

THE IMPACT OF ETHNOLINGUISTIC DIVERSITY ON ENTREPRENEURIAL ACTIVITY: A CROSS-COUNTRY STUDY

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The relationship between language diversity, ethnic fractionalization, and economic activity is both complex and open to heated debate. In this study, we empirically examine the impact linguistic diversity and ethnolinguistic fractionalization has upon entrepreneurial behavior at the country level of analysis. Utilizing an economic club theory approach to social capital, this study supplements the growing socio-economic literature that examines the relationship between diversity and economic growth. We find that while ethnolinguistic diversity is associated with higher levels of entrepreneurial activity, diversity is also associated with higher failure rates. We also find that income disparity is closely related to entrepreneurial activity.

1. Introduction

Language, almost by definition, is a core component of human development. In a broad historical sense, there has always been a close relationship between the complexity of civilization and the complexity of language. Sophisticated social interactions, institutions, and philosophies require a language capable of providing the basis to conceptualize and communicate within these complex human environments. On a more local scale, language is also intimately tied to an ethnic group's cultural perspective. Sociolinguists have long argued that language strengthens a group's identity, while providing a repository for a culture's intrinsic beliefs, values, and social systems.

Yet language is always evolving, both as a society develops over time, and by the inevitable conflicts that occur when one culture interacts, often violently, with another culture. Every large scale human migration through-out recorded history has involved the loss of local languages (Tsunoda, 2006). For example, it is estimated that about

1,000 distinct languages were spoken by the various indigenous tribes within pre-colonial North America (Bryson, 1990), with some 300 to 500 spoken specifically within the geographic region of the United States (Mithun, 1999). During the colonial and settlement periods most of these indigenous languages were under intense pressure. Not only did they have to compete with the new languages brought into the U.S by immigrants, but many languages of the smaller horticultural Native American clans were simply destroyed by the invasions of the larger, more warlike tribes during this time (e.g., Benson, 2006; Galbraith et al, 2006). Similarly, Schmidt (1993) reports that approximately 250 indigenous languages were spoken in Australia prior to the arrival of European colonists. Most of these indigenous languages have been lost, with the remaining few being spoken only in isolated pockets of native culture (e.g., Krauss, 1998). In these heavily colonized regions, the Western European languages of English, Spanish, French and Portuguese have become dominant.

The consolidation of language has been most dramatic in Europe. While Europe contains 13.2% of the world's population, it has only 3.5% of the world's languages (Gordon, 2005). In other regions, the loss of languages has been somewhat less dramatic. Africa, for example, while containing 12.3% of the world's population has over 30.3% of the world's languages. This consolidation, and resulting loss, of "minority" languages appears increasingly inevitable. Current estimates, for example, suggest that while there are approximately 7,000 spoken languages worldwide, about 90% of these are threatened and likely to disappear within a couple generations (De Grauwe, 2006; Breton, 1998).

The relationship between language and economic behavior is highly complex and open to passionate debate. To date, while the combined academic literature is voluminous, the study of the economics of language remains, at best, a somewhat marginalized and diverse effort. Scholarly efforts to investigate these relationships come from a variety of disciplines, ranging from social network analysis, developmental economics, sociolinguistics, political conflict analysis, and more to our focus, from the ethnic entrepreneurship field. Within this broad literature, language is generally not seen in isolation, but rather as an important component in defining ethnic or cultural groupings. And while there is recognition that ethnic or cultural groups exist, and are important to social and economic behavior, there is certainly no agreement regarding how to define, measure or view the transitions within these ethnic or cultural groupings (see Pires and Stanton, 2000; Laitin, 2000; Fearon, 2003; Ng, 2007).

Most of the effort in the broadly defined ethnic entrepreneurship field has been small-scale surveys, network studies or ethnographic case descriptions that focus on economic activities within a single or limited number of specific ethnic, cultural, and linguistic groups. This literature has exploded, however, and comprehensive scholarly surveys of ethnic, indigenous, developmental and immigrant entrepreneurship now regularly appear (Rath, 2000; Stiles and Galbraith, 2004; Galbraith and Stiles, 2006; Dana, 2007; Dana and Anderson, 2007). Within this literature several themes have emerged. One important theme is that while ethnolinguistic group economies offer distinct advantages to co-ethnic entrepreneurs, these economies also experience intense competition, marginal performance, and elevated small business failure rates (e.g., Ram et al, 2000; Iyer and Shapiro, 1999; Walton-Roberts and Hiebert, 1997).

While insightful, micro-level studies are somewhat limited in their usefulness in developing a broader understanding of economic behavior and regional development. Our study of ethnolinguistic economic behavior therefore takes a much more macro-approach than the vast majority of previous empirical research. We specifically examine the impact ethnolinguistic diversity has upon entrepreneurial behavior at the country level of analysis. In this respect, our study supplements the growing socio-economic literature that examines the relationship between ethnolinguistic diversity and economic growth while incorporating the theoretical underpinnings developed over the past two decades within the broader ethnic entrepreneurship and social capital literature.

2. Economics, Language and Cultural Diversity

2.1 Social Capital and Economic Clubs

Over the past several decades, several important theoretical models have emerged to describe the relationships between language and economics¹. One of the most dominant themes in both ethnic entrepreneurship and economic sociology is that a common language shared by co-ethnics contributes to the development of social capital within an ethnic community. Other aspects of social capital include shared traditions, cultural trust, tacit knowledge, implicit habits and behavioral norms (Portes, 1998; Rath and Kloosterman, 1999; Dyer and Ross, 2000; Greene and Chaganti, 2004; Sequeira and

¹ There are other important disciplines that examine the relationship between language and economics that are less relevant to our discussion in this study. For example, there are large bodies of literature on both the economics of language choice (e.g., examining the personal choice to learn a second language), and the relationship between language and labor economics (e.g., the effect of minority language fluency on wage rates).

Rasheed, 2004), but language is certainly believed to be one of the most important social capital building blocks (e.g., Fishman, 1999; Grin, 2002; Fearon and Laitin, 2000, 2003; Menzies et al, 2007). This package of relationship-building factors creates powerful economic, social, and political boundaries that ultimately define an ethnic enclave or community (Piore, 1979; Adler and Kwon, 2002; Light, 2004; Light and Bhachu, 2004).

