

MEASURING THE EFFECTS OF FOREIGN DIRECT INVESTMENT AS A
CONDUIT FOR THE CREATION OF A NEW ENTREPRENEURIAL CLASS IN
MÉXICO

by

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Signed: Pablo de la Peña Sánchez

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DEDICATION

To Elizabeth, my friend, my partner, my wife.

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ABSTRACT

This dissertation presents an integrated-empirical analysis of the relationship between Foreign Direct Investment (FDI) and the entrepreneurial activity in México. The bulk of the literature has focused its attention on measuring FDI's effects on economic growth across countries using secondary data at the macro level, but it has neglected the analysis for Latin American countries, particularly; it has neglected the analysis of FDI's effects on the entrepreneurial activity; and the factors that foster or hinder the entrepreneurial activity in an open-market system, at the institutional level.

In this work I present evidence that supports the hypothesis that FDI is positive and significant correlated with economic growth but only when economic growth is presented as a linear function of FDI. I also present evidence that contest the hypothesis that FDI is positive correlated with the creation of new firms, particularly for a setting in which the host country's economic structure is heavily characterized by micro and small low-tech-firms, as it is the case in México. However, I also present evidence that supports the findings of previous studies regarding external and internal factors affecting individuals who are willing to take risks and to become entrepreneurs across regions. This integrated approach is based on the use of different methodological tools that helped me to explore the factors affecting the entrepreneurial activity in México, both at different economic sectors, and at different regional levels.

I argue that each potential entrepreneur faces different environmental constraints and personal limitations (external and internal factors) when is about to start a new venture, such differences are subject to personal traits, and to the institutional context in which the future entrepreneur interacts. I found that there are similar institutional constraints across Mexican states affecting the rate of new firms' creation; I also found that individuals – entrepreneurs – across Mexican States differ in their willingness to take risks depending upon their geographic location. I will also discuss how these differences and similarities across Mexican States raise important implications for public policy toward the development of a new entrepreneurial class in the country.

CHAPTER I. INTRODUCTION

The motivation of this research project is to analyze the relationship between Foreign Direct Investment (FDI) and the entrepreneurial activity in México. It is believed that FDI encourages economic growth through the expansion of domestic aggregated demand in the short run; and in the long run, it has been argued that one of the most important FDI's effects is the stimulation of capital and technology transfer, specifically knowledge transfer from industrialized economies to developing countries. Borensztein et al. (1995) found that FDI is an important vehicle for technology transfer, contributing relatively more to growth than domestic investment. FDI also contributes to foster productivity and exports in the host country (Blomström & Kokko 1996) through the creation of new firms that enhance industrial clusters and strengthen the supply-chain value within the industry. FDI differentiates from what is usually called Foreign Indirect Investment which is speculative investment usually done at the Stock Market. FDI is usually in the form of assets – machinery, productive equipment, etc – that are more likely to directly create jobs and increase the host country's production capabilities.

After NAFTA was signed in 1994, México expected to receive large inflows of FDI in the manufacturing industry from companies looking for a low-wage export platform. However, even though Mexico is one of the top recipients of FDI in Latin America, Multinational Enterprises (MNE) in México relied heavily on foreign suppliers rather than buying inputs locally. In 2002, locally sourced inputs in export-oriented *maquildoras* - manufacturing plants - accounted for less than 4% of the total added value

(Zarsky & Gallagher 2004). In spite of changes in the law, that eliminated restrictions against local suppliers to the maquiladora industry, FDI's effects in México's economy remain yet to be empirically determined.

Even though, there is evidence in the current literature emphasizing how FDI's spillovers – such as knowledge transfer and increments in productivity – positively contribute to economic growth, there are yet several important questions yet to be answered for the Mexican case: What is the relationship between FDI and economic growth in México? Has FDI spurred the creation of new firms in the country? Given the recent macroeconomic changes in the country, how are the institutional arrangements and the market conditions affecting the entrepreneurial activity?

In 1990 México received the equivalent of 1 percent of its GDP of FDI, the same as China, whereas Singapore received 15 percent of FDI as percentage of its GDP. In 2005, China's GDP grew at 10 percent; Singapore's GDP grew at 6 percent, while México's GDP grew only 3 percent. China has been able to maintain constant FDI inflows of more than 3 percent of its GDP, but more surprisingly Singapore has been able to maintain FDI inflows of more than 10 percent of its GDP. Even when there is modest evidence that FDI has been the driving force of such growing rates in those two countries, the expectation of seeing a more dynamic activity in México's economy remains alive, due to the significant contribution MNEs and export oriented companies.

Research purpose

Endogenous growth theory emphasizes the importance of technology investment as the driving force for economic growth, by understanding FDI as a mechanism of technology investment we could then reasonable accept that the entrepreneurial activity is the conduit by which knowledge spillovers take place (Audretsch et al. 2006). Individuals willing to take risks and to become entrepreneurs are key in the process of economic growth, by increasing production, generating wealth and creating jobs. Nonetheless, there is still no much evidence on the relationship between FDI and the entrepreneurial activity.

However, following the cumulative literature regarding the relationship between FDI and economic growth, I have the following set of research questions :

Research question 1: Have FDI positively contribute with México's economic growth?

I will measure economic growth also in its conventional way as the Gross Domestic Product's growth rate; however, I will use Mexican states as the unit of analysis in my research; thus, I will focus the empirical analysis on the relationship between FDI and Economic growth by Mexican States. To answer the previous research questions I will develop an econometric model following Borensztein et al. (1995) theoretical model for the relationship between FDI and economic growth, which I will thoroughly explain in chapter IV.

If FDI has in fact contributed with economic growth in the country, as the literature suggests, then, the following research question is indeed the driver of this research project.

Research question 2: *Have FDI's inflows helped México to create a new entrepreneurial class?*

In this research I will borrow the concept of entrepreneurial class from Grossman (1984) “which is a [new] group of individuals who are capable of organizing production and are willing to bear the risks associated with industrial activity” [p.605]. A new entrepreneurial class is a latent variable in my study; thereby I will follow the conventional way to measure the outcome of entrepreneurial activity, which can be observed by the creation of new businesses.

This dissertation also attempts to examine the context in which the entrepreneurial activity takes place in México; in addition to the results of the econometric analysis, I will try to explore the factors that foster or inhibit the entrepreneurial activity in the country, as a way to provide context to the findings of the econometric model. Therefore, a third research questions is as follows:

Research question 3: What are the factors that foster or inhibit the creation of new firms in México?

I believe that it would be useful for future research if I am able to shed light to the context in which individuals are willing to take risks, and to become entrepreneurs in México. Thus far, there are no much studies providing evidence that FDI has helped México to grow faster, or whether it has had the spillovers described by the literature. Studies regarding the context in which individuals are willing to take risks in México are also virtually inexistent. Hence, it is the purpose of this dissertation to empirically analyze the relationship between FDI and economic growth, and between FDI and the entrepreneurial activity in México, as well as to explore the factors that contribute, or hinder, the desire to become entrepreneur and to start new firms in the country.

Most of the literature in business and economics, conceptualize the entrepreneur as an individual willing to take risks and to take advantage of market's opportunities; however, in doing so, the bulk of the literature virtually has limited its study to the extent to which entrepreneurs are willing to start new ventures – new businesses. Therefore, there are a limited amount of studies exploring the conditions in which entrepreneurs are more effective in creating new businesses, and the factors that foster their willingness to do so.

Up until recently, most of the literature on entrepreneurship was aimed at the study of either the importance of the innovativeness driven by the entrepreneur on the economy (Schumpeter 1936, 1947; Leff 1979; Leibenstein 1968; Baumol 1968, 1986, 1990; Iyigun and Owen 1998; Neace 1999; Portes and Zhou 1999; Wennekers and Thurik 1999; McMillan and Woodruff 2002; Acs and Armington 2004; Beugelsdijk and Noorderhaven 2004; Moehling and Steckel 2004; Van Stel et al. 2005) or at the study of psychological characteristics that motivate individuals to become entrepreneurs (Evans

and Leighton 1989; Blanchflower et al 1998; Busenitz et al 2000; Thomas and Mueller 2000; Lazear 2003, 2004). Recently, we have observed an accumulation of literature on entrepreneurship dealing with the conditions under which entrepreneurs start their own businesses, while taking advantage of market opportunities (Schmitz 1989; Holmes and Schmitz 1990; Shane and Venkataram 2000; Sorensen and Pino 2000b; Black and Strahan 2002; Vo Bargaen et al. 2003; Shane 2002, 2004, 2005; Binder and Sautter 2005; Carlson 2005; Craig et al. 2005; Fritsch and Mueller 2005; Luckgen et al 2005; Wagner et al 2005)

However, only recent studies have tried to empirically identify and to measure the impact of institutional and environmental factors on the entrepreneurial activity across regions (Armington & Acs 2002; Black & Strahan 2004; Lückgen et al 2005; Wagner et al 2005; Shane 2005; Audretsch et al. 2006). In spite of the fact that there is yet too much research to do in this regard, we can have now a more broad perspective on the factors that motivate individuals to become entrepreneurs, and on the circumstances in which individuals are willing to take risks.

The results of this dissertation are presented in three chapters; each chapter describes the findings of each one of the three approaches used in this work. Chapter IV attempts to statistically address my research question, which was previously stated as: *Have FDI's inflows helped México to create a new entrepreneurial class?* The econometric model has the advantage to capture a macro perspective of the interaction between the entrepreneurial activity and FDI's inflows at a regional level in México. The entrepreneurial activity has been measured by the change of the number of economic

units – businesses- in each Mexican state from 1998 to 2003. I will use economic census data from the National Institute of Statistics, Geography and Informatics (INEGI) for the correspondent years.

Chapter V describes the results of a cross-sectional study on Sonoran entrepreneurs within the manufacturing industry, in which I conducted seventeen in-depth interviews, particularly, on owners of a manufacturing plant in the state of Sonora. Results of this study will help me to have a broader perspective of the context in which FDI has affected the entrepreneurial activity in Sonora. I will discuss both individual level, and market level characteristics that foster or inhibit the formation of new businesses, and that motivate the desire to become an entrepreneur in México.

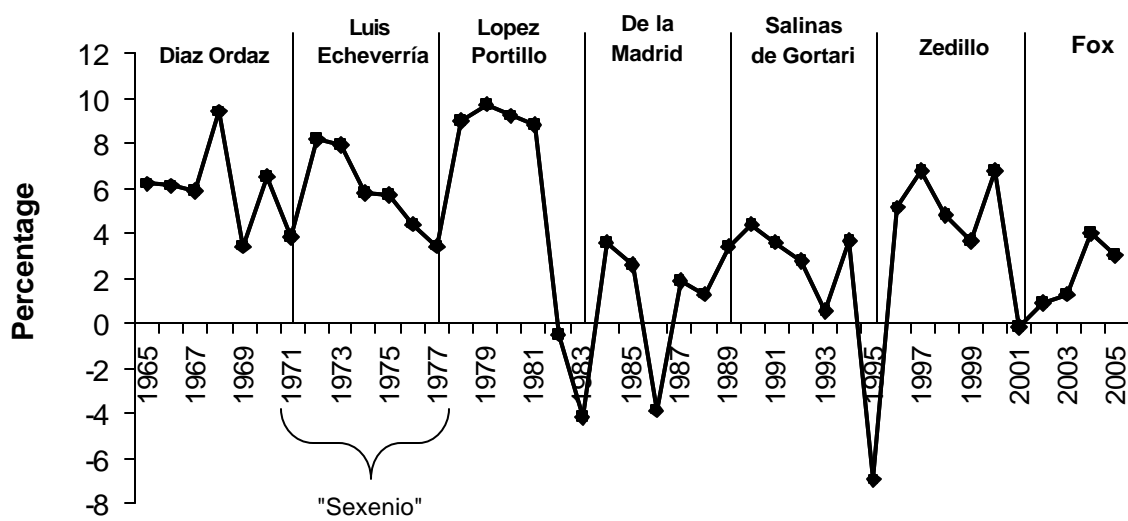
In Chapter VI I will analyze the results of a nationwide survey done on 2,000 entrepreneurs within the *Chamber of Commerce, Services, and Tourism in México*. This survey was conducted by the Center for Strategic Studies of the ITESM Campus Guadalajara, during the fall of 2006. I had the opportunity to include several questions into this survey, so I took advantage of this survey's span on entrepreneurs within the tertiary sector in Mexican states; this way, I will be able to compare results between the cross-sectional analysis on Sonoran entrepreneurs within the manufacturing sector, and the entrepreneurs' perspective in the tertiary sector in México on similar issues such as the factors that affect the creation of new firms in the country, and the factors that tend to affect the desire to become an entrepreneur in México.

FDI in México

Mexico, as many developing countries, has suffered from recurrent financial crises for the last 30 years; surprisingly, Mexico has had five distinctive economic debacles since 1976 that have stalled the growth of the real GDP per capita in the country; all of them at the end of each presidential term. Figure 1.1 shows yearly fluctuations of the Mexican economy – using real GDP growth rate by year. In this figure we can see that a couple of years after Luis Echeverría took over the Mexican presidency in 1971, México was hit by a global financial crisis, originally started by the devaluation of the U.S. dollar against the gold. This devaluation of the dollar triggered a chain reaction on most countries with large debts on U.S. bonds, significantly increasing the interest rates over their loans, and consequently pushing them to devalue their own currencies against the U.S. dollar. México was significantly hurt by this financial crisis, and saw its GDP's growth rate sink from 6 to 3 percent in a five year period, 1974 to 1977.

Although, during most of Lopez Portillo's presidency, from 1977 to 1982, México's GDP's growth rate was high and relatively stable, close to 10 per cent, a new devaluation of the Mexican peso in tandem with the nationalization of the Mexican financial system significantly damaged the yet weak Mexican economy. México's GDP growth rate went down to negative 4 per cent in 1983, just after losing 8 percentage points from 1981 to 1982.

