

Vancouver Centre of Excellence



Research on Immigration and
Integration in the Metropolis

Working Paper Series

No. 06-18

**The Liability of Foreignness: Survival Differences Between Foreign- and
Native-owned Firms in the Basque Country**

Nahikari Irastorza

December 2006 (Updated)

RIIM

Research on Immigration and Integration in the Metropolis

The Vancouver Centre is funded in 2006 by grants from the federal funding partners of Metropolis, which include:

- Social Sciences and Humanities Research Council
- Citizenship and Immigration Canada
- Canadian Heritage,
- Human Resources and Social Development Canada
- Public Safety and Emergency Preparedness Canada
- Royal Canadian Mounted Police
- Canada Mortgage and Housing Corporation
- Status of Women Canada
- Atlantic Canada Opportunities Agency.
- Statistics Canada provides in-kind support.

In addition, the Centre receives grants from Simon Fraser University, the University of British Columbia and the University of Victoria.

Views expressed in this manuscript are those of the author(s) alone. For more information, contact the Co-directors of the Centre, Dr. Don DeVoretz, Department of Economics, SFU (devoretz@sfu.ca) and Dr. Daniel Hiebert, Department of Geography, UBC (dhiebert@geog.ubc.ca).

**The Liability of Foreignness: Survival Differences
Between Foreign- and Native-owned Firms in the Basque Country¹**

Nahikari Irastorza
Faculty of Humanities
University of Deusto
lnairast@rigel.deusto.es

Updated
December 2006

¹ The author acknowledges the financial support of RIIM, the Vancouver Centre of Excellence: Research on Immigration and Integration and the University of Deusto. I note that Prof. Don DeVoretz, Dr. Diane Coulombe and Dr. Iñaki Peña provided encouragement and supervision. I also thank Vasył Golovetsky and Ross Hickey for their valuable comments.

Abstract: Using census data on firms operating in the Basque Country between 1993 and 2003 and a Cox regression analysis I produce a series of simulations to measure the survival differences between foreign- and native-owned firms and to find the determinants of these differences. I find that firms created by natives survive longer than those created by foreigners due to the liability of foreignness, i.e., the initial human and financial capital constraints faced by foreign entrepreneurs in a foreign country.

Keywords: Immigrant entrepreneurs, firm survival, liability of foreignness, Basque Country

1. Introduction

Since the early 1980s, the destination of immigration flows in Europe has changed from central and northern countries to the Mediterranean basin. As a result, the immigration rates to southern European countries have increased substantially. In Spain, the percentage of documented foreigners² as a percent of the total population has grown from 1.8% in 1998 to 6.2% in 2005. Economic integration is one of the main objectives of foreigners in Europe and the first step toward their social integration. Unemployment rates in Europe are, however, high, and the difficulties experienced by foreigners looking for employment in Europe are magnified since they have to deal with an additional “liability of foreignness.”³ Within this context, entrepreneurship emerges as an alternative to unemployment and a mechanism to overcome difficult labour market barriers for many foreigners.

The literature on ethnic and immigrant entrepreneurship has focused on examining the reasons that motivate foreign entrepreneurs to start up firms (Levie 2005, Schuetze 2005, Basu and Altinay 2002, Bates 1997, Ward and Jenkins 1984). However, with a few exceptions (Constant and Zimmermann 2004, Zimmermann *et al.* 2006 and 2003, Fertala 2004, Hammarstedt 2001), scholars have not paid much attention to the study of venture performance by foreign entrepreneurs. This article aims to fill this gap by an analysis of the survival of foreign- and native-owned ventures in the northern Spanish region of the Basque Country. I select this geographical area for various reasons: (i) the good health of its economy as shown by its low unemployment rate (5.1% as compared to Spain’s 9.1% circa early 2006); (ii) the possibility of more favourable entrepreneurial conditions as shown by the higher percentage of self-employed individuals registered with Social Security department (19.3% compared to Spain’s 16.2%); (iii) the higher percentage of foreigners registered as self-employed with the department of Social Security (10.1% versus 8.5% for Spain) even though the foreign population has traditionally been much smaller than that of Spain (2.7% compared to Spain’s 6.2% in December 2005).

² In Spain, “resident foreigners” are the foreign-born who have lived in Spain for more than three months, with the exception of those who have acquired citizenship. On the other hand, the term “immigrants” includes the whole population of foreign-born who live in Spain, regardless of their citizenship. In my database entrepreneurs are classified by their ID, which changes with the acquisition of citizenship; the foreign-born who become Spanish citizens are considered as “natives”. Therefore, in this paper “foreigners” will be used to refer to resident foreigners, whereas “natives” will include both the native-born and the foreign-born with Spanish citizenship.

³ Stinchcombe (1965) coined the concept of “liability of newness” in order to explain the vulnerability of organizations in the start-up stage characterized by small size and limited financial as well as human capital resources. I argue that this liability of newness could be applied to both entrepreneurs and wage workers, and that it is magnified in the case of immigrants who also have to face what we call the “liability of foreignness”, i.e., additional barriers such as poor language skills, the lack of labour experience and human capital attributes required in the host country, and discrimination.

In sum, the purpose of this study is to analyze the economic integration of foreign entrepreneurs in the Basque Country, by comparing the survival rates of foreign- and native-owned ventures. More precisely, I attempt to answer the following central questions related to the likelihood of survival of firms operating in the Basque Country:

- (i) Are ventures created by foreign entrepreneurs in the Basque Country more or less likely to survive than those started by native entrepreneurs?
- (ii) If there are differences, how can they be explained?
- (iii) Are the determinants of business survival of native entrepreneurs similar to those attributed to foreign entrepreneurs?

In order to answer these questions, firms' internal characteristics - human capital attributes of entrepreneurs, firm resources and strategies, and environmental factors, such as socio-demographic characteristics and macroeconomic conditions - will be analyzed in the next section of the paper. The possible effects of Spanish immigration policies on the human capital and, thus, on the survival of foreign-owned firms will be discussed in section three. The research design and statistical methods used in my empirical work are explained in section four. Section five provides a brief discussion of the findings. Finally, I report my conclusions and draw some implications.

2. Literature Review

The literature on immigrant entrepreneurship includes very few studies on firm survival. Hence, I have to appeal to the general entrepreneurship literature in order to build a conceptual framework to construct a model and derive my hypotheses. The literature review is divided into two parts. The first part features an examination of the effect of entrepreneurs' origin (foreign versus native) on business survival as a background to my first two research questions. The second part deals with the literature on determinants of business survival that I will relate to my third research question.

2.1. The effect of entrepreneurs' origin on the likelihood of venture survival

Few studies have analysed venture success of foreign entrepreneurs. Fertala (2004) reports that the immigrant status is negatively associated with venture survival. She analyses to what extent the initial investment in both human capital (as measured by age) and social capital (understood as networking ability) of entrepreneurs contribute to the performance of immigrant versus native entrepreneurs in

Upper Bavaria. She concludes that differences in venture survival between immigrant and native entrepreneurs can not be explained solely by differences in human capital attributes, but she does not suggest other possible determinants.

An alternative explanation to firm survival differences between native and immigrant entrepreneurs could be the “liability of foreignness”. Solé and Parella (2005) define the additional obstacles faced by immigrant entrepreneurs as they start businesses in the Spanish region of Catalonia as follows: initial financial difficulties due to a shortage of savings and limited access to formal credit institutions; difficulties in obtaining a business permit and securing adequate premises given the extant racism. The fact that natives believe in a link between immigration and criminality often leads to high rents being charged to immigrants. In addition, their lack of familiarity with the host economic system and market rules diminish the prospects of firm survival for immigrant entrepreneurs.

Nevertheless, in some countries, such as Canada, where immigration policies are designed to attract high skilled immigrants, the human capital of the immigrant population is higher than that of the native. On the other hand, in the absence of selection procedures, the human capital of immigrants to Spain is lower than that of the native population. If immigrant selection systems matter, the survival of firms created by non-selected immigrants coming to the Basque Country should be lower than the survival of firms started by native entrepreneurs. This will be discussed into detail in the third section of the essay.

Based on the entrepreneurship literature I state a first set of hypotheses as follows:

Hypothesis 1a: The likelihood of survival of firms created by native entrepreneurs is higher than that of firms created by foreign entrepreneurs.

Hypothesis 1b: The differences in venture survival between foreign and native entrepreneurs can be explained by the “liability of foreignness” faced by foreigners defined as additional financial and human capital difficulties.

2.2. Determinants of native- and foreign-owned ventures survival

Factors affecting venture performance can be grouped in various ways. I propose a conceptual framework following the line of thinking developed by Schutjens and Wever (2000), Gimeno *et al.* (1997) and Peña (2004). This framework includes internal and external characteristics of the new venture. On the one hand, I include the entrepreneurs’ human capital endowment and organizational resource-strategy factors as *firm-internal* factors to explain venture survival. On the other hand, *firm-*

external factors relate to agglomeration economies and are expected to influence new business longevity.

2.2.1. Internal Factors

2.2.1.1. Human Capital Attributes

Conventional wisdom suggests that human capital factors, such as education, experience, age and the gender of entrepreneurs affect venture success. Older, more educated and experienced entrepreneurs are expected to perform better than younger, less educated and experienced entrepreneurs (Fertala 2004, Arias *et al.* 2004, Peña 2004, Schutjens and Wever 2000, Bates 1997).

Given the limitations of my database and past studies on entrepreneurs' human capital (Peña 2002, Honing 2001, Zacharaskis 1999) and on ethnic entrepreneurship (Light 1984, Aldrich and Waldinger 1990, Mata and Pendakur 1999), I will consider the age of entrepreneurs as a human capital factor that affects business performance.

Most studies show that older entrepreneurs perform better than their younger counterparts (Stuart and Abetti 1990, Cooper *et al.* 1989, Constant and Zimmermann 2004, Peña 2004). Older entrepreneurs usually have more experience, and this positively affects venture performance. Because the majority of foreigners come from developing countries where they probably have neither worked in managerial positions nor built firms from the ground up, the work experience of foreign entrepreneurs may be less extensive than that of native entrepreneurs. In sum, older foreign entrepreneurs are likely to accumulate more experience and human capital attributes. This leads to my second hypothesis:

Hypothesis 2a: The probability of survival of firms created by older foreign entrepreneurs is higher than that of firms created by younger foreign entrepreneurs.

The effect of gender of entrepreneurs on the success of ventures is elusive. While some studies show that women entrepreneurs build up less successful companies (Carvajal 2004), others show the opposite outcome (Fertala 2004, Baycan Levent *et al.* 2003, Lerner 1997). Moreover, Boden and Nucci (2000) found that the financial and human capital acquired by entrepreneurs in previous wage employment affect the success of firms, but that female entrepreneurs were at a disadvantage due to: (i) their lower average wage earnings and greater initial financial constraints; (ii) the fact that women are less likely than men to have any prior managerial experience; and (iii) the fact that women usually have fewer years of prior paid employment experience and, therefore, acquire less valuable human capital during wage employment. Kofman *et al.* (2005) argue that, since unemployment levels

are still higher for immigrant than native women, and since immigration controls heavily restrict the opportunities for work, sex work or domestic work are the main channels for employment for recent female immigrants. Kofman *et al.* note, however, that women use entrepreneurship as a tool for social mobility. They conclude that women often remain in supportive roles in small businesses because they face additional difficulties as immigrants and understand the firm “as a family”. Conscious of the dual discrimination suffered by immigrant women entrepreneurs in a foreign and usually male-dominated market, I formulate the next hypothesis:

Hypothesis 2b: Firms created by male foreign entrepreneurs survive longer than those created by their female counterparts.

2.2.1.2. Firm Resources and Strategies

Three strains of literature, the Resources Theory (Light 1972, Light and Gold 2000), Migrant Networks (Massey 1988, Light and Bhachu 1993) and the Interactive Model (Aldrich and Waldinger 1990), highlight the significance of the support provided by co-ethnics in terms of human, social and financial capital in the creation and performance of firms run by immigrant entrepreneurs. Moreover, like small companies run by *non-ethnic* entrepreneurs, ethnic firms make use of networks (e.g., members of a political party), family labour, credit associations or specific places to share information (e.g., entrepreneurial associations, sport or gastronomy clubs, etc.).

The ethnic entrepreneurship literature has, however, often overlooked essential internal characteristics of firms, such as initial size and age, the number of entrepreneurs at creation, and diversification strategies. The resource-based view of competitive advantage states that organizational resources and strategies also serve to explain business survival. The basic assumption here is that resources and capabilities can be heterogeneously distributed across competing firms, that these differences can be long-lasting, and that they can help explain why some firms outperform other firms (Barney 2001). The resources and capabilities of firms include all the financial, physical, human and organizational assets they use to develop, manufacture and deliver products to their customers (Barney 1995).

The size of the firms may influence their survival. Gibrat's law states that the expected size of firms is not conditioned by their current size. However, there is enough empirical evidence to suggest that venture size is positively linked to survival (Mata *et al.* 1995, Geroski 1995, Audretsch and Mahmood 1995, Sutton 1997, Zhang 1999, Segarra and Callejón 2002). Between 1993 and 2003, 81% of the firms created by native entrepreneurs in the Basque Country started with 1 or 2

employees, or none, while 93% of foreign-owned firms had the same number of employees. This could suggest a negative effect on firm survival. The ethnic entrepreneurship literature suggests, however, that immigrant entrepreneurs often have family and co-ethnic labour working without any formal contract. Since my data is limited to formally-employed labour, it is important to remember that non-formally recognized employees may be absent from the data set.

Another concept related to the initial resources of the company is the number of entrepreneurs involved in starting up firms. Woo *et al.* (1989) reveal that the most successful firms are those created, not by single individuals, but by a group of entrepreneurs. Schutjens and Wever (2000) found that having a business partner increased growth in employment. In the Basque Country, while 42% of native-owned companies were started up by two or more entrepreneurs, 100% of companies run by foreigners between 1993 and 2003 were created by individuals.

Moreover, the supportive role of the family and, specially, of wives as key competitive factors for immigrant entrepreneurs has been highlighted in the literature on ethnic and immigrant entrepreneurship. As mentioned above, Kofman *et al.* (2005) argued that women understood the firm as a family and, thus, often remained in supportive rolls in small businesses. Ward and Jenkins (1984) suggested that employing relatives and other community members may be a key competitive advantage for immigrant entrepreneurs. In some cases the family of foreign entrepreneurs may serve as a substitute for a business partner. Either way, I am faced with the same data limitations. As I do not have access to any other data, I thus will only consider the official size and number of entrepreneurs provided by the Basque Statistical Institute. Based on previous findings on the effect of initial size and partnership on venture survival, I formulate my next hypothesis as follows:

Hypothesis 3a: The greater the initial size of the firm, the greater its likelihood of survival.