Although the literature on social capital and ethnic business has developed exponentially, the vast majority of sociologists and ethnic entrepreneurship researchers tend to view social capital within the descriptive framework of networks, relationships, and embeddedness (e.g., Rath, 2002). These descriptive social capital models, while very insightful, are somewhat limiting when developing broader economic models of ethnic entrepreneurial behavior. In order to incorporate the concept of social capital into economic performance models several different approaches have been offered (Coleman, 1984; Van Dijk, 1997; Dasgupta and Serageldin, 1999). Building on the seminal work by North (1990) and Ostrom (1994), for example, Silva (2006) suggests that social capital should be seen primarily as a “macro-level” institutional set of rules that generate lower transaction cost to the economy. In fact, some economists such as Arrow (1999) argue for the abandonment of the word “social capital” all together, since it does not have the necessary requirements for “capital.”

To understand the implications of social capital within the context of ethnolinguistic groupings (which is more in-line with historical sociological and ethnic entrepreneurship thought) it is our belief that social capital can be best understood as an economic good (Portes and Landolt, 2000; Fukuyama, 2001), and in particular, a “club” good to use Tiebout’s (1956) framework. Within this context, social capital can be defined as a collective asset that is supplied at the co-ethnic network level that has both costs and benefits (Galbraith et al, 2007, Evans, 2005). Its value stems from a number of sources including the sharing of production costs, such as co-ethnics contributing to ethnic causes, festivals, and work training events, as well as the unique group characteristics, e.g., common language, culture, or immigration experience, that result in benefits unavailable (excludable) to non-ethnics, and most often, non-fluent speakers of the ethnic group’s language. But for the entrepreneur, there are also potential costs, such as being forced to use lower quality co-ethnic produced inputs, less productive co-ethnic employees, or less effective co-ethnic distribution systems, factors that actually might make the enterprise less competitive in an open market (Martes and Rodriguez, 2004;

Araujo et al, 2006). This situation can occur in both an immigrant population using an “imported” language or within an indigenous population speaking a “minority” language.

To use Ostrom and Ostrom’s (1977) categorization, our quasi-public “club” good of “social capital” lies within the class of “impure public goods” in that it is generally “non-rival,” but like a private good, is also “excludable.” In the case of social capital, since the benefits derived from ethnic community-membership have their source in sharing a common language, belief system, legal and business expectations, it is exactly those aspects that make them “excludable” from other non-ethnics and most often, non-fluent speakers of the group’s language – thus the “club” analogy.

However, as an ethnic economy matures, the “club” can become even more exclusive if economic “congestion” becomes an issue. Congestion in an ethnic economy can occur, for example, when successful intra-group trade benefits exceed its entry costs thus attracting late comers to the ethnic group. This creates a free-rider type of externality, which in turn, may result in increasing efforts to enforce strict club membership regimens.

The maintenance and enforcement of ethnic “club” membership can take several forms. One important potential dimension of club exclusion will occur along the dimension of language fluency, that is, non-fluent speakers may be increasingly marginalized from the economic benefit of the club. Exclusion can be informal such as established ethnic enterprises simply not doing business with outsiders, or formal, such as ethnic quasi-government community groups (i.e., a local ethnic-based “chamber of commerce) excluding potential free-riders from intra-group economic activities and business contacts (Galbraith et al, 2004). Thus while a common language often underpins the notion of social capital that facilitates both economic exchange among co-ethnics and encourages the establishment and maintenance of ethnic entrepreneurial enterprises, language can also become the basis for exclusion if “club” congestion occurs (see Galbraith et al, 2007)².

2.2 Transaction Costs and Economic Institutions

Another approach to understand the role of language falls within the context of transaction costs. As the body of institutional economics literature argues (for example, Williamson, 1975; Teece, 1980; North, 1990; Kay, 1997; de Soto, 2006), the basis for

² Note that Alesina and Ferrara’s (2000) excellent discussion of social capital and heterogeneous communities departs from the normal club theory model since in their model ethnic groupings do not have congestion effects, require no contribution, and allow free entry

economic institutions must be found in those enforceable formal and informal contractual systems that ultimately make the costs of transacting within organizations competitive with market transaction costs. Nevertheless, a structured legal system sophisticated enough to allow efficient economic organization among non-related members (such as employees, owners, customers, suppliers, and financiers) is not easily developed. The problem becomes even more difficult as the tradable assets become less-product or region-specific (Galbraith and Kay, 1986; Kay, 1997). Within this framework, language directly influences the nature of search, contract, policing, and enforcement costs between individuals and institutions.

A common language, it is argued, will generally reduce transaction costs, resulting in more sophisticated and stronger institutions, greater agreement regarding property rights, increased cross-group trade, and ultimately more economic growth. On the other hand, two groups with vastly dissimilar languages may result in increased cross-group transaction and organizing costs to the point where joint institutional arrangements, and even trade, may be impossible. In addition, as Bryson (1990) argues, multiple languages may decrease social and economic mobility since language differences makes it easier to establish and institutionalize rigid intra-country class structures, thus increasing the transaction cost between these groups.

From a historical perspective, this aspect of language in defining economic institutions can be seen in 19th century interactions between different indigenous Native American tribal groups. While the economic costs of complex early European-based frontier business were relatively high by modern 21st century standards, the contemporaneous Native American family-oriented economic organization of the 18th and 19th century was at an even greater disadvantage regarding transaction costs. Native Americans, lacking a universal, systematic and standardized contractual model to organize unrelated economic stakeholders, combined with the inherent transaction costs associated with non-uniformity of language and an oral-based legal tradition, simply could not act collectively as economic units in sizes much larger than the family or sub-clan (Carlos and Lewis, 2002; Galbraith et al, 2006;). In fact, in some tribes, the rights over physical property, such as farm-land and hunting areas, were even defined by ownership of songs in which the words actually defined the parameters of the rights (Laird, 1976). Thus, while the songs, and thus, the rights, could be inherited or traded within a small tribal band, a broader-based commerce and institutional organization with these types of assets was almost impossible.