Figure 1.1 México's GDP growth rate by "Sexenio".



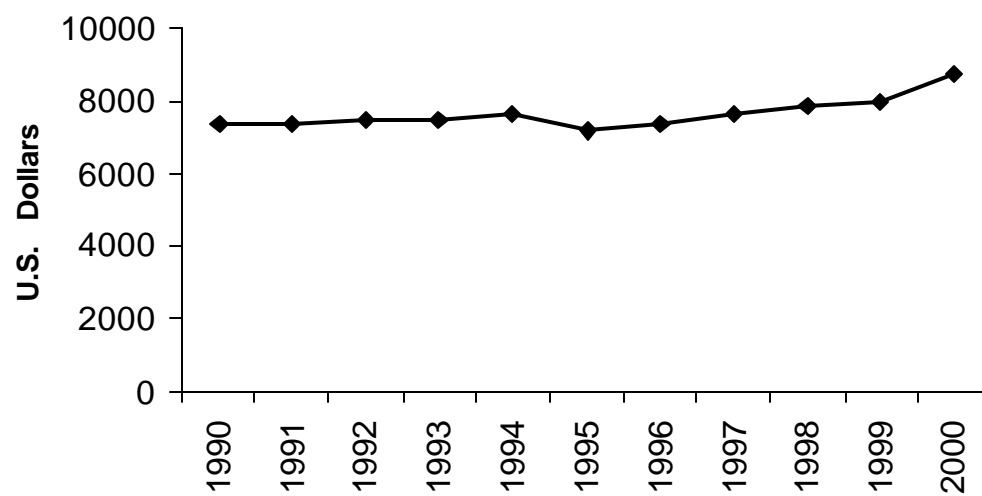
Source: Own elaboration with data from INEGI

Since 1983 up until 2001, the Mexican economy suffered a high degree of volatility. It was clear that México had to look for alternative sources of foreign currency to keep up serving its foreign debt. In order to do so México had to push forward its domestic industry to increase the exports on manufactured goods, and to reduce its dependency upon oil and agricultural products' exports. As a result Mexico's economic policy shifted from a strongly protective policy against foreign competition, such as import-substitution, to a more liberal approach, one that focuses on privatization, markets liberalization, and an active participation within the international trade. This shift was made in order to achieve a more sustainable economic growth, in which financial and structural weaknesses could be eradicated to diminish the likelihood of recurrent economic crises. Such approach was thought to be the surest recipe for triggering higher levels of growth, productivity, and income equality [Pastor and Wise 1997:420].

An open market economy approach has been the backbone of Mexico's economic policy in the last 15 years; there is no doubt that signing NAFTA in 1994 represented a threshold for the Mexican economy in terms of international trade and for attracting Foreign Direct Investment (FDI). However, FDI inflows to México during the last decade may have crowded out both, domestic investment and public investment, leaving the country in a considerably dependent condition on external capital and making México highly vulnerable to changes in the global economy.

Figure 1.2 shows México's real GDP per capita in US dollars of 1993, as we can see, México's real GDP growth rate has been relatively stable, growing at an average of 2 percent rate for the period between 1993 and 2005.

Figure 1.2 México's GDP per capita by year in constant US Dollars of 1993.

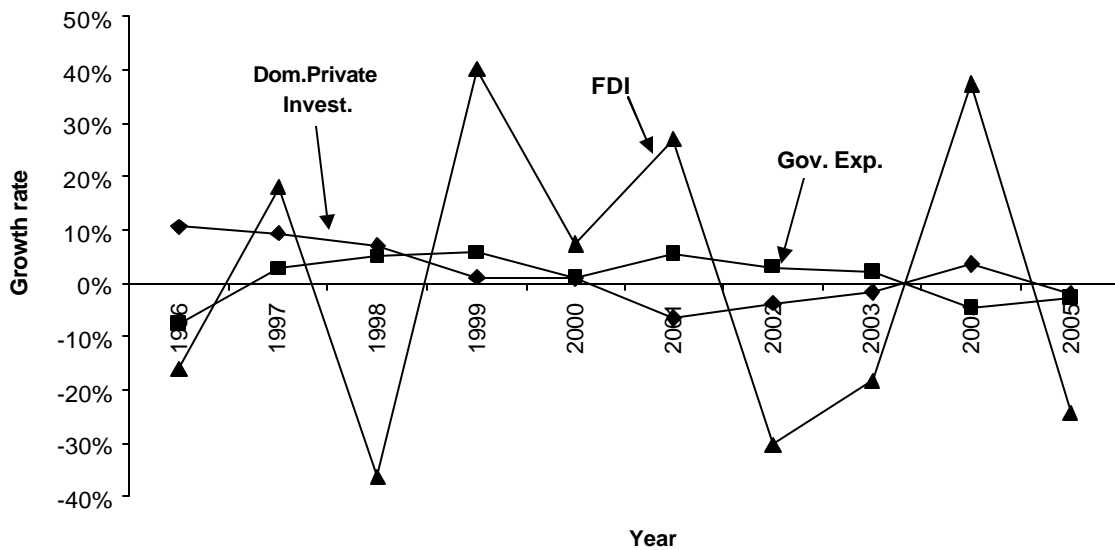


Source: Own elaboration with data from INEGI

An average growth rate of 2 percent is not necessarily good news for a developing country, much less the fact that this growth rate results from a highly volatile period of time for México. Conceivably, large inflows of foreign capital could have helped México to grow at a faster rate and in a more sustainable way. However, while FDI inflows to México have maintained a relatively constant ratio to México's GDP in recent years, the behavior of this ratio has been anything but stable [See figure 1.3].

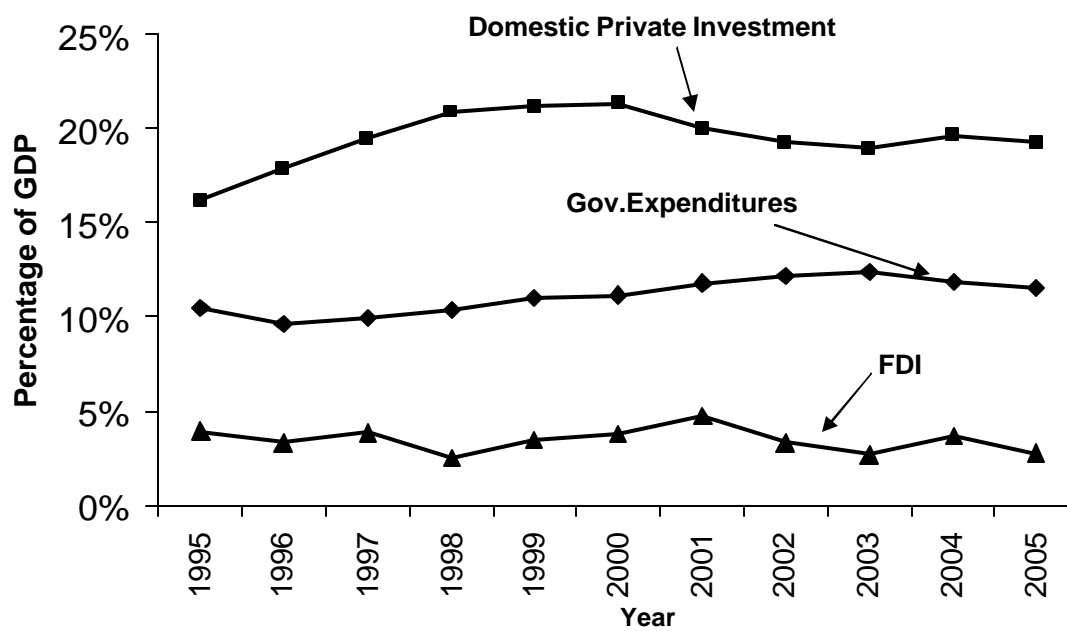
Figure 1.4 shows the percentage of FDI, the percentage of government expenditures, and the percentage of domestic private investment to México's GDP from 1995 to 2005. FDI maintains a relatively stable level of less than 5 percent. Government expenditures keep a slightly growing pattern above the 10 per cent level. México's private investment shows a clear change of slope; first it shows a constant growing growth rate from 1995 to 2000, and then, a negative slope from 2001 to 2005. It is interesting to see that while private domestic investment in México has declined since 2000, México's government expenditures have raised for the same period of time, this may suggest that the Mexican government has compensate with own resources the declining of private investment in the country; however, this graph does not show whether foreign capital has also helped the Mexican economy to compensate the lack of domestic investment.

Figure 1.3 Growth rate of FDI, domestic investment, and government expenditures as ratio to México's GDP.



Source: Own elaboration with data from INEGI.

Figure 1.4 Government Expenditures, Domestic Private Investment and FDI as a percentage of GDP in México



Source: Own elaboration with data from INEGI.

As previously mentioned, in spite of all the literature regarding FDI and its effects in developing countries, there has not been yet any study that empirically tests for FDI's effects in México. Thus, I will focus the analysis of my econometric model at the regional level in México, using Mexican states as the unit of analysis.

Using Mexican states as unit of analysis will provide better information whether FDI inflows are biased against geographic location in México. It is expected that northern states in México might receive larger FDI inflows due to their closeness with the American market.

As stated above, FDI spillovers may contribute to accelerate the industrialization process in a host economy through the diffusion of new technology across domestic and foreign owned suppliers to multinational corporations. Thus, I am interested in measuring the extent to which FDI inflows have contributed to the creation of new businesses within Mexican states.

In the following chapters I will describe the literature that motivates this dissertation, and the findings of the three approaches used in this research project. In the final chapter I will offer the conclusions of this research project and will discuss limitations and further research projects that could be derived from this dissertation.

CHAPTER II. THEORY AND HYPOTHESIS DEVELOPMENT

FDI and economic growth

It is the purpose of this research project to analyze the relationship between Foreign Direct Investment and the rate of new-firms formation; however, before discussing the pertinent literature that encouraged my dissertation, it is important to discuss, firstly, what we know about the relationship between FDI and economic growth on host countries. Thereby, the goal of this chapter is to bridge the existing literature on the relationship between FDI and economic growth with the existing literature of entrepreneurship and economic growth; in doing so, I will attempt to contribute to the current literature of the relationship between FDI and entrepreneurship, specifically in a developing country setting.

FDI has been thought as the most accurate measured for technology transfer between two countries, particularly, between an industrialized country and a developing country. FDI is the trace that MNEs leave while investing abroad, and as such, FDI has been thought as the conduit for innovation and ultimately for productivity growth in host countries. Since Paul Romer's (1990) seminal work of endogenous technological change, our understanding – and interpretation – of the factors that foster economic growth has been significantly improved; more importantly, it has positively impacted countries' economic policies oriented to improve their economic performance. Romer's fundamental argument is that technological change occurs because of intentional actions taken by economic actors in response to market conditions; this argument significantly change our previous understanding of technological innovations as an exogenous factor

in the traditional Solow model of economic growth. The understanding of technological change as an endogenous element for economic growth – one that arises at the will of key actors in the economy – opened the door for analyzing the conditions in which technological change occurs, and the conduit by which it occurs. If technological change and innovation is a function of key actors in the economy, as suggested by Romer, then, it follows that countries with limited technological capacity, and limited financial resources might lagged behind of other countries with relatively better economic position. However, following Romer’s argument, that “key actors” invest in response to market conditions then, it is also likely that such key actors might be willing to invest in technological change and innovation in economies – markets – with the proper conditions for them to maximize their investment, such countries may well be developing countries, and such type of investment may well be in the form of Foreign Direct Investment.

Prior to Romer’s endogenous technological change model, Ray and Webster (1978) evaluated whether a closer relationship between industrialized and developing countries will produce a more rapid economic growth in the latter. The authors used as starting point the general accepted thesis that development of poor countries follows from the degree of contact that has with industrialized countries. However, the closer the relationship between these two types of countries, the higher the dependency of the poor country upon the industrialized one may be. The authors argued that such type of relationship results in a “diffusion” and “dependency” situation due to the significant disparity in their economies. The diffusion argument establishes that economic growth diffuses from rich countries to poor countries, in which the greater the FDI in a

developing country, the more rapid the economic growth of that country will be [p.411]. Whereas the dependency argument establishes that a highly dependent economy on international trade and on FDI could crowd out domestic investment; thus host countries' economies may significantly depend upon other countries' industrial cycles.

Conversely, Robert Jackman (1982) found little evidence for the idea that dependence on foreign investment inhibits growth. The author found that the growth of foreign investment has a positive effect on economic growth, at least among the initially wealthier countries in the Third World [p.195]. Jackman also found that economic growth rates and the growth of foreign investment are reciprocally related, this means that higher growth rates attracts more foreign capital, which in turn foster higher growth rates, and so on. In the same vein, Borensztein, et al. (1995) suggest that FDI is an important vehicle for technology transfer. FDI inflows in the form of new technology tend to increase productivity and knowledge spillovers. However, the higher the productivity of FDI only holds when the host country has a minimum threshold stock of human capital. A minimum threshold of human capital is the minimum level of education and trained labor, needed to efficiently absorb new knowledge and to improve labor's productivity. In other words, the productivity level is the product of a highly trained labor and the incorporation of new technology. Borensztein et al. also suggest that imports of high-technology products and the adoption of foreign technology are important conduits for the diffusion of technology. Contrary to what "dependency" theorists believed, Borensztein et al. (1995) found that there is a crowding-in effect in which FDI is associated with an increase in total investment in the host economy. They argue that FDI

contributes to economic growth by increasing total capital accumulation in the host economy. However; the authors also concluded that the contribution of FDI to economic growth is only evident when the interaction between human capital and FDI is included in the model.