Hypothesis 3b: Firms created by two or more entrepreneurs survive longer than those started up by individuals.

Due to the liability inherent in being new, firms face risks in the initial stage of their development. In order to overcome initial difficulties and to gain a competitive edge, firms employ different strategies. Nicholls-Nixon *et al.* (2000) propose the concept of “strategic experimentation” defined as “a series of trial and error changes pursued along various dimensions of strategy, over a relatively short period of time, in an effort to identify and establish a viable basis for competing” (p. 496). They highlight environmental dynamism, uncertainty and hostility as factors that can affect organizational stress. Dynamism concerns the environmental changes and the difficulty to predict them. Environmental uncertainty refers to the inability of firms to predict the impact of environmental

change and to determine the available response options and their consequences. Nicholls-Nixon *et al.* (2000) add that dynamism and uncertainty can create both difficulties and opportunities by generating new possibilities for venture performance. I argue that geographical mobility may mitigate the impact of an uncertain and non-favourable environment and offer a new source of opportunity. It has been stated that business strategies involving mobility positively affect business success (Stearns *et al.* 1995). Finally, environmental hostility refers to the threat that arises as a result of the level of competition and volatility of the firms' principal industry. I propose industry diversification as a possible experimentation strategy for overcoming the environmental hostility and formulate the next hypothesis as follows:

Hypothesis 3c: The application of experimental adaptation strategies, measured by geographical mobility and industry diversification, has a positive effect on venture survival.

2.2.2. External Factors

The influence of external factors on venture performance has been widely studied in the entrepreneurship literature. Rekers and van Kempen (2000) suggested that the spatial context has an effect on the start of ethnic enterprises: economic development - such as agglomeration effects, unemployment, subcontracting, and size of firms -, the composition of the population of an area, the urban environment measured by the availability of premises, and local policy are the most significant influences on firm performance. They pointed out that these factors were not specific to ethnic entrepreneurs, but that they affected potential entrepreneurs in general.

Engelen (2001) proposed a three-fold conceptual framework to study immigrant entrepreneurship: (i) political-economic regimes and the relationship between entrepreneurial activity and the institutional environment at the macro level; (ii) markets and opportunities, i.e., the match between market requirements – product characteristics, property regimes, market place, and regulation – and collective and individual resources; (iii) and temporal and dynamic dimensions of entrepreneurial activity. Audretsch *et al.* (1999) suggested that external factors faced by firms, such as industry characteristics or characteristics inherent to the local region are important to understand venture performance. Besides, socio-economic variables (Rath 2002), such as regional unemployment, immigrations rates, and location in terms of an urban vs. rural environment affected firm survival.

The industrial sector in which the company operates may have an influence on venture survival. Audretsch and Mahmood (1995) found that the likelihood of survival of those industries where scale economies mattered was lower than for industries where scale economies do not play such an important role. Mata and Portugal (1994) noticed that the survival of companies operating in consumer-oriented industries is lower than the survival of firms in other industry sectors. It has been argued by Aldrich and Waldinger (1990) that immigrant entrepreneurs often operate in marginal, post-industrial, segmented or exotic markets, where the barriers to entry are relatively low and, consequently, the degree of competition is high. The strategy adopted by immigrant entrepreneurs to face this competition is based more on self-exploitation⁴ and price than on quality (Rath and Kloosterman 2000). Empirical evidence (Audretsch and Mahmood 1995, Segarra and Callejón 2002) suggests that the greater the price-cost margin of firms, the higher the probability of survival. Due to scanty profits, foreign-owned firms are often forced to cease activity after a relatively short period of time. In the Basque Country, 49% and 46% of foreign and native entrepreneurs respectively operate in either the retail, hotel and catering and transport sectors, where the barriers to entry are low and competition and market turbulence greatest. Thus, the expected survival rate is low. Hence, I pose the next hypothesis as follows:

Hypothesis 4a: The likelihood of survival is lower for those firms in highly competitive industries, such as in the retail, hotel and catering and transport sectors, than for firms in other industries.

Empirical evidence suggests that location could influence the performance of firms. Holt (1987) listed some factors that could influence venture location: logistics and transport facilities, patterns of venture success or failure of an area, predisposition of banks and financial institutions, commercial disposal, and subcontractor services, fabrication and suppliers. In this respect, it has been argued that the selection of an urban, rural or peripheral geographical area, and the proximity of clients, suppliers and competitors can influence the success of the company (Stearns *et al.* 1995, Littunen 2000, Peña 2004). Razin (1999) maintained that locating firms in large metropolitan areas increased the main earnings of immigrant entrepreneurs. On the other hand, foreign-owned companies are concentrated mainly in big cities, and greater competition from other foreign-owned firms may reduce survival rates. Thus, I pose my next hypothesis as follows:

Hypothesis 4b: Firms located in rural areas survive longer than those located in urban areas.

⁴ Rath and Kloosterman (2000) define self-exploitation as the long work hours immigrant entrepreneurs keep in order to be profitable in highly competitive industry sectors.

The socio-demographic composition of an area, and especially the size of the immigrant population where the company is located, might also affect the success of immigrant entrepreneurs (Fertala 2004, Rekers and van Kempen 2000, Bull and Winter 1991). First, a lively commercial enclave with a high concentration of immigrant entrepreneurs with their own commercial networks can bring together co-ethnics looking for products from their places of origin; second, the enclave can constitute an attraction for those individuals who, not being from the same ethnic group, demand products that they perceive as different or even exotic. In sum, locating a firm in an area with a large population of immigrants would attract more clients and, thus, increase the likelihood of firm survival for immigrant entrepreneurs; in other words:

Hypothesis 4c: Firms located in an area with a large population of immigrants survive longer than firms located where there are few immigrants.

The macroeconomic environment in which the company is created affects the probability of its success (Peña 2002). Specifically, the regional unemployment rate may affect firm survival. Constant and Zimmermann (2004) found that earnings of immigrants decreased for those who lived in areas where the unemployment rate was high, and Audretsch and Mahmood (1995) mentioned that a high unemployment rate had a negative effect on the likelihood of survival of new entrants. On the one hand, a high unemployment rate is symptomatic of a weak economy; on the other hand, entrepreneurship usually emerges as an alternative to unemployment or non-satisfactory work conditions. In other words, immigrants start businesses when they are least likely to succeed: during an unfavourable economic cycle, when resources are scarce and their decision necessity-driven (Constant and Zimmermann 2004). Thus, I formulate my last hypothesis as follows:

Hypothesis 4d: Unfavourable economic conditions, measured by unemployment and growth, have a negative effect on venture survival.

3. Immigration Policies in Spain

As mentioned in the previous section, Spain lacks effective selection procedures, and as a result the human capital endowment of immigrants is lower than that of the native population.

Based on a previous law, version 4/2000, the Organic Law 8/2000 establishes three main ways of obtaining wage-labour employment along with a residence permit⁵ in Spain: the general regime, an annual quota, and extraordinary regularization processes.

According to the general regime, foreigners can have access to the Spanish labor market under the following conditions: (i) foreigners older than 16 years old who do not come from the EU have to reside in their country of origin when the permit is being processed; (ii) foreigners can be employed when no other workers in Spain, either Spanish or foreigners with work permits, qualify to carry out jobs offered by companies⁶.

The Spanish government also forecasts an annual quota of jobs not likely to be filled by the Spanish population and opens up positions, not to foreigners already in Spain, but to outsiders. The government decides on the number and the descriptions of available jobs. The annual quota represents less than 30% of the work permits given annually (Villena 2004).

In order to tackle situations in which there are large numbers of *irregular* foreigners, the government also establishes extraordinary regularization processes whereby residence permits are granted pending proof of residency in Spain for a certain time period. Amnesties were granted in 1986, 1991, 1996, 2000 (twice), and 2005. Of the 691,000 requests processed during the last amnesty, which took place between February and May 2005, 572,000 were granted.

The law does not establish specific requirements for those foreigners who wish to start up a business. Article 37 states that (i) foreigners must fulfill the same requirements as the Spanish-born for starting up and running a business; and (ii) foreigners must obtain appropriate work permits⁷. The law does not, however, specify the conditions to get the initial self-employed work permit. Besides, unlike other countries with a long immigration history, such as Australia or Canada⁸, Spanish

⁵ The other two ways for foreigners to obtain a temporary residence permit valid between 90 days and 5 years, are (i) to qualify for family reunification programs and (ii) to prove that they can earn a living.

⁶ The national employment situation will not be taken into account in the case of those foreigners coming from countries exempted from this requirement via international agreements, of legal foreigners who live in Spain, and of those with visa exemption.

⁷ There are three types of self-employment work permits for foreigners who wish to run a business in Spain: (1) the initial "D" work permit allows foreigners to run a business either in a particular sector of activity or in a certain geographical area; it is valid for one year; (2) the renewed "D" work permit is issued to foreigners who wish to prolong their business activity; it is valid for two years and firms can be located anywhere in Spain; (3) the "E" work permit is made available to those foreigners who wish to continue their activity after the "renewed "D"" permit; same conditions as for the "renewed "D"" permit apply.

⁸ Canada has a Business Immigration Program which seeks to attract experienced business people to the country by establishing three classes of business immigrants: investors, entrepreneurs and self-employed persons. *The Entrepreneur Program* targets experienced business persons who will own and actively manage businesses in Canada, contribute to the economy and create jobs. Entrepreneurs must demonstrate business experience and have a minimum legally-obtained net worth of CAN \$300,000; they are subject to conditions upon arrival in

immigration policies do not include selection procedures for the admission of foreign workers or entrepreneurs.

Canadian policies have been cited as a model for competent planning and efficient management of immigration flows. Nevertheless, over the last decade, the number of immigrants who participated in the *Business Immigrant Program* has decreased significantly⁹, possibly due to an increase in the average time necessary to process applications, from thirty-seven months to five years within the last decade. Besides, an empirical study carried out by Ley (2003) shows that many immigrant entrepreneurs are dissatisfied with the unfavourable Canadian entrepreneurial environment, including taxation levels, economic regulation, and the language and networks of commerce. Therefore, despite careful screening, it appears that the Canadian business program is falling short of its objectives.

In this section the significant effect of human and initial financial capital endowments on the likelihood of venture survival has been addressed. Due to a lack of selection procedures, the human and financial capital of immigrant entrepreneurs in Spain and, thus, the probability of survival of the firms they create is expected to be lower than the endowment and venture survival of native-owned firms.

4. Research Design

The Basque Country has a population of about two million inhabitants distributed across three counties: Araba, Bizkaia, and Gipuzkoa. In 2005, the immigration rate reached 2.7%, while the self-employment rate circa 2006 in the region was 19.3% overall and 10.7% for foreign entrepreneurs. A preliminary analysis of my database shows that 56% of the firms created by native entrepreneurs in the Basque Country between 1993 and 2003 ceased business activities after five years. This failure percentage rose to 78% for companies created by foreign entrepreneurs.

4.1. Sample

I used firm census data supplied by the Basque Statistics Institute which comprises 387,421 companies created in the Basque Country between 1991 and 2004. Out of these companies, 3,232

Canada. *The Self-Employed Persons Program* seeks to attract applicants who have the intention and ability to become self-employed in Canada. Self-employed persons are required to have either (a) relevant experience that will enable them to make a significant contribution to the cultural or athletic life of Canada, or (b) experience in farm management and the intention and ability to purchase and manage a farm in Canada. (<http://www.cic.gc.ca/english/business/index.html>).

⁹ In 1996, 22,452 immigrants were registered as permanent residents under the Business Immigrant category; by 2005 this number had decreased by 40%, to 13,469 immigrants. *The Self-Employed Persons Program* attracted 1,392 immigrants in 1996, but only 301 in 2005, an 80% decrease.

were created by foreign entrepreneurs. Of the total population, I selected a sample involving firms created in the Basque Country between 1993 and 2003. The database contains information on the origin, gender, and age of entrepreneurs. It also includes initial and final location, initial and final industry sector, initial and final size, and the years of creation and cessation of firms.

4.2. Description of Variables

4.2.1. Dependent Variables

In order to test and compare the venture survival experiences of companies created in the Basque Country by foreign and native entrepreneurs between 1993 and 2003, I created a single dependent variable SURVIVAL. This variable measures the number of years from firm inception to closure within the 1993-2003 time period.

Even though firm survival can be a sign of business success, closures are not always a consequence of failure. Firms may cease to be registered in my data set for the following reasons: (i) immigrants may migrate in and out of entrepreneurship depending on labour market conditions, not on the profitability of their firm; in this case firm closure would not be caused by business failure but by the hope for more favourable conditions in the general labour market; (ii) geographical mobility of firms from the Basque Country to other regions; (iii) the merging of firms; (iv) successful completion of projects in particular industry sectors such as construction. Taking into account these possibilities, I could not consider closures synonymous with firm failure, but I still will consider those that survive as successful firms.

4.2.2. Independent Variables

Based on the conceptual framework discussed in the literature section and following the line of thinking developed in past studies by Schutjens and Wever (2000), Gimeno *et al.* (1997) and Peña (2004), I organized the independent variables to explain venture survival of foreign- vs. native-owned firms into two groups: firm internal and firm external variables. Within firm internal variables, those related to the human capital of entrepreneurs, firm resources and experimental adaptation were used. Firm external variables were grouped according to industry sector, location, and socio-demographic factors (see Appendix 1).

Some polychotomous variables were re-coded as 0-1 dummies so they could be tested under a hazard Cox regression analysis. This recoding occurred in the case of SIZE_0to2, TEAM, MOBILITY, DIVERSIFICATION, MANUFACTURE, CONSTRUCTION, RETAIL, BANKING,

ARABA, BIZKAIA, GIPUZKOA, and URBAN variables. The remaining binary variables in my database are IMMIGRANT and MALE. In each case a value of 1 is given to those observations characterized by the name of the variable and 0 is assigned to those that do not fill this condition. For instance, a value of 1 for the variable CONSTRUCTION means that the firm operates in the construction industry, whereas 0 means that it does not. AGE, GROWTH, ANNUAL UNEMPLOYMENT and ANNUAL IMMIGRATION are continuous quantitative variables.