By the late 19th century, as the European-based economic frontier in the western United States consolidated into a more uniform legal and contractual system, Native American populations simply could not fully develop efficient mechanisms that made the costs of business transactions competitive, no matter how entrepreneurially inclined some of their members were. In essence, while there were strong incentives for Native Americans to internalize many of their economic transactions, because of the linguistic and cultural fractionalization among indigenous tribes, the organization costs of doing so were prohibitive (Peredo et al, 2004; Galbraith and Stiles, 2006).

The same theme is echoed in modern economic development research. There is an increasingly large empirical literature examining the relationship between language and economic growth. A number of researchers, for example, have found that countries are more likely to integrate their economies and trade with other countries that share a common language (Helliwell, 1998; Melitz, 2002). Other researchers, however, have suggested that with appropriate institutions, a fairly low level of common language fluency is required for successful trade (e.g., Cremer and Willes, 1991).

There is greater debate, however, regarding the impact of language on economic development. (Arcand, 1996; Nettle, 2000; Grin, 2001). A long history of development research has found support for the “Fishman-Pool” hypothesis that linguistic heterogeneity leads to lower economic growth due to the higher levels of government instability, institutional failures, and economic transactions costs associated with high language and ethnic diversity (Fishman, 1972; Pool, 1991, Coulmas, 1992; Easterly and Levine, 1997). However, some have argued that the causal direction may be in the opposite direction -- high economic growth is associated with linguistic homogeneity because the increased factor specialization, centralized education and advanced communication that flows from a more development economy encourages a consolidation of language (de Grauwe, 2006).

More recently the basic “Fishman-Pool” hypothesis is being increasingly challenged. Some studies have found no economic penalty for language or ethnic diversity (Lian and O Neal, 1997; Grin, 2002), while other researchers have found that cultural, language, and ethnic diversity has little or no empirical impact on political instability in modern times, and therefore should not impact economic development (Fearon and Laitin, 2003; Fearon et al, 2007)

Some of the concerns directed toward this body of research have focused on measurement issues, such as the use of poorly defined language and ethnic diversity

metrics (Laitin, 2000; Alesina et al, 2003; Fearon, 2003). But in reality, most of the recent criticism advanced against the economic benefits of language homogeneity tends to be grounded in the notions of indigenous rights, aesthetic attractiveness, and cultural morality (e.g., McEwan-Fujita, 2005; Muhlhausler, 2007), which has now reached the proportions of influencing formal “minority language” education policy in many countries (Grin, 2002, 2004).

2.3 Diversity and Entrepreneurship

In spite of the increasing sophistication and insights provided by the economics of language research, there has been little reference to the role of entrepreneurial activity, or the impact entrepreneurial behavior has on the relationship between linguistic or cultural diversity and economic development. Perhaps entrepreneurship represents an intervening factor, where diversity impacts the nature of entrepreneurship activity, which in turn, impacts economic growth. This relationship remains to be investigated in detail.

On the surface, however, it appears that the social capital perspective of language economics and the transaction cost perspective of language economics are in potential conflict -- ethnic economies are facilitated by a language that has the potential of excluding non co-ethnics, developing co-ethnic intra-group networks, and building “protected” co-ethnic sub-economies, whereas economic activity with other ethnic groups, or within the broader economy, is facilitated by a single, common language that reduces transaction costs, encourages trade and creates shared institutional arrangements.

The evolutionary models of ethnic entrepreneurial development suggested by Woolcock (1998) and others lay a possible foundation for resolving this theoretical tension. Here the potential immigrant entrepreneurs enter an ethnic community seeking employment, then accumulate resources and progress into a start-up phase that relies primarily upon intra-ethnic business ties, which in turn matures into a third stage of *extra-ethnic* market expansion (Morris, 2001; Sequeira and Rasheed, 2004). Early stage ethnic entrepreneurs are better able to develop strong ties with suppliers and co-ethnic customers and obtain the necessary work force at lower costs. Business growth, however, often requires expansion outside the community; or as Woolcock (1998) argues, “the initial benefits of intensive intra-community integration . . . must give way over time to extensive extra-community linkages” (Woolcock, 1998: 175). Within an economic club good perspective, social capital is certainly limited in scale, and as a result, shows diminishing returns as the enterprise matures (Iyer and Shapiro, 1999).

Small-scale input-out analysis of ethnic business development appears to support this argument (Galbraith et al, 2003), although the factors that allow some entrepreneurial enterprises (and not others) to transition from *intra*-ethnic economies to *extra*-ethnic economies remain unascertained.

Another explanation for this evolutionary entrepreneurial behavior can also be provided within the context of club theory. This suggests that the utility function of early stage ethnic entrepreneurs tends to be more similar to the general co-ethnic community's than later stage ethnic entrepreneurs. If we considered the ethnic economy to be a "club," we would, indeed, expect some heterogeneity in the "ethnic club," with emergent entrepreneurs sharing more economic activity internal to the club than more established entrepreneurs, and the latter becoming more involved in "overlapping" clubs – a co-ethnic economy combined with a non-co-ethnic economy, representing increasing levels of assimilation. In fact, assimilation within this context may be framed as the relationship of evolving personal utility and preference functions with the perceived benefits of resources derived from co-ethnic social capital.

However, if language or cultural diversity is high in a country, mobility barriers between ethnic groups increase and the opportunity to expand outside the ethnic group becomes more costly. In this situation, the ethnic business community will likely pool (typically as a large number of marginal micro-enterprises) within the ethnic market boundaries, resulting in "congestion," increased competition, and ultimately elevated small business failure rates -- particularly as new ethnic enterprises also enter the enclave seeking benefit from the social capital (Galbraith et al, 2007).

Within the ethnic entrepreneurship literature, high ethnic competition rates, and subsequent failure rates, have been suggested by a number of small-scale studies examining specific ethnic or cultural groups (e.g., Ram et al, 2000; Iyer and Shapiro, 1999; Walton and Hieber, 1997; Galbraith et al, 2003). The explanations given for this are often non-economic in nature, such as discrimination (see Greene and Chaganti, 2004; Menzies et al, 2007), although the same theoretical conclusions can be reached using an economic "good" perspective of social capital and the notion of cross-linguistic/cultural transactions costs.