In sum, Blomstrom et al. (1995) found that economic growth needs more than a minimum threshold of human capital and fixed investment. The authors argue that institutions, economic and political climate, economic policies that encourage education, lower population growth, and the efficient use of investment, were the chief foundation for economic growth in developing countries. These findings suggest that despite the fact that MNEs can spread the use of new technology in host countries and increase capital accumulation with foreign investment inflows, there should be certain pre-conditions within host economies such as: efficient institutions, high levels of education, etc., in order to take full advantages of FDI. In the same vein, Blomstrom and Kokko (1996) analyzed the impact of foreign investment on host countries, and stressed that foreign MNEs may contribute to efficiency, in host countries, by breaking supply bottlenecks, introducing new know-how, by training workers who later may take employment in domestic firms, and by forcing local firms to increase their productivity and competitiveness.

Thus far, there is consensus, among scholars, that FDI increases growth in two ways: (1) FDI increases total investment by attracting higher levels of domestic investment toward growing industries; and (2) through the interaction of the more advanced technology with human capital in the host country (Lim 2001). In sum, it seems that

FDI's spillovers are to some extent bounded by the host country's existent structural pre-conditions that ultimately allow the diffusion of FDI's benefits in the host country.

Human capital, as one of such preconditions, has been emphasized as key factor for economic growth. Higher levels of education and training imply more skilled and more productive workforce, which in turn increases the country's output. Robert Barro and Jong-Wha Lee (2001) developed a methodology to estimate the stock of human capital by a perpetual inventory method, using the level of educational attainment of the adult population aged of 25 and over, at seven levels of schooling. There have been other attempts to measure human capital. One measure commonly used is the OECD's data set on educational attainment of the population in the 1990s (Barro & Jong-Wha 2001). These data set presents the percentage of the population aged between of 25 and 64 years old with the higher levels of education within the OECD countries. Nonetheless, regardless of the operationalization method to measure the level of human capital in a country, the fundamental idea remains constant across the board; higher levels of human capital – greater amounts of population with higher levels of education – significantly contribute with higher economic growing rates.

In recent literature, it has been recognized the entrepreneurial ability as a characteristic of a country's human capital; which in turn may explain the relative economic success between geographic regions, either across countries or within regions (Jones 1996; Von Bargen and Freedman 2003; Beugeldsdijk and Noorderhaven 2004). Higher levels of human capital may not just be found as productive workers – employees – in domestic as well as in MNEs; but they may be also found running their own

businesses. Particularly, the entrepreneurial ability as a characteristics of the level of human capital in a country, has caught the attention of scholars for years, mainly in trying to connect it with the development of a community and ultimately with economic growth. In this regard, and in spite of the difficulties in measuring entrepreneurial attitudes, Beugelsdijk and Noorderhaven (2004) tested whether certain societal characteristics are related to regional economic growth, and whether those characteristics are related with high or low levels of entrepreneurial attitude in 54 European regions.

The authors showed that entrepreneurs differ from the general population in several ways; entrepreneurs seem to have a stronger need to achieve results, are more inclined to risk-taking behavior, and have a stronger belief that people can take their fate in their own hands [Beugelsdijk and Noorderhaven 2004:200]. Beugelsdijk and Noorderhaven conclude that entrepreneurial culture seems to influence regional economic growth as it may increase the start-up rate of new firms, increasing efficiency advantages and influencing the absorptive capacity to adapt new technologies. However, the authors did not analyze the relationship between entrepreneurial activity and economic growth across regions. Wenneker and Thurik (1999) explain that the plausible effect of the entrepreneurial activity on economic growth could be understood by identifying the roles of the entrepreneurial attitude.

The authors argue that innovation and productivity can result from the creation of new ventures – start-up of new firms – and from innovation within existing firms. This means that we could distinguish between the traditional conceptualization of entrepreneurial attitudes which are conducive for the creation of new ventures, from

“intrapreneurship” attitudes, which are also called “corporate entrepreneurship”, in the sense that the latter are committed to the improvement of the corporations that they are part of with better practices, strategies and processes.

It is my interest to focus on the traditional conceptualization of entrepreneurship, the one that is capable of creating new firms in the market, and in doing so it is capable to positively contribute to economic growth in the country. In the next section I will review and discuss what we have learned so far, about the relationship between entrepreneurship and economic growth.

Entrepreneurship

It is widely perceived that formation of new firms positively impacts the country's economic development. Formation of new firms creates new jobs, it is a vehicle for technology transfer, and it mobilizes resources – redistributes wealth, and increases capital mobility – (Schumpeter 1947; Baumol 1968; Leff 1979; Baumol 1986; Busenitz et al. 2000; Thomas & Mueller 2000; Acs & Storey 2004; Fairlie 2004; Moehling & Steckel 2004; Fritsch & Mueller 2004; Fritsch et al. 2005) All this is done through the action of new entrepreneurs who taking advantage of their inherent characteristics and skills such as: low risk aversion, innovative spirit, internal-locus of control and general managerial skills (Leff 1979; Blanchflower et al. 1998; Thomas & Mueller 2000; Lazear 2003; Lückgen et al. 2005; Weyh 2005) are willing to take new endeavors by consciously deciding to exploit new market opportunities (Audretsch et al 2006). Models of occupational choice show that individuals are willing to become self-employed when the expected benefits of being employed or continue to being employed are less than the expected benefits of become self-employed.

The existence for such entrepreneurial characteristics among individuals implies that only a fraction of a community's population will be willing to create new firms or to take new endeavors. It is believed that entrepreneurs will be willing to take risks only when certain external conditions are in-place such as low wages, high unemployment, low cost of capital, or fiscal incentives (Schumpeter 1947; Leff 1979; Evans & Leighton 1989; Busenitz et al. 2000; Thomas & Mueller 2000; Black & Strahan 2004) in short, entrepreneurs are willing to take risks when their opportunity cost of not taking them is

relatively high. Entrepreneurs also learn new skills, and acquire new knowledge during their professional jobs; they learn how to read financial and operational opportunities (Wagner et al. 2005). Entrepreneurs are innovative individuals (Schumpeter 1947) willing to take measured risks to satisfy an economic interest.

Thus, we know that entrepreneurs are innovative individuals able to both perceive new opportunities and to take adequate actions to break down resistance in an innovative way (Schumpeter 1947). For Schumpeter the, “defining characteristic” of an entrepreneur is the ability of “innovation”; entrepreneurs can innovate not just in doing new things, but also in doing old things differently. Schumpeter also stresses that entrepreneurs are “the fundamental need of a capitalist society”, which creates the incentives for entrepreneurial activity. The need for a capitalist society raises the question, though, of how countries with an underdeveloped capitalist society would foster entrepreneurial activity? However, according to Nathaniel Leff, entrepreneurship involves innovation, investment, and activist expansion in new markets, products and techniques [1979:47] which implies the very essence of a capitalist society.

Thus, within an underdeveloped market economy, the lack of entrepreneurship may not just be the result of an inefficient market system, but it also may be the cause of such an endemic condition. For Leff (1979), there should be additional requirements such as “adequate” institutional conditions that help to mobilize resources in such a way that transactions costs are reduced, increasing the likelihood of entrepreneurship activity. In short, entrepreneurial activity is a function of two factors; one, personal attributes – psychological traits – which may imply that entrepreneurs could learn and transfer them

across generations and cultures; and two, external factors which are related with both market conditions and with the institutional framework, that to some extent could be set and regulated by public or private organizations and institutions.

According to Leibenstein (1968), the supply of entrepreneurs can be increased by training in “gap-filling” capacities to those individuals who come from families with some experience in trade and with relatively wealthy positions. Gap-filling relates to the entrepreneur’s ability of connecting markets’ deficiencies with business opportunities, and filling in those deficiencies through the transformation of inputs and mobilizing resources. Even though, Leibenstein does not expand on “how” entrepreneurs can be trained on such “gap-filling” abilities, Evans and Leighton (1989) used Blanchflower et al’s (1998) simple conceptualization of an entrepreneur as “self-employed”, and examined key factors that increase the likelihood of white men on becoming an entrepreneur. Evans and Leighton found that individuals with greater assets and between the mid 20s and the early 40s are more likely to become self-employed. The authors also found that external – environmental – conditions are also relevant to increase the likelihood of becoming an entrepreneur, mostly when there are relatively poor economic conditions within the community, such as low wages and unemployment; however, their most interesting finding is that entrepreneurs’ characteristics are positively related with psychological theories regarding individual’s internal locus of control, which implies that individuals are more likely to become self-employed if they believe that their performance depends largely on their own actions.

Thomas and Mueller (2000) interested in analyzing whether entrepreneurial attributes of capitalist societies are “universal”, or whether they vary systematically across cultures, defined an entrepreneurial profile based on psychological traits, attitudes, and values that seem to be related with individuals’ motivation to create their own businesses. It is also believed that cultural and religious factors explain, to some extent, differences in entrepreneurial activity across societies (Weber 1904); hence, Thomas and Mueller based their analysis on systematically comparing across countries the relative frequency of occurrence of four entrepreneurial characteristics (apparently common on the U.S. society which they used as the “ideal” entrepreneur profile) such as *innovation*, *risk-propensity*, *internal locus of control*, and *energy level*. The authors compared these attributes using a survey designed to know attitudes and perceptions about free-markets, competition, and the contribution of entrepreneurs to economic development, on a sample of third and fourth year international business and economic students in nine countries – United States, Canada, Ireland, Germany, Belgium, China, Singapore, Croatia and Slovenia. As the authors were also interested in analyzing cultural differences across countries, the authors built a composite index of *cultural distance* on the deviation along each of the four cultural dimensions suggested by Hofstede (1980) (Power distance, uncertainty avoidance, individualism, and masculinity) of each country from the United States index as the point of reference. With this composite index, the authors were able to measure how different was each country to the United States culturally, and to estimate the effects of cultural distance from the U.S. on each one of the four entrepreneurial

characteristics: *innovativeness, internal locus of control, risk taking propensity, and energy level.*

Thomas and Mueller defined *Innovativeness* as the tendency to be creative in solving problems. *Risk taking* is usually related to tolerance for ambiguity, according to the authors, entrepreneurs are considered to be moderate risk-takers. *Locus of control* implies the degree to which individuals believe they have considerable influence over the outcomes of their lives. *Energy level* is usually high among entrepreneurs; they are willing to give all the time possible to see their endeavor succeed.

Interestingly, Thomas and Mueller did not find significant differences across countries in the likelihood of an innovative orientation as cultural distance from the U.S. increases [Thomas & Mueller 2000:295]. Nevertheless, they did find that risk-taking propensity, high energy level and internal locus of control decrease as the cultural distances from the U.S. increase. Such findings, tell us that despite the fact that particular characteristics of a capital-like society vary across cultures, the likelihood of creating new businesses – self-employment– does not decrease as societies differentiate themselves from the American culture.

Even though, Thomas and Mueller did not find significant differences on the likelihood of creating new businesses or self-employment across countries as they differentiate themselves, culturally, from the U.S. society, it would be interesting to analyze what factors might affect nation's levels of business formation. If cultural differences are not the reasons for having low rates of new business formation in less developing countries, according to Thomas' and Mueller's findings, then it may well be

the case that the lack of an efficient institutional framework, few governmental regulations, property rights protection, and a healthy banking system, might be constraining individuals within LDCs to take the risk of becoming entrepreneurs. In short, despite the obvious cultural differences between western entrepreneurs and the rest of the world's entrepreneurs, there are no significant differences on the entrepreneur's traits – innovation, risk-propensity, internal locus of control, and energy level – across countries; then, it is reasonable to assume that there are institutional differences instead, between western countries and the rest of the world, that may be affecting the rate of new businesses' formation.

It is unfortunate that there are no sufficient empirical studies on LDCs to thoroughly understand the impact of the institutional framework on new firm formation; however, Black and Strahan (2004) found that after the removal of branching restrictions and interstate banking in the U.S. by the early 1990s, the rate of growth in the number of new business was significantly increased in the U.S. [Black & Strahan 2004:62] Access to capital, at lower interest rates seems to be a strong influence on the entrepreneurial activity, although, capital per se may not tell the whole story.

Shane (2004; 2004; 2005) makes a thorough recount of governmental policies, in the U.S., which encouraged economic development through technology transfer by new-firms formation. Funding academic research – Shane says – increases University spin-offs which in turn increase self-employment and new-firms formation. However, funding new technology research among Universities would not have had the same impact without the proper institutional framework, which was built through the Bayh-Dole Act

and related laws that encouraged university technology licensing for small firms in the 1980s in the U.S.

In what perhaps has been one of the most influential works on “entrepreneurship theory”. James O. Fiet (2000) argues that the lack of a coherent theory of entrepreneurship reflects the doubts in the academy about whether we can teach individuals to be entrepreneurs. Researchers have mainly focused on describing the entrepreneurs’ traits rather than on developing a cohesive theory capable to make predictions. Despite the wide variety of topics within the entrepreneurship curricula, scholars of this field tend to agree on the importance of studying market opportunities, industry attractiveness, resource management, and competitiveness. These four converging issues on the teaching of entrepreneurial skills – Fiet proposes – can be strengthened by addressing the main assumptions relying on theories such as: Agency Theory, Decision Making, Transaction Cost, Industrial Organization, Resource-Based, and Social Embeddedness. The importance of teaching theory to entrepreneurship students is to develop on them the capability to understand the effects of their own actions, and at the same time, to provide some theoretical rigor on the entrepreneurship discipline, as for research as well as for teaching (Fiet 2000).

Analyzing regional differences in entrepreneurial education in Germany, Wagner et al. (2005) found that those regions with a high degree of regional collaboration between Universities and the business sector, as well as providing a high component of business-knowledge and technology transfer within the classroom, are more likely to have high rates of firm formation. This finding holds under the assumption that those regions count

on a supportive institutional framework with clear rules, easy access to capital, protective property rights, and a relatively strong network of industrial parks, researchers, and educational support.

