriminated against because of how they spoke Italian. Because it generated a series of stereotypes, accent was the critical element, far beyond race, gender, income, or any physical attribute (Bailey, 2005; Cavanaugh, 2005; Pizzolato, 2004).³⁰ The fact that, on average, southerners were not able to adapt their accents to that of the people in the north and thus, had to endure hardship due to discrimination, simply reinforces the fact that once acquired, accents are extremely difficult to change, as demonstrated in the linguistics literature (Chambers, 2003).

Still, in order to minimize any potential reverse causality issues, I follow previous research and measure economic performance subsequent to the measurement of the CEI.³¹ The additional explanatory variables follow much of the literature (Barro, 1991; Glaeser et al., 1992, and others), and include average years of education and per capita income, both measured at the beginning of the period in the initial benchmark specification. As described above, the dependent variable in all the empirical exercises is the average annual change in per capita income during the period 1991-2001 for a sample of 48 cities in the Golden Horseshoe area. Figure 2 provides a partial regression plot between the Canadian English Index and per capita income change for the period under consideration.

Initial findings are shown in Table 4. When using White-corrected, ordinary least squares, Equation 1 finds that the city-sample during the period considered displays similar features to previous empirical research on economic performance. Initial income yields a negative and statistically significant link with subsequent rates of change in incomes, and incomes appear to converge conditional to the other controls. Similarly, as expected, average years of education are positively linked with change in income. The CEI exhibits a positive sign and a strong and statistically significant relationship to income increase. This appears to confirm the hypothesis that linguistic affinity elicits a sense of cultural identification, which is thus conducive to higher rates of growth in income, possibly through trust channels. In fact, cities in which a higher proportion of the population speaks with nuances closer to Canadian English exhibit higher rates of growth in income. According to these findings, a 10 percentage-point increase in this variable is linked with an increase in economic growth of 8 percent. A 1

³⁰ This is such a well-known fact in Italy that not only have political commentators have written about it (Tranfaglia, 1997) but even filmmakers have dealt with this issue (Visconti, 1960).

³¹ I replicate my empirical specifications using the average growth period 1991-1996 and use average values over the period instead of beginning-of-the period data, and find that the size of the resulting coefficients is not consistent with the presence of reverse causality.

standard-deviation change in the CEI (19.8 percentage points) is linked with a change in income of around 15 percent. In fact, the CEI coefficient is statistically significant regardless of the presence of a variable that captures human capital accumulation, in this case, average years of education.³² For the sake of comparison, notice that the analogous estimate in the case of years of education is around 25 percent. This is consistent with the hypothesis that language speech affinity elicits cultural identification as well as trust, which facilitates transactions and thus helps achieve higher rates of income change (Platteau, 1994; Knack and Keefer, 1997). This result supports the idea that speech nuances are important for increasing earnings through a channel other than human capital accumulation alone. Intuitively, this makes sense as, on average, accents, rhythms, and particular sounds, are quite difficult to learn, as the speaker is not clearly aware of such speech nuances, which reflect subconscious speech processes (Zeller, 1990). Furthermore, while in the specific case of Canadian and American English some words such as “serviette,” “washroom,” and the like may be easy to learn and use, most nuances in Canadian speech and, in particular, the way diphthongs, and words are pronounced or intoned are, on average, more difficult to incorporate into everyday use by non-Canadians. At the same time, while theoretically possible, it is difficult to believe that transactions costs due to miscommunications in this case would become so high among agents as to slow down transactions to the point of dramatically reducing economic growth resulting from nuances in English speech by Canadians and non-Canadians, particularly Americans. In fact, most differences in spoken English in Canada and the United States are well-known among inhabitants in the Southern Ontario-Upstate New York area—the area of study—since the largest exchange of trade, services, and factors in North America involves both sides of the border.³³ While values of economic performance have been used subsequent to the measurement of the CEI, one could still argue that endogeneity may be a potential problem, because higher economic growth may bring increased interaction between regions, for instance, by way of higher immigration, or even physical proximity between Canadian cities and the U.S border, which may

³² Furthermore, very similar results are observed when using other measures of human capital accumulation from the survey. Employing primary enrollment or secondary enrollment yields positive and statistical significant coefficients as well. Including primary enrollment and secondary enrollment together in the same specification yields positive and statistically coefficients, although the coefficient for secondary enrollment is not robust. Substituting enrollment measures for enrollment variables yields similar results and, as before, does not have a bearing on the CEI coefficient. When omitting human capital variables in the regression, the coefficient of the language index barely changes and remains statistically significant.

³³ On the other hand, one may argue that if this were the case, the expected sign of the coefficient would have to be positive, not negative, since it would reflect the dominant economy in the United States.

facilitate commerce between cities of the two countries. In fact, this is particularly relevant, since the Canadian Golden Horseshoe area borders the United States. However, the CEI maintains its statistical significance despite the fact that the background mobility variable, described above, is included among the controls in Equation 1. In fact, this variable does not appear to be driving the results of the CEI. A 1 standard-deviation change in the background mobility variable (29.3 percentage points) is linked with a change in growth of around 13 percent.³⁴

Furthermore, Equation 2 in Table 4 extends the basic specification. In particular, additional beginning-of-the-period immigration variables are used, such as the percentage of immigrants from the United States, as well as the physical distance in miles from the corresponding city municipality to Fort Erie-Niagara Falls, the closest control post on the border with the United States in the Golden Horseshoe area.³⁵ Both the distance variable and the U.S. immigration variable produce coefficients that yield the expected signs, although they are not statistically significant at conventional levels.³⁶ Interestingly, the CEI coefficient remains statistically significant at 5 percent. In the above context, Equation 3 in Table 4 considers yet another extended specification that also includes variables for population and number of family members. In particular, the former has been included in empirical research on city growth (Glaeser et al., 1992).³⁷ Neither variable results in coefficients that are statistically significant.

Equations 4 through 6 in Table 4 repeat the first three specifications described above. However, they also introduce an interaction term between the CEI and initial income. If the impact of commonality in language speech signals cultural identification, the coefficient of the language index should be higher in cities with initially lower incomes. The signal provided by commonality in language speech should be more important in relatively less developed cities because inhabitants may rely more on culture-related trust, which changes slowly over time, rather than on formal channels of transaction, such as the financial system (Knack and Keefer, 1997).³⁸ In fact, consistent with this idea, the sign of the interaction term is negative and statistically significant at conventional levels in all three specifications, while the CEI coefficient remains statistically significant at conventional levels.

³⁴ Furthermore, when this variable is omitted from the regression, the CEI coefficient increases, as expected.

³⁵ The sources for distance are Yahoo Maps (www.yahoo.com) and Mapquest (www.mapquest.com).

³⁶ I also test percentage of immigrants from the United Kingdom, Ireland, and Australia. Results do not change.