Thus, fluency in the language of an ethnic community may allow for successful entrepreneurial development on a small scale, fluency in a broader language is then required for larger scale entrepreneurial development and expansion. This dual fluency takes advantage of both the enclave supported social capital and the expanded

opportunities of non co-ethnic trade made possible by the reduced transaction costs. However, the process of acculturation by ethnics, if taken too far, may result in a loss of the economic advantage associated with the tight co-ethnic relationships of an enclave or community. And again, if language or cultural diversity is too high in a country, then it may become impossible to achieve sufficient language fluency or cultural knowledge across the various groupings to establish effective institutional arrangements resulting in small, marginally successful micro-enterprises – the modern analogy of the 19th century Native American economy described above.

2.4 Language Economies

Recently there has been increased interest in the idea of a “language economy.” While much of the basis of a language economy overlaps with a social capital argument, the notion of a language economy also suggests that there is significant potential inter-group trade advantages associated with a cohesive economic system defined by a “minority language.” First, a language economy can create greater intra-community respect, motivation, and cohesion that, in turn, results in greater productivity and more competitive goods and services for export outside the ethnic group. And second, the language economy perspective views languages, particularly “minority languages,” as economic goods, that is, something that can be developed, enhanced, protected, marketed, and ultimately sold.

This notion of a language economy has been a common theme in recent European Union policies. Europe is home to a number of minority languages, which while enjoying a long and important history in European development, have been rapidly diminishing in recent usage. An example of a potential language economy is Scottish highland Gaelic (see Pedersen, 2000; Glaser, 2004; McEwan-Fujita, 2005). Scottish Gaelic (Gàidhlig) is spoken only in the remote Highlands and Islands peripheral region of Scotland, with the language heartland being the Western Isles, Skye, and Lochalsh. Faced with a declining and aging Gaelic speaking population, and the increasing importance of English based trade, the outlook for Gaelic is bleak. However, through a variety of government policies, such as establishing a Gaelic oriented University of the Highlands and Islands, and the promotion of Gaelic based goods, crafts, and art to both Gaelic and non-Gaelic markets, a relatively successful “language economy” has developed, with local entrepreneurs aggressively marketing Gaelic products and services. As Pedersen (2000) notes, “it is through the mainstream commercial application of

Gaelic that prosperity and employment gains are likely to be most substantial” (p. 158). The value of Gaelic as a commercial product has even reached a point that some English-speaking promoters are putting Gaelic on their products to capture customers (MacLeod, 2006; Chalmers and Danson, 2004, 2005).

However, some researchers have challenged the long-term viability of “language economies” such as Gaelic, attributing most of the “positive results to public funding and “rhetoric” (see McLeod, 2001, 2002). Other language economies promoted by recent European policies include Welsh (Aitchison and Carter, 1999; Higgs *et. al.*, 2004) and Catalonia. Similar governmental efforts are underway to develop language economies around Native American languages in the U.S., such as the Karuk tribe in California (e.g., Sims, 1998), New Zealand’s Te Reo of the Māori, and the indigenous languages of Australia (e.g., Mühlau, 2004) and Canada (e.g., Grin, 2004).

3. Hypotheses

Since we are specifically examining entrepreneurial behavior in this paper, our hypotheses focus on the impact language, ethnic and cultural diversity has upon both entrepreneurial activity and entrepreneurial motivations. As mentioned above, a dominant theme in the sociology and ethnic entrepreneurship literature revolves around the importance of social capital in defining an economic enclave in which ethnic entrepreneurs can successfully establish and sustain their enterprises, relying, to a large degree, upon the co-ethnic community to provide inputs and customers. Since the benefits derived from ethnic community-membership have their source in a common language, belief system, and business expectations, these communities can become protected markets, or “economic clubs” that can exclude competition from the broader market. Thus, the “economic club” aspect of an ethnic or culturally-based economy has two important potential impacts on entrepreneurial behavior -- first the strong “social capital” component will likely attract a high number of start-up co-ethnic enterprises to the enclave, and second, the “protected market/mobility barrier” component will likely result in a congested market, that is, a captive pool of smaller, more marginal enterprises that otherwise might be less competitive in a broader market.

Therefore, as the number of ethnolinguistic groups increase within a country, it is likely that that the overall business start-up rate will increase with a corresponding decrease in the business survival rate. Each fragmented market becomes a local competition center, with the players being smaller scale, marginally profitable, and more

susceptible to failure when confronted with new entrants. In addition, from a transaction cost perspective, the more ethnically, culturally, or linguistically fragmented a country becomes, the less likely that large cross-group enterprises will develop. This results in enterprises unable to achieve efficient scale in the broader market.

H1. Countries with high levels of ethnic, cultural or linguistic diversity will have higher rates of start-up activity than countries that are more ethnically, culturally or linguistically homogeneous.

H2. Countries with high levels of ethnic, cultural or linguistic diversity will have higher failure or transition rates, than countries that are more ethnically, culturally or linguistically homogeneous.

Motivations for initiating an enterprise can vary. A commonly used dichotomy is “opportunity” driven entrepreneurship versus “necessity” driven entrepreneurship. Opportunity-driven entrepreneurial behavior is generally considered a value-added effort to seek-out opportunities within the market place; with entrepreneurs initiating enterprises even though the entrepreneur may have other personal income options. Opportunity-driven entrepreneurship is often seen as contributing to a country’s economic development (Minnitti, 2005, 2006). On the other hand, entrepreneurs may be classified as necessity-driven if the motivation for start-up activity is simply related to the necessity of generating income. To a large extent, this entrepreneurial behavior is more “reluctant” in nature, and if new income options arise “necessity-based” entrepreneurs may abandon their start-up enterprise and return to the labor force (Galbraith and Latham, 1996).

Since ethnic entrepreneurs may be initially attracted to enter a “protected” and “excludable” ethnic economy, we hypothesize that as ethnolinguistic fragmentation increases; there will be a corresponding higher incidence of “opportunity” based entrepreneurial activity. We recognize, however, that the ratio of opportunity to necessity based entrepreneurship is highly correlated to a country’s per capita income (Minnitti, 2005, 2006) since lower income countries will likely have a greater incidence of “necessity based” activity, while higher income countries will have a greater incidence of “opportunity-based” entrepreneurship.