Busenitz et al (2000), argue that firms are embedded in “country-specific institutional arrangements”, and used an “institutional profile of entrepreneurship” to analyze how and why levels of entrepreneurship vary by country. The authors used three dimensions: regulatory, cognitive and normative dimensions. From a transactions costs point of view, laws, regulations and government policies that provide support to new firms, may reduce the risks - or the opportunity costs – for individuals to start their own business; an appropriate *regulatory dimension*, then, may facilitate entrepreneurs to acquire resources. The *cognitive dimension* is related with knowledge and skills that individuals acquired as they operate their businesses or they learned from previous generations of entrepreneurs; this dimension is, to some extent, related with what Thomas and Mueller (2000) called “entrepreneurs’ traits” which can be identified as those psychological attributes of an individual that make him/her an entrepreneur. The *normative dimension* is related with the social context and to the extent to which the society “admires” entrepreneurial activity and promotes innovative thinking; this may be interpreted as the set of values, culture and beliefs within the society.

Thus, we could reasonably identify that entrepreneurs’ traits, social context, market conditions, and the institutional framework, are the set of main factors affecting the formation of new businesses due to their positive impact on entrepreneurial activity. Thomas and Mueller (2000) as previously cited, found no statistically significant

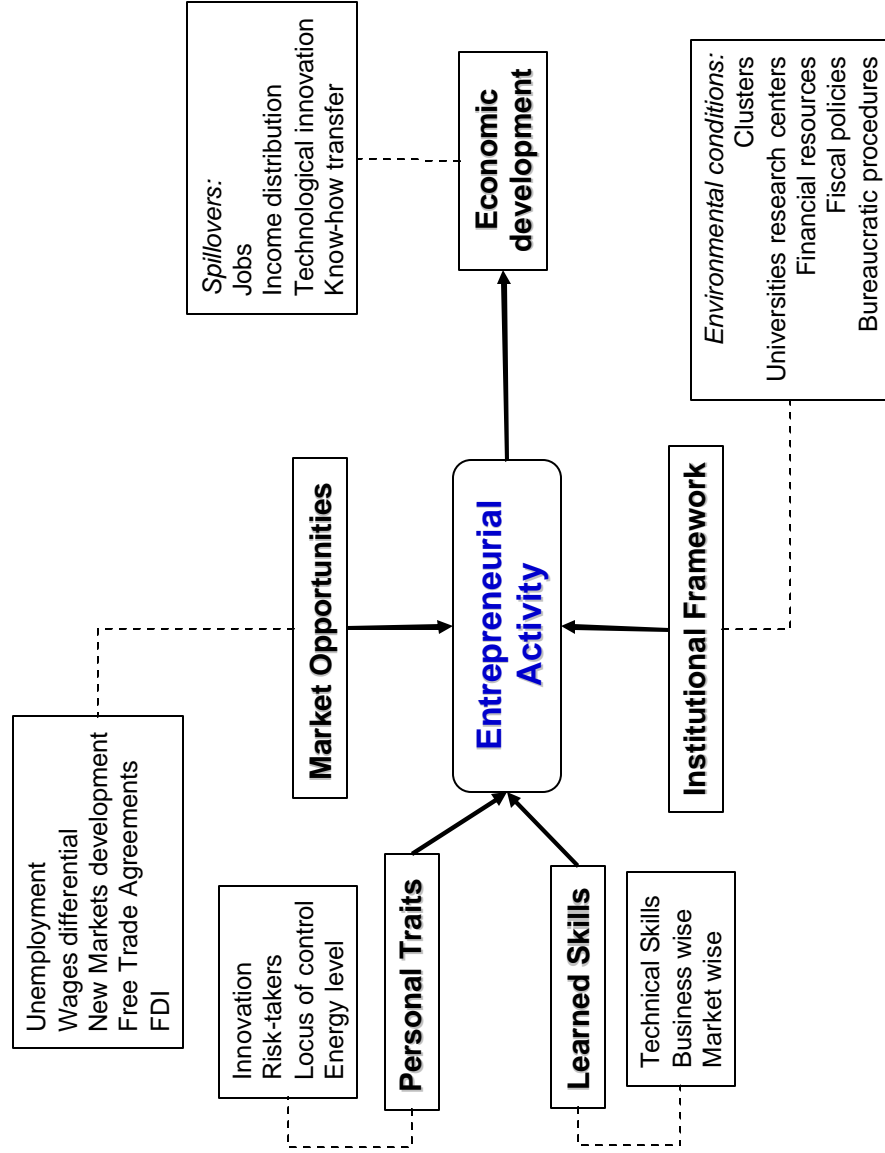
differences in the likelihood of being innovative in non-western countries as the cultural distance (measured by the difference between the country's cultural settings and the U.S. culture as the ideal pro-business setting) increases against the U.S. This implies that innovation, as a primarily entrepreneurial trait, can be found in relatively every culture, western or not. However, the authors also found that the likelihood of an individual towards risk-propensity, internal locus of control and energy level, is in fact reduced as cultural distance from the U.S. increases. These results may imply that even though, individuals are relatively as likely to be innovative in every culture as in the U.S., entrepreneurs in non-western countries are not necessarily as risk takers as in the U.S. This lack of security for starting new businesses may be strongly related with both adverse environmental conditions such as market distortions (price regulations, high level of governmental intervention, monopolistic practices, barriers of entry) and with an inadequate institutional framework (banking system, governmental regulations, property rights) which might increase the opportunity costs for starting a new business.

Being innovative, then, is a necessary condition but not a sufficient one to become entrepreneur. As Thomas and Mueller suggest, there are innovative individuals in non-western countries, but they are unlikely to take risks if environmental conditions are not appropriate; on this regard, Carlsson (2005) stresses that a supportive national or regional culture, in addition to political, social and business leaders' support is needed to cultivate the mind and character of a potential entrepreneur. Hence, in order to have entrepreneurs, we need to fulfill both conditions: one, to have innovative people with psychological traits willing to take risks; and two, to have the appropriate environmental conditions

which consist as much as in market opportunities as in institutional conditions helping to reduce transactions costs.

Figure 2.1, shows a simple diagram with the main elements addressed in this section, regarding personal traits, external factors such as market opportunities and the institutional framework that foster the entrepreneurial activity. We can also differentiate from this diagram, exogenous and endogenous elements that contribute with the entrepreneurial activity in a community. Endogenous factors are those factors that are inherent to the individuals, such as personal traits and learned skills. Individuals may have certain personal characteristics that make them willing to take risks; however, individuals might also have learned from previous experiences when there are the adequate conditions in place before taking risks. Exogenous factors, as previously explained, are market conditions that allow or inhibit the entrepreneurial activity within a community. However, not all of the individuals in a society might be able to identify market opportunities and to overcome institutional constraints in order to pursue a new venture; thus, both endogenous and exogenous factors may be individually sufficient, but are together necessary to foster the entrepreneurial activity in the economy.

Figure 2.1 Entrepreneurial Activity Model



Under the assumption that there must be a relatively good amount of potential entrepreneurs in LDCs – by this I mean innovative individuals but restraint by market and institutional conditions – the policy implication is how to set an institutional framework, within LDCs, in order to create incentives and to increase the likelihood of becoming an entrepreneur? It may be reasonable to ask, then, why we would need a specific policy for setting an appropriate institutional framework for new-firms creation. Evidence, however, tells us that policies that allow and promote coordinate efforts to generate new technologies, or to provide complementary services between private and public organizations, might substantially increase the creation of new firms, and consequently the formation of new entrepreneurs.

In the same direction, Universities may have a significant role in connecting market opportunities with innovative individuals. Bartholomew (1997) stressed that access to research and educational institutions, access to sources of financing, and the ability to pool educated labor within a country, determine the pattern in which innovation and new-firms formation emerge. In the same vein, Shane (2005) found that funding of academic research, the provision of property rights for academic inventions within universities, the Bayh-Dole Act for licensing technology to small businesses, the development of spin-offs companies from University research centers, programs to reduce financial gap within the early stage of business life, and policies encouraging technology transfer across academics and the private sector; are considered as best practices within public policies for promoting new-firms formation. Carlsson (2005) suggests that the Bayh-Dole Act provided significant incentives for Universities to increase patenting on fields in which

licensing is an effective mechanism for acquiring and transferring new technologies through spin-offs. Universities have also installed science parks as a joint strategy with high-tech companies, not just to increase their scientific research but as means to create new ventures and creating, in turn, complementarities that help increasing technology spillovers. Entrepreneurs, then, have the task of transforming innovative knowledge into economically useful knowledge by identifying economic opportunities (Carlsson 2005). The link between new knowledge and market opportunities can be fostered through knowledge-based networks between Universities, businesses, and entrepreneurs.

As I mentioned it before, entrepreneurs need to overcome transactions costs to put their innovations to work. Such transactions costs are usually related with financial burdens which in some cases are resolved with personal – or family – savings. Sandra Black (2004) claims that the regulation of the Banking Industry in the U.S. in the 1990s, opened the market to more competitive services expanding lending within and across regional markets. This increase in bank loans supply is correlated to the number of new businesses for the past 20 years.

Welter and Trettin (2005) also propose that an “entrepreneurial infrastructure” formed by public institutions, social and educational organizations, might provide a good basis for the emergence of entrepreneurs. The existence of a social network structure that enhance resource mobilization – financial and human resources – creates a “safety net” for the new-firms formation process (Brüderl 1998). This safety net may provide managerial support and access to resources, either technical or financial.

Entrepreneurship and economic growth

Despite the fact that the Gross National Product's – or Gross Domestic Product – growth rate does not necessarily account for the actual well-being of the people within a country, and it does not tell anything about wealth distribution, it is indeed, however, a very good approximation for estimating and for comparing economic growth across countries. There is a substantial amount of literature on economic growth that focus their analyses on estimating GDP, output, or income growth, through the impact of physical capital accumulation, human capital investment, technological change, research and development, transfer of knowledge; and factor mobility (Schumpeter 1936; Harrod 1939; Domar 1946; Solow 1956; Kaldor 1963; Lucas 1988; Romer 1990, 1994; Pack 1994; Barro and Sala-i-Martin 2004; Audretsch 2006). In this regard, technical change is thought to be a necessary condition for economic growth (Solow 1956).

Solow claimed that for countries to sustain in the long run their per capita income growing, they would continually need to invest in technical progress to offset potential capital diminishing returns as the population grows. However, it was not until Romer (1990) with his seminal work on endogenous technological change, when total factor productivity was thought as a function of conscious decisions of key actors in the economy; thus, Romer transformed the traditional exogenous growth model into an endogenous growth model. It is expected, then, that technical progress, or capital investment, be done chiefly by the private sector – as key players – within a capital market system. It may also be the case, as previously argued in the last section, that a

combination of public institutions – Universities or public agencies – and private companies could raise together the rate of capital investment and technology change, through the increase of new-firms formation.

It is important to acknowledge that physical capital investment and technology progress is not of private sector's sole competence, governments also carry out a significant share of a nation's total investment in physical capital and in technological progress. Communications' infrastructure, health services, housing, and education are examples of public investments, mainly within developing countries, which may be accounted either as physical capital or human capital investment. Nevertheless, private physical investment has to be understood as the resultant of the entrepreneurial activity.

At the micro level, nascent firms, either University spin-offs or self-fostered firms, help spillovers to spread across an industry or throughout related industries within a community. Spin-offs are also thought as firms that help to exploit commercial knowledge and technology innovations within a university (Carlsson 2005). Borenztein, et al. (1995) suggest that foreign direct investment's spillovers, such as technology and know-how transfer only hold when there is enough fertile ground on the host economy; for fertile ground we can understand a sufficient level of human capital to absorb new knowledge, and an entrepreneurial class able to put forward innovations on their own businesses and to be the means for transferring new technology throughout the industry.

Since a more elemental perspective, nascent firms – entrepreneurship activity – are also thought as mechanisms for upward mobility, redistribution of wealth and resources allocation (Fairlie 2004; Moehling, Steckel 2004; Leff 1979). A rational individual

seeking to maximize his/her own wealth might consider starting his/her own business when the opportunity cost of doing so is relatively low. A relatively low opportunity cost may well be when interest rates are low so the cost of borrowing financial resources to start a new business does not become a burden for the nascent entrepreneur. New firms are also new players within the market, seeking to maximize profits through efficient and effective managerial and marketing systems. This implies that new firms are willing to satisfy a market need so they can assure a market niche to increase their likelihood for survival; in doing so, they are fulfilling a basic social function of any organization, which is to satisfy a need, providing competitive goods and services at competitive prices. Even though, I acknowledge that the previous statement is a normative one, nevertheless, it is self-evident that under a free market system only those companies able to compete efficiently within the market would survive in the long run. New-firms do not just mobilize goods and services to satisfy a need in the market, but they also help the labor market system as a mechanism to redistribute human resources in accord with their capabilities and skills (Helper and Stanley 2005).

In sum, there is relatively recent literature about the impact of new-firms as University spin-offs in the economic development process, and most of them emphasize the importance of creating complementarities between public sector, research centers and the private sector (Shane 2004; Craig et al 2005) in such a way that developing countries may become less dependent on older – or traditional – industries (Shane 2005) by diversifying their industrial clusters (Porter 1998, Binder and Sautter 2005) improving industrial competitiveness (Fritsch and Mueller 2004) and exerting multiplier effect on

the economy through innovations (Acs and Storey 2004) hiring, training, and investing in human capital (Fritsch and Mueller 2005).