A further analysis of the variables AGE, GENDER, MOBILITY, TEAM, SIZE_0to2, and URBAN was required. Data on the variables AGE and GENDER of entrepreneurs were available for only about 50% of foreign-owned firms and not at all for native-owned firms. The variable TEAM distinguishes between those companies created by an individual (value = 0) and those created by two or more people (value = 1). Since all foreign-owned firms were created by one individual, I did not include the TEAM variable in the Cox regression analysis for foreigners. The number of observations for those foreign-owned firms that had changed location, explained by the variable MOBILITY, was not large enough either to be included in the Cox regression. The variable SIZE_0to2 indicates that the firm started up with 0 to 2 employees (value = 1) or with more than two (value = 0). I have made this distinction because more than 80% of both the native- and foreign-owned firms started with 0 to 2 employees. Lastly, URBAN is a dichotomous variable created by modifying another variable which groups annual entries in twenty regions following the official classification of Basque regions suggested by the Basque Statistical Institute. Taking into account that the three largest metropolitan areas of the Basque Country are the county capitals, the three regions where the capital of each province is located were codified as urban areas (value = 1) and the others were rural (value = 0). Selecting the three capitals as the most significant urban areas can be rationalized as follows: (1) the highest density of foreigners is found in these three cities; and (2) the majority of companies run by foreigners operate in commerce and services, industry sectors mainly concentrated in the three capitals.

4.3. Methodology

Theil's U index of inequality, Cox regression analysis and a series of simulations will be applied in order to provide answers to my initial research questions.

4.3.1. Theil's U index of inequality

An inequality index owing to Theil will be applied to measure the gaps in venture survival and standardize the gaps across different years, legal forms and industries.¹⁰ Theil's U inequality index is a measure of the degree to which one time series differs from another. It performs a point-by-point matching of the two time series and varies from 0 to 1. A value of 1 implies a maximum gap and 0 implies no gap between the two series. The index is computed as follows:

$$U = \frac{\sqrt{\frac{1}{n} \sum (X_i - Y_i)^2}}{\sqrt{\frac{1}{n} \sum X_i^2} + \sqrt{\frac{1}{n} \sum Y_i^2}}$$

In my analysis, the total percentage of venture mortality is represented by X for foreign-owned firms and by Y for native-owned firms.

4.3.2. Cox regression analysis

In order to identify the determinants of firm survival, a Cox regression analysis was conducted for companies created by the total population of entrepreneurs, by foreigners, and by natives. A survival analysis is concerned with the time-to-occurrence of a critical event such as the death of a firm; the Cox regression is a method for modelling time-to-event data in the presence of censored cases. Cox regression uses the hazard function to estimate the relative risk of failure. The hazard function, $h(t)$, is defined as the potential for death at a particular instant, given that the case has survived until that instant. A general model relating explanatory variables (i.e., the X vector) to the dependent variable (i.e., death of the firm) can be represented in terms of the hazard function:

$$h(t) = [h_0(t)] e^{(\beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n)}$$

where $h_0(t)$ is the baseline hazard function (i.e., when X is 0). If one divides both sides of the equation by $h_0(t)$, the hazard ratio can be obtained. The hazard ratio indicates the increase or decrease in risk incurred by the effect of a particular explanatory variable, and can be represented as:

¹⁰ For example two industries could have vastly different mean survival rates and hence the measured gaps for each industry between native and foreign-owned firms would not be comparable unless I indexed them.

$$\ln \left[\frac{h(t)}{h_0(t)} \right] = \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n$$

If the right hand side of this equation is set equal to Y, then the new expression resembles an ordinary regression equation with the general form $Y = \beta X$. The parameter β is the estimated coefficient and can be interpreted as the predicted change in the log hazard for a unit increase in the explanatory variable. The general form of the expression to be estimated in my analysis is the following:

$$Y = f \left(\begin{array}{l} \text{Human Capital, Firm Resources, Experimental Adaptation, Industry Sector,} \\ \text{Location, Socio-demographic variables} \end{array} \right)$$

The equations for the likelihood of survival of companies created by all entrepreneurs, for those created only by foreigners, and for those started only by natives are the following:

Likelihood of survival for firms created by the total of the entrepreneurs:

$$Y_T = \ln \left[\beta_1 \text{ORIGIN} + \beta_2 \text{SIZE} + \beta_3 \text{URBAN} + \beta_4 \text{MOBILITY} + \beta_5 \text{DIVERSIFICATION} \right]$$

Likelihood of survival for firms created by foreign entrepreneurs:

$$Y_f = \ln \left[\begin{array}{l} \beta_1 \text{GENDER} + \beta_2 \text{AGE} + \beta_3 \text{SIZE} + \beta_4 \text{MOBILITY} + \beta_5 \text{MANUFACTURY} \\ + \beta_6 \text{CONSTRUCTION} + \beta_7 \text{RETAIL} + \beta_8 \text{BANKING} + \beta_9 \text{ARABA} + \beta_{10} \text{BIZKAIA} \\ + \beta_{11} \text{URBAN} + \beta_{12} \text{UNEMPL} + \beta_{13} \text{IMMI} + \beta_{14} \text{GROWTH} \end{array} \right]$$

Likelihood of survival for firms created by native entrepreneurs:

$$Y_L = \ln \left[\begin{array}{l} \beta_1 \text{TEAM} + \beta_2 \text{SIZE} + \beta_3 \text{MOBILITY} + \beta_4 \text{DIVERSIFICATION} + \\ \beta_5 \text{MANUFACTURY} + \beta_6 \text{CONSTRUCTION} + \beta_7 \text{COMMERCE} + \beta_8 \text{BANKING} + \\ \beta_9 \text{ARABA} + \beta_{10} \text{BIZKAIA} + \beta_{11} \text{URBAN} + \beta_{12} \text{UNEMPLOYMENT} + \beta_{13} \text{IMMI} \\ + \beta_{14} \text{GROWTH} \end{array} \right]$$

4.3.3. Simulations

A series of simulations will be used in order to explain the causes of survival differences between native and foreign entrepreneurs. These simulations explore the role of entrepreneurs' reaction to key

variables (i.e., performance) versus the entrepreneurs' endowments in explaining the persistent survival differences between native- and foreign-owned ventures. These simulations will isolate the sources of the observed survival gap and may also allow me to infer some policy conclusions on methods to reduce the survival gap. The basic idea underlying the simulations is a "counterfactual experiment" in which I make firms created by native entrepreneurs act like firms created by foreign entrepreneurs and vice-versa. I do this by substituting the estimated beta coefficients from my regression equation of natives for the estimated coefficients of foreigners obtained in the Cox regression analysis. Next, I multiply these transformed coefficients by the respective mean values of the appropriate variables for the native and foreign groups. Then I maintain the original Cox regression coefficients and mean values for the relevant variables to predict the native- and foreign-owned firm survival rate. Finally, I compare the latter predictions to the counterfactual ones to see if the survival gaps are reduced or increased. If the gaps are reduced, then I can infer that foreign adaptation in the form of mimicking native behaviour will also reduce foreign-owned firm mortality.

Since I could not use all the variables applied in the previous Cox regression analysis due to correlation problems, I have selected those which I consider the most important, namely size, industry diversification, manufacture, construction, retail, hotel and catering and transport industry, banking, insurance and business services, the location in the provinces of Araba or Bizkaia, and in an urban vs. a rural area. Thus, the series of equations used to calculate the estimated coefficients of business survival in my analysis are the following:

Likelihood of survival for firms created by native entrepreneurs who act like native entrepreneurs:

$$Y_L = \ln \left[\frac{\beta1_L SIZE_L + \beta2_L DIVERSIFICATION_L + \beta3_L MANUFACTURE_L + \beta4_L CONSTRUCTION_L + \beta5_L RETAIL_L + \beta6_L BANKING_L + \beta7_L ARABA_L + \beta8_L BIZKAIA_L + \beta9_L URBAN_L}{\beta5_L RETAIL_L + \beta6_L BANKING_L + \beta7_L ARABA_L + \beta8_L BIZKAIA_L + \beta9_L URBAN_L} \right]$$

Likelihood of survival for firms created by native entrepreneurs who act like foreign entrepreneurs:

$$Y_{L=i} = \ln \left[\frac{\beta1_i SIZE_L + \beta2_i DIVERSIFICATION_L + \beta3_i MANUFACTURE_L + \beta4_i CONSTRUCTION_L + \beta5_i RETAIL_L + \beta6_i BANKING_L + \beta7_i ARABA_L + \beta8_i BIZKAIA_L + \beta9_i URBAN_L}{\beta5_i RETAIL_L + \beta6_i BANKING_L + \beta7_i ARABA_L + \beta8_i BIZKAIA_L + \beta9_i URBAN_L} \right]$$

Likelihood of survival for firms created by foreign entrepreneurs who act like foreign entrepreneurs:

$$Y_i = \ln \left[\begin{array}{l} \beta 1_i SIZE_i + \beta 2_i DIVERSIFICATION_i + \beta 3_i MANUFACTURE_i + \beta 4_i CONSTRUCTION_i + \\ \beta 5_i RETAIL_i + \beta 6_i BANKING_i + \beta 7_i ARABA_i + \beta 8_i BIZKAIA_i + \beta 9_i URBAN_i \end{array} \right]$$

Likelihood of survival for firms created by foreign entrepreneurs who act like native entrepreneurs:

$$Y_{i=L} = \ln \left[\begin{array}{l} \beta 1_L SIZE_i + \beta 2_L DIVERSIFICATION_i + \beta 3_L MANUFACTURE_i + \beta 4_L CONSTRUCTION_i + \\ \beta 5_L RETAIL_i + \beta 6_L BANKING_i + \beta 7_L ARABA_i + \beta 8_L BIZKAIA_i + \beta 9_L URBAN_i \end{array} \right]$$

4.4. Descriptive Statistics

Table 1 summarizes the descriptive statistics of the variables used in the study. Several differences can be observed between the firms created by foreign and native entrepreneurs. Some of the salient features of my study sample are the following: 73% of foreign-owned ventures were created by males, and foreign entrepreneurs at start-up had a mean age of 42; all the companies created by foreign entrepreneurs, and almost 60% of firms created by natives, were started up by one individual.

Between 1993 and 2003, foreign-owned firms mainly belonged to the following sectors: retail, hotel and catering, and transport (50 %), other service activities (18%), and construction (15%). Most native-owned firms operated in the retail, hotel and catering, and transport (45%), the banking, insurance and business services (20%), and the construction (15%) sectors. Almost 70% of both native- and foreign-owned ventures were located in a metropolitan area, with about half of all firms in the province of Bizkaia and less than 13% in Araba. However, there were more foreign- than native-owned firms in the province of Gipuzkoa.

Table 1. Characteristics of the Sample

Descriptive Statistics				
Variable	FOREIGNERS		NATIVES	
	Mean	Standard deviation	Mean	Standard deviation
Initial_age	42.2	9.6		

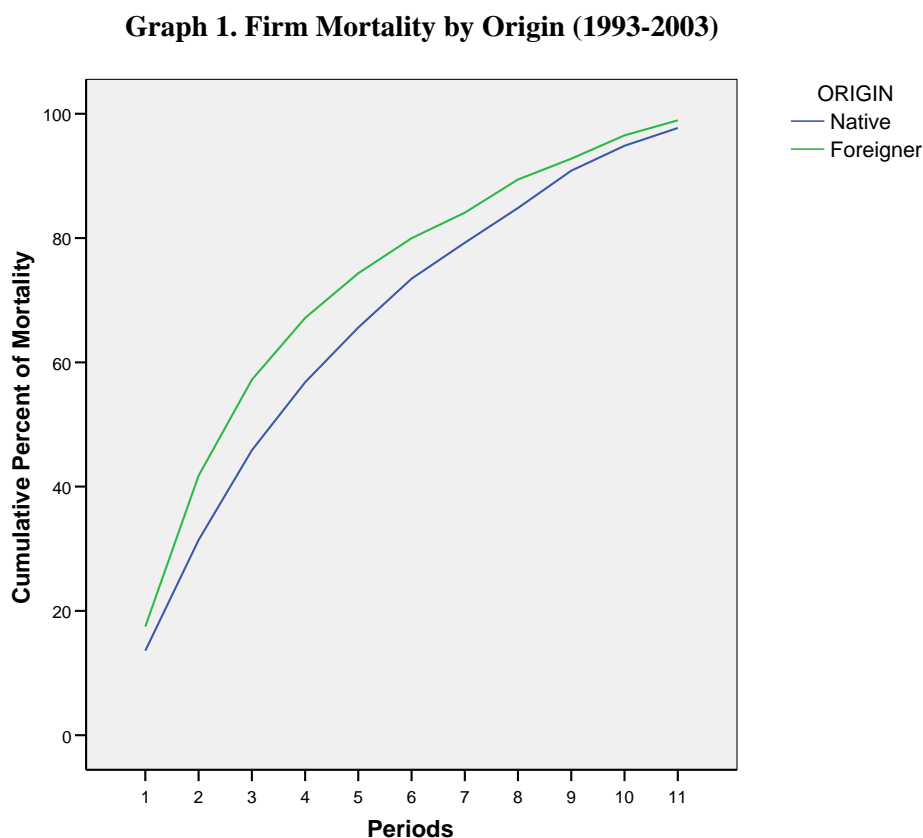
Characteristics of the Sample				
	FOREIGNERS		NATIVES	
	Number of firms	%	Number of firms	%
Gender of entrepreneurs				
Male	1,074	73.4		
Female	389	26.6		
Total	1,463	100		
Number of entrepreneurs				
One	2,685	100	125,223	58.2
Two or more	0	0	89,825	41.8
Total	2,685	100	215,048	100
Initial number of employees				
0-2	2,492	92.8	175,282	81.5
3-5	163	6.1	23,849	11.1
6-9	27	1	7,269	3.4
10-14	2	0.1	3,449	1.6
15-19	0	0	1,521	0.7
20-49	1	0	2,467	1.1
50-99	0	0	722	0.3
100-249	0	0	375	0.2
250-499	0	0	73	0
>=500	0	0	42	0
Total	2,685	100	215,049	100
Sector				
Fish farming	4	0.1	3	0
Manufacturing	68	2.5	17,914	8.5
Construction	419	15.6	31,287	14.8
Retail, Hotel and Catering, and Transport	1,325	49.4	96,406	45.5
Banking, insurance and business services	375	14.0	41,459	19.6
Other services activities	494	18.4	24,923	11.8
Total	2,685	100	215,049	100
Location				
Rural	816	30.4	64,274	30
Urban	1,867	69.5	149,982	70
Total	2,683	99.9	214,256	100
Provincial distribution				
Araba	259	9.6	27,719	12.9
Bizkaia	1,275	47.5	111,519	51.9
Gipuzkoa	1,151	42.9	75,811	35.2
Total	2,685	100	1,299	100
Geographical mobility				
No	2,675	99.6	212,485	98.8
Yes	10	0.4	2,564	1.2
Total	2,685	100	215,049	100
Industry diversification				
No	2,558	95.3	198,603	92.4
Yes	127	4.7	16,446	7.6
Total	2,685	100	215,049	100