H3. After controlling for per-capita income, countries with high levels of ethnic, cultural or linguistic diversity will have higher rates of opportunistically-based start-up activity than countries that are more ethnically, culturally or linguistically homogeneous.

4. Data

The data used for this study was obtained from several sources. A description of the diversity metrics, the control variables, and the entrepreneurial activity variables follows:

4.1 Diversity Metrics

Language Diversity (LangDiv). The Summer Institute of Language's *Ethnologue* (Gordon, 2005) reports the Greenberg's (1956) language diversity index using 2004 data. The Greenberg diversity measure represents the probability that any two people selected at random would have different mother tongues. A higher number represents greater language diversity. Laitin (2000) discusses the various Greenberg measures of language diversity in detail. The *Ethnologue* project started in 1951 as an effort to share information on language development needs, and is currently in its 15th edition (2005). For our sample, language diversity ranges from low diversity for Jamaica (0.011) and Iceland (0.019) to high diversity for India (0.930) and South Africa (0.869), with the sample mean calculated as 0.345. As a comparison, the United States has a language diversity measure of 0.353, the United Kingdom is calculated at 0.139, and France has a score of 0.272.

Ethnolinguistic Fractionalization Index (ELF). During the "cold war" Soviet ethnolinguists published several different studies that categorize ethnolinguistic groupings throughout the world. Generally, Soviet and Eastern European ethnolinguistic theory tends to place the highest weight on linguistic differences and national origins (Fearon, 2003). Roeder (2001) calculates several different ELF indices for the years 1961 and 1985 based upon the Greenberg diversity index using as base sources the published Soviet ethnolinguistic atlas data. We use the most recent ELF index from Roeder (2001) that separates groups based upon the most detailed sub-groupings available in the sources. For example, the ELF index we employ treats separate Native American groups as separate ethnic groups rather than combining these groups as "Indigenous Peoples". In addition in the colonial societies of the Western Hemisphere, this ELF index treats racial distinctions within ethnolinguistic groups (Afro-Americans versus White Americans or Afro-Colombians versus Euro-Colombians) as separate ethnic groups. In our sample, the average ELF is 0.37; with a range between 0.013 and 0.886. For reference, the United States (0.524), Belgium (0.589), and Switzerland (0.586) have the highest ELF scores among the developed countries whereas the vast majority of European countries have ELF scores less than the mean (e.g., Iceland at 0.033; Germany at 0.111, and Sweden at 0.137). The highest ELF scores in our sample

are reported for India, Malaysia, Indonesia, South Africa, and the Philippines. See Roeder (2001) for additional detail.

Ethnic Fractionalization (EthnicFrac). Fearon (2003) examines the ethnic structure of one hundred-sixty countries. Using a variety of sources, including the CIA's *World Book Factbook* and the *Minorities at Risk* database, Fearon develops an ethnic fractionalization measure based upon the Greenberg diversity index. Fearon's ethnic fractionalization measure is defined as "the probability that two individuals selected at random for a country will be from different ethnic groups" (2003: 208). The ethnic fractionalization metric is a continuous measure, and as a probability measure it is more desirable than ethnic diversity measures based upon simple "number of ethnic groups" or dominance measures. While Fearon (2003) uses language as one dimension of ethnic group definition, other dimensions are more important, such as ethnic identification and consequence measures. In our sample, Sweden, Netherlands, Iceland, and Italy all have low EthnicFrac scores, while India, Indonesia, South Africa, and Columbia show high EthnicFrac scores. For comparison, the United States (0.491) and Spain (0.502) have EthnicFrac scores higher than the sample mean EthnicFrac score (0.361) while France (0.272) and Germany (0.095) have scores lower than the sample mean. Fearon (2003) describes the measurement of ethnic fractionalization in more detail.

Cultural Fractionalization (CultFrac). Fearon (2003) also develops a cultural fractionalization metric. Cultural fractionalization attempts to measure the "distance" between ethnic groups. Thus cultural fractionalization modifies ethnic fractionalization. The major dimension Fearon uses to measure "distance" between ethnic groups is distance between "tree-branches" of the language used by the different ethnic groups. While not a probability measure, cultural fractionalization specifically takes into account the language similarity between two ethnic groups and ranges between 0 and 1, with 1 representing high cultural fractionalization. In our sample, countries with low CultFrac scores include Japan, Venezuela, and Iceland. Countries with high CultFrac scores include India, Malaysia, and Indonesia. For comparison, the United States (0.271) and France (0.251) are slightly above the sample mean CultFrac score (0.241), while Ireland (0.157) and Australia (0.147) are below the mean score. Because of its specific inclusion of language similarity, Fearon's cultural fractionalization metric appears most similar to the ethnolinguistic fractionalization index (ELF) developed from the 1985 Soviet Atlas

data (Roeder, 2001). Differences are noted, however, particularly in Asian and sub-Saharan African countries. *CultFrac* and *ELF* are most similar for North American and European countries (see Fearon, 2003).

4.2 Control Variables.

Per Capita Income (GDP(PPP)): Using the data from the Global Entrepreneurship Monitor (GEM), both Minniti (2006) and Bosma and Harding (2007) suggest that economic activity significantly impacts the interplay between both entrepreneurial activity, such as start-up rates, as well as entrepreneurial motivations, such as the rate of necessity driven entrepreneurial behaviors. The annual GEM project, in fact, analyzes entrepreneurial activity based upon per capital GDP. Given these findings, we use as a control variable the 2005 GDP income per capita based on purchasing-power-parity in US dollars (source: International Monetary Fund World Economic Outlook Database). The purchasing power parity data computed by the IMF uses the conversion factors provided by the World Bank. In our sample, GDP(PPP) ranges from a low of \$3,344 for India to a high of \$42,364 for Norway. The GDP(PPP) for the United States is \$41,399, France has \$29,316, Croatia reports \$12,157, while Mexico shows \$10,185.