³⁷ Log of initial population was also tested instead and along with population change. In both cases this variable results in a coefficient that is negative but statistically insignificant.

³⁸ The simple correlation between per-capita city income and the number of bank branches per-capita in 1991 is 0.383. This link is statistically significant at 10 percent (Source: Statistics Canada, 1991).

Table 5 replicates the basic specifications used in Table 4, but uses an instrumental variables approach to further minimize any potential endogeneity problems and possible measurement errors in the variable of interest. Corresponding instruments were chosen based on related empirical research on trust. Along the lines of research by Sullivan (1991) and Mauro (1995), a first instrument is an ethnolinguistic variable, based on the mother tongue of the parents, their race, and their religion, since they are typically crucial cleavages in a society. A second instrument is the percentage of law students at the beginning of the period with respect to the total students in the city. Less trusting areas are expected to have a higher demand for lawyers, as are more polarized societies in which special interests lobby governments for rents (Murphy, Shleifer, and Vishny, 1991).³⁹ Finally, a third instrument is the percentage of television viewing of programs from the United States as a percentage of total hours of television viewing, following the premise that the type of speech to which people are exposed can also influence their speech (Chambers, 2003).⁴⁰ When instrumenting for the CEI with the three variables above, the corresponding coefficient remains a statistically significant predictor of city income change for the period under consideration at 10 percent or higher. The coefficients of the other regressors also yield a similar statistical significance as well as the same sign. This is the case of initial income and years of education. However, the background mobility index, while keeping the same sign in the coefficient, loses its statistical significance.⁴¹

5. Additional Empirical Issues

In this section the robustness of the findings above is further tested by focusing on the role of (i) particular influential observations, (ii) the inclusion of additional regressors and omitted variables, (iii) potential non-linearities, (iv) spatial correlation issues, (v) Canadian English sub-indices, and (vi) sample expansion using a different language benchmark. In general, the

³⁹ Putnam (1993) argues that lawyers may be in demand in societies where formal institutions work better.

⁴⁰ Data on the mother tongue of parents are from 1991 and come from the University of Toronto survey. All the other variables come from a 1991 National Census from Statistics Canada. There is a negative and statistically significant correlation between heterogeneity in the ethnolinguistic variable and the Canadian English Index and between percentage of law students and our variable of interest. The television variable also yields a negative sign, although only marginally significant. Hausman tests of overidentifying restrictions suggest that neither of the instruments belongs in the growth regression directly. An additional instrument employed is the percentage of the population in the city that has voted for a specific political party (Tories, NDP, Liberals). Results are essentially identical.

⁴¹ Regressions with an interactive term between initial income and the Canadian English Index yield similar results as in the ordinary least square case in Table 4. That is, the resulting coefficients are negative and statistically significant at 5 percent or higher.

coefficient of the variable of interest, as shown in Tables 4 and 5, is quite insensitive to most of the empirical considerations above, since it mostly keeps its sign as well as its statistical significance.

When excluding the most influential observation in the specifications of Table 1, neither the CEI coefficient nor its statistical significance varies.⁴² Furthermore, when deleting the two cases most favorable for the CEI on income change, the coefficient and standard errors of the variable of interest remain practically unchanged.⁴³

The effects of the language index on income change are robust to the inclusion of additional variables that are sometimes included in similar regressions, providing some confidence that the findings in this study are not capturing the effect of potential omitted variables. Following Sala-i-Martin (1997), I consider the entire distribution of the estimator of the variable of interest by focusing on the fraction of the density function lying on each side of 0. Given that 0 divides the area under the density into two, the larger of the two areas is denoted $cdf(0)$, regardless of whether it is above or below 0. Under the assumption that the distribution of the coefficient of interest is non-normal, the $cdf(0)$ is calculated as follows.⁴⁴ I augment the three first empirical specifications used in Table 4 (from Equation 1 to Equation 3) by using a pool of 10 ancillary variables.⁴⁵ The idea is to choose up to three variables at a time from this pool and to perform regressions on all possible combinations from the pool. I then compute the coefficient estimates, their variance, the integrated likelihoods, and the individual $cdf(0)$ for each regression.⁴⁶ The variable of interest is said to be strongly correlated or robust with the dependent variables if the weighted $cdf(0)$ is greater than or equal to 0.95. Findings for this exercise are shown in Table 6. The weighted mean is reported in the first column of this table. The second

⁴² The most influential observation in terms of its impact on the slope of the language measure coefficient is the city of Wainfleet. Also when the two and three most influential observations are excluded, the statistical significance of the Canadian English Index does not vary (see Figure 2).

⁴³ The signs, values, and statistical significance of the coefficients of all the other variables included in the regression remain essentially unchanged in relation to the results in Table 4.

⁴⁴ Assuming normality yields essentially identical results.

⁴⁵ I use 10 ancillary variables: percentage married, percentage of immigrants, urbanization rate, rate of unemployment, percentage of firms with headquarters in the United States, percentage of multiethnic families, population in 1991, rate of participation, city ethnolinguistic fractionalization, number of television sets at home, and square feet of the house. As before, the sources for these variables are Statistics Canada and the University of Toronto.

⁴⁶ This is summarized by $V = F \{ \hat{\gamma}_{I,j}, \hat{\sigma}_{I,j}^2, L_{I,j}, \Phi_{I,j}(0 / \hat{\gamma}_{I,j}, \hat{\sigma}_{I,j}^2) \}$. I compute the aggregate $cdf(0)$ of the coefficient of interest γ_I as the weighted average of all individual $cdf(0)s$, $\Phi_I(0) = \sum_{j=1}^M \omega_{I,j} \Phi_{I,j}(0 / \hat{\gamma}_{I,j}, \hat{\sigma}_{I,j}^2)$ where weights are the integrated likelihoods (Sala-i-Martin, 1997).

column shows the aggregate $cdf(0)$ under the assumption of non-normality. Finally, the third column presents the standard deviation computed as the square root of the weighted variance estimate for all the regressions. According to these results, the CEI appears to be robust to changes in specification for each of the first three specifications in Table 4, which provides some additional support to the previous findings.⁴⁷

Autocorrelated errors due to spatial correlation may pose a problem for the empirical findings. As explained by De Long and Summers (1991), many comparative cross-country regressions assume that there is no dependence across residuals and that each region provides as informative and independent an observation as any other. Ex ante, the omitted variables that are captured in the regression residuals seem likely to take on similar values in neighboring regions. This suggests that residuals in nearby regions will be correlated and that the sample contains less information than ordinary least squares regressions and standard errors report. Following De Long and Summers (1991) I construct for all country pairs i and j the product $u_i u_j / \sigma^2$ of the two fitted residuals from the benchmark regressions in Table 4, normalized by the estimate of the residual variance. I regress using various functional forms $u_i u_j / \sigma^2$ on the distance δ between the city halls of the corresponding cities i and j . When analyzing the pattern of the residuals I find no evidence of spatial correlation, as the product of the residuals does not appear to be high when city halls of the different cities in the Golden Horseshoe area are relatively closer together.⁴⁸

I additionally looked for potential non-linearities in the language index, since the marginal impact of this variable on income change may be greater when the language index is lower, perhaps as a result of perceptions related to social class. In fact, the logged values of the language index produce statistically significant results that are similar to those reported in the benchmark specifications. This is generally consistent with the findings of Knack and Keefer (1997) when testing subjective trust indices and economic performance.