Source: The Basque Statistical Institute

5. Results

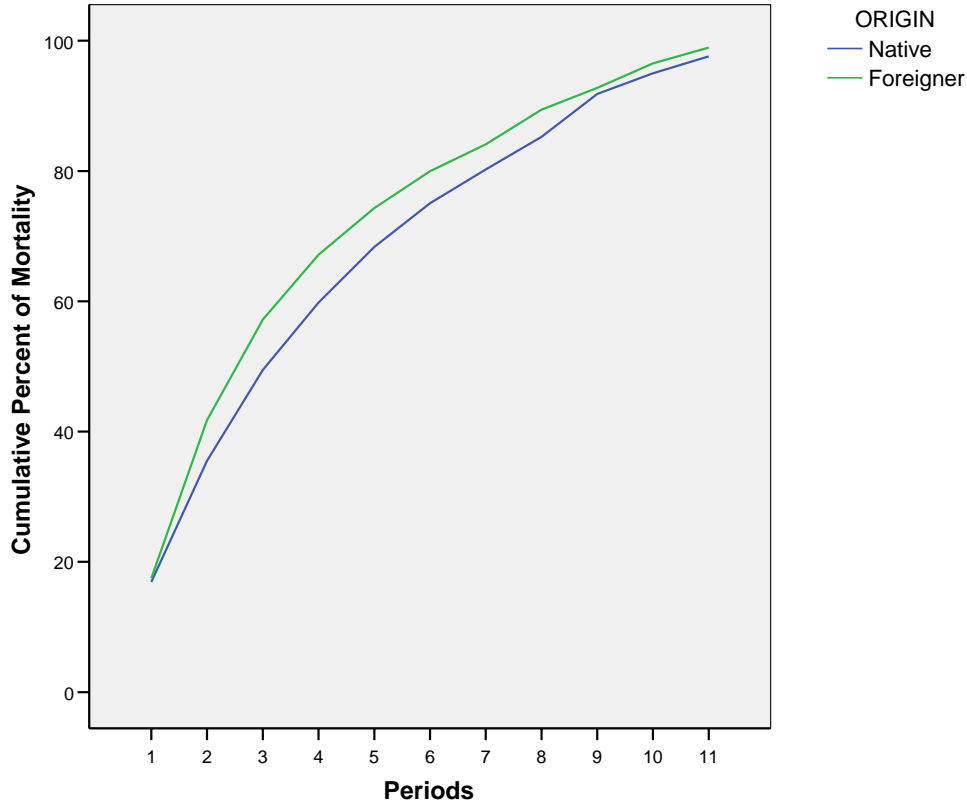
5.1. Theil's U index of inequality

Almost 55% of all firms operating in the Basque Country between 1993 and 2003 ceased their business activities within the initial five years, and this percentage reached 78% for firms created by foreigners. A preliminary analysis of my data showed a gap in foreign- and native-owned firm mortality, with native-owned firms surviving longer. Mortality differences between native- and foreign-owned firms are illustrated in Graph 1.

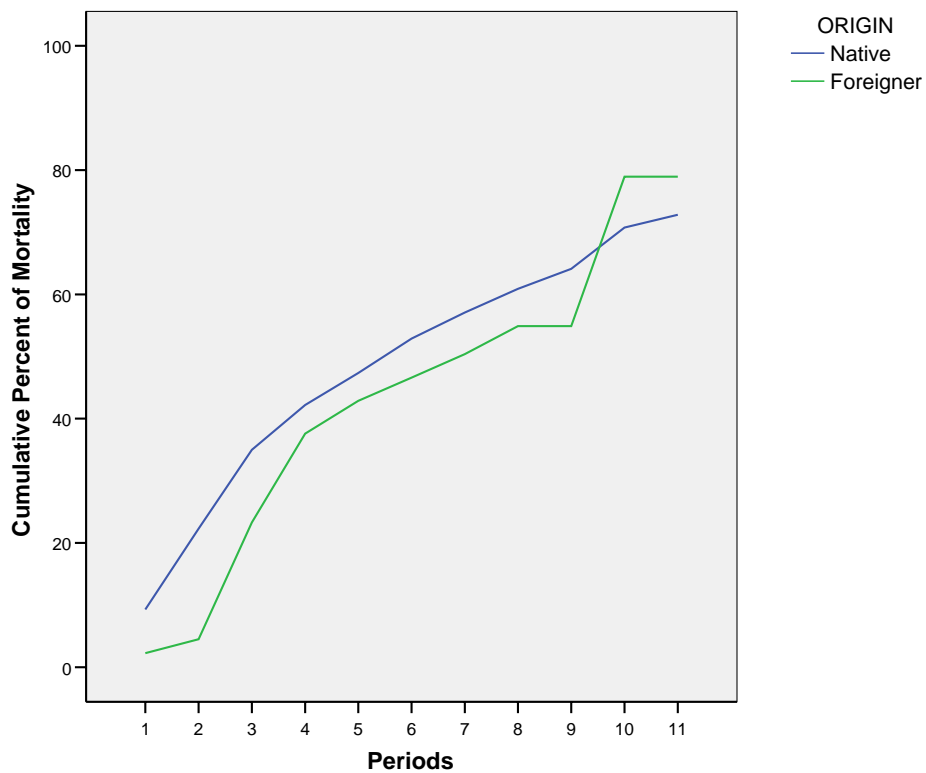


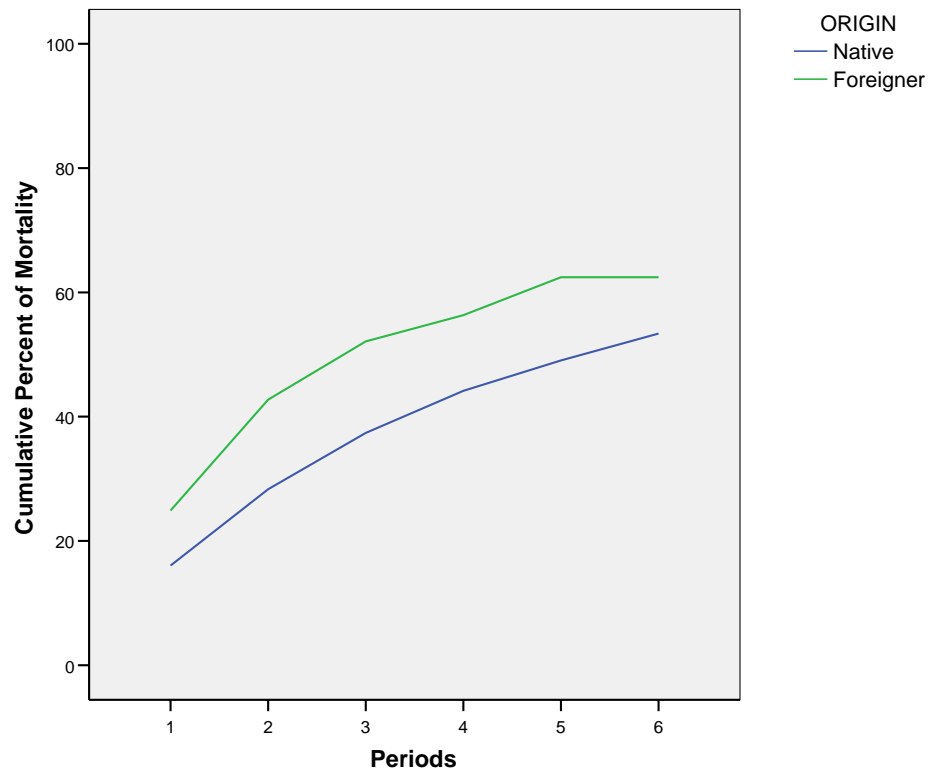
Graph 2 shows that the gap in firm mortality by origin decreases when the number of entrepreneurs per firm is equalized for natives and foreigners¹¹. However, the plots do not specify the size of these gaps. In order to standardize the gaps I have applied Theil's U inequality index. The results of THEIL (see Appendix 2) show that the gap in firm survival between foreign and native entrepreneurs decreases from 0.12 to 0.09 when the number of entrepreneurs is similar for both groups.

¹¹ A reminder that all the foreign-owned firms were created by one individual.

Graph 2. Mortality of Firms created by One Entrepreneur, by Origin (1993-2003)

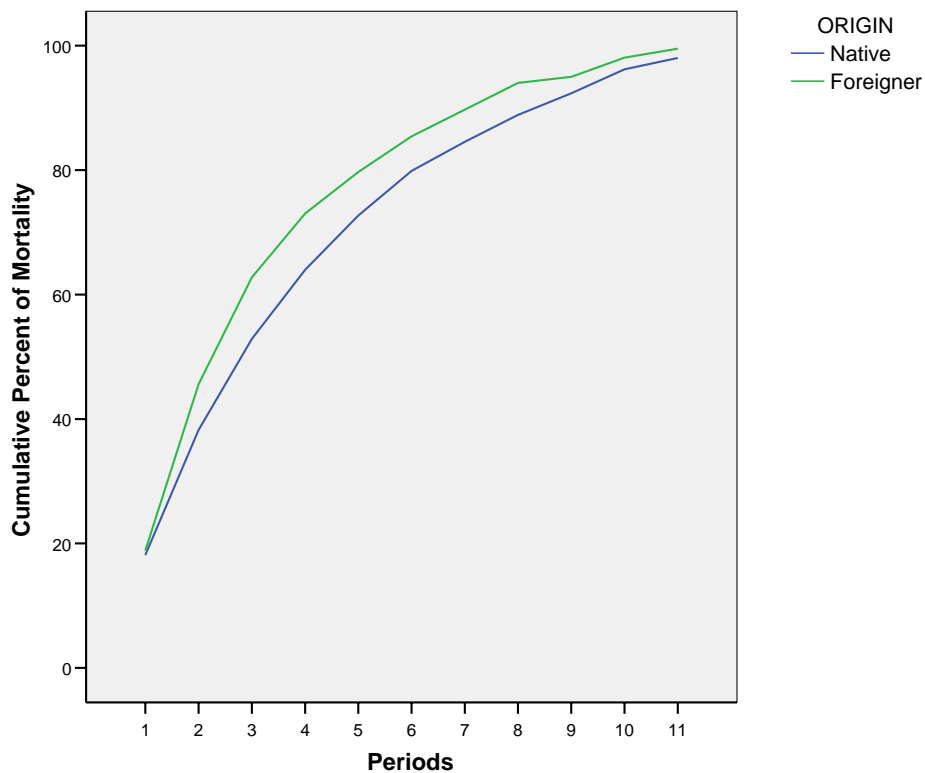
Firm mortality differences between native- and foreign-owned firms depend on the year of inception. Graphs 3 and 4 illustrate the survival of companies created in 1993 and 1998 respectively. I have chosen these two years because 1993 is at the start of my database, and 1998 the midpoint. The mortality lines for firms created in 1993 switch between periods 9 and 10, when the cumulative mortality of foreign-owned firms becomes higher than that of native-owned firms. In contrast, the cumulative mortality of companies created by foreigners in 1998 is higher than that of natives. Their's U index for companies created in 1993 is 0.34, and 0.21 in 1998, a substantial reduction in the observed gap.

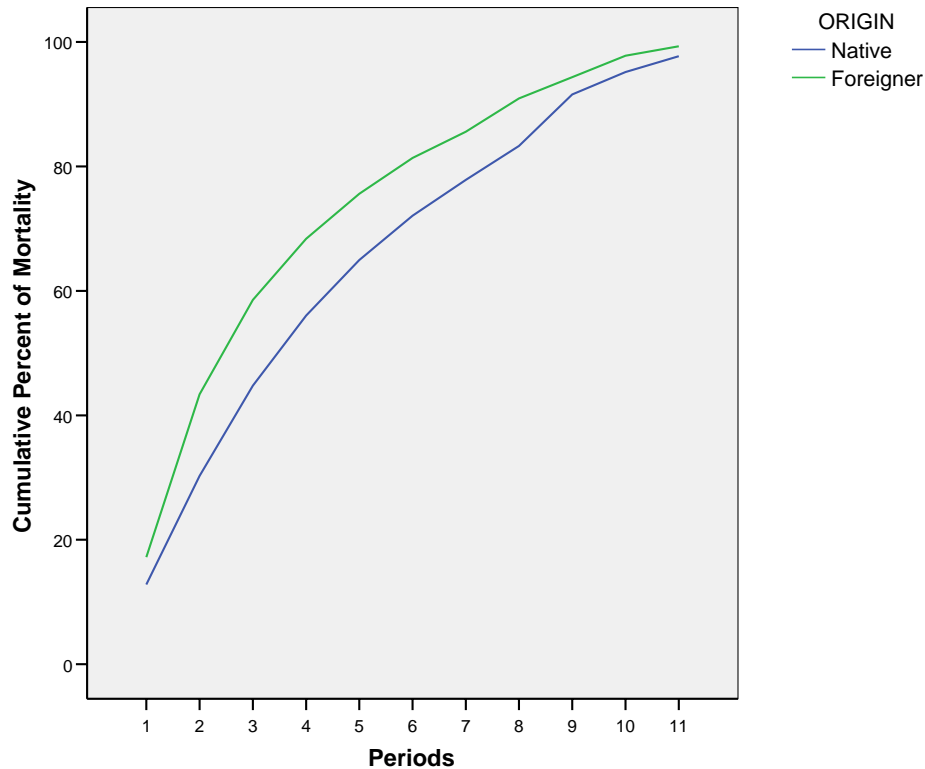
Graph 3. Firm Mortality by Year of Inception and Origin: 1993

Graph 4. Firm Mortality by Year of Inception and Origin: 1998

Graphs 5 and 6 illustrate venture mortality differences by industry sector and origin. The gap in the retail, hotel and catering, and transport industry looks bigger than in the construction industry sector. Their's U index for companies operating in construction is 0.04 versus 0.15 for those firms operating in the retail sector.