Human Development Index (HDI). In addition to income measures, a commonly used metric to rank country level development is the United Nation's Human Development Index (HDI). The HDI is a composite index measuring average achievement in three dimensions of human development—a long and healthy life (life expectancy), knowledge (combined primary, secondary and tertiary gross enrollment ratios) and standard of living (GDP per capita, PPP US\$). The HDI ranges between 0 and 1. In our sample, a low of 0.653 is reported for South Africa and a high of 0.965 is reported for Norway (2004 data). Other large countries in our data base include the United States at 0.948, France at 0.942, Germany at 0.932, Mexico at 0.805, and Brazil at 0.792. Except for South Africa, our sample does not include any sub-Saharan Africa nations which typically have the lowest HDI scores, often in the 0.3 to 0.5 range.

Income Inequality (GINI). Income inequality may impact entrepreneurial behaviors in several ways. Higher income inequality may provide an incentive for individuals to start enterprises as a means of attaining higher income. However, high income inequality may also indicate structural problems, such as monopolistic distribution, concentrated control

over capital resources, or lack of social mobility. While there are several measures of income inequality, one of the most commonly used is the Gini index. The index is computed from household surveys, and is a Lorenz curve based-statistic. The Gini index ranges from 0, representing perfect equality of income distribution to 100, representing perfect inequality. Source for the Gini index is the World Bank (*World Development Indicators 2006*, except Iceland which is not reported in U.N./World Bank data. Source for Iceland Gini index was *Iceland Ministry of Finance*, Weekly Web Release 2/3/05). For our sample, the mean GINI score is 37.92. South Africa (59.3), Brazil (56.7) and Mexico (54.6) have the highest GINI score, while Denmark (23.2), Sweden (25.0) and Norway (25.8) have the lowest scores. The United States (45.0) and Japan (38.1) are above the average score, while most of the EU countries are below the average. While the Gini index has generally been increasing during the last several decades, current economic research indicates that trade globalization (a commonly cited cause behind increasing income inequality) is probably not a major factor, but rather capital transfers and institutional failures (see Rodrik et al, 2004, IMF, 2007).

4.3 Entrepreneurial Activity Variables

Entrepreneurial activity variables were obtained from the Global Entrepreneurship Monitor (GEM) project. We used 2005 data, supplemented by 2006 data. The 2005 data involves over 100,000 surveys conducted in 35 countries. All of these countries were included in our analysis. Several new countries were added in 2006, and for these countries we use the 2006 data (several 2005 countries were also dropped from the 2006 survey). One country, Peru, was not used in our study since the data appeared as a significant outlier, with business start-up rates double any other country in the data-base, including its Latin American neighbors. In all, our sample included data from forty-four countries.

One of the primary objectives of the GEM project is to “measure differences in the level of entrepreneurial activity between countries.” (Minniti, 2006:9) GEM measures entrepreneurial activity at three levels. The first level is defined as “nascent” if an entrepreneur commits resources or starts a new business. A business is classified as a “new business” if an entrepreneur has started a business and paid a salary for more than three months, but less than forty-two months. Combining nascent and new business results in a total “early-stage” entrepreneurial effort measure (Minniti, 2006). Finally, an enterprise is defined as a “established business” if it has been in operation for more than

forty-two months, and the founder is still active in the operation; thus, most of the GEM's established businesses would also be classified as "small businesses".

The GEM survey also investigates the motivation behind entrepreneurial activity. In particular, GEM classifies business owners as either "necessity-driven" or "opportunity-driven." Necessity-driven refers to entrepreneurial business activity that is a result of better employment alternatives, while opportunity-driven refers to entrepreneurial business activity that is based on opportunity recognition.

We use four entrepreneurial activity measures in our study.

Total Entrepreneurial Activity (TEA). This represents the total prevalence of entrepreneurial activity, and includes the sum of nascent and new businesses.

Survival Ratio (SURV). The survival ratio is computed as the ratio of established business divided by early-stage entrepreneurial activity (nascent + new business). This ratio can be interpreted as a proxy for a survival rate. The GEM project calls this the "transition ratio" (Minniti, 2006:19).

Opportunity Entrepreneurship (OppEnt). *OppEnt* is measured as the percentage of "opportunity-driven" entrepreneurship, and is reported in the GEM data.

Opportunity Entrepreneurship Ratio (OppRatio). *OppRatio* is measured as the ratio of opportunity-driven" entrepreneurship to "necessity-driven" entrepreneurship, and is reported in the GEM data.

5. Findings

Table 1 provides the bivariate correlations for the diversity and control variables. For the diversity variables, in our sample of forty-four countries the correlation between EthnicFrac and ELF is 0.73, and the correlation between CultFrac and ELF is 0.52. This is somewhat lower than the correlations reported by Fearon (2003) based upon his full one hundred-sixty country analysis, which reports correlations around 0.81 between his measures and the ELF measures computed by Roeder (2001). For the full one hundred-sixty country analysis, Fearon (2003) also reports a correlation of 0.75 between EthnicFrac and CultFrac -- we found almost the identical correlation in our sample. For LangDiv we find correlations ranging between 0.45 and 0.68 with the other three diversity measures. Since Fearon (2003) does not use the Greenberg language diversity measure (e.g., LangDiv) as reported in Gordon (2005), we can not compare our correlation results. Overall, given that our sample has a bias toward certain regions, such as the Americas and Europe, our correlations compare reasonably well with the analysis

reported by Fearon (2003). Since the correlations are sufficiently high between the diversity measures to raise multicollinearity concerns, our regression analysis does not employ different diversity metrics in the same model.

Insert Table 1

Because the UN's Human Development Index incorporates per capita GDP as one of its three components, we were also concerned that GDP(PPP) and HDI would be highly correlated in our sample. In our sample the correlation between GDP(PPP) and HDI was, indeed, relatively high at 0.88. Therefore, because of potential multicollinearity issues, GDP(PPP) and HDI were not used in the same regression. HDI was used as a control variable in the regressions to examine *H1* and *H2*. However, since the GEM project emphasizes GDP in their discussions of entrepreneurial motivations (see Minnitti, 2005 and 2006), we used GDP(PPP) as our control variable to examine *H3*. For the other control variables the correlations were below 0.60.