⁴⁷ Similar robustness tests were applied for the instrumental variables case. We find that the CEI is weakly robust to changes in specification. The $cdf(0)$ is greater than or equal to 0.90.

⁴⁸ Following de Long and Summers (1991), the functional forms tested were $E(u_i u_j) / \sigma^2 = \alpha + \exp[-\lambda \delta_{ij}] + \varepsilon$ and $E(u_i u_j) / \sigma^2 = \alpha + 1/(1 + \lambda \delta_{ij}) + \varepsilon$. In both cases the estimated dependence of $u_i u_j$ on distance was statistically insignificant and economically irrelevant. Furthermore, following Knack and Keefer (1997) I also computed residuals for different geographic areas, in particular (i) cities neighboring Toronto versus non-neighboring Toronto cities; (ii) cities bordering the United States and non-bordering cities; and (iii) East-side cities and non-East side cities. In no case are residuals among any particular subset significantly different from those of the other group, which further confirms that spatial correlation does not seem to be of concern in the empirical results.

When repeating all the empirical specifications of Table 4 using the Canadian English sub-indices instead of the aggregate measure I obtain very similar results for the cases of the *diphthong* sub-index and the *raising* sub-index (see Table 1). The coefficients of these variables for all the specifications are positive and statistically significant at 5 percent or higher. However, when using the *vocabulary* sub-index and the *verb* sub-index, the corresponding coefficients, while also positive, become statistically significant at 10 percent, only.⁴⁹ This finding is consistent with the fact that specific words (e.g., “serviette” instead of “napkin,” or “chesterfield” instead of “couch”) and particular verb tenses (e.g., “sneaked” instead of “snuck”) may be learned relatively easily while *diphthong* and *Canadian raising* require a rather conscious effort to imitate and, on average, are difficult to learn and internalize in everyday speech.

Finally, as a “reverse sensitivity” test I replicate all the empirical specifications in Table 4 but use an extended sample that also includes 12 cities of Québec, a Canadian province that neighbors Ontario. Since this is an area in which French, and not English, is the predominant language that most people use in order to pursue economic transactions, the use of Canadian English as a “benchmark” of cultural affinity in this province is not expected to hold, as English affinity may not translate into cultural identification. Speaking English in this province will not necessarily elicit trust among individuals.⁵⁰ The findings of this exercise are shown in Table 7. As expected, the CEI coefficients in the first three specifications, while still positive, are statistically weaker since they reach 10 percent of significance, only. Also, the economic impact of the corresponding coefficients is lower than in the ordinary least squares, since they range from 0.0024 to 0.0026. Furthermore, when adding an interactive term between the CEI and initial income, the statistical significance of the variable of interest tends to disappear, as does the significance of the interactive term itself. On the other hand, the other regressors behave in similar fashion to the ordinary least squares results. This is the case of initial income, years of education, and the background mobility index.

⁴⁹ To avoid excessive length, these findings are not reported but may be provided upon request.

⁵⁰ The Québec data are also from the Department of Linguistics at the University of Toronto and were collected using the same questionnaire described above, although an additional module was also included that captures the particular linguistics subtleties of French being the predominant mother tongue. Given this, all regressions also include a Québec dummy. The specific cities included in the survey are: Alma, Beaconsfield, Dorval, Granby, Huntingdon, Laval, Loretteville, Montreal, Québec, Repentigny, Saint-Eustache, Saint-Leonard, Shannon, and Sillery.

6. Related Outcomes

Based on the evidence presented above, one may remain unconvinced and may believe that economic growth at the city level is not direct enough and is thus somewhat spurious. This section uses data from the Canadian National Census (Statistics Canada, 1990, 2000) and further pursues a link between the English nuances as reflected by the CEI measure and a broad battery of outcome variables that have been typically linked with trust and social capital, such as investment, unemployment, government dependency, social participation, political participation, and others (Fukuyama, 1997; Putnam, 1993; Knack and Keefer, 1997). Remarkably, when using the benchmark specification in Table 4 (Column 1), there is a strong link between the CEI measure and most socioeconomic outcomes typically associated with the culture, trust, and social capital literature. This is shown in Table 8.⁵¹

Not only does cultural affinity, as measured by the CEI index, explain subsequent higher income in the cities of the Golden Horseshoe area (Putnam, 1993; Fukuyama, 1997, Hall and Jones, 1999) but also lower rates of unemployment, higher voting rates in national elections, and higher rates of donors (Putnam, 1993). Similarly, the Index is a statistically significant determinant of higher rates of investment, number of investors, and capital gains (Knack and Keefer, 1997; La Porta, López-de-Silanes, and Shleifer, 1997), as well as of lower government transfers and lower rates of social assistance. Furthermore, cultural identity as reflected in the language index is also a significant explanatory variable of several social outcomes consistent with the literature on social capital, since the index is negatively correlated with divorce and separation rates, and positively linked with marriage rates. These findings are robust to changes in specification. Specifically, they are stable to the introduction of the alternative specifications shown in Table 4.⁵²

7. Conclusions

Spoken language serves two key functions. It enables communication between agents and thus helps facilitate trade among individuals. It also serves a far less studied function, as it provides a reassuring quality more closely related to issues linked with cultural identification and trust.

⁵¹ When testing additional specifications along the lines of the ones in Table 4 and Table 5, I obtain very similar results. Corresponding figures are shown in Appendix 1.

⁵² An exception is the voting variable, which loses statistical significance in the more complete specification in Table 4.

While research on the role of language as a learning process is widespread, there is no evidence on its role as a signal for cultural identification. I pursue this latter avenue of research and show that Canadian English affinity is positively linked with long-run income change when using English-speaking data for cities in Ontario during the period 1991 to 2001. The results appear to be robust to possible endogeneity problems, changes in specification, non-linearities, spatial correlation issues, extension of the sample using a different language benchmark, and other empirical tests.

A skeptical reader may remain unconvinced as to the importance of the link between spoken language, cultural affinity, and economic outcomes. Perhaps, in the case of language, greater economic payoffs are simply achieved via a standard human capital mechanism. But this does not seem to be the case, since the empirical evidence provided here suggests that the impact of language affinity is significant on top of the impact of typical human capital variables usually employed in growth regressions. In fact, it does not seem likely that non-Canadian English nuances could impose such large transaction costs on economic exchanges and thus on city performance. In short, in the area under study—which is highly integrated with the Northeast United States, the source of most non-Canadian nuances in the area—it is highly implausible that Canadians would not understand non-Canadian nuances to the point that performance would be affected. Thus, this points to a different role for language affinity, arguably a role related to cultural identification and trust, which, with all the caveats that may be imposed, hopefully provides a compelling argument on the role of culture identification and economic payoffs.