Graph 5. Firm Mortality in Construction, by Origin (1993-2003)



Graph 6. Firm Mortality in Retail, Hotel and Catering, and Transport, by Origin (1993-2003)

To sum up, the results of Theil's U inequality index show that the gap in venture survival between foreign and native entrepreneurs differs depending on various factors, such as the number of entrepreneurs (the gap decreases when the number of entrepreneurs per firm is equalized for native and foreign entrepreneurs), the year of firm inception, and industry sector.

5.2. Cox regression analysis

The results of the Cox regression analysis suggest that the origin of entrepreneurs affects venture survival, and that firms created by native entrepreneurs survive longer than those created by foreigners. I have carried out two analyses in order to test the effect of the origin of entrepreneurs on firm survival and to compare the explanatory variables of the survival of foreign- and native-owned firms.

In the first analysis, the Cox regression covers the whole sample of firms in order to test the influence of the independent variable IMMIGRANT on the dependent survival. I assigned a unit value to firms created by foreign entrepreneurs and 0 to those created by natives. The negative sign of the explanatory variable IMMIGRANT indicates, as expected, that the foreign origin of entrepreneurs

has a negative effect on venture survival¹², i.e., native-own companies survive longer than foreign-owns. This finding confirms hypothesis 1 and Fertala's (2004) conclusion that being a foreigner was negatively associated with venture survival, as shown in Table 2.

Table 2. Effect of Origin of Entrepreneurs on Venture Survival

	Model I		Model II	
	N=101,691 Sig=0.000		N=101,691 Sig=0.000	
	B	Exp(B)	B	Exp(B)
Firm Internal Variables:				
<u>Human Capital:</u>				
IMMIGRANT	-0.164(**)	0.849	-0.111(**)	0.895
<u>Firm Resources:</u>				
SIZE_0to2	-0.198(**)	0.820	-0.047(**)	0.864
TEAM			0.086(**)	1.089
<u>Experimental Adaptation:</u>				
MOBILITY			0.406(**)	1.500
DIVERSIFIC			0.559(**)	1.748
Firm External Variables:				
<u>Location:</u>				
URBAN	-0.040(**)	0.961	-0.043(**)	0.958

** Correlation is significant at the 0.01 level (1 –tailed).

The effect of firms' initial size and location on venture survival was tested and the results reported in Table 2. As expected, I found that higher initial resources as measured by firm size, number of entrepreneurs, geographical mobility, and industry diversification have positive effects on venture survival. This confirmed my third hypothesis on size, number of entrepreneurs and experimental adaptation strategies for the whole sample of entrepreneurs operating in the Basque Country between 1993 and 2003.

In contrast, I found that firm location in an urban area (i.e., any of the three regions in which the county capitals are located) has a negative effect on firm longevity: firms started up in a rural area survive longer. This finding does not confirm the generalized hypothesis supported in the literature (Peña 2004, Littunen 2000, Razin 1999, Stearns *et al.* 1995).

¹² Since the Cox regression analyzes the mortality of the firm, a negative sign would indicate a positive effect on firm survival. However, the SPSS statistical program recodes the dummy variables, so that a unit value becomes 0 and vice-versa. Therefore, negative results on dummy variables should be read as if these variables affected survival negatively.

Next, I split the sample into two sub-samples: foreign entrepreneurs and native entrepreneurs. I then tested four models for each sample with a Cox regression analysis. In the first three models a set of regressions were run with an identical set of variables for both sub-samples. The decision to run more than one regression responds to the co-linearity problems found in the correlation matrix between the variables URBAN, REGI_IMMI and REG_UNEMPL (see Appendices 3, 4 and 5 for correlation matrixes). In these cases I looked for a comparative basis in order to observe similarities and differences between the significance of the same set of explanatory variables. However, some of the variables of the last model applied to foreign-owned firms differ from the ones applied to native-owned firms since there were not enough cases for four of the explanatory variables, namely, AGE, GENDER, TEAM and MOBILITY. Therefore, I decided to maintain the rest of the variables and add GENDER and AGE for companies started-up by foreign entrepreneurs, and TEAM and MOBILITY for those created by natives (in this case 100% of foreign entrepreneurs started up their business alone, so the variable TEAM could not be tested) in my fourth model.

Featuring results for foreign-owned firms, Table 3 shows that being an older entrepreneur and experiencing industry diversification, i.e., moving from one industry sector to another between the year of inception and firm closure, increase the likelihood of firm survival. These findings support previous work (Constant and Zimmermann 2004, Peña 2004, Stuart and Abetti 1990, Cooper *et al.* 1989) with respect to the human capital attributes of foreign entrepreneurs. These findings also lend support to the thesis of strategic experimentation (Nicholls-Nixon *et al.* 2000). In short, hypothesis 2a is confirmed: firms created by older foreign entrepreneurs survive longer than those created by younger foreigners. Hypothesis 3c is also confirmed, as the application of experimental adaptation strategies has a positive effect on venture survival.

Location in the province of Bizkaia increases the probability of foreign-owned firm survival whereas, surprisingly, the opposite is true for native-owned firms. In addition, foreign-owned firm survival is positively influenced by high unemployment rates; this finding contradicts my hypothesis 4d to the effect that unfavourable economic conditions, measured by unemployment and low growth, have a negative influence on venture survival.

The small size of firms (0-2 employees) and their location in areas with a high density of foreigners also have a negative effect on foreign-owned firm survival. Thus, my hypothesis 4c referring to the positive effect of locating a company in an area with a large population of foreigners is not confirmed.

The explanatory variables gender, the four industry sectors, location in the province of Araba, and in an urban environment are not significant for foreign entrepreneurs. Therefore, hypotheses 2b

(firms created by male foreign entrepreneurs survive longer than those created by their female counterparts), 4a (the likelihood of survival is lower for those firms in highly competitive industries, such as in the retail, hotel and catering and transport sectors, than for firms in other industries), and 4b (firms located in rural areas survive longer than those located in urban areas) cannot be tested for ventures operated by foreigners.

Table 3. Foreign-owned Venture Survival

	Model I N=1,244 Sig=0,000		Model II N=1,244 Sig=0,000		Model III N=1,244 Sig=0,000		Model IV N=241 Sig=0,324	
	B	Exp (B)	B	Exp (B)	B	Exp (B)	B	Exp (B)
Firm Internal Variables:								
<u>Human Capital:</u>								
GENDER							-0.167	0.846
AGE							0.013(*)	0.987
<u>Firm Resources:</u>								
SIZE_0to2	0.330(***)	0.719	0.331(***)	0.719	0.327(***)	0.721	0.148	0.863
<u>Experimental Adaptation:</u>								
DIVERSIFIC	-0.378(**)	1.460	-0.363(**)	1.437	-0.373(**)	1.453	-0.657(*)	1.929
Firm External Variables:								
<u>Industry Sector:</u>								
MANUFACT	-0.097	1.101	-0.099	1.104	-0.102	1.107	-0.215	1.240
CONSTRUC	0.207(**)	0.813	0.200(*)	0.818	0.213(**)	0.808	0.314	0.730
RETAIL	0.006	0.994	-0.011	1.011	0.003	0.997	-0.065	1.067
BANKING	0.144	0.866	0.138	0.871	0.147	0.863	-0.155	1.167
<u>Location:</u>								
URBAN	0.093	0.911					-0.070	1.073
REG_IMMI			0.392(**)	1.480				
REG_UNEMPL					0.023(*)	1.023		
Control Variables:								
ARABA	0.128	0.879	0.015	0.985	0.197	0.821	0.127	0.881
BIZKAIA	-0.104(*)	1.109	-0.048	1.050	-0.152(**)	1.164	-0.160	0.852

***Correlation is significant at the 0.01 level (1 –tailed).

** Correlation is significant at the 0.05 level (1 –tailed).

* Correlation is significant at the 0.1 level (1 –tailed).

As shown in Table 4, where native entrepreneurs are concerned, all the explanatory variables, except the retail, hotel and catering, and transport industry sector are significant. Thus, hypothesis 4a cannot be tested either for firms created by natives. Size, diversification, economic growth, regional immigration and regional unemployment rates have the same effect on local as they do on foreign entrepreneurs and may do so for the same reasons. As expected, firm creation by more than one entrepreneur has a positive influence on the likelihood of firm survival, and, hence, hypothesis 3b is confirmed for native-owned ventures. Predictably, geographical mobility seems to have a positive influence on firm survival. In this case, the part of hypothesis 3c regarding the application of experimental adaptation strategies measured by geographical mobility is confirmed for native-owned firms.

Table 4 also shows that working in manufacturing, construction, and banking, insurance and business services sectors decreases the likelihood of native-owned firm survival. Traditionnally the level of competition in the manufacturing industry in the Basque Country is high; this may have a negative effect on the survival of firms in this industry sector. Location in the province of Araba also has a negative influence on native-owned firm survival. Finally, the likelihood of survival of those firms located in an urban environment is not as high as for those located in rural areas.

Table 4. Native-owned Venture Survival

	Model I N=98,572 Sig=0.000		Model II N=98,572 Sig=0.000		Model III N=98,572 Sig=0.000		Model IV N=98,572 Sig=0.000	
	B	Exp (B)	B	Exp (B)	B	Exp (B)	B	Exp (B)
Firm Internal Variables:								
<u>Firm Resources:</u>								
SIZE0_2	0.187(***)	0.829	0.186(***)	0.830	0.187(***)	0.830	0.144(***)	0.865
TEAM							-0.084(***)	1.087
<u>Experimental Adaptation:</u>								
MOBILITY							-0.416(***)	1.516
DIVERSIFIC	-0.613(***)	1.846	-0.612(***)	1.844	-0.613(***)	1.846	-0.565(***)	1.759
Firm External Variables:								
<u>Industry Sector:</u>								
MANUFACT	0.010	0.990	0.005	0.995	0.009	0.991	0.016	0.984
CONSTRUC	0.151(***)	0.860	0.150(***)	0.861	0.150(***)	0.861	0.154(***)	0.857
RETAIL	-0.008	1.008	-0.009	1.009	-0.008	1.008	-0.010	1.010
BANKING	0.122(***)	0.885	0.123(***)	0.884	0.122(***)	0.885	0.124(***)	0.884
<u>Location:</u>								
URBAN	0.036(***)	0.964					0.038(***)	0.963
REG_IMMI			0.055(***)	1.056				
REG_UNEMPL					0.006(***)	1.006		
Control Variables:								
ARABA	0.017	0.984	0.004	0.996	0.036(***)	0.964	0.017	0.983
BIZKAIA	-0.001	1.001	0.011	0.989	-0.012	1.012	0.001	0.999

*** Correlation is significant at the 0.01 level (1 –tailed).

** Correlation is significant at the 0.05 level (1 –tailed).

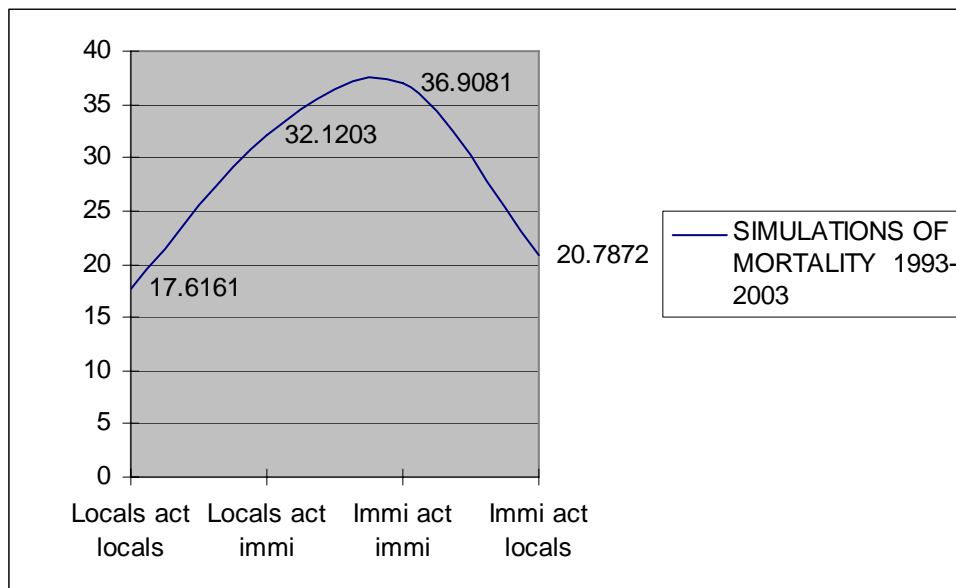
* Correlation is significant at the 0.1 level (1 –tailed).

5.3. Simulations

In the previous section, determinants of firm survival were examined by applying a Cox regression analysis. Preliminary analysis of our data showed a gap between foreign and native-owned firms, with native-owned firms surviving the longest. Cox regression cannot, however, explain this gap. Below I present a series of simulations that explore the role of tastes versus endowments in explaining the persistent survival differences between native- and foreign-owned ventures. I conduct these simulations for firms operating between 1993 and 2003, as well as for 1994, 1996, 1998, and 2000 to explore the effect of time on the likelihood of venture survival for both groups.

Graph 7 shows that, when natives act like foreigners, the estimated average likelihood of firm mortality increases from 17.61 to 32.12. This ratio is, however, still lower than the average likelihood of survival of firms created by foreign entrepreneurs (36.91). When foreigners act like natives, the estimated average probability to fail decreases from 36.91 to 20.79; this means that if foreigners acted like natives, the differences in the average likelihood of mortality between the two groups would not be significant. Therefore, I conclude that the main differences in venture mortality rates pertain to the reaction of foreign entrepreneurs to the conditioners of survival, such as access to financial and human capital, which may be amenable to policy initiatives. I will review these initiatives in the concluding section of this essay.