As a preliminary analysis, we plotted the survival ratio against the measures of ethnolinguistic diversity. Figure 1 shows the plot using CultFrac. From this simple graphical analysis, it appears that there may be a negative relationship between the business survival rate and a nation's ethnolinguistic diversity (hypothesis *H2*). From Figure 1 countries with low ethnolinguistic diversity tend to have greater survival ratios than countries with higher levels of ethnolinguistic diversity. While this result is intriguing, we recognize that it is necessary to control for other factors, such as per capita income and income inequality, which also might affect survival rates as well as other aspects of entrepreneurial activity.

Insert Figure 1

To examine hypotheses *H1* and *H2* in more detail we therefore estimated a series of regression models. For each regression we used one of the fractionalization/diversity metrics and the two control variables. Table 2 shows the results of these regressions using Total Entrepreneurial Activity (TEA) and the entrepreneurship survival rate (SURV) as dependent variables. The Greenberg language diversity measure (LangDiv) did not produce any statistically significant models and for brevity purposes are not reported in Table 2 or Table 3. We used the natural logarithm for the diversity measures in our regressions, however, similar results were obtained by using the non-logarithm form. We also used the natural log of GINI in the analysis.

Insert Table 2

Hypothesis *H1* is partially supported. For the TEA regression models, while all of the models produced results in the hypothesized direction (positive coefficients on the fractionalization variables) only the ethnolinguistic fractionalization (ELF) model produced a statistically significant result. Thus it appears that after controlling for gross income/human development and income disparity, more ethnolinguistically diverse countries may be associated with higher levels of entrepreneurial activity.

Hypothesis *H2* is more fully supported. For each of the three fractionalization variables, statistically significant models were estimated. The negative coefficients on the fractionalization variables indicate that as a nation's ethnolinguistic and cultural diversity increases, then the small business survival rate decreases. Taken together, our results provide "macro-level" support to previous "micro-level" studies and case examinations that suggest ethnic-linguistic economies are associated with both elevated competition and low survival rates. Our study also suggests that multiple ethnolinguistic communities may exacerbate this phenomenon at the national level of analysis.

It is also interesting to note the statistically significant positive coefficient on income disparity (GINI) in the TEA models. This finding indicates that income disparity may have a positive effect on the rate of entrepreneurial activity within a country. Whether income disparity provides an incentive to encourage entrepreneurs to seek higher rewards, or represents a structural or institutional failure that forces individuals to find employment in the small-business market remains unascertained, however. But income disparity is also negatively related to business survival (SURV). Combined, these results indicate that while income disparity encourages more entrepreneurial activity, it may also result in more competition, and thus higher business failure rates. In essence, with respect to entrepreneurial activity, income disparity appears to work in the same fashion as ethnolinguistic fractionalization.

With respect to entrepreneurial motivations, the results are more mixed (see Table 3). Hypothesis *H3* is generally not supported. Examining the OppEnt regressions, the coefficients of the ethnolinguistic fractionalization variables are all in the hypothesized direction (positive coefficients), however only the ELF model produced statistically significant results. However, in these models again the GINI variable appeared statistically significant, with a positive effect. These positive coefficients on the GINI variable adds to the results from the first set of regression in suggesting that income

disparity may provide an “incentive” for opportunity based entrepreneurial activity (as well as for overall entrepreneurial activity).

Insert Table 3

For the OppRatio regressions none of the ethnolinguistic fractionalization variables were significant. In fact, the only consistently significant variable in the OppRatio regressions was the per capita income, GDP(PPP), variable. The positive coefficient on GDP(PPP) indicates that, on the average, as a country’s per capita income increases so does its ratio of opportunity-based entrepreneurial activity. This is completely consistent with the GEM findings (Minniti, 2006; Bosma and Harding, 2007). Beyond this, however, we could find little indication that ethnolinguistic fractionalization has a significant impact on entrepreneurial motivations.

6. Conclusions

It is well recognized that language is often a distinguishing characteristic between ethnic and cultural groupings. This is true for both the “minority language” of an established indigenous enclave as well as the “imported language” of a newly formed immigrant community. Language establishes co-ethnic identify, facilitates social networks, frames cultural boundaries, and provides a mechanism to conduct business transactions. In fact, one of the most enduring themes is that a common language shared by co-ethnics contributes to the development of social capital within an ethnic community.

Theoretically, ethnolinguistic groupings present a double-edged sword to the entrepreneur. While these economies can often provide co-ethnic entrepreneurs low-barrier entry opportunities and protected markets from broader competitive pressures, they can also result in a pool of less efficient business operations and ultimately, economic congestion within the enclave economy. In addition, multiple ethnolinguistic groupings within a country may discourage broader economic institutional arrangements and trade due to the increased transaction costs associated with multiple languages, customs, and behaviors.

Not surprisingly within the ethnic entrepreneurship literature a number of studies have been published that suggest that ethnic economies experience higher rates of business start-ups, more intense competition, and ultimately higher failure rates than the

broader economy. However, most, if not all, of this research have been small-scale studies examining specific ethnic groups.

Examining forty-four countries we also found empirical support for the hypotheses that ethnolinguistic fractionalization leads to both higher entrepreneurial activity and lower survival rates. Taken together, our results provide strong “macro-level” support to the findings of previous “micro-level” studies and case examinations of ethnic economies. Our study also suggests that multiple ethnolinguistic communities may exacerbate this phenomenon at the national level of analysis. However, we could not find any significant relationship between ethnolinguistic fractionalization and the motivations behind entrepreneurial activity – this relationship appears overshadowed by issues of national income and wealth.

One interesting outcome of our study was the apparent importance of income inequity in explaining country-level entrepreneurial activity. While used as a control variable in our study, income inequity appeared as a statistically significant variable in many of the equations. It appears that income disparity may have both a positive effect on the rate of entrepreneurial activity within a country but a negative relationship with the survival rate. Whether income disparity provides an incentive to encourage entrepreneurs to seek higher rewards, or represents a structural or institutional failure that forces individuals to find employment in the congested small-business ethnolinguistic market remains unanswered, and more research is certainly needed in this area.