If speaking with a different accent helps you get ahead, why not fake the local accent? In other words, is there an analogy to the “acting white” literature? As the historical case of southern Italians who migrated to north shows, nuances in languages cannot be easily learned. In fact, the “acting white” story, at least in terms of language, is more closely related to bilingualism, since blacks in the United States have been raised with both black and white accents in most of their social interactions, which is less the case with southern Ontarians in Canada, or southern Italians in Italy. In other words, blacks who “act white” are, essentially, fluent in both “black-speak” and “white-speak” in a similar way that bilingual individuals whose parents have different mother tongues are typically able to speak their parents’ languages flawlessly. The acquisition of a new accent or speech nuance is a different issue, since the

individual is almost exclusively raised under one “type” of language nuances and is directly exposed to a different accent only later in life (e.g., adulthood).⁵³

From a policy perspective, an implication of this research is that language benchmarks, and thus, cultural benchmarks, are conducive to positive income change. Interestingly, in this context, the notion of a *melting pot* in the United States, by which different cultures interact and end up creating a unique cultural combination, does not appear to be consistent with higher rates of change in income. In fact, in the context of the much discussed debate on the *melting pot* in recent years, this research appears to show that, *ceteris paribus*, the positive rates of growth in the United States occur despite the *melting pot* phenomenon or that, in fact, the *melting pot* is just a myth, for an Anglo-Saxon cultural benchmark actually predominates.⁵⁴ This implication is consistent with recent research by Huntington (2004), who claims that the persistent inflow of Hispanic immigrants to the United States threatens to divide the country into two cultures and two languages because Latinos “have not assimilated into mainstream U.S. culture, forming instead their own cultural and linguistic enclaves, and rejecting the Anglo-Protestant values that built the American Dream.”

⁵³ The difficulty involved in learning to speak a new language or accent flawlessly is illustrated by the fact that highly intellectually accomplished individuals (e.g., university professors, Nobel Prize recipients) who were not raised in the United States during their formative years typically cannot do so. This occurs despite the fact that they may have lived in the country for decades. In fact, IQ does not appear to matter (Chambers, 2003). Additionally, the empirical evidence for the “acting white” story was gathered from students, that is, those individuals that linguists agree are relatively more malleable in terms of speech acquisition. As people living in a foreign country can attest, speech nuances are extremely powerful signals; so much that just one word or one unusual speech inflexion can easily reveal the fact that the speaker is not from the region or country.

⁵⁴ This may beg comparisons of the U.S. “melting pot” mythos with the Canadian “multicultural mosaic” mythos. In addition, the reality of both the U.S. situation and some aspects of the Canadian situation may to a greater or lesser extent be explained by what is termed in cultural geography the law of first effective settlement, which states that, *ceteris paribus*, the first group to establish sustained control of a place sets the norms, such as language, law and customs, to which subsequent arrivals must assimilate.

References

- Adelstein, R. 1994. "Order and Planning." Manuscript, Wesleyan University.
- Akerlof, G., and R. Kranton. 2000. "Economics and Identity." *Quarterly Journal of Economics* 115(3): 715-753.
- Alba, R. 1990. *Ethnic Identity: The Transformation of White America*. New Haven, CT: Yale University Press.
- Angus, H. 1938. *Canada and Her Great Neighbor: Sociological Surveys of Opinions and Attitudes in Canada Concerning the United States*. Toronto: Ryerson Press.
- Bailey, R. 2005. "Talking Proper: The Rise of Accent as Social Symbol." *Language* 81(1): 269-271.
- Bakalian, A. 1993. *American-Americans: From Being to Feeling American*. New Brunswick, NJ: Transaction Publishers.
- Barro, R. 1991. "Economic Growth in a Cross-Section of Countries." *Quarterly Journal of Economics* 106(2): 407-444.
- Becker, G. 1975. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*, second edition. New York: Columbia University Press.
- Cavanaugh, J. 2005. "Accent Matters: Material Consequences of Sounding Local in Northern Italy." *Language and Communication* 25(2): 127-148.
- Chambers, J. 1993. "Lawless and Vulgar Innovations: Victorian Views of Canadian English." In: S. Clarke, ed. *Focus on Canada*. Amsterdam: John Benjamins.
- , 1994. An Introduction to Dialect Topography. *English World-Wide* 15: 35-53.
- , 1995. "The Canada-US Border as a Vanishing Iso Gloss: The Case of Chesterfield." Harold Allen Memorial Issue, *Journal of English Linguistics* 23: 155-66.
- , 2001. "English in Canada." In: T. Loreto, ed. *Varieties of World English*. London: Cassell Academic.
- , 2003. "Dynamics of Globalization: A Linguistic Perspective." Manuscript, University of Toronto.
- Chambers, J. and T. Heisler. 1999. "Dialect Topography of Quebec City English." *Canadian Journal of Linguistics* 44: 23-48.

- Chiswick, B. 1978. "The Effect of Americanization on Earnings of Foreign-Born Men." *Journal of Political Economy* 86: 897-921.
- , 1991. "Speaking, Reading, and Earnings among Low-Skilled Immigrants." *Journal of Labor Economics* 9: 149-170.
- Church, J. and I. King. 1993. "Bilingualism and Network Externalities." *Canadian Journal of Economics* 26(2): 337-345.
- Clark, T. 1990. "International Marketing and National Character: A Review and A Proposal for an Integrative Theory." *Journal of Marketing* 54(4): 66-79.
- Clarke, S. 1991. "Phonological Variation and Recent Language Change in St. John's English." In: J. Cheshire, ed. *English Around the World, Sociolinguistic Perspectives*. Cambridge: Cambridge University Press.
- Cozzi, G. 1998. "Culture as a Bubble." *Journal of Political Economy* 106(2): 376-394.
- De Long, B. and L. Summers. 1991. "Equipment Investment and Economic Growth." *Quarterly Journal of Economics* 106(2): 445:502.
- Doney, P., J. Cannon, and M. Mullen. 1998. "Understanding the Influence of National Culture on the Development of Trust." *The Academy of Management Review* 23(3): 601-620.
- Elections Canada. 2000. <http://www.electionscanada.ca>.
- Fershtman, C. and Y. Weiss. 1993. "Social Status, Culture, and Economic Development." *The Economic Journal* 103(419): 946-959.
- Fukuyama, F. 1997. *Trust: The Social Virtues and the Creation of Prosperity*. New York: Free Press.
- Glaeser, E., H. Kallal, J. Scheinkman, and A. Shleifer. 1992. "Growth in Cities." *The Journal of Political Economy* 100(6): 1126-1152.
- Grin, F. and F. Vaillancourt. 1997. "The Economics of Multilingualism: Overview of the Literature and Analytical Framework." in W. Grabe. ed. *Multilingualism and Multilingual Communities*. Cambridge: Cambridge University Press, 43-65.
- Hale, Ken, M. Krauss, L. Watahomigie, A. Yamamoto, C. Craig, L. Jeanne, and N. England. 1992. "Endangered Languages." *Language* 68: 1-42.
- Hall, E. and M. Hall. 1990. *Understanding Cultural Differences*. Yarmouth, ME: Intercultural Press.