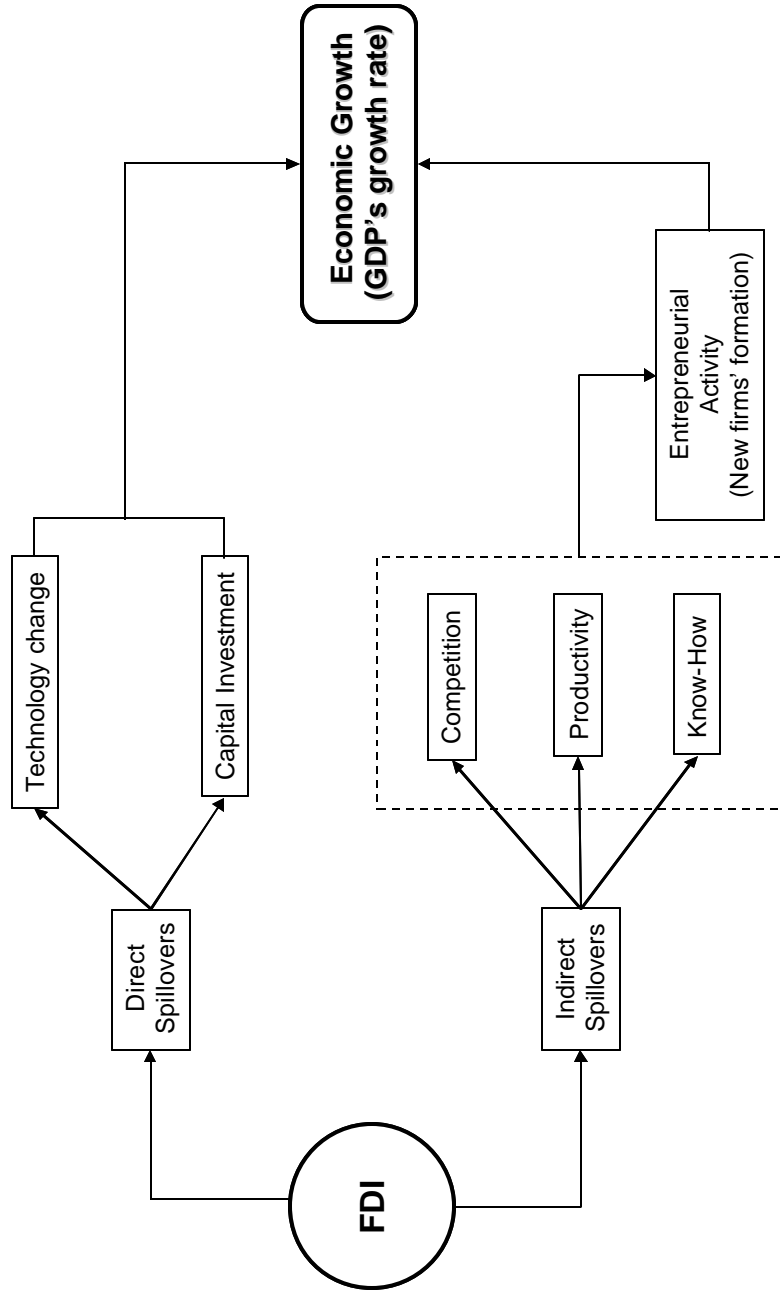
Despite all of the literature about FDI and its effects in developing countries there has not been yet any study that empirically tests for FDI's effects in México. Whether FDI positively contributes with México's economic growth, or whether there is evidence of FDI's spillovers across Mexican states, we do not yet know. Hence, I will use Mexico's states as unit of analysis, and *net FDI inflows* as the main predictor for economic growth, and for the rate of new-firms' formation in México, for the period between 1998 and 2004.

The use of Mexican states as unit of analysis could provide better information whether FDI inflows are biased by their geographic location, this is, that northern states in México may be more likely to receive larger amounts of foreign capital than the rest of the states in the country, due to northern states are closer to the U.S. market and thus, transportation cost of inputs and products is significantly lower than for the states in the center and in the south of México.

Hence, derived from the previous review, I state two general hypotheses, one regarding the relationship between FDI and economic growth in México, and the second regarding the relationship between FDI and the entrepreneurial activity in México.

Figure 2.2 shows the theoretical argument behind this dissertation, and it has been modeled following the existing literature previously reviewed.

Figure 2.2 FDI's spillovers, Entrepreneurial Activity and Economic Growth



I argue that we can account for direct and indirect spillovers of FDI inflows in the host economy. Direct spillovers are clearly observable when MNEs established a subsidiary in the host country, such as is the case of most of the American automotive companies (FORD in the state of Sonora in México, or GM in Coahuila state). Such companies bring in new technology, create jobs, and its investment contributes with capital formation – fixed investment – in the host country, in turn, increasing the productive output of the economy, which it can be reflected in the country's GDP.

However, the literature previously reviewed also identifies other types of externalities that cannot be clearly identified in the immediate economic cycle in which the investment – FDI – came to the host economy. Such externalities can be observed when local companies increase their productivity to keep up with MNEs' quality standards. Most of the automotive companies, for instance, that came to México during the 1970s and the 1980s brought their own suppliers to assure quality and productivity. Nowadays, the same companies that are continually investing in the country may, or may not, bring their first and second tier of suppliers, depending upon the degree of industrial integration in the region – state- in which they operate in México. In the city of Hermosillo, in Sonora State, FORD[®] increased its investment doubling its production in 2003; the company brought new suppliers to the city, but still has some of its previous suppliers, which most of them are MNEs. This means that, although, there are domestic companies in México able to compete and to be part of the automotive industrial cluster in the country, the country still lacks of a sufficient competitive industry – productive and innovative – to be able to supply intermediate and finished goods to the automotive industry. Nonetheless, it

is indisputable that México has improved its industrial capacity, mainly because the existence of more MNEs, and a substantial improvement in productivity within the domestic industry as part of the industrial clusters in which MNEs compete.

Thus, competition within the industry, an increase in the productivity of domestic companies within the MNE' industrial cluster, and new know-how such as managerial and productive skills, are examples of indirect spillovers that FDI inflows can bring to the host country. However, the story does not necessary ends there, it may well be the case that executives and managers that used to work for a MNEs now decide to establish their own company. They would do so, based on the assumption that they already know the market, and have learned the know-how run a similar company as the one in which they used to work for. Therefore, we could expect to see an increment in the number of firms within the host country, as a result of FDI's externalities as well. It is still under debate, though, whether a greater number of firms, in the host country, is mainly the outcome of more foreign owned companies, and not the product of more domestic investment. Unfortunately, some countries, as it is the case for México, do not provide the pertinent information for differentiate between foreign owned and domestic owned companies; however, the overall outcome remains the same, which is a greater entrepreneurial activity in the country.

Hypotheses

In order to test whether FDI inflows have helped to create more firms in México, I will, firstly, analyze the relationship between FDI and economic growth in the country. Hence a group of hypotheses are developed as follows:

(H1) Foreign Direct Investment is statistically significant and positive related with the economic growth in México.

However, in accord with the literature thus far reviewed, I also have the following hypotheses that attempt to provide context to the relationship between FDI and economic growth in México.

Borensztein et al. (1995) argue that FDI's effects on economic growth are evident only when interacts with the level of human capital. México, as a developing country, has a relative low level of human capital, thus, it would be interesting to provide evidence of Borensztein's et al., argument for the Mexican context. Therefore, hypothesis H1a attempts to test the relationship of such interaction between FDI and human capital

(H1a) The effect of FDI on economic growth is higher when interacts with the level of human capital in the host country.

Most of the FDI inflows in México have gone to the manufacturing sector, particularly in the form of assembling plants for the automotive industry; thus, the level of industrialization in Mexican states might be an important factor for determining the continuity of FDI inflows, and as such, the state's gross product. Therefore, testing

hypothesis H1b will provide some evidence of the effect of the level of industrialization across Mexican states, on economic growth in the country.

(H1b) The level of industrialization within Mexican states is statistically significant and positive correlated with economic growth.

Finding evidence that new firms positively impact economic growth in México, might reoriented the thought that México's output growth has chiefly been the result of an increase in production by existing MNEs and not the result of a greater participation of domestic and new businesses in the economy.

(H1c) The rate of new firms' formation is statistical significant and positive correlated with economic growth in México.

Hypothesis H1d rests on the thought that northern Mexican states, which are located along the U.S. – México border, might have received larger amounts of FDI due to their closeness to the U.S. market. In turn, larger amounts of FDI inflows may affect the rate of economic growth differently to those states that are not along the Mexican northern border.

(H1d) Mexican states along the U.S. – México border have higher economic growth rates than the rest of the Mexican States.

Once I have evidence of the relationship between FDI and economic growth in México, I will turn to analyze the relationship between FDI and entrepreneurial activity in the country. The second group of hypotheses will attempt to shed some light on the relationship between FDI and the entrepreneurial activity in México.

Hypothesis 2 attempts to bridge what we know about the FDI - economic growth's relationship, with the relationship between entrepreneurship and economic growth.

(H2) Foreign Direct Investment is statistically significant and positive correlated with the creation of new firms in México.

Similarly, as for the relationship between FDI and economic growth, I am introducing the same set of hypotheses intended to give context to the situation in which FDI interacts in the Mexican economy.

The interaction between FDI and human capital is also expected to have a significant impact on the rate of new firms' formation. Theoretically, one of the indirect FDI's spillovers outcome is the increase in the entrepreneurial activity in the host country; thus, it would be expected that more firms could be created in a community in which market opportunities are created and identified by those individuals with working experience and with higher levels of education, after absorbing new techniques and knowledge, derived from being working within MNEs.

(H2a) The effect of FDI on the creation of new firms is higher when interacts with the level of human capital in the host country.

Considering that most of the FDI inflows in México go to the manufacturing industry, as stated before, it is plausible that the level of industrialization within Mexican states might affect the rate of new firms' formation. A positive correlation between the level of industrialization and the creation of new firms might indicate a closer interconnectedness between the industrial sector and the rest of the economic sectors in the country.

(H2b) The share of industrialization within Mexican states is statistically significant and positive correlated with the creation of new firms in the country.

Similarly, it would be expected that those states along the U.S. – México border, due to their proximity to the U.S.'s market might exert a greater volume of entrepreneurial activity. Those states might receive a greater amount of FDI and in turn, could create more market opportunities for the entrepreneurial activity.

(H2c) Mexican states along the U.S. – México border have higher rates of new firms' formation than the rest of the States in the country.

In the following chapter I will describe the research methodology that I considered pertinent to analyze each one of the previous hypotheses. The following chapter describes the overall strategy for this research project, while further chapters will describe in detail the methodological procedure and the findings of this research.

CHAPTER III. RESEARCH METHODOLOGY

This dissertation presents a three stage approach with multiple analytical tools to better understand the relationship between FDI and the entrepreneurial activity in México. Each stage, by itself, has a unique research purpose by analyzing the entrepreneurial activity in the country from a macro, individual and national perspective, respectively. However, this research design has the overall purpose to present an integrated approach, in which the study of the entrepreneurial activity in México can be understood at different contextual levels.

In the first stage of my analysis I used a quantitative research tool more particularly an econometric model for estimating the FDI's effects on economic growth, and on the rate of new firms' formation across Mexican states, from 1998 to 2004. This research tool will give me the opportunity to test for hypotheses previously tested in the literature, but neglected for the Mexican Case; at the same time, it will give me an overall perspective at the macro level in the country about the entrepreneurial activity and its relationship with FDI.

In the second stage, I used a qualitative research tool, in which I used in-depth interviews on entrepreneurs within the manufacturing sector in the state of Sonora, México, with the purpose of exploring the factors that inhibit and foster the entrepreneurial activity in their community; and to give context to the findings in the first stage of this research. I believe it is important to explore the context in which the entrepreneurial activity takes place in México, and its relationship with FDI. Thus, by

exploring the factors that foster or inhibit the creation of new firms in Sonora I may be able to provide a better context to the findings at the macro level.

The third stage of my analysis has the purpose of examining the differences and similarities between the perceived factors affecting the entrepreneurial activity within the manufacturing sector in Sonora, with what entrepreneurs within the tertiary sector in México, and at a national level, perceive. This stage uses a nationwide survey on entrepreneurs within the National Chamber of Commerce and Services, and Tourism in the country. By using this research tool on entrepreneurs at the national level I will be able to contrast the differences across regions, regarding the factors that foster or inhibit the entrepreneurial activity in the country; and its relationship with FDI.

In this chapter I will describe the characteristics, in general terms, of each one of my research tools; thus in subsequent chapters I will independently describe the methodology, data collection, manipulation, and coding for each one of my methodological approaches. Hence, in order to maintain an easy reading process of my results and my methods, I am presenting in the following three chapters the findings of each one of my research tools with a more thorough description of the each approaches' methodology.

Econometric model

I will start describing the purpose, characteristics, and limitations of each approach, in so doing, I will attempt to explain why and where each approach support one another along this research project.

Let us recall that the premise driving the present dissertation is the thought that Foreign Direct Investment positively impacts the rate of creation of new firms in the host country; therefore, taking advantage of the recent cumulative literature regarding the FDI's effects on the host countries' economy, I will use as starting point Borensztein et al's (1995) seminal work "How does foreign direct investment affect economic growth", to develop an econometric model that, firstly, test for FDI's effects on economic growth in México, and secondly, that test for FDI's effects on the rate of creation of new firms.

Hence, using Romer's (1990) model for endogenous growth, in which technical change is the result of capital investment, I estimated a Cobb-Douglas production function, of the form:

$$Y = L^a K^b A \quad (\text{Eq.3.1})$$

Where K is the stock of capital in the economy, L is labor, and A represents technological change; coefficients a and b represent the productivity of capital and labor, respectively. The linear representation of equation 1 is as follows:

$$\log Y = a \log L + b \log K + \log A \quad (\text{Eq.3.2})$$

In line with Borensztein et al, there are subsequent studies using the initial level of GDP by country, as initial stock of capital (Ram & Zhang 2002; Campos & Kinoshita 2002; Alfaro 2003; Nunnenkamp & Spatz 2003; Alfaro et al 2003). I will use, however, total fixed net assets that accounts for the stock of capital in the country. Conventionally, *Labor* has been replaced by population (Ram & Zhang 2002) but it has also been treated as the level of human capital (Borensztein et al. 1995, Campos & Kinoshita 2002; Nunnenkamp & Spatz 2003; Alfaro et al 2003; Audretsch et al. 2006); and FDI inflows are also part of the change in the stock of capital (Borensztein et al 1995). In order to differentiate the effects between domestic capital and foreign capital, I can rewrite equation 3.2. as:

$$\log Y = \mathbf{a} \log L + \mathbf{b}_1 \log K_d + \mathbf{b}_2 \log K_f + \log A \quad (\text{Eq.3.2})$$

Where, K_d represent domestic capital, and K_f foreign capital.