While the results of our macro-level study are intriguing, and provide confirmatory support for previous micro-level studies in ethnic entrepreneurship and sociology, we recognize several limitations. First, it is not clear whether there are sample biases inherent in the GEM entrepreneurship data, particularly for countries with high ethnolinguistic diversity. And second, while ethnolinguistic diversity appeared more significant than just linguistic diversity we did find significant differences between our three metrics of ethnolinguistic fractionalization. This suggests that the relationship between entrepreneurial activity (and most probably other economic measures) and ethnolinguistic diversity may be sensitive as to how these groupings are measured. The debate regarding the proper measurement of ethnolinguistic groupings is ongoing. And although we attempted to use a variety of well-established ethnolinguistic metrics, there are certainly other measures that could also be examined.

While there are certainly limitations to any cross-country empirical study, this study raises several important issues regarding the role of ethnolinguistic diversity in

influencing entrepreneurial activity, and ultimately economic development. In addition, our findings also suggest a complex calculus between ethnolinguistic diversity, and other, more structural characteristics such as income inequity and human development. Clearly more macro-level analysis is needed in these areas to supplement the growing body of micro-level research that dominant the ethnic, indigenous, and immigrant entrepreneurship literature.

7. References

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Table 1: Correlations: Diversity Metrics and Control Variables

Variable	EthnicFrac	CultFrac	LangDiv	ELF	HDI	GDP(PPP)	GINI
EthnicFrac	1.00	-	-	-	-	-	-
CultFrac	0.76**	1.00	-	-	-	-	-
LangDiv	0.46**	0.69**	1.00	-	-	-	-
ELF	0.73**	0.52**	0.54**	1.00	-	-	-
HDI	-0.58	-0.36	-0.32	-0.59	1.00	-	-
GDP(PPP)	-0.42**	-0.14	-0.06	-0.50**	0.88**	1.00	-
GINI	0.43**	0.04	0.04	0.48**	-0.55*	-0.57**	1.00

***prob<0.01, **prob<0.05, *prob<0.10, two-tailed

Figure 1: Survival Rate v. Ethnolinguistic Diversity

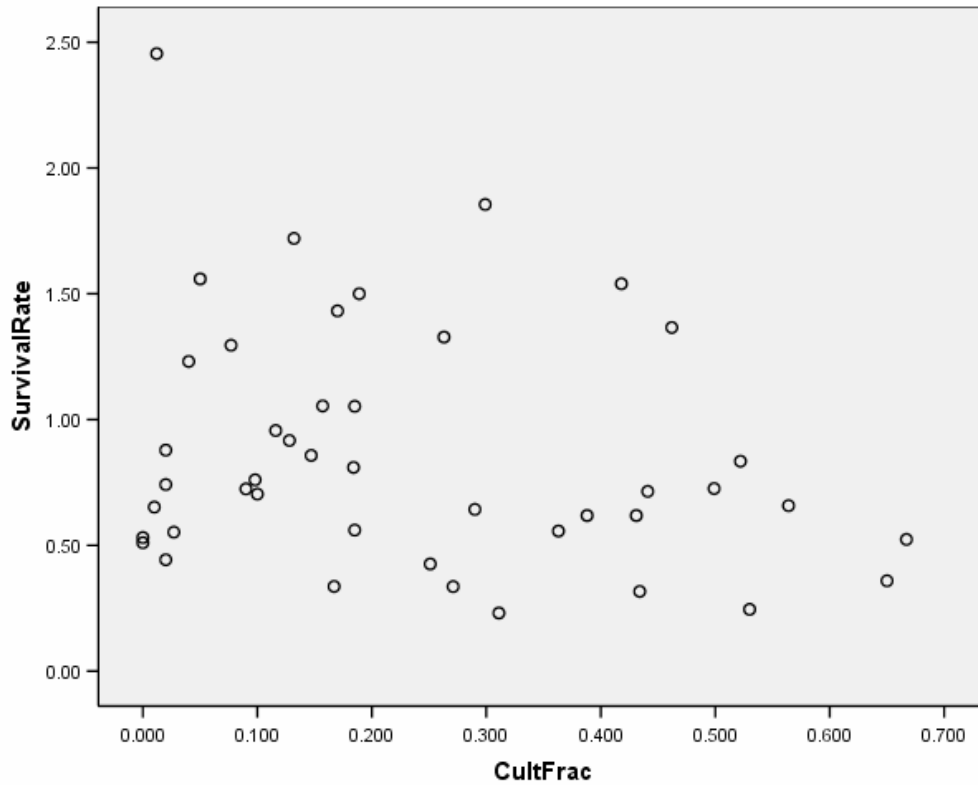


Table 2: Regression of Diversity on Entrepreneurial Activity

<i>Variable</i>	<i>TEA</i>	<i>TEA</i>	<i>TEA</i>	<i>SURV</i>	<i>SURV</i>	<i>SURV</i>
Constant	-1.75	-3.76	-5.34	1.21	1.70	1.70
LnGINI	5.46*	6.95**	7.09**	-0.31	-0.49*	-0.39
HDI	-7.65	-14.44*	-12.05	0.67	0.89	0.39
LnCultFrac	-	0.28	-	-	-0.10*	-
LnEthnicFrac	-	-	0.30	-	-	-0.16***
LnELF	1.47**	-	-	-0.13**	-	-
R ²	0.304	0.241	0.244	0.230	0.207	0.261
N	44	44	44	44	44	44

***prob<0.01, **prob<0.05, *prob<0.10, one-tailed

Table 3: Regression of Diversity on Entrepreneurial Motivation

<i>Variable</i>	<i>OppEnt</i>	<i>OppEnt</i>	<i>OppEnt</i>	<i>OppRatio</i>	<i>OppRatio</i>	<i>OppRatio</i>
Constant	-3.87	-11.04	-9.02	15.69	14.74	15.96
LnGINI	3.38	5.21**	4.64*	-3.86	-3.66	-3.79
GDP(PPP)	0.16	-0.14	-0.04	1.79***	1.72**	1.62**
LnCultFrac	-	0.29	-	-	-0.14	-
LnEthnicFrac	-	-	0.43	-	-	0.34
LnELF	1.21**	-	-	0.11	-	-
R ²	0.184	0.118	0.118	0.301	0.286	0.282
N	44	44	44	44	44	44

***prob<0.01, **prob<0.05, *prob<0.10, one-tailed