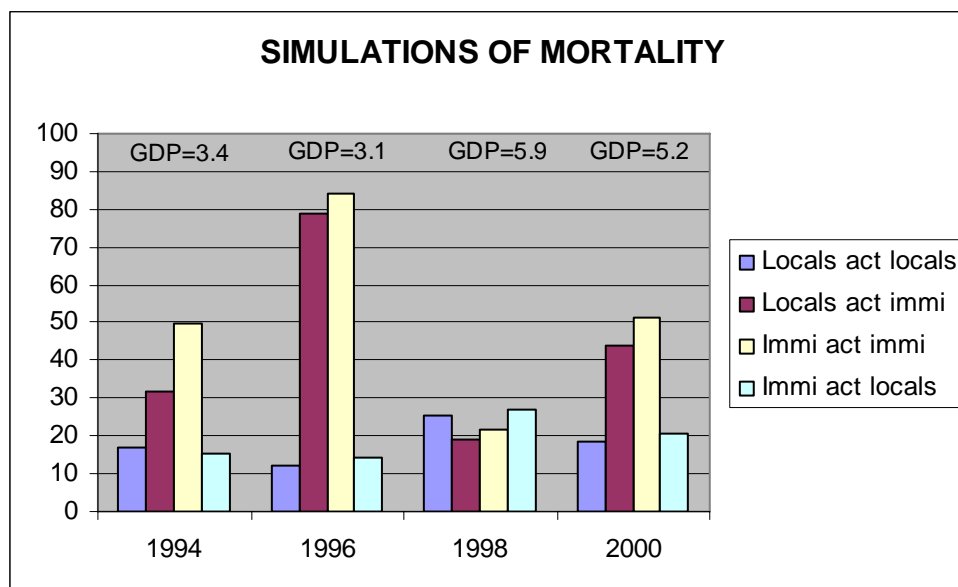
Graph 7. Simulations of Firm Mortality by Origin (1993-2003)



The year of firm inception seems to have an effect on the likelihood of mortality for both native- and foreign-owned ventures. Graph 8 shows the estimated average probability of failure for native entrepreneurs acting like native entrepreneurs, and by natives acting like foreigners, as well as for foreigners acting like foreigners and foreigners acting like natives. The visible differences in the likelihood of failure, especially for foreign entrepreneurs, by year of inception, suggest that firm external variables, such as environmental changes influence the probability of firm survival significantly. In fact, the development of the annual economic growth, as measured by the GDP, corresponds to the changes in the likelihood of venture survival. It is particularly evident in the case of companies begun by foreign entrepreneurs, whose probability of failure for firms created in 1998 decreases drastically when the GDP increases from 3.1 in 1996 to 5.9 in 1998. The opposite effect

seems to prevail for native-owned firms, where the probability of failure increases as economic growth occurs. Thereby, this analysis across several years allows me to conclude that variables external to firms significantly influence their survival.

Graph 8. Simulations of Mortality of Firms by Origin and Year of Inception



6. Conclusions and Implications

In this paper I sought to assess the economic integration of foreign entrepreneurs by analysing business survival differences between foreign and native-owned firms. I found that the foreign birth status of entrepreneurs affects survival, with firms created by natives surviving longer than foreign-owned ventures. I measured the gap in survival by applying a U Theil's Index of Inequality. First, I found that the gap in firm survival by origin decreases when the number of entrepreneurs per firm is equal for native- and foreign-owned firms; this suggests that the foreigners' limited resources have a negative influence on the survival of their firms.

Second, the gap in firm survival by origin varies according to industry sectors. The high market turbulence which characterizes the construction industry sector is owing to the relatively short duration of each project (i.e., each firm), and may explain the negative effect on survival that I found when I applied the Cox regression analysis. Coupled with the financial entry barriers inherent to business start-ups in this sector, the negative effect of the banking, insurance and business services sector on survival could be explained by the high degree of competition in this industry.

Finally, the gap in survival by origin changes depending on the year of firm inception. This leads me to conclude that the variables external to native- and foreign-owned firms have an effect on their survival.

Older foreign entrepreneurs, industry diversification, and high unemployment rates increased the likelihood of firm survival, and small firms had fewer chances of surviving. The unexpected positive effect of high unemployment rates on survival may mean that foreigners cease operations to take paid employment during periods of low unemployment. In fact, the negative effect of economic growth on survival would confirm this hypothesis. For its part, the negative effect of locating a foreign-owned firm in areas with a dense foreign population may be explained by higher levels of competition amongst foreign entrepreneurs.

Unexpectedly, native-owned firms established in urban areas and in areas with a dense foreign population were less likely to survive than those located in rural areas and in areas with few foreigners. This may be due to greater competition and higher fixed operating costs in cities than in rural areas. Firms operating in urban areas would need a higher profit margin than those operating in rural areas to cover costs.

In sum, the effect of the main explanatory variables on foreign and native-owned firm survival seems similar, but Cox regression analysis can not explain the gap in mortality rates. In order to find an explanation, I applied a series of simulations and found that, if native entrepreneurs acted like foreigners, the estimated likelihood of mortality would increase, and vice-versa: if foreigners acted like natives, the difference in the probability of failure between the two groups would not be significant.

Thus, I conclude that the main differences in survival between native- and foreign-owned firms are caused by the liability of foreignness, i.e., the unfavourable initial financial and human capital conditions foreign entrepreneurs have to address when they start up a business in a foreign country. I argue that these differences could be reduced by applying the following appropriate policy initiatives: (i) facilitating access to the initial financial capital; (ii) designing appropriate business training programs; and (iii) offering language classes. Besides, the experience and practices of other countries with a long history of immigration, such as Australia and Canada, should be taken into account in order to design and carry out an efficient and comprehensive immigration policy.

Caution is recommended in the interpretation of my results. An important limitation of this study is the small number of human capital explanatory variables in our database. On the other hand, the database involves the entire population of firms that operated in the Basque Country between

1993 and 2003. It should be noted that I applied a series of simulations which may have partly compensated for my limited data on the human capital characteristics of entrepreneurs. Thus, in spite of this shortcoming, I believe that the results are robust enough to contribute to and extend the scant literature on survival differences of foreign- and native-owned firms.

Future research is needed to assess and compare the survival of foreign-owned firms over years and across geographical areas. It would be interesting to carry out the same analysis at different points in time in order to test the effect of environmental factors, such as economic growth and socio-demographical changes (e.g., an increase in the foreign population) on firm survival. Besides, a comparative study of Spanish regions would provide an assessment of regional entrepreneurial opportunities and guide policy initiatives. Finally, comparing the effect of contextual factors, such as immigration policies and entrepreneurial opportunities, on foreign-owned firm survival across different countries would lend an international perspective to my inquiry into the Basque Country.

References

- Aldrich, H.E. and R. Waldinger. 1990. Ethnicity and Entrepreneurship. *Annual Review of Sociology* 16: 111-35.
- Arias, A., P. Carvajal and I. Peña. 2004. Necessity-driven versus Opportunity-driven Entrepreneurs: Evidence from Ecuador and Spain. *Babson Kauffman Entrepreneurship Research Conference*. University of Strahcycle, Glasgow.
- Audretsch, D. B., Houweling, P. and Thurik, A. R. 2000. Firm Survival in the Netherlands. *Review of Industrial Organization* 16 (1): 1-11
- Audretsch, D.B. and T. Mahmood. 1995. New Firm Survival: New Results Using a Hazard Function. *The Review of Economics and Statistics* 77 (1): 97-103.
- Barney, J.B. 1995. Looking Inside for Competitive Advantage. *Academy of Management Executive* 9 (4): 49-61.
- . 2001. Resource-based Theories of Competitive Advantage: A Ten-year Retrospective on the Resource-based View. *Journal of Management* 27: 643-650.
- Basu, A. and E. Altinay. 2002. The interaction between culture and entrepreneurship in London's immigrant business. *International Small Business Journal* 20 (4): 371-400.
- Bates, T. 1997. *Race, Self-employment and Mobility: An Illusive American Dream*. Washington: The Woodrow Wilson Center Press.
- Baycan Levent, T., E. Masurel and P. Nijkamp. 2003. Diversity in Entrepreneurship: Ethnic and Female Roles in Urban Economic Life. *International Journal of Social Economics* 30 (11): 1131-1161.
- Boden, R.J. and A.R. Nucci. 2000. On the Survival Prospects of Men's and Women's New Business Ventures. *Journal of Business Venturing* 15, 347-362.
- Bull, I. and F. Winter. 1991. Community Differences in Business Births and Business Growths. *Journal of Business Venturing* 6: 29-43.
- Carvajal, R.P. 2004. *Empresas de nueva creación en la provincia de Tungurahua-Ecuador (1996-2000)*. Doctoral Thesis, University of Deusto, Donostia-San Sebastian.
- Constant, E. and Zimmermann, K.F. 2004. The Making of Entrepreneurs in Germany: Are Native Men and Immigrants Alike? IZA Discussion Paper Series: Paper N°. 1440.
- Cooper, A.C., W.C. Dunkelberg and C.Y. Woo. 1989. Entrepreneurship and the Initial Size of Firms. *Journal of Business Venturing* 4: 317-332.
- Engelen, E. 2001. 'Breaking in' and 'breaking out': a Weberian approach to entrepreneurial opportunities. *Journal of Ethnic and Migration Studies: Special issue on Immigrant Entrepreneurship*.
- Fertala, N. 2004. Do Human and Social Capital Investments Influence Survival? A Study of Immigrant Entrepreneurship in Upper Bavaria. *Babson Kauffman Entrepreneurship research Conference*. University of Strahcycle, Glasgow.
- Geroski, P.A. 1995. What Do We Know about Entry? *International Journal of Industrial Organization* 13: 421-220.

- Gimeno, J., T.B. Folta, A.C. Cooper and C.Y. Woo. 1997. Survival of the Fittest? Entrepreneurial Human Capital and the Persistence of Underperforming Firms. *Administrative Science Quarterly* 42: 750-783.
- Hammarstedt, M. 2001. Immigrant self-employment in Sweden - its variations and some possible determinants. *Entrepreneurship & Regional Development* 13 (2): 147-161.
- Holt, D.H. 1987. Network Support Systems: How Communities can Encourage Entrepreneurship. In *Frontiers of Entrepreneurship Research*, edited by R. Ronstadt, J.A. Hornaday, R. Peterson and K.H. Vesper, 44-56. Wellesley, MA: Center for Entrepreneurial Studies, Babson College.
- Honing, B. 2001. Human Capital and Structural Upheaval: A Study of Manufacturing Firms in the West Bank. *Journal of Business Venturing* 16: 575-594.
- Kofman, E., A. Phizacklea, P. Raghuram and R. Sales. 2005. *Gender and International Migration in Europe: Employment, Welfare and Politics*. London: Routledge.
- Lerner, M. 1997. Israeli Women Entrepreneurs: An Examination of Factors Affecting Performance. *Journal of Business Venturing* 12: 315-339.
- Levie, J. 2005. *Immigration, in-migration, ethnicity and entrepreneurship: insights from the GEM UK database*. Second GEM Research Conference. Hungarian Academy of Sciences, Budapest.
- Ley, D. 2003. Seeking Homo Economicus: The Strange Story of Canada's Business Immigration Program. *Annals of the Association of American Geographers* 93 (2): 426-441.
- Light, I. 1972. *Ethnic Enterprise in America: Business and Welfare among Chinese, Japanese and Blacks*. Berkeley: University of California Press.
- . 1984. Immigrant and ethnic enterprise in North America. *Ethnic and Racial Studies* 7: 195-216.
- Light, I. and P. Bhachu. 1993. *Immigration and Entrepreneurship: Culture, Capital and Ethnic Networks*. New Brunswick: Transaction Publishers.
- Light, I. and S. Gold. 2000. *Ethnic Economies*. San Diego: Academic Press.
- Littunen, H. 2000. Networks and Local Environmental Characteristics in the Survival of New Firms. *Small Business Economics* 15: 59-71.
- Massey, D.S. 1988. Economic Development and International Migration in Comparative Perspective. *Population and Development Review* 14: 383-413.
- Mata, F., P. Portugal and P. Guimarães. 1995. The Survival of New Plants: Star-up Conditions and Post-Entry Evolution. *International Journal of Industrial Organization* 13: 459-481.
- Mata, F. and R. Pendakur. 1999. Immigration, Labour Force Integration and the Pursuit of Self-Employment. *International Migration Review* 33 (2): 378-402.
- Mata, J. and P. Portugal. 1994. Life Duration of New Firms. *The Journal of Industrial Economics* 42 (3): 227-43.
- Nicholls-Nixon, C.L., A.C. Cooper and C.Y. Woo. 2000. Strategic Experimentation: Understanding Change and Performance. *New Ventures in Journal of Business Venturing* 15: 493-521.
- Peña, I. 2002. Intellectual Capital and Business Start-up Success. *Journal of Intellectual Capital* 3 (2): 189-98.
- . 2004. Business Incubation Centres and New Firm Growth in the Basque Country. *Small Business Economics* 22 (3-4): 223-236.