- Hall, R. and C. Jones. 1999. "Why Do Some Countries Produce So Much More Output Per Worker Than Others?" *Quarterly Journal of Economics* 114(1): 83-116.
- Henrich, J. 2000. "Does Culture Matter in Economic Behavior? Ultimatum Game Bargaining among the Machiguenga of the Peruvian Amazon." *American Economic Review* 90(4): 973-979.
- Hill, C. 1997. *International Business: Competing in the Global Marketplace*. Chicago: Irwin.
- Hofstede, G. 1984. *Culture's Consequences: International Differences in Work Related Values*. Beverly Hills, CA: Sage.
- Huntington, S. 2004. *Who Are We?* New York: Simon & Schuster.
- Knack, S. and P. Keefer. 1997. "Does Social Capital Have an Economic Payoff? A Cross-Country Investigation." *Quarterly Journal of Economics* 112(4), 1251-1288.
- La Porta, R., F. Lopez-de-Silanes, and A. Shleifer. 1997. "Trust in Large Organizations." *American Economic Review Papers and Proceedings* 87(2): 333-38.
- Labov, W. 1991. The Three Dialects of English, In: P. Eckert, ed. *New Ways of Analyzing Sound Change*. New York: Academic Press.
- Labov, W., S. Ash, and C. Boberg. 2003. *The Atlas of North American English*. Department of Linguistics, University of Pennsylvania.
- Lang, K. 1986. "A Language Theory of Discrimination." *Quarterly Journal of Economics* 101(2): 363-82.
- Lazear, E. 1999. "Culture and Language." *Journal of Political Economy* 107(6): 95-126.
- Lipset, S. 1993. "Culture and Economic Behavior: A Commentary." *Journal of Labor Economics* 11(1): S330-S347.
- Mauro, P. 1995. "Corruption and Growth." *Quarterly Journal of Economics* 110: S.681-712.
- McManus, W., W. Gould, and F. Welch. 1983. *Journal of Labor Economics* 1(2): 101-30.
- McNeill, W. 1976. *Plagues and Peoples*. New York: Anchor Books, Doubleday.
- Murphy, K., A. Shleifer, and R. Vishny. 1991. "The Allocation of Talent: Implications for Growth." *Quarterly Journal of Economics* 106(2): 503-530.
- Namewirth, J. and R. Weber. 1987. *Dynamics of Culture*. Boston: Allen and Irwin.
- Phelps-Brown, H. 1977. *The Inequality of Pay*. Oxford: Oxford University Press.
- Pinker, S. 2000. *The Language Instinct: How the Mind Creates Language*. New York: HarperCollins Publishers, Perennial Classics.

- Pizzolato, N. 2004. "Workers and Revolutionaries at the Twilight of Fordism: The Breakdown of Industrial Relations in the Automobile Plants of Detroit and Turin: 1967-1973." *Labor History* 45(4): 419-443.
- Platteau, J-P.1994. "Behind the Market Stage Where Real Societies Exist – Part II: The Role of Moral Norms." *Journal of Development Studies* 30 (4): 753-817.
- Putnam, R., with R. Leonardi and R. Nanetti. 1993. *Making Democracy Work*. Princeton NJ: Princeton University Press.
- Sala-i-Martin, X. 1997. "I Just Ran Two Million Regressions." *American Economic Review, Papers and Proceedings* 87: 178-183.
- Statistics Canada. 1990, 1991, 1996, 2000, and 2001. Census Information, www.statisticscanada.ca.
- Scherer, M. 2005. "Speaking with an Accent." *Educational Leadership* 63(4): 7-12.
- Sullivan, M. 1991. *Measuring Global Values*. New York: Greenwood.
- Temin, P. 1997. "Is it Kosher to Talk About Culture?" *Journal of Economic History* 57(2): 267-87.
- Tranfaglia, N. 1997. "La Storia Siamo Noi." <http://www.nicolatranfaglia.com>.
- University of Toronto. 2001. "Dialect Topography Database." Department of Linguistics.
- Visconti, L. 1960. "Rocco e I Suoi Fratelli." Medusa Home Entertainment, IBS Italia.
- Von Schneidemesser, L. 1979. "A Study of Lexical Stability and Change in the Urban Spoken Language of Giessen, Germany, as Influenced by Age and Geographical Background." Ph.D. Dissertation, University of Wisconsin, Madison.
- Zeller, C. 1990. "Dialect Variants from Toronto to Milwaukee." M.A. Forum Research Paper, Department of Linguistics, University of Toronto.