Thus, given the fact that I am using two data sets, one for 1998 and another for 2004, I would need to take derivatives respect to time on equation 2, which can be written as:

$$d \log Y / dt \approx \mathbf{DY} / Y_0 = \mathbf{a} \mathbf{DL} / L_0 + \mathbf{b}_1 \mathbf{DK}_d / K_{d0} + \mathbf{b}_2 \mathbf{DK}_f / K_{f0} \quad (\text{Eq.3.3})$$

Where, \mathbf{D} represents the change from 1998 to 2004 for each variable, and Y_0 , L_0 , K_{d0} , and K_{f0} , represent the initial levels of 1998. The change in the foreign capital stock is in fact the Foreign Direct Investment (FDI); similarly, the change in the domestic capital stock can be represented by the Net Domestic Investment (NDI); thus, equation 3.3 can be rewritten as:

$$DY/Y_0 = \mathbf{a} DL/L_0 + \mathbf{b}_1 NDI/Kd_0 + \mathbf{b}_2 FDI/K_{f0} \quad (\text{Eq.3.4})$$

The most influential literature regarding FDI's spillovers (Borensztein et al. 1995; Ram & Zhang 2002; Campos & Kinoshita 2002; Alfaro 2003; Nunnenkamp & Spatz 2003; Torau & Goss 2004) acknowledge the importance of the stock of Human Capital in the host country as a prerequisite for spillovers to take place; then, FDI's coefficient can be expressed as following:

$$\mathbf{b}_2 = c_0 + c_1 HC \quad (\text{Eq.3.5})$$

Inserting equation 3.5 in 3.4

$$DY/Y_0 = \mathbf{a} DL/L_0 + \mathbf{b}_1 NDI/Kd_0 + (c_0 + c_1 HC) FDI/K_{f0} \quad (\text{Eq.3.6})$$

$$DY/Y_0 = \mathbf{a} DL/L_0 + \mathbf{b}_1 NDI/Kd_0 + c_0 FDI/K_{f0} + c_1 HC*(FDI/K_{f0}) \quad (\text{Eq.3.6})$$

Where, c_1 will show the effect of the interaction between FDI and the level of human capital in the host country. Re-arranging coefficients in equation 3.6 I can rewrite it as:

$$DY/Y_0 = \mathbf{b}_1 DL/L_0 + \mathbf{b}_2 NDI/Kd_0 + \mathbf{b}_3 FDI/K_{f0} + \mathbf{b}_4 (HC*FDI)/K_{f0} \quad (\text{Eq.3.7})$$

Thus, \mathbf{b}_4 is expected to be greater than \mathbf{b}_3 under the assumption that FDI's spillovers take effect when the host country has certain level of stock of human capital. A more extensive description of this model and its variables will be found in the next chapter.

Equation 3.7, then, will be useful to test the effects of FDI on economic growth; however, due to the fundamental premise of this research is that FDI positively affects the creation of new firms in the host country, I used, as starting point Audretsch et al.'s (2006) model for entrepreneurship:

$$E_i = f(y_i, x_i) \quad (\text{Eq.3.8})$$

Where i equals each state or region; E_i accounts for the entrepreneurial activity, y_i accounts for factors reflecting the economic performance of the region or state, and x_i denotes other potential factors affecting the entrepreneurial activity in the region or state.

Following the logic behind the relationship between FDI and Human Capital in the previous model, and including the pertinent variables, model 3.9 would be the empirical model testing for hypothesis 2.

$$bsns_i = \mathbf{b}_1 K_i + \mathbf{b}_2 pop_i + \mathbf{b}_3 FDI_i + \mathbf{b}_4 (HC_i * FDI_i) + \mathbf{b}_5 X_i \quad (\text{Eq.3.9})$$

Where i goes from 1 to 32 for each Mexican State; $bsns$ represents the number of businesses in each Mexican state, from 1998 to 2004. K_i accounts for the stock of capital, pop_i represents population size; FDI is the Foreign Direct Investment; and $FDI*HC$ is the interaction between FDI and Human Capital (population with higher education); and X_i represents the set of other variables that are conventionally used for estimating the linear model on the creation of businesses, such as the level of unemployment, education, public investment, and geographic location. Each one of these variables will be thoroughly explain in the next chapter.

As I am interested in analyzing FDI's effects on the rate of new firms' creation at the state level in México, I used INEGI's (Instituto Nacional de Estadística Geografía e Informática) Economic Census from 1998 and from 2004, which include state level data for the pertinent variables. INEGI publishes the results of economic census every six

years, the data set for both reports are available on INEGI's webpage at www.inegi.gob.mx . I will present a more thorough description of the variables within both models in the following chapter.

I tested for OLS assumptions for each one of the previous models, and corrected for specification error when it was needed. However, one of the most important limitations of the econometric model is that it cannot provide evidence of the contextual environment in which FDI is interacting with the level of human capital, and in which individuals are willing to start new businesses across Mexican states. Thus, in order to better understand the environment in which the entrepreneurial activity is done in México, I selected the state of Sonora as the appropriate setting for conducting a series of in-depth interviews on entrepreneurs within the manufacturing sector. In doing so, I will be able to establish a contextual base for interpreting the findings of my econometric model, regarding the FDI's effects on the entrepreneurial activity in the country.

In-depth interviews on Sonoran entrepreneurs

The units of analysis of my in-depth interviews were entrepreneurs within the manufacturing sector in the city of Hermosillo, in the state of Sonora, México. I focused my analysis on entrepreneurs within the manufacturing industry, due to the fact, that more than 60 per cent of FDI inflows coming into México, go to the manufacturing sector; thus, by focusing the interviews on entrepreneurs within the manufacturing sector, I would be increasing the likelihood of finding the appropriate individuals' perspectives, regarding the factors that affect the entrepreneurial activity in connection with FDI's spillovers in the community. I selected the state of Sonora by convenience, given the fact that it is my home state in México, and the closeness with Arizona, which gave me significant advance in time managing for developing this research project.

Additionally, Sonora is per se an important player in the attraction of FDI in the country. Sonora is the 10th state as recipient of total FDI in México, out of the 32 states in the country, from 1993 to 2004. Thus, I considered that using entrepreneurs within the manufacturing sector in the state of Sonora could be an interesting cross-section study for analyzing the context in which the entrepreneurial activity evolves and interrelates with FDI in México.

I used the industrial data base from the National Chamber of Transformation Industries (CANACINTRA) in Hermosillo as my population sample. Then, taking advantage of the fact that I know some of the active members of CANACINTRA, I used a nonprobability method for sampling, which is the purposive sampling. In this type of sampling the researcher relies on his/her expert judgment to identify and to select the

elements that are representative of the population (Singleton & Straits 1999). As the purpose of the in-depth interviews was to obtain the entrepreneurs' perspective on the factors that affect the creation of new firms within the manufacturing industry, and at the same time, to explore the way in which FDI affect the entrepreneurial activity in the community, I had to select owners of firms with more than 50 employees as a measure for eliminating micro businesses that are less likely to interact with MNEs. Businesses within the manufacturing sector with less than 50 employees are too small, and in fact, most of them (98%) are usually micro welding and repairing workshops that are less likely to have had any interaction with MNEs. In turn, businesses within the manufacturing industry with more than 50 employees are more likely to have been founded by individuals who earned their experience in at least a similar company, and at the same time, have relatively more sophisticated manufacturing processes.

This second research tool was significantly useful to collect individual level perspectives on the factors that affect the entrepreneurial activity in the community, particularly, within the manufacturing industry in Sonora. I was able to conduct seventeen in-depth interviews using a semi-structured interview tool [see Appendix A.1], and as mentioned, chapter V will provide a more thorough examination of this approach; nonetheless, it is important to stress in this chapter several limitations of this analysis.

Despite the carefulness in which the interviews were conducted, I have to acknowledge the existence of potential systematic error that could have emerged during the interview process. Before conducting each interview, I contacted the potential interviewee by phone and set the time and the place for the interview. During the phone

conversation I explained in general terms the purpose of my research and confidentiality issues to each one of my potential interviewees. My interviewees had the opportunity to avoid being interviewed by deciding not to give me the appointment. The interviews were conducted at the entrepreneurs' offices at the preferred time for them; before starting each interview I read to them the disclaimer consent letter in which I, once again, explained the purpose of my research, the format of the interview and that they could, at any time, stop the interview, or even avoid answering any question they consider inadequate. However, despite their willingness to objectively participate in this research, they may have provided non-truthful answers. However, I believe that my relationship with the interviewees could have worked in my favor in two ways; one to overcome the weakness of the purposive sampling method of requiring a considerable knowledge of the population before the sampling; and two, in the sense that the interview was conducted in a more relaxed environment for the entrepreneurs, in the sense that the interview was conducted in a more comfortable manner for the interviewees without losing integrity and coherence of the research purpose. Another potential source of systematic error is the interviewer's potential influence during the process of collecting data in the interview. A way to reduce the likelihood of systematic error incurred by the interviewer is the use of semi-structure questionnaires, which helps to follow a "script" of the relevant issues for the study and at the same time it allows the interviewer certain degree of flexibility to explore and to expand answers provided by the interviewees that might have not been clear enough for the interviewer, and vice versa.

In-depth interviews are usually helpful for explorative purposes; this was not the exception in my research. Since my research purpose was to find evidence regarding the effects of FDI's spillovers in the entrepreneurial activity in México; I used a statistical analysis based on secondary data as my primary research tool. However, with the purpose of giving context to the findings I could have obtained from my econometric model, I decided to conduct an explorative research on entrepreneurs in the state of Sonora. Thus, this cross-section analysis on Sonoran entrepreneurs within the manufacturing industry was useful to obtain the perceived factors that affect the entrepreneurial activity in the community. However, despite that the entrepreneurs that I interviewed are highly involved individuals in their community, and that some of them have held important positions at the national and regional level within their industry, the information collected from the in-depth interviews on those entrepreneurs remains limited and biased against these entrepreneurs' perspectives; thus I have to be careful before doing any generalization regarding the findings of this study. Therefore, I took advantage of a nationwide survey on entrepreneurs within the tertiary sector – commerce, services and tourism – to explore whether the entrepreneurs in this sector also share some of the same perspectives of their counterparts within the manufacturing sector in the state of Sonora.

CANACO-SERVYTUR Survey

The third research tool of my dissertation is a nationwide survey in México, on entrepreneurs within the tertiary sector, which includes commerce, personal and collective services, and tourism.

Because the survey was conducted by the Center of Strategic Studies of the ITESM Campus Guadalajara, I should refer to this survey as secondary analysis (Singleton & Stairs 1999). Questionnaires were self-administered, though the application and management of each questionnaire was done by the Confederation of National Chambers of Commerce, Services, and Tourism (CANACO – SERVYTUR). This survey had a twofold goal to obtain information to make a diagnosis of the current economic situation of the tertiary sector in México, and to identify potential public policies for the entrepreneurial development within this economic sector in the country. The ITESM Campus Guadalajara designed a structured questionnaire covering the following topics:

1. Market conditions
2. Strengths of the regional productive sectors
3. Degree of internationalization of the productive sectors in the region
4. Government intervention
5. Management and productivity
6. Quality of life
7. Infrastructure
8. Human Capital
9. Financial resources ability
10. Technological development in the region
11. Social capital
12. Innovative systems within the region
13. Information and communication Technology

In order to collect data for comparing and exploring similarities and differences between the entrepreneurs' perspectives within the manufacturing industry in Sonora, and the entrepreneurs in the tertiary sector in the country, I included several Likert-scale type of questions in the survey. After the in-depth interviews on entrepreneurs within the manufacturing industry in Sonora, I designed several questions upon the Sonoran entrepreneurs' answers, regarding the factors that affect the entrepreneurial activity in their community. It is important to acknowledge potential biased problems on those questions, due to the fact that they were constructed upon the entrepreneurs' responses within the manufacturing sector; thus, entrepreneurs' responses within the CANACO-SERVYTUR survey were constraint to evaluate a predefined set of potential answers. However, I considered that having the opportunity to explore the entrepreneurs' perspective on the factors that affect the entrepreneurial activity in México for the first time in a nationwide survey, was worth it; besides, given the fact that the kind of questions and their potential answers, included in the survey, are aligned with previous findings in the literature regarding entrepreneurship and new firms formation. Although, I will describe in chapter VI with more detail the type of questions and the way the questionnaires were applied across Mexican states by the CANACO-SERVYTUR, I will discuss here the limitations of this research tool and the benefits for the overall purpose of my research.