- Rath, J. and R. Kloosterman. 2000. Outsiders' Business: A Critical Review of Research on Immigrant Entrepreneurship. *International Migration Review* 34 (3): 657-681.
- Rath, J. 2002. A quintessential immigrant niche? The non-case of immigrants in the Dutch construction industry. *Entrepreneurship and Regional Development* 14: 355-372.
- Razin, E. 1999. Immigrant Entrepreneurs and the Urban Milieu: Evidence from the U.S., Canada and Israel. RIIM Working Paper Series. Paper N° 99-1. Vancouver Centre of Excellence.
- Rekers, A. and R. van Kempen. 2000. Location Matters: Ethnic Entrepreneurs and the Spatial Context. In *Immigrant Businesses: An Exploration of their Embeddedness in the Economic, Politico-Institutional and Social Environment*, edited by J. Rath, 54-69. Houndmills, Basingstoke, Hampshire: Macmillan Press.
- Schuetze, H.J. 2005. The Self-Employment Experience of Immigrants to Canada. RIIM Working Paper Series. Paper N° 05-24. Vancouver Centre of Excellence.
- Schutjens, V. and E. Wever. 2000. Determinants of Firm Success. *Papers in Regional Science* 79 (2): 135-153.
- Segarra, A. and M. Callejón. 2002. New Firms' Survival and Market Turbulence: New Evidence from Spain. *Review of Industrial Organization* 20: 1-14.
- Solé, C. and S. Parella. 2005. *Negocios étnicos: Los comercios de los inmigrantes no comunitarios en Cataluña*. Barcelona: Fundació CIDOB.
- Stearns, T., P. Reynolds and M. Williams. 1995. New Firm Survival: Industry, Strategy and Location. *Journal of Business Venturing* 10: 23-42.
- Stinchcombe, A.L. 1965. Social Structure and Organizations. In *Handbook of Organizations*, edited by J. G. March, 142-92. Chicago: Rand MacNally.
- Stuart, R.W. and P.A. Abetti. 1990. Impact of Entrepreneurial and Management Experience on Early Performance. *Journal of Business Venturing* 5: 151-162.
- Sutton, J. 1997. Gibrat's Legacy. *Journal of Economic Literature* 35: 40-59.
- Villena, M. 2004. Demografía, Mercado de Trabajo y Política de Inmigración. Full text available in www.eumed.net/cursecon/libreria/
- Ward, R. and R. Jenkins. 1984. *Ethnic Communities in Business: Strategies for Economic Survival*. Cambridge: Cambridge University Press.
- Woo, C.Y., A.C. Cooper, W.C. Dunkelberg, U. Daellenbach and W.J. Dennis. 1989. Determinants of Growth for Small and Large Entrepreneurial Start-ups. In *Frontiers of Entrepreneurial Research*, edited by R.H. Brockhaus, N.C. Churchill, J.A. Katz, B.A. Kirchoff, K.H. Vesper and W.E. Wetzell, 134-47. Wellesley, Babson College, MA.
- Zacharaskis, A.L. 1999. Differing Perceptions of New Venture Failure: A Matched Exploratory Study of Venture Capitalists and Entrepreneurs. *Journal of Small Business Management* 37 (3): 1-14.
- Zhang, K. 1999. Problems and Strategies of Chinese Immigrants: A Study of Restaurant Sector in the Dutch Labour Market. RIIM Working Paper Series: Paper N° 99-08. Vancouver Centre of Excellence.
- Zimmermann, K.F., A. Constant and Y. Schachmurove. 2003. What Makes an Entrepreneur and Does it Pay? Native Men, Turks and Other Immigrants in Germany. IZA Discussion Paper Series: Paper N°. 940.

Zimmermann, K.F., H. Bonin, A. Constant and K. Tatsiramos. 2006. Native-Migrant Differences in Risk Attitudes. IZA Discussion Paper Series: Paper N° 1999.

Appendix 1

Description of Variables

Name	Definition	Source
SURVIVAL	Number of years from firm inception to closure between years 1993-2003	EUSTAT: The Basque Statistical Institute
IMMIGRANT	Dummy variable which distinguishes between foreign (value = 1) and native (value = 0) entrepreneurs	EUSTAT: The Basque Statistical Institute
AGE	Indicates the age of entrepreneur(s) at the moment of firm creation	EUSTAT: The Basque Statistical Institute
MALE	Dummy variable which distinguishes between male (value = 1) and female (value = 0) entrepreneurs	EUSTAT: The Basque Statistical Institute
SIZE_0to2	Dummy variable which distinguishes between firms started up with 0, 1 or 2 employees and those with more than 2. It was created by recoding the initial polychotomous variable SIZE and by giving the value of 1 to those firms started-up with 0 to 2 employees and the value of 0 to the remaining ranks	EUSTAT: The Basque Statistical Institute
TEAM	Dummy variable which distinguishes between firms created by more than one entrepreneur and those created by an individual. It was created by recoding the initial polychotomous variable LEGAL STATUS and by giving a value of 0 to those firms created as a form of physical persons and a value of 1 to the remaining forms (i.e., corporation, limited liability company, or cooperative)	EUSTAT: The Basque Statistical Institute
DIVERSIFIC	Dummy variable which distinguishes between firms which changed the industry sector they operated in between the first and the last year of registration (value = 1) and those which did not (value = 0).	EUSTAT: The Basque Statistical Institute
MOBILITY	Dummy variable which distinguishes between those firms that moved (value = 1) and those that did not move (value = 0) between the creation and the closure of the firm. It was recoded from the initial variables ENTRMUN – which indicates the municipality where the firm was initially registered - and CLOSMUN – the municipality where the firm was registered at the moment of closure.	EUSTAT: The Basque Statistical Institute
MANUFAC	Dummy variable which distinguishes between firms which operate in the manufacturing industry sector (value = 1) and those which do not (value = 0). It was created by recoding the initial variable CNAE which organizes firms following an officially recognized industry sector classification suggested by The Basque Statistical Institute.	EUSTAT: The Basque Statistical Institute
CONSTRUC	Dummy variable which distinguishes between firms which operate in the construction industry sector (value = 1) and those which do not (value = 0). It was recoded from the initial variable CNAE following the same procedure as the variable MANUFAC.	EUSTAT: The Basque Statistical Institute
RETAIL	Dummy variable which distinguishes between firms which operate in the retail, hotel and catering and transport industry sector (value = 1) and those which do not (value = 0). It was recoded from the initial variable CNAE following the same procedure as the variable MANUFAC.	EUSTAT: The Basque Statistical Institute

BANKING	Dummy variable which distinguishes between firms which operate in the banking, insurance and business services industry sector (value = 1) and those which do not (value = 0). It was recoded from the initial variable CNAE following the same procedure as the variable MANUFAC.	EUSTAT: The Basque Statistical Institute
ARABA	Dummy variable which distinguishes between firms created in the province of Araba (value = 1) and those which were not (value = 0). It was created by recoding the initial variable ENTRMUN which indicates the municipality where the firm was created.	EUSTAT: The Basque Statistical Institute
BIZKAIA	Dummy variable which distinguishes between firms created in the province of Bizkaia (value = 1) and those which were not (value = 0). It was created by recoding the initial variable ENTRMUN – which indicates the municipality where the firm was created.	EUSTAT: The Basque Statistical Institute
URBAN	Dummy variable which distinguishes between firms located in an urban area (value = 1) and those located in a rural area (value = 0). It was recoded from the variable ENTREG which groups annual entries in twenty regions following the official classification of Basque regions suggested by the Basque Statistical Institute. The three regions where the capital of each province is located were urban areas and the remaining regions were rural.	EUSTAT: The Basque Statistical Institute
GROWTH	Indicates the annual economic growth of the Basque Country between years 1993 and 2003, measured by the GDP variation. It was added by the author to the initial database.	EUSTAT: The Basque Statistical Institute
REG_IMMI	Indicates the average regional percentage of immigrants living in the Basque Country between years 1991 and 2001. It was added to the initial database by the author who adopted the officially recognized classification of the regions used by The Basque Statistical Institute.	EUSTAT: The Basque Statistical Institute and the Spanish Observatory of Immigration
REG_UNEMPL	Indicates the average regional percentage unemployment in the Basque Country between years 1991 and 2001. It was added to the initial database by the author as per the same classification used for the variable REG_IMMI.	EUSTAT: The Basque Statistical Institute

Appendix 2**THEIL'S U INDEX OF INEQUALITY**

MORTALITY BY ORIGIN 1993-2003					
	FOREIGN (%)	(X)SQ	NATIVE (%)	(Y)SQ	DIFF (X-Y)SQ
P1	17,5	306,25	13,6	184,96	15,21
P2	24,3	590,49	17,8	316,84	42,25
P3	15,5	240,25	14,4	207,36	1,21
P4	9,9	98,01	10,9	118,81	1
P5	7,2	51,84	8,8	77,44	2,56
P6	5,6	31,36	7,9	62,41	5,29
P7	4,1	16,81	5,8	33,64	2,89
P8	5,3	28,09	5,6	31,36	0,09
P9	3,4	11,56	6	36	6,76
P10	3,8	14,44	4	16	0,04
P11	2,4	5,76	2,9	8,41	0,25
TOTAL	99	1394,86	97,7	1093,23	77,55

$A = \text{ROOT SQ}[1/N*(X-Y)SQ] = \text{RSQ} [1/11*(77.55)] =$	2,65
---	------

$B = \text{ROOT SQ}[1/N*(X)SQ] = \text{RSQ} [1/11*(99)SQ] =$	11,2
--	------

$C = \text{ROOT SQ}[1/N*(Y)SQ] = \text{RSQ} [1/11*(97.7)SQ] =$	9,97
--	------

$U = A/(B+C) =$	0,12
-----------------	-------------

MORTALITY BY ORIGIN WHEN TEAM=0 1993-2003					
	FOREIGN (%)	(X)SQ	NATIVE (%)	(Y)SQ	DIFF (X-Y)SQ
P1	17,5	306,25	16,9	285,61	0,36
P2	24,3	590,49	18,6	345,96	32,49
P3	15,5	240,25	13,9	193,21	2,56
P4	9,9	98,01	10,4	108,16	0,25
P5	7,2	51,84	8,5	72,25	1,69
P6	5,6	31,36	6,7	44,89	1,21
P7	4,1	16,81	5,2	27,04	1,21
P8	5,3	28,09	5	25	0,09
P9	3,4	11,56	6,6	43,56	10,24
P10	3,8	14,44	3,2	10,24	0,36
P11	2,4	5,76	2,6	6,76	0,04
TOTAL	99	1394,86	97,6	1162,68	50,5

$A = \text{ROOT SQ}[1/N*(X-Y)SQ] = \text{RSQ} [1/11*(50.5)] =$	2,14
--	------

$B = \text{ROOT SQ}[1/N*(X)SQ] = \text{RSQ} [1/11*(99)SQ] =$	11,26
--	-------

$C = \text{ROOT SQ}[1/N*(Y)SQ] = \text{RSQ} [1/11*(97.6)SQ] =$	10,28
--	-------

$U = A/(B+C) =$	0,09
-----------------	-------------

MORTALITY BY ORIGIN IN CONSTRUCTION 1993-2003					
	FOREIGN (%)	(X)SQ	NATIVE (%)	(Y)SQ	DIFF (X-Y)SQ
P1	18,9	357,21	18,1	327,61	0,64
P2	26,7	712,89	20,1	404,01	43,56
P3	17,2	295,84	14,6	213,16	6,76
P4	10,3	106,09	11,1	123,21	0,64
P5	6,7	44,89	8,7	75,69	4
P6	5,7	32,49	7,2	51,84	2,25
P7	4,3	18,49	4,7	22,09	0,16
P8	4,3	18,49	4,3	18,49	0
P9	1	1	3,5	12,25	6,25
P10	3,1	9,61	3,9	15,21	0,64
P11	1,4	1,96	1,8	3,24	0,16
TOTAL	99,6	1598,96	98	1266,8	65,06

$$A = \text{ROOT SQ}[1/N*(X-Y)SQ] = \text{RSQ} [1/11*(65.06)] = 2,43$$

$$B = \text{ROOT SQ}[1/N*(X)SQ] = \text{RSQ} [1/11*(99.6)SQ] = 29,12$$

$$C = \text{ROOT SQ}[1/N*(Y)SQ] = \text{RSQ} [1/11*(98)SQ] = 29,54$$

$$U = A/(B+C) = 0,04$$

MORTALITY BY ORIGIN IN RETAIL 1993-2003					
	FOREIGN (%)	(X)SQ	NATIVE (%)	(Y)SQ	DIFF (X-Y)SQ
P1	17,2	295,84	12,8	163,84	19,36
P2	25,2	635,04	17,5	306,25	59,29
P3	15,2	231,04	14,5	210,25	0,49
P4	9,8	96,04	11,3	127,69	2,25
P5	7,2	51,84	8,9	79,21	2,89
P6	5,7	32,49	7,1	50,41	1,96
P7	4,2	17,64	5,8	33,64	2,56
P8	5,4	29,16	5,4	29,16	0
P9	3,4	11,56	8,3	68,89	24,01
P10	3,5	12,25	3,6	12,96	0,01
P11	1,4	1,96	2,6	6,76	1,44
TOTAL	98,2	1414,86	97,8	1089,06	114,26

$$A = \text{ROOT SQ}[1/N*(X-Y)SQ] = \text{RSQ} [1/11*(114.26)] = 3,22$$

$$B = \text{ROOT SQ}[1/N*(X)SQ] = \text{RSQ} [1/11*(98.2)SQ] = 11,34$$

$$C = \text{ROOT SQ}[1/N*(Y)SQ] = \text{RSQ} [1/11*(97.8)SQ] = 9,95$$

$$U = A/(B+C) = 0,15$$

MORTALITY BY ORIGIN AND YEAR OF INCEPTION (1993)					
	FOREIGN (%)	(X)SQ	NATIVE (%)	(Y)SQ	DIFF (X-Y)SQ
P1	2,3	5,29	9,3	86,49	49
P2	2,3	5,29	13	169	114,49
P3	18,8	353,44	12,7	161,29	37,21
P4	14,3	204,49	7,2	51,84	50,41
P5	5,3	28,09	5,1	26,01	0,04
P6	3,8	14,44	5,6	31,36	3,24
P7	3,8	14,44	4,2	17,64	0,16
P8	4,5	20,25	3,8	14,44	0,49
P9		0	3,2	10,24	10,24
P10	24,1	580,81	6,7	44,89	302,76
P11		0	2	4	4
TOTAL	79,2	1226,54	72,8	617,2	572,04

$A = \text{ROOT SQ}[1/N*(X-Y)SQ] = \text{RSQ} [1/11*(572.04)] =$	7,21
--	------

$B = \text{ROOT SQ}[1/N*(X)SQ] = \text{RSQ} [1/11*(79.2)SQ] =$	10,56
--	-------

$C = \text{ROOT SQ}[1/N*(Y)SQ] = \text{RSQ} [1/11*(72.8)SQ] =$	7,49
--	------

$U = A/(B+C) =$	0,34
-----------------	-------------

MORTALITY BY ORIGIN AND YEAR OF INCEPTION (1998)					
	FOREIGN (%)	(X)SQ	NATIVE (%)	(Y)SQ	DIFF (X-Y)SQ
P1	24,9	620,01	16	256	79,21
P2	17,8	316,84	12,3	151,29	30,25
P3	9,4	88,36	9,1	82,81	0,09
P4	4,2	17,64	6,8	46,24	6,76
P5	6,1	37,21	4,9	24,01	1,44
P6		0	4,3	18,49	18,49
TOTAL	62,4	1080,06	53,4	578,84	136,24

$A = \text{ROOT SQ}[1/N*(X-Y)SQ] = \text{RSQ} [1/11*(136.24)] =$	3,52
--	------

$B = \text{ROOT SQ}[1/N*(X)SQ] = \text{RSQ} [1/11*(62.4)SQ] =$	9,91
--	------

$C = \text{ROOT SQ}[1/N*(Y)SQ] = \text{RSQ} [1/11*(53.4)SQ] =$	7,25
--	------

$U = A/(B+C) =$	0,21
-----------------	-------------

Appendix 3

Correlation Matrix : All Firms

	IMMIGRANT	SIZE_0to2	TEAM	MOBILITY	DIVERSIFIC
SIZE_0to2	,032(**)				
TEAM	-,094(**)	-,442(**)			
MOBILITY	-,008(**)	-,018(**)	,004		
DIVERSIFIC	-,012(**)	-,064(**)	,061(**)	,170(**)	
URBAN	-,001	-,004(*)	,017(**)	-,009(**)	,002

** Correlation is significant at the 0.01 level (1 –tailed).

* Correlation is significant at the 0.05 level (1 –tailed).