Figure 1.
Map of the Golden Horseshoe, Ontario, Canada

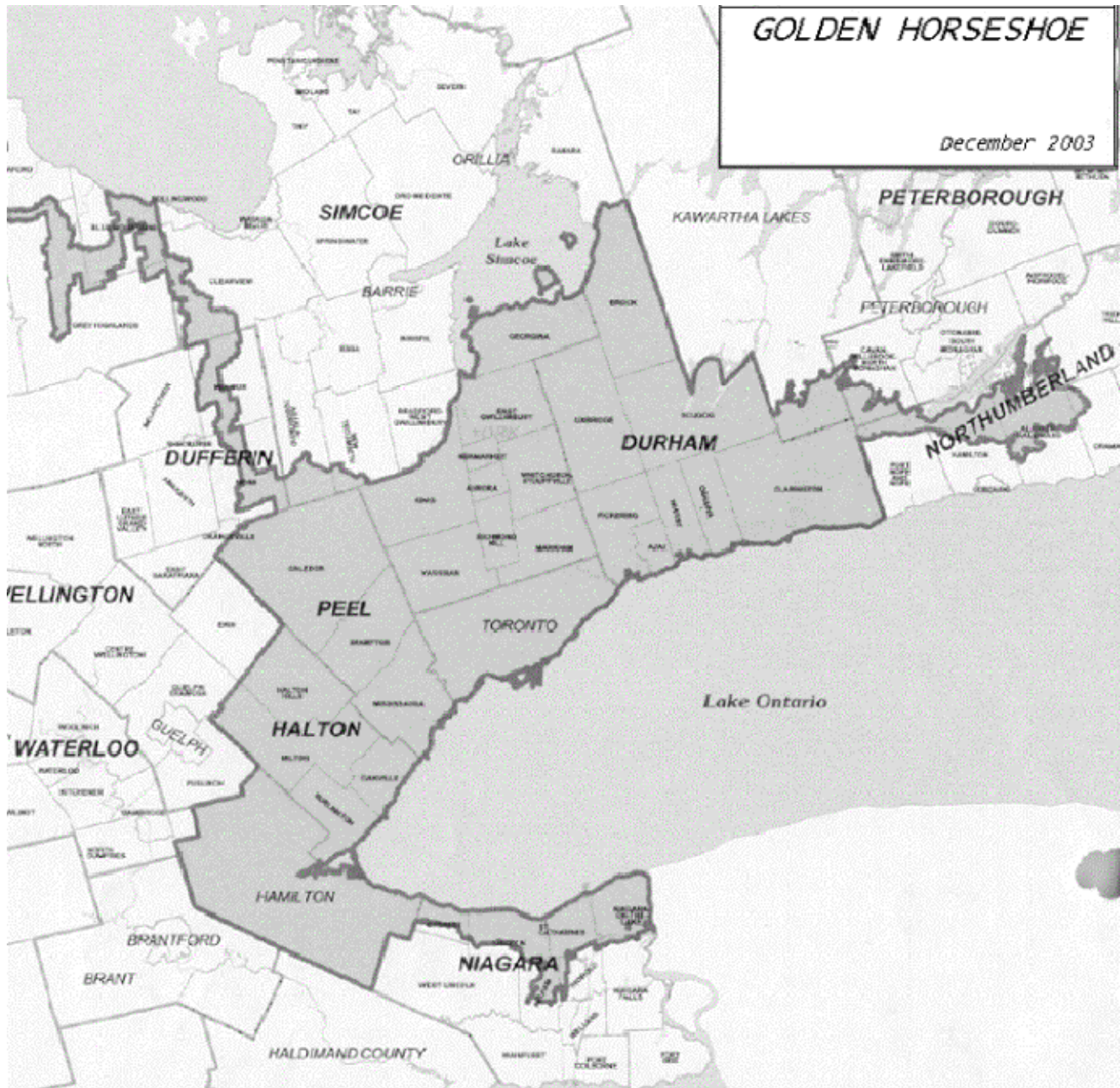


Figure 2. Partial Regression Plot, Canadian English Index and City Economic Growth