As previously mentioned this third research tool – the CANACO-SERVYTUR survey – had the purpose to obtain the perspectives of entrepreneurs within the tertiary sector on the factors affecting the entrepreneurial activity in the country, and at the same time to

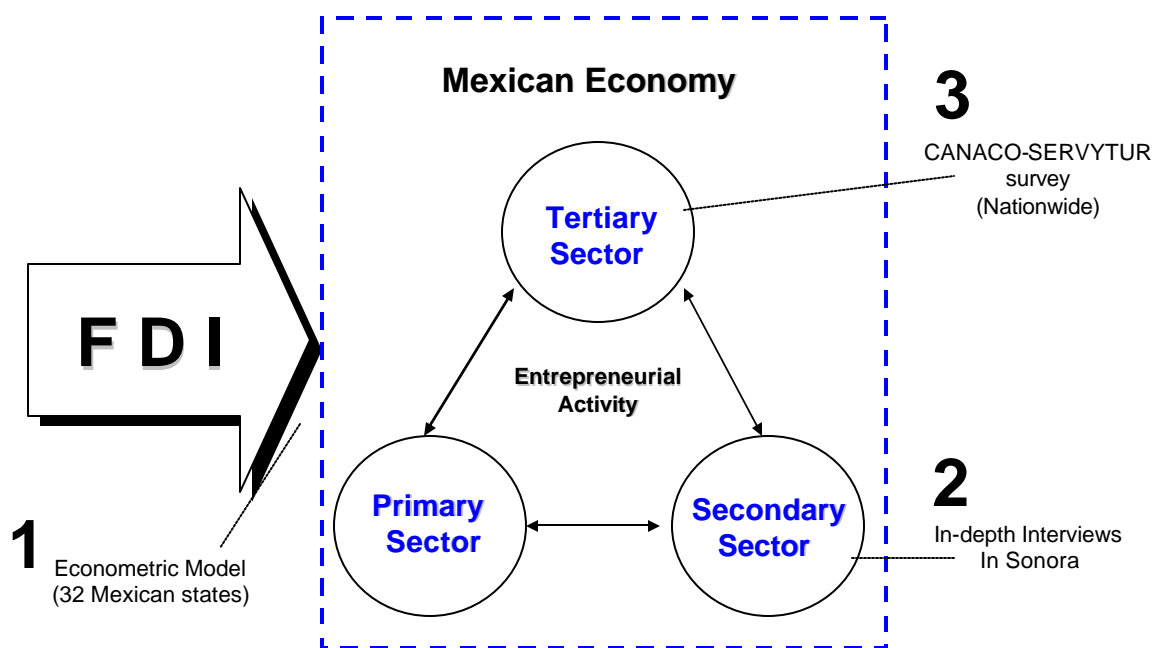
explore, and to contrast, the differences and similarities with the entrepreneurs' perspectives on the same issues but within the manufacturing industry in Sonora. In so doing, I would be able to present a more comprehensive context in which the entrepreneurial activity in México takes place.

Thus, one of the most important benefits of using the CANACO-SERVYTUR survey is to have a nationwide entrepreneurial perspective, on the factors that foster and hinder the entrepreneurial activity within the tertiary sector in the country. To my knowledge, this is the first nationwide effort to collect this kind of data on entrepreneurs within the tertiary sector in México, thus far. Hence, I will be able to provide a more recent, and comprehensive, depiction of the context in which individuals are willing to take risks and start their own ventures in México. And at the same time, I will be able to contrast these results with the results of the in-depth interviews on Sonoran entrepreneurs to provide a better understanding of the factors that affect the entrepreneurial activity in the country.

Another important benefit of the CANACO-SERVYTUR survey is without a doubt the low cost of collecting data within the entire sector, nationwide. The ITESM Campus Guadalajara, received more than 2000 answered questionnaires from the 263 districts in which there is a CANACO-SERVYTUR association in México. However, I have to acknowledge the plausibility of systematic measurement error emerged by the respondents' inability, or unwillingness, to provide truthful responses. Given the fact that there were more than 2000 observations, I randomly selected a sub-sample of the CANACO-SURVEY and ran statistical test on the reliability of the sample, which results will be addressed in chapter VI.

In sum, the rationale for using three research tools in my dissertation, responds to my purpose of providing a better contextual environment in which the entrepreneurial activity takes place in the country. Figure 3.1 graphically shows the methods used in this dissertation and the level of their analysis.

Figure 3.1 Stages in the analysis of FDI's effects on the entrepreneurial activity in México.



Stage 1, refers to the econometric model using secondary data from INEGI at the state level for México, which attempts to obtain statistical evidence on the relationship between FDI, economic growth, and the rate of new-firm's creation in the country. The purpose of this statistical model is to respond the research question whether FDI has

helped México in creating a new entrepreneurial class. Stage 2 refers to the cross-sectional analysis on Sonoran entrepreneurs within the manufacturing industry, which has the purpose of providing context in which the entrepreneurial activity takes place in the country. The main purpose of this stage is to explore, through the entrepreneurs' perspectives, the factors that affect the creation of new firms in the country. Despite the potential results of the statistical model, this stage will help me to better understand the influence of institutional factors on the relationship between FDI and the domestic market, particularly, in regards of the creation of new firms in the host economy.

Finally, stage 3 will help me to contrast the similarities and the differences between the entrepreneurs within the manufacturing industry in Sonora, and the entrepreneurs within the tertiary sector nationwide. at the same time, it will be useful to compare the entrepreneurs' perspective at the regional level across Mexican states. This way, I believe, I could be able to have a more comprehensive scope of the factors affecting the entrepreneurial activity in México, and to better respond my research question: Has FDI helped México in creating a new entrepreneurial class?.

I will describe in the following chapters, IV, V, and VI, the results of the econometric model, the in-depth interviews in Sonora, and the CANACO-SERVYTUR survey, respectively. In each chapter, I will discuss in more detail the methodology for each research tool, as a way to closely connect the research process and the findings of each approach.

CHAPTER IV. FDI AND THE ENTREPRENEURIAL ACTIVITY IN MÉXICO:
AN EMPIRICAL ANALYSIS

Literature and motivation

There is a rich stock of literature regarding Foreign Direct Investment's spillovers, and their effects on host countries' economies. Studies on the effects of FDI's spillovers have mainly focused on analyzing the impact of technology transfers, on factor productivity, and on economic growth on host countries (Acs and Audretsch 1989; Acs, et al. 1994; Aitken et al. 1997; Binder and Björn 2005; Blömstrom 1986; Blömstrom and Kokko 1996, 1998; Borensztein et al 1995; Branstetter 2006; Fosfuri et al. 2001; Freenstra and Hanson 1997; Fritsch et al. 2005; Love and Lage-Hidalgo 2000; Zarszky and Gallagher 2004). However, in spite of the relative large amount of literature on this regard, those empirical studies have failed to provide significant and positive results on the impact of FDI on economic growth on host countries. Campos & Kinoshita (2002) argue that the lack of strong evidence regarding FDI's effects on economic growth, may be explained by the conventional orientation of empirical analysis to associate FDI mainly to technology transferred; whereas FDI usually covers a wide arrange of potential effects on the host country such as vertical and horizontal linkages among MNEs and domestic firms in the host country. Ultimately FDI's effects go beyond solely technology transfer from industrialized countries to the least developed countries. Laura Alfaro (2003) and Nunnenkamp & Spatz (2003), argued, in separate studies, that FDI's effects on economic growth, might be better explained if we take into account countries'

structural differences, which are inherent to the composition of the countries' economies mainly regarding the composition of their economic sectors – primary, manufacturing, and services. Alfaro (2003) presents evidence that FDI inflows into the primary sector tend to produce negative effects, while FDI inflows into the manufacturing sector produce positive effects on economic growth; and that the evidence of FDI inflows into the service sector is still ambiguous, regarding its impact on economic growth. The negative impact of FDI inflows into the primary sector on economic growth may be explained by the fact that most of the developing countries usually lack of a well linked-business infrastructure that allows efficient mobility of goods and resources from the primary sector to other economic sectors. Thus, FDI inflows – say in the form of MNEs – may find it difficult to enhance positive externalities into the primary sector; the primary sector is usually characterized by having low-wage-low-skilled labor, which is usually a limitation for FDI' spillovers to take effect in the host country. The expected positive externalities – or spillovers – from FDI into the host country, are usually related with an increase in productivity, competitiveness, and labor mobility, which in turn tend to increase the overall output of the host economy.

Nonetheless, despite the relative lack of consistency on the empirical work regarding the effects of FDI on economic growth, there are several key empirical studies that have significantly contributed to the understanding of this relationship, and to the conditions under which FDI might improve its impact on the host economy.

Borensztein et al. (1995) acknowledged that their most significant result is the finding that FDI's effects on economic growth are dependent on the level of human capital available in the host country. Using panel data for 69 countries for the two decades 1970-79 and 1980-89, Borensztein et al. found that FDI has a positive overall impact on economic growth, but the magnitude of this impact rises when FDI interacts with the stock of human capital available in the country. For the stock of human capital, the authors used a relative measure of the population above 25 years of age with secondary schooling. Later on, in a review of the existing empirical evidence at that time, about the impact of FDI on host countries, Blömsstrom and Kokko (1998) concluded that FDI promotes productivity and increases exports in the host country, through the interaction between Multinational Corporations (MNCs) and domestic companies; however, the authors stressed that the "nature" of such interactions and the magnitude of FDI's effects, might depend on countries' characteristics and policies that, to some extent, determine the business environment within the host country.

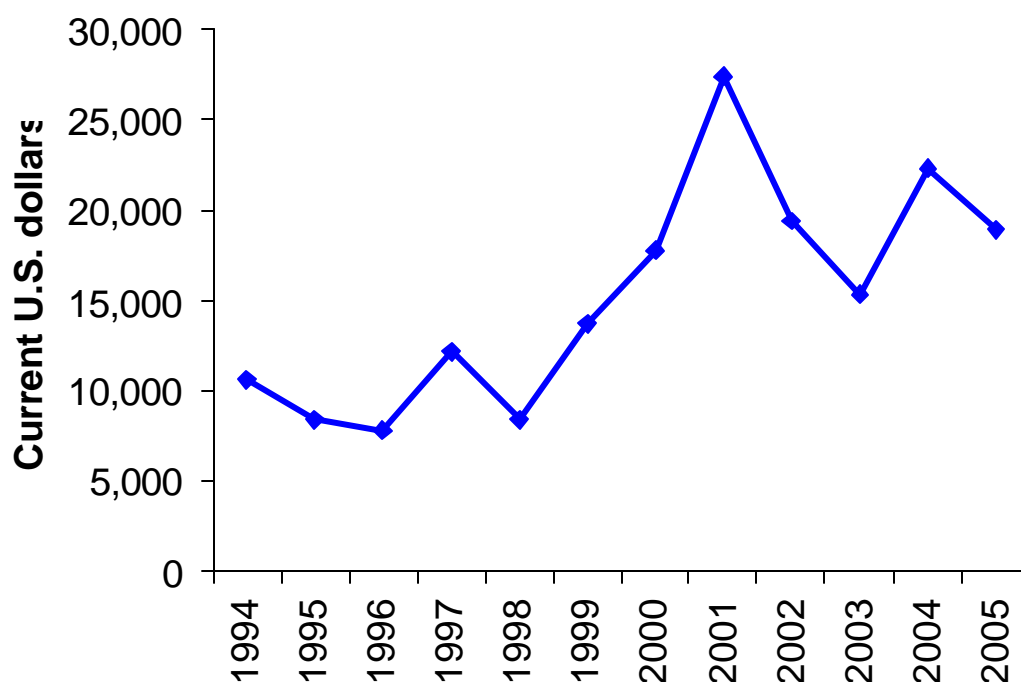
One of the host countries' characteristics needed for enhancing FDI's effects is a sound financial market, this is explained by Hermes and Lensiki (2000), and by Alfaro et al. (2004). A host country with a sound financial system would be able to distribute more efficiently financial resources within the country, and could allow a rapid diffusion of FDI's spillovers across industries. Firstly, with an efficient financial system, say, minimum or non-existent regulations, that allows fair competition for resources at competitive interest rates, MNCs may be more willing to invest in the host country, knowing that the associated risks of investing in this host country are not much different

than investing in any other developing country. Secondly, a financial system with competitive interest rates and that allows an efficient redistribution of financial resources within the country, might facilitate the creation of new businesses (Black & Strahan 2004), and thus, the diffusion of new technologies brought by MNCs (Blömstrom & Kokko 1996)

There seems to be certain pre-conditions for FDI's spillover to take effect on host countries, such as a minimum threshold of human capital, and an efficient financial system, as previously explained it; however, technology transfer – know-how – only takes place with competition and labor mobility (Blömstron & Kokko 1998; Fosfuri et al 2001). Intuitively, there are reasons to believe that MNCs train their workers in the use of new technology, either on production systems, or on managerial procedures; and later on these workers may tend to explore better opportunities in other companies within their community (domestic or also MNCs), or they may explore the alternative to become entrepreneurs. Either way, these former MNCs' workers will take with them the know-how learned in their previous workplace, thereby, becoming the vehicle for knowledge transfer in their community. More importantly than just the broad concept of knowledge transfer from one workplace to another, it is the potential creation of domestic firms by these former MNCs' workers. If we accept that FDI might positively impact economic growth in a host country, through spillovers such as know-how, technical transfers, competition, workers mobility and improving factor productivity, it would not be difficult to acknowledge a potential positive effect of FDI on the rate of new firms in the host country.

This research is an attempt to explore the relationship between FDI and the rate of new-firms' creation in a developing country. México is one of the major recipients of FDI in Latin America. Figure 4.1 shows a substantial increment of FDI to México since 1998, and despite the fall of FDI in 2002 and in 2003, the level of FDI into the country remains above the level of the 1990s. Thus, the evident question here is to what extent FDI inflows into México have helped to the creation of new firms in the country.

Figure 4.1 Foreign Direct Investment in México by year.



Source: Own elaboration with data from INEGI

I am borrowing from Grossman (1984) the concept of entrepreneurial class: “that is a group of individuals who are capable of organizing production and are willing to bear the risks associated with industrial activity” [p.605]. To some degree, the previous definition leaves us with a latent variable for “entrepreneurial class”; however by accepting that entrepreneurial activity – in the form of new firms’ creation – is the outcome of the actions taken by the entrepreneurial class, and that the entrepreneurial activity can be observed through changes on the number of existing firms from one period of time to another within any particular community; It is safe to say that observing the change in the number of businesses from one year to another, could be a close measure for the entrepreneurial activity. In other words, by measuring the change on the number of businesses – firms – in one community from one year to another, I could very well be measuring the degree in which this community is capable to create new firms, which is in turn the outcome of such community’s entrepreneurial class.