Appendix 4

Correlation Matrix: Foreign-owned Firms

	GENDER	AGE	SIZE0_2	DIVERSIFIC	MANUFACT	CONSTRUC	RETAIL	BANKING	URBAN	REG_IMM I	REG_UNEMP L	ARABA
AGE	-,092(**)											
SIZE0_2	,029	-,043										
DIVERSIFIC	-,051	,049	,042(*)									
MANUFACT	-,017	-,004	-,001	,043(*)								
CONSTRUC	-,260(**)	-,141(**)	,084(**)	,011	-,069(**)							
RETAIL	,087(**)	-,026	-,113(**)	-,019	-,159(**)	-,425(**)						
BANKING	,033	,028	,087(**)	-,018	-,065(**)	-,174(**)	-,399(**)					
URBAN	,004	-,138(**)	-,030	-,024	-,038	-,092(**)	,059(**)	,073(**)				
REG_IMM I	,023	-,034	-,006	-,027	-,021	,011	,035	,042(*)	,382(**)			
REG_UNEMP L	,045	-,061	-,018	-,040(*)	-,030	-,179(**)	,123(**)	,033	,718(**)	,041(*)		
ARABA	,007	-,096(**)	-,021	-,025	-,021	,068(**)	-,033	,032	,160(**)	,623(**)	-,372(**)	
BIZKAIA	,072(**)	-,045	-,027	-,047(*)	-,030	-,173(**)	,106(**)	,011	,253(**)	-,339(**)	,661(**)	-,311(**)

** Correlation is significant at the 0.01 level (1 –tailed).

* Correlation is significant at the 0.05 level (1 –tailed).

Appendix 5

Correlation Matrix: Native-owned Firms

	SIZE0_2	TEAM	MOBILITY	DIVERSIFIC	MANUFAC	CONSTRUC	RETAIL	BANKING	URBAN	REG_IMMI	REG_UNEMPL	ARABA
TEAM	-,442(**)											
MOBILITY	-,017(**)	,003										
DIVERSIFIC	-,064(**)	,061(**)	,171(**)									
MANUFAC	-,192(**)	,130(**)	-,006(**)	,048(**)								
CONSTRUC	,030(**)	-,037(**)	,104(**)	-,003	-,126(**)							
RETAIL	,049(**)	-,087(**)	-,039(**)	-,020(**)	-,277(**)	-,380(**)						
BANKING	,061(**)	,017(**)	-,024(**)	,009(**)	-,150(**)	-,205(**)	-,450(**)					
URBAN	-,004	,017(**)	-,009(**)	,002	-,103(**)	-,018(**)	,009(**)	,079(**)				
REG_IMMI	-,018(**)	,039(**)	-,009(**)	,000	-,002	-,006(*)	-,012(**)	,028(**)	,431(**)			
REG_UNEMPL	,019(**)	-,013(**)	,000	-,003	-,099(**)	-,017(**)	,032(**)	,054(**)	,692(**)	-,056(**)		
ARABA	-,044(**)	,046(**)	,027(**)	,002	,024(**)	,005(*)	-,011(**)	-,004	,077(**)	,609(**)	-,418(**)	
BIZKAIA	,013(**)	-,014(**)	-,011(**)	-,011(**)	-,038(**)	-,035(**)	,046(**)	,016(**)	,222(**)	-,305(**)	,652(**)	-,399(**)

** Correlation is significant at the 0.01 level (1 –tailed).

* Correlation is significant at the 0.05 level (1 –tailed).

Working Paper Series

No.	Author(s)	Title	Date
04-01	Rosa Sevy and John Torpey	Commemoration, Redress, and Reconciliation in the Integration of Immigrant Communities: The Cases of Japanese-Canadians and Japanese-Americans	02/04
04-02	Don DeVoretz and Sergiy Pivnenko	Immigrant Public Finance Transfers: A Comparative Analysis by City	02/04
04-03	Margaret Walton-Roberts	Regional Immigration and Dispersal: Lessons from Small- and Medium-sized Urban Centres in British Columbia	02/04
04-04	Don J. DeVoretz, Sergiy Pivnenko, and Morton Beiser	The Economic Experiences of Refugees in Canada	02/04
04-05	Isabel Dyck	Immigration, Place and Health: South Asian Women's Accounts of Health, Illness and Everyday Life	02/04
04-06	Kathy Sherrell, Jennifer Hyndman and Fisnik Preniqi	Sharing the Wealth, Spreading the "Burden"? The Settlement of Kosovar Refugees in Smaller B.C. Cities	02/04
04-07	Nicolas Marceau and Steeve Mongrain	Interjurisdictional Competition in Law Enforcement	03/04
04-08	Shibao Guo	Responding to the Changing Needs of the Chinese Community in Vancouver: The Contribution of SUCCESS (1973-1998)	04/04
04-09	Amanda Aizlewood and Ravi Pendakur	Ethnicity and Social Capital in Canada	04/04
04-10	Kathy Sherrell and Jennifer Hyndman	Global Minds, Local Bodies: Kosovar Transnational Connections Beyond British Columbia	05/04
04-11	Krishna Pendakur and Ravi Pendakur	Colour my World: Has the Minority-Majority Earnings Gap Changed over Time?	05/04
04-12	Leonie Sandercock with Leslie Dickout and Ranja Winkler	The Quest for an Inclusive City: An Exploration of Sri Lankan Tamil Experience of Integration in Toronto and Vancouver	05/04
04-13	Don DeVoretz	Immigration Policy: Methods of Economic Assessment	06/04
04-14	Min-Jung Kwak	An Exploration of the Korean-Canadian Community in Vancouver	07/04
04-15	Daniel Hiebert and Min-Jung Kwak	Transnational Economies of Export Education	07/04
04-16	Harald Bauder	Attitudes Towards Work: Ethnic Minorities and Immigrant Groups in Vancouver	07/04
04-17	Leslie Dickout	The Quest to Negotiate Equitable Civic Engagement: Response of Toronto's Sri Lankan Tamil Community to Social Development Planning in Canada's Largest Multicultural Metropolis	08/04

No.	Author(s)	Title	Date
04-18	Zheng Wu and Christoph M. Schimmele	Immigrant Status and Unmet Health Care Needs in British Columbia	08/04
04-19	Jennifer Hyndman and Nadine Schuurman	Size Matters: Attracting new Immigrants to Canadian Cities	10/04
04-20	Heather A. Smith	The Evolving Relationship between Immigrant Settlement and Neighbourhood Disadvantage in Canadian Cities, 1991-2001	10/04
04-21	Don J. DeVoretz and Sergiy Pivnenko	The Economic Causes and Consequences of Canadian Citizenship	11/04
04-22	Kenny Zhang and Minghuan Li	To Stay or to Move? Chinese Migrant Workers in Cities	12/04
05-01	David Ley	Indicators of Entrepreneurial Success among Business Immigrants in Canada	01/05
05-02	Diane Dagenais and Patricia Lamarre	Representations of Language among Multilingual Youth in Two Canadian Cities	01/05
05-03	Kelleen Toohey and Natalia Gajdamaschko	Communities of Practice, Figured Worlds and Learning Initiative in the Second Language Education of Immigrant Students	01/05
05-04	Kelleen Toohey	Assigning Marginality: The Case of an “ESL/learning Disabled” Student	01/05
05-05	Loren B. Landau	Urbanization, Nativism, and the Rule of Law in South Africa’s ‘Forbidden’ Cities	01/05
05-06	Gillian Creese	Negotiating Belonging: Bordered Spaces and Imagined Communities in Vancouver, Canada	01/05
05-07	Don J. DeVoretz and Sergiy Pivnenko	Self-Selection, Immigrant Public Finance Performance and Canadian Citizenship	02/05
05-08	Shibao Guo and Don J. DeVoretz	The Changing Faces of Chinese Immigrants in Canada	02/05
05-09	David Ley and Audrey Kobayashi	Back in Hong Kong: Return Migration or Transnational Sojourn?	04/05
05-10	Krishna Pendakur and Ravi Pendakur	Ethnic Identity and the Labour Market	05/05
05-11	Krishna Pendakur	Visible Minorities in Canada’s Workplaces: A Perspective on the 2017 Projection	05/05
05-12	Krishna Pendakur	Visible Minorities and Aboriginals in Vancouver’s Labour Market	05/05

No.	Author(s)	Title	Date
05-13	Harald Bauder	Immigrants' Attitudes towards Self-Employment: The Significance of Ethnic Origin, Rural and Urban Background and Labour Market Context	06/05
05-14	Daniel Hiebert	Migration and the Demographic Transformation of Canadian Cities: The Social Geography of Canada's Major Metropolitan Centres in 2017	06/05
05-15	Zheng Wu and Christoph M. Schimmele	Health Care Utilization of Later-Stage Immigrants in British Columbia	06/05
05-16	June Beynon, Linda Larocque, Roumiana Ilieva, and Diane Dagenais	A Sociocultural and Critical Analysis of Educational Policies and Programs for Minority Youth in British Columbia	06/05
05-S1	Jamie Doucette	An Annotated Bibliography of RIIM Publications Related to the Settlement Services Sector of Greater Vancouver, 1996-2004	06/05
05-17	Don J. DeVoretz and Florin P. Vadean	A Model of Foreign-Born Transfers: Evidence from Canadian Micro Data	08/05
05-18	David Ley	Post-Multiculturalism?	09/05
05-19	Chen Bo	A Model in Brain Drain and Circulation	10/05
05-20	Shibao Guo and Don J. DeVoretz	Chinese Immigrants in Vancouver: Quo Vadis?	10/05
05-21	Dan Swanton	Iranians in Vancouver: 'Legible People'/Irredeemable Others/Migrant Stories	10/05
05-22	Amanda Aizlewood, Pieter Bevelander and Ravi Pendakur	Recreational Participation among Ethnic Minorities and Immigrants in Canada and the Netherlands	10/05
05-23	Katharyne Mitchell and Walter Parker	I Pledge Allegiance To... Flexible Citizenship and Shifting Scales of Belonging	10/05
05-24	Herbert J. Schuetze	The Self-Employment Experience of Immigrants to Canada.	10/05
05-25	Shibao Guo	Toward Minority Group Rights and Inclusive Citizenship for Immigrants: The Role of a Voluntary Organization in Vancouver	11/05
05-26	Arlene Tigar McLaren and Tracey Lou Black	Family Class and Immigration in Canada: Implications for Sponsored Elderly Women	11/05
05-27	Krishna Pendakur and Ravi Pendakur	Glass Ceilings for Ethnic Minorities	12/05

No.	Author(s)	Title	Date
05-28	Heather Antecol, Peter Kuhn and Stephen J. Trejo	Assimilation via Prices or Quantities? Sources of Immigrant Earnings Growth in Australia, Canada, and the United States	12/05
05-29	Don J. DeVoretz	The Economics of Citizenship: A Common Intellectual Ground for Social Scientists?	12/05
06-01	TIAN Fangmeng and MA Zhongdong	Explaining Socio-economic Well-being of Immigrants and Returned Migrants: An Econometric Analysis of the Hong Kong and Canadian 2001 Censuses*	02/06
06-02	Parin Dossa	Creating Politicized Spaces: “Here” and “There”: Lives of Elderly Afghan Women in Metropolitan Vancouver	02/06
06-03	Parin Dossa	“Witnessing” Social Suffering: Migratory Tales of Women from Afghanistan	02/06
06-04	Shibao Guo	Bridging the Gap in Social Services for Immigrants: A Community-Based Holistic Approach	04/06
06-05	Pieter Bevelander and Justus Veenman	Naturalisation and Socioeconomic Integration: The Case of the Netherlands	04/06
06-06	Kirk Scott	The Economics of Citizenship. Is there a Naturalization Effect?	06/06
06-07	James McLean, Chris Friesen and Jennifer Hyndman	The First 365 Days: Acehese Refugees in Vancouver, British Columbia	06/06
06-08	Arlene Tigar McLaren	Parental Sponsorship – Whose Problematic? A Consideration of South Asian Women’s Immigration Experiences in Vancouver	06/06
06-09	John E. Hayfron	The Economics of Norwegian Citizenship	06/06
06-10	Rob Fiedler, Jennifer Hyndman and Nadine Schuurman	Locating Spatially Concentrated Risk of Homelessness amongst Recent Immigrants in Greater Vancouver: A GIS-based Approach	07/06
06-11	Kelleen Toohey and Tracey M. Derwing	Hidden Losses: How Demographics Can Encourage Incorrect Assumptions About ESL High School Students’ Success	07/06
06-12	Michael Buzzelli and K. Bruce Newbold	Immigrant Rites of Passage: Urban Settlement, Physical Environmental Quality and Health in Vancouver	08/06
06-13	Dominique M. Gross and Nicolas Schmitt	Why do Low- and High-skill Workers Migrate? Flow Evidence from France	08/06
06-14	Steven Vertovec	The Emergence of Super-diversity in Britain	09/06
06-15	Daniel Hiebert	Beyond the Polemics: The Economic Outcomes of Canadian Immigration	09/06

No.	Author(s)	Title	Date
06-16	Don J. DeVoretz	The Education, Immigration and Emigration of Canada's Highly Skilled Workers in the 21st Century	10/06
06-17	Adrienne Wasik	Economic Insecurity and Isolation: Post-Migration Traumas among Black African Refugee Women in the Greater Vancouver Area	10/06

For information on papers previous to 2004, please see our Website
<http://www.riim.metropolis.net/research/policy>

Back issues of working papers are available for \$5 from
Vancouver Centre of Excellence: Immigration
WMX4653, Simon Fraser University, 8888 University Drive
Burnaby, B.C, Canada V5A 1S6.
Tel: 604-291-4575 Fax: 604-291-5336

E-mail: riim@sfu.ca
<http://www.riim.metropolis.net/>