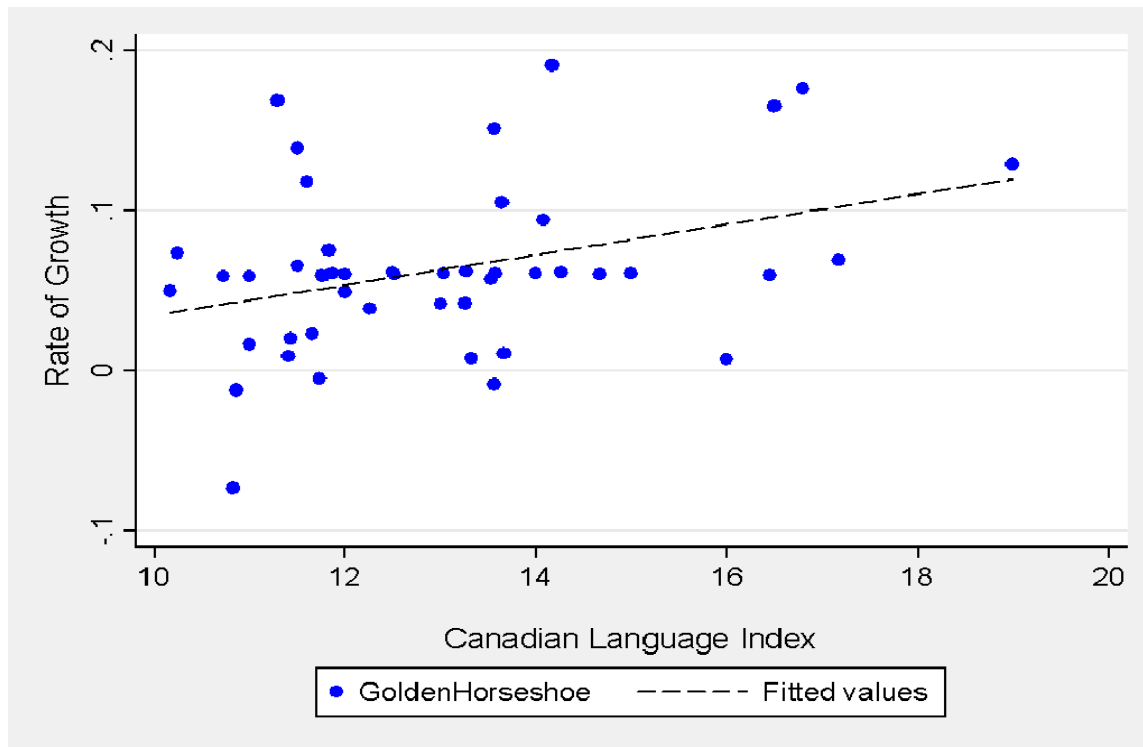


Table 1. Canadian English Index

Variable	Description
I. Diphthong Index	<p>This sub-index measures the presence of <i>Yod-Dropping or Canadian diphthong</i> . It is formed by the sum of the following variables: (i) Does news sound like nyooze (0) or nooze (1)?, (ii) Does the u in student sound like oo in too (1), or the u in u (0) ?, (iii) Does the beginning of coupon sound the same as cue (0), or coo (1)?, (iv) Does mom, as in "My mom's gone fishing with my dad" , rhyme with Tom (0) or tum (1)?, and (v) avenue sounds like you (0) or oo (1)?; (vi) Does the last half of garage sound more like badge (1) or lodge (0)?; (vii) Does roof rhyme with hoof? Yes (0) or No (1); (viii) Does oot, as in chimney soot, rhyme with foot (0) or boot (1)?; (ix) In "we're finally making progress" does the O in progress sound like the O of go (1) or the O of got (0)? Sub-Index ranges from 0 to 9, where higher values imply more cultural affinity to Canada. Source: University of Toronto (2001).</p>
II. Vocabulary Index	<p>This sub-index measures the usage of Canadian English words to refer to pieces of furniture, bath accessories and meal accessories. It is the sum of the following variables: (i) What do you call the upholstered piece of furniture that 3 or 4 people sit on in the living room? Couch (0) / Chesterfield (1) , (ii) What do you call the piece of furniture where you keep your socks, underwear, and other clothing? Dresser and else (0) / Bureau (1), (iii) What do you call the small cloth you use for washing your face? Washcloth (1) / Other (0), and (iv) At meal, people are sometimes given a cloth to wipe their fingers on. What do you call it? Napkin (0) / Serviette (1). The sub-index ranges from 0 to 4, where higher values imply more cultural affinity to Canada. Source: University of Toronto (2001)</p>
III. Raising Index	<p>This sub-index measures the way of pronunciation and rhyme of some words in Canadian English. The index is formed by the sum of the following variables: (i) Does route, as in 'paper route', rhyme with shoot (1) or shout (0)? , (ii) Is the ei of either pronounced like the ie of pie (1) , or the ee of bee (0)?, (iii) Does leisure rhyme with measure (1), or with seizure (0)?, and (iv) In the word tomato do you pronounce the middle part of the word as eight (0), or as at, or as ought (1) ?(v) Does the sch in schedule sound like sch (0) in school, or sh (1) in shed? (vi) Does the mi of semi, as in semi-final, sound like my (0) or like me (1)?; (vii) Does the ti of anti, as in anti-pollution, sound like tie (0) or like tee (1)?; (viii) Do you pronounce the letter Z as zee (0) or as zed (1)?; (ix) Does lever, as in 'Pull the lever', rhyme with clever (0) or cleaver (1)? The sub-index ranges from 0 to 9 where higher values imply more cultural affinity to Canada. Source: University of Toronto (2001).</p>
IV.- Verbs and WH-loss Index	<p>This sub-index measures the way of usage of some verbs and WH-loss in Canadian English. The index is formed by the sum of the following variables: (i) Which do you say? He has drank three glass of milk (0) or he has drunk three glasses of milk (1), (ii) Which do you say? Yesterday he dove into the quarry (0) or Yesterday he dived into the quarry (1), (iii) Which do you say? The submarine dived to the floor of the a (1) or The submarine dove to the floor of the a (0), (iv) Do whine and wine sound exactly the same? Same (0) / Different (1), and (v) Do witch and which sound exactly the same? Same (0) / Different (1); (vi) If a mother is going out for a few hours, she might say: 'Will you _____ the baby while I'm gone?' watch (0) look after and others (1); (vii) Which do you say? The little devil sneaked into the theatre (1) or the little devil snuck into the theatre (0)?; (viii) Which would you say? He snuck by when my back was turned (0) or He sneaked by when my back was turned (1)?The index ranges from 0 to 8, where higher values imply more cultural affinity to Canada. Source: University of Toronto (2001)</p>
V.- Canadian English Index	<p>This aggregate index is constructed by adding up the four following sub-indices: (I) diphthong index; (ii) vocabulary index (iii) raising index, and (iv) verbs and wh index. This index ranges from 0 to 30 where higher values mean more cultural affinity to Canada. Source: University of Toronto (2001).</p>

Table 2. Background Mobility Index in 1991

Indigenouness Score	Profile
1	Born, raised, living in same place as parents
2	Born, raised, living in region, parents born in province
3	Born, raised, living in region, parents born out of province
4	Raised and living in region, but born elsewhere in province
5	Raised and living in region, but born outside of province
6	Living in region, but born and raised elsewhere in province
7	Living in region, but born and raised outside of province

Scores range from 1 to 7; the lower the score, the more indigenous to the region. Based on Chambers and Heisler (1999), the base score for each respondent is 1, determined by the place where the person was raised from ages 8 to 18. A score between 0 and 2 is added depending on (i) the place where the respondent was born, (ii) the place where the respondent lives now, and (iii) the place where the respondent's parents were born. By following this formula, native-born, second-generation residents of a region earn a score of 1. If a woman lived in Toronto from ages 8 to 18, then Toronto is the region she represents. She receives a 1 for that, and a 0 if she was also born in Toronto; if she lives in Toronto now, that is another 0, and if one or both of her parents was born in Toronto, another 0. Her "background mobility index" is thus 1 (1 + 0 + 0 + 0). At the other extreme, for example, is a man who is long-time resident of Toronto but was raised in Montreal from 8 to 18; he would receive a 2 in addition to his base score of 1. If he was born in Montreal, that would be 2 more; if one or both of his parents was born in Poland, 2 more. Therefore, he would receive the maximum background mobility index score of 7 (1 + 2 + 2 + 2). Notice that other possible combinations have been excluded.

Table 3. Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Rate of City's Economic Growth, 1991-2001 (%)	48	0.0638	0.053	-0.073	0.192
Log 1991 Income	48	11.022	0.158	10.672	11.355
Years of Education	48	12.939	1.831	8.015	14.943
Canadian English Index (CEI)	48	13.249	2.612	10.171	25.000
Background Mobility Index	48	3.893	1.127	1.000	7.000
Distance to Niagara Falls (miles)	48	106.275	60.104	2.500	197.8
U.S. Immigrants (%)	46	0.061	0.057	0.0131	0.379
Number of Family Members	46	3.156	0.141	2.900	3.500
Population Change (%)	46	17.502	17.229	1.090	71.370
Blue Collar Dummy	48	0.181	0.227	0.000	1.000
English Mother Tongue (%)	46	0.810	0.128	0.282	0.950
English Home Language (%)	46	0.901	0.124	0.274	0.989
Foreign Television Viewing (%)	46	74.128	2.637	70.90	77.100
Works in Different City (%)	46	0.602	0.160	0.229	0.859
Single Ethnicity (%)	46	0.673	0.719	0.572	0.870

Sources: University of Toronto (2001) and Statistics Canada (1991, 1996, 2001).

Table 4. Canadian English Index and Economic Growth in Cities

	Ordinary Least Squares					
	(1)	(2)	(3)	(4)	(5)	(6)
	-					
Log 1991 Income	0.1477 *** (0.049)	-0.1930 *** (0.047)	-0.1975 *** (0.051)	0.2113 (0.164)	0.1092 (0.167)	0.3039 (0.209)
Years of Education	0.0087 *** (0.003)	0.0070 *** (0.003)	0.0072 ** (0.003)	0.0102 *** (0.003)	0.0082 ** (0.003)	0.0092 *** (0.003)
Canadian English Index (CEI)	0.0037 ** (0.002)	0.0030 ** (0.001)	0.0028 ** (0.001)	0.3062 ** (0.134)	0.2548 * (0.129)	0.4250 ** (0.169)
Background Mobility Index	0.0076 * (0.004)	0.0075 ** (0.004)	0.0068 * (0.004)	0.0082 ** (0.004)	0.0079 ** (0.004)	0.0069 * (0.004)
Distance to Niagara Falls		0.0001 (0.000)	0.0001 (0.000)		0.0001 (0.000)	0.0001 (0.000)
U.S. Immigrants		-0.0196 (0.091)	-0.0255 (0.099)		-0.0375 (0.081)	-0.0876 (0.082)
Number of Family Members			-0.0171 (0.042)			-0.0702 (0.050)
Population Change			0.0003 (0.000)			0.0006 (0.000)
1991 Income * CEI				-0.0276 ** (0.012)	-0.023 * (0.012)	-0.0385 ** (0.015)
Constant	1.5001 ** (0.566)	2.0261 *** (0.554)	2.1289 *** (0.637)	-2.4547 (1.807)	-1.3032 (1.841)	-3.2243 (2.222)
Number of observations	48	46	46	48	46	46
F	26.15	17.01	13.1	19.57	18.73	16.61
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000
R-squared	0.577	0.638	0.642	0.604	0.655	0.676

Robust standard errors in parentheses (*) significant at 10 percent; (**) significant at 5 percent; (***) significant at 1 percent.

**Table 5. Canadian English Index and Economic Growth in Cities
Using Instrumental Variables**

	(1)	(2)	(3)
Log 1991 Income	-0.1798 *** (0.047)	-0.1903 *** (0.046)	-0.1947 *** (0.049)
Years of Education	0.007 ** (0.003)	0.0061 * (0.004)	0.0065 * (0.004)
Canadian English Index (CEI)	0.0064 ** (0.003)	0.0063 * (0.004)	0.0051 ** (0.002)
Background Mobility Index	0.0066 (0.006)	0.0061 (0.005)	0.0061 (0.005)
Distance to Niagara Falls		0.0001 (0.000)	0.0001 (0.000)
U.S. Immigrants		-0.0181 (0.092)	-0.0253 (0.100)
Number of Family Members			-0.016 (0.042)
Population Change			0.0002 (0.000)
Constant	1.8473 *** (0.540)	1.9696 *** (0.535)	2.0775 *** (0.604)
Number of obs	48	46	46
F	29.83	16.62	12.58
Prob > F	0.000	0.000	0.000
R-squared	0.603	0.614	0.631

Robust standard errors in parentheses (*) significant at 10 percent; (**) significant at 5 percent; (***) significant at 1 percent.

Table 6. Robustness of Canadian English Index to Changes in Specification

	Mean	Standard Deviation	$cdf(0)$
Specification 1	0.0037	0.002	0.952
Specification 2	0.0029	0.001	0.969
Specification 3	0.0027	0.001	0.963

The cumulative distribution function is denoted as “ cdf ”. A variable whose weighted $cdf(0)$ is larger than 0.95 is significantly correlated with the dependent variable at 5 percent or higher. The cdf is computed assuming non-normality of the parameters estimated. In the normal case, the results are similar. Results are based on the first three empirical specifications in Table 4.

**Table 7. Canadian English Index and Economic Growth in Cities,
Extended Sample Including French Benchmark**

	(1)	(2)	(3)	(4)	(5)	(6)
Log 1991 Income	-0.1482 *** (0.044)	-0.2027 *** (0.042)	-0.2050 *** (0.043)	0.0346 (0.142)	-0.0077 (0.122)	0.0136 (0.136)
Years of Education	0.0098 *** (0.003)	0.0065 ** (0.003)	0.0067 ** (0.003)	0.0113 *** (0.003)	0.0079 *** (0.003)	0.0084 *** (0.003)
Canadian English Index (CEI)	0.0026* (0.001)	0.0026* (0.001)	0.0024* (0.001)	0.1516 (0.114)	0.1612* (0.091)	0.1810 (0.108)
Background Mobility Index	0.0115 *** (0.004)	0.0108 *** (0.003)	0.0101 *** (0.003)	0.012 *** (0.004)	0.0109 *** (0.003)	0.0102 *** (0.003)
Distance to Niagara Falls		0.0000 (0.000)	0.0000 (0.000)		0.0000 (0.000)	0.0000 (0.000)
U.S. Immigrants		-0.1498 (0.096)	-0.1387 (0.095)		-0.1555 (0.094)	-0.1476 (0.090)
Number of Family Members			0.003 (0.030)			-0.0102 (0.033)
Population Change			0.0002 (0.000)			0.0003 (0.000)
1991 Income * CEI				-0.0136 (0.010)	-0.0144* (0.008)	-0.0163 (0.010)
Constant	1.4883 *** (0.511)	2.1517 *** (0.491)	2.1654 *** (0.524)	-0.5402 (1.576)	-0.0113 (1.356)	-0.2188 (1.476)
Number of obs	62	60	60	62	60	60
F	21.81	18.36	13.62	21.06	18.07	15.25
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000
R-squared	0.630	0.696	0.698	0.638	0.704	0.708

Robust standard errors in parentheses; regressions include a Quebec dummy; (*) significant at 10 percent; (**) significant at 5 percent; (***) significant at 1 percent.

Table 8.Canadian English Index and Related Socioeconomic Outcomes

	(1) Per Capita Income in 2000	(2) Percent with no employment	(3) Percent Vote in National Elections	(4) Percent Donors	(5) Percent Receiving. Capital Gains	(6) Percent Married	(7) Percent Separated and Divorced	(8) Percent with Investment Income	(9) Percent Receiving Government Transfers	(10) Percent Receiving Social Assistance
Log 1991 Income	12.315 *	1.343	8.174	-0.091	-0.038	-0.043	0.0008	-0.06	0.233	0.034
	(6.67)	(2.67)	(6.93)	(0.044)**	(0.045)	(0.045)	(0.002)	(0.07)	(0.34)	(0.05)
Years Education	0.575	0.219	0.349	-0.003	-0.004	-0.004	0.003	-0.008	0.004	0.002
	(0.61)	(0.18)	(0.53)	(0.005)	(0.004)	(0.004)	(0.02)	(0.007)	(0.03)	(0.004)
Canadian English Index	0.390	0.232	0.349	0.003	0.003	0.003	-0.0009	0.005	-0.143	-0.003
	(0.20) **	(0.05) ***	(0.13) **	(0.001) **	(0.001) *	(0.001) **	(0.0005) *	(0.002) **	(0.08) *	(0.001) **
Background Mobility Index	0.938	0.441	1.355	0.006	0.005	0.006	-0.002	0.003	-0.09	-0.01
	(0.42) **	(0.15) ***	(0.38) ***	(0.005)	(0.004)	(0.003) *	(0.001)	(0.007)	(0.02) ***	(0.003) **
Constant	71.148	-5.512	-33.01	1.28	0.55	0.97	0.032	1.081	-0.53	0.272
	79.07	(30.95)	(82.03)	(0.54) **	(0.55)	(0.54) *	(0.19)	(0.90)	(4.01)	(0.58)
Observations	46	46	46	46	46	46	46	46	46	46
F	6.86	6.86	3.36	2.35	2.05	2.39	1.98	1.29	4.76	3.14
Prob > F	0.0003	0.0003	0.02	0.07	0.10	0.06	0.12	0.29	0.003	0.02
R-squared	0.22	0.23	0.19	0.14	0.09	0.10	0.07	0.07	0.21	0.16

Robust standard errors in parentheses (*) significant at 10 percent; (**) significant at 5 percent; (***) significant at 1 percent. All the variables are from Statistics Canada (2000) except the voting data which is from Elections Canada (2000).