Now, I will turn to describe and to explain the central hypotheses of my research.

Hypotheses

In this research I have the purpose of exploring the relationship between FDI and the entrepreneurial activity in México. However, based on the previous discussion regarding the empirical literature on FDI and economic growth, I am deriving two hypotheses as the backbone of this research.

Hypothesis No.1.

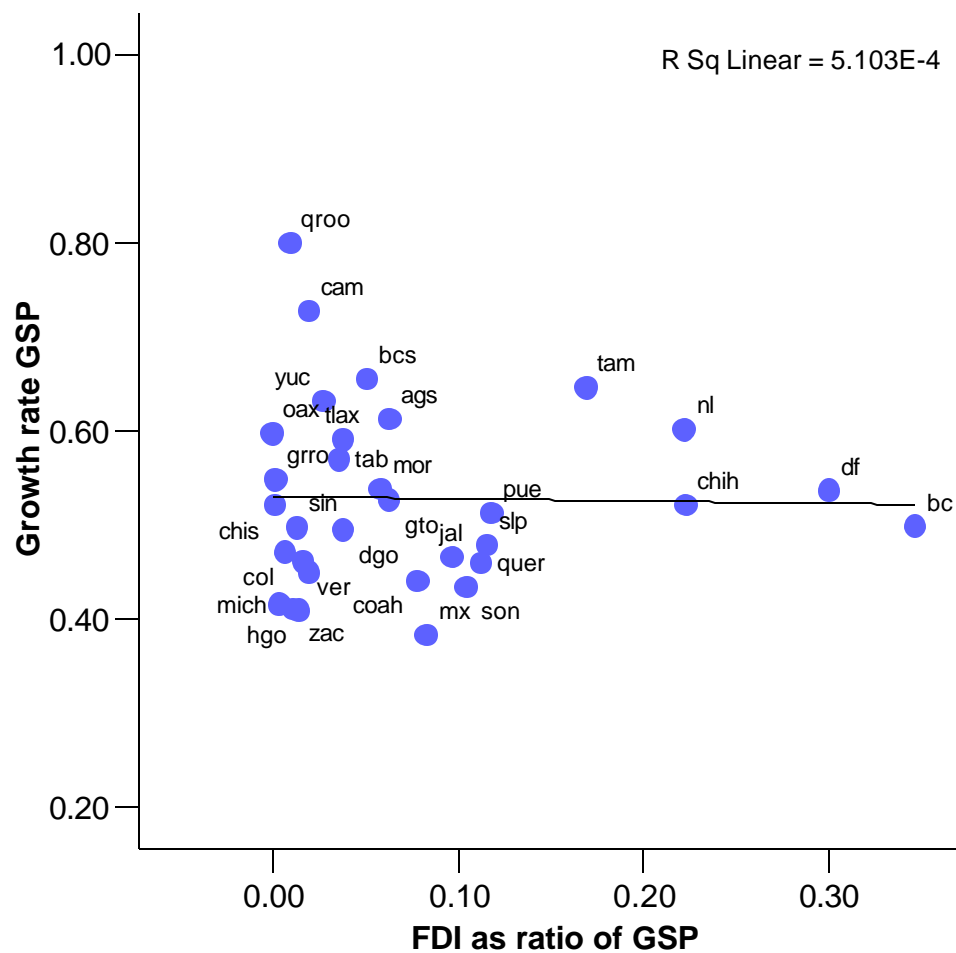
Foreign Direct Investment is statistically significant and positively correlated with economic growth in México.

Hypothesis No.2.

Foreign Direct Investment is statistically significant and positively correlated with the creation of new firms in México.

The first hypothesis responds to the cumulative literature regarding FDI's effects on developing countries that have neglected empirical studies in Latin America, and more particularly in México. Figure 4.2 shows the relationship between the cumulative FDI as ratio to the GSP and economic growth (GSP's growth rate) for all Mexican States from 1998 to 2003. The trend line in the graph shows a relatively inexistent relationship between the two variables. This relationship suggests that despite the government's efforts to attract more FDI into their States, GSP's growth are not responding to the share of FDI, but to other factors affecting the dynamics of each State's economy. In other words, México presents for this period of time – from 1998 to 2003 – an interesting case to test the hypothesis that FDI is positively correlated with economic growth, as suggested by the literature.

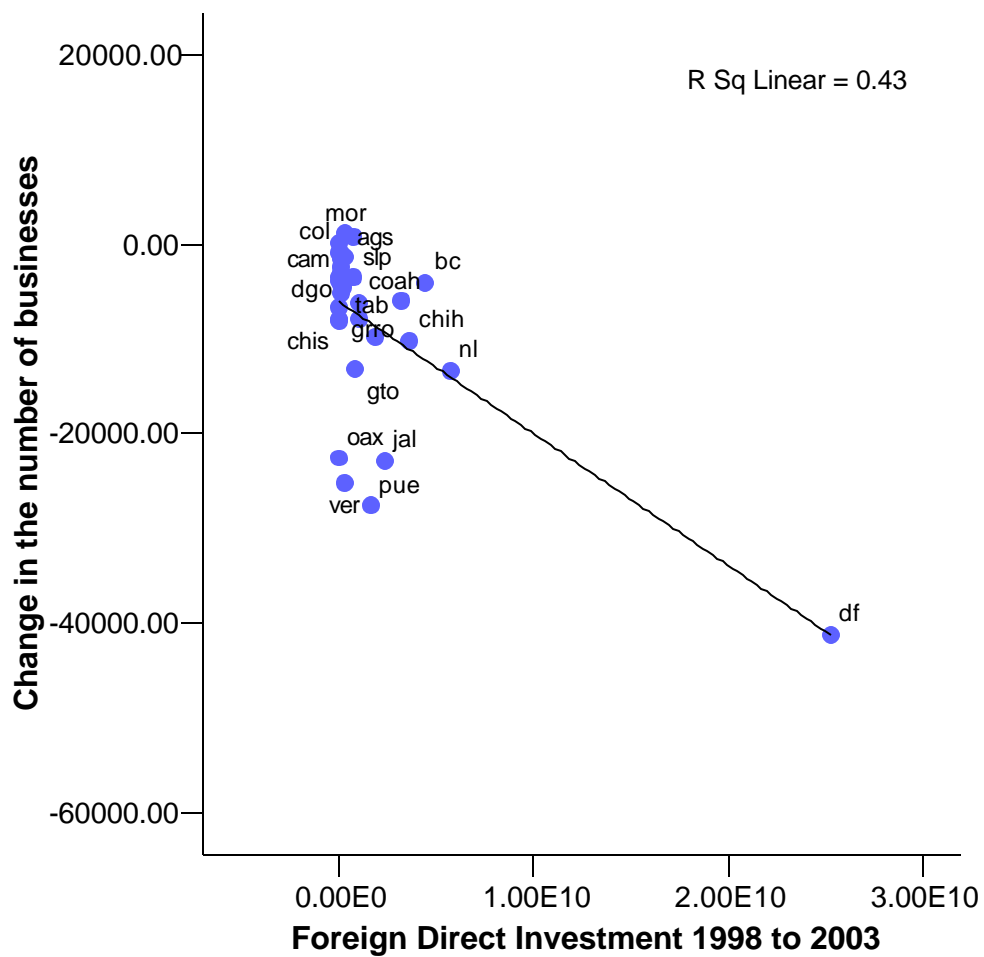
Figure 4.2 Correlation between FDI and GDP growth rate by Mexican State.



Source: Own elaboration with data from INEGI.

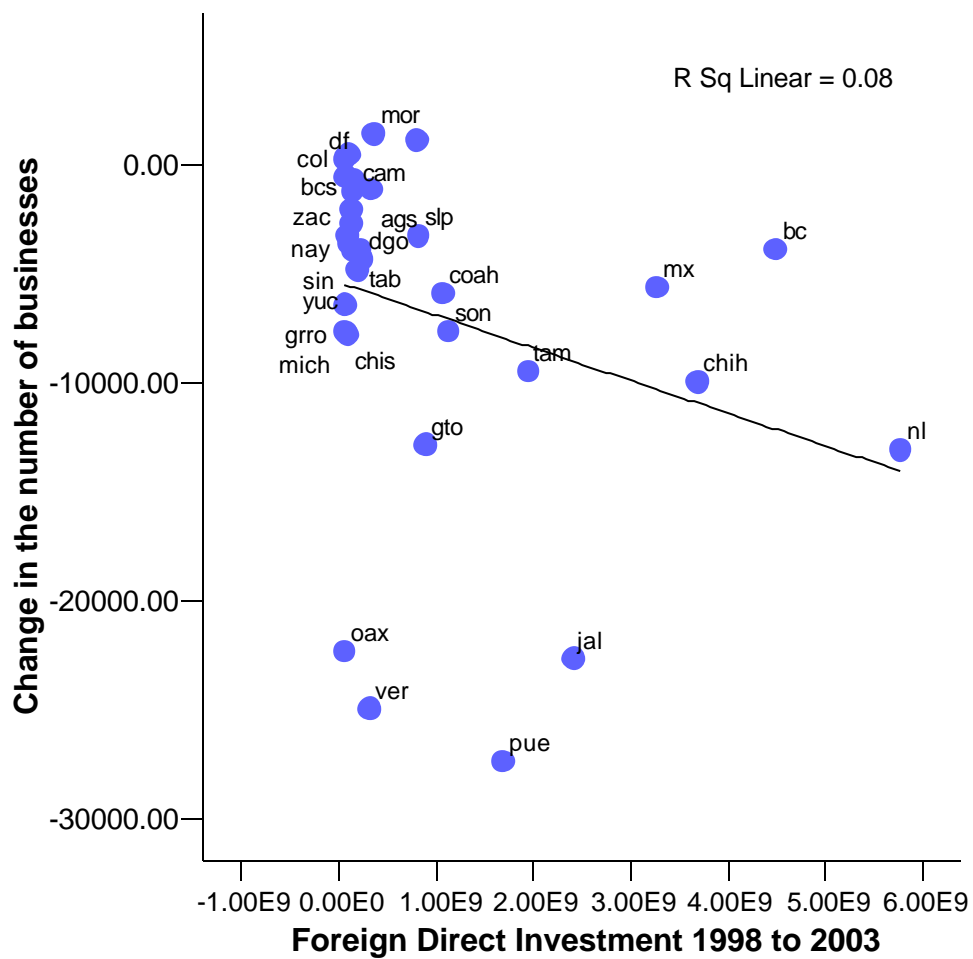
Hypothesis 2 is based on the argument that new firms created by former MNEs' workers are the vehicle through which FDI's spillovers take place in the host economy; due to former MNEs' workers take their know-how and managerial skills with them and that are able to transfer such *technology* into their new ventures. These new ventures might also be formed by either new entrepreneurs, or by existent entrepreneurs that are trying to expand their current businesses in the host country. Figure 4.3 captures the relationship between the change in the number of businesses by State from 1998 to 2003, and the cumulative FDI for the same period of time. Similarly as in figure 4.2 the relationship between the change in the number of businesses per Mexican State and the cumulative FDI shows a negative a steeper slope. Even though, eliminating México City (df) from the analysis the relationship remains negative [see figure 4.4]. México City as I will explain further in this chapter, concentrates almost 60 percent of the FDI inflows into the country; nonetheless, eliminating from the analysis does not change in anything the relationship between those two variables. This situation may suggest that there are also some other important factors affecting the entrepreneurial activity in México, and that there might be some structural elements (administrative processes and market conditions, for instance) affecting the dynamics between FDI and the rate of new firms' formation in México, at least for this period of time under analysis (1998 to 2003) . This is why I believe that the current statistical analysis might be useful to test for the hypothesis stated above, but the in-depth interviews on Sonoran entrepreneurs and the nationwide survey on members of the tertiary sector, might shed more light on the relationship between FDI and the entrepreneurial activity in México.

Figure 4.3 Correlation between FDI from 1998 to 2003, and the change in the number of businesses per Mexican State.



Source: Own elaboration with data from INEGI.

Figure 4.4 Correlation between the change in the number of business per Mexican State and the cumulative FDI from 1998 to 2003.



Source: Own elaboration with data from INEGI.

Methods

Model I Relationship between FDI and economic growth.

Using Romer's (1990) model for endogenous growth, in which technical change is the result of capital investment, I estimated a Cobb-Douglas production function, of the form:

$$Y = L^a K^b A \quad (\text{Eq.4.1})$$

Where K is the stock of capital in the economy, L is labor, and A represents technological change; coefficients a and b represent the productivity of Labor and Capital, respectively. The linear representation of equation 1 is as follows:

$$\log Y = a \log L + b \log K + \log A \quad (\text{Eq.4.2})$$

In order to differentiate the effects between domestic capital and foreign capital, I can rewrite equation 3.2 as:

$$\log Y = a \log L + b_1 \log K_d + b_2 \log K_f + \log A \quad (\text{Eq.4.3})$$

Where, K_d represents domestic capital, and K_f foreign capital. By presenting the change in the stock of capital by the sum of domestic investment plus foreign direct

investment, I might be able to test the hypothesis that in some countries FDI has proven to crowd-out domestic investment, instead of helping to create a new entrepreneurial class.

Thus, given the fact that I am using two data sets, one for 1998 and another for 2004, I would need to take derivatives respect to time on equation 4.3, which can be written as:

$$d\log Y/dt \approx \mathbf{D}Y/Y_0 = \mathbf{a} \mathbf{D}L/L_0 + \mathbf{b}_1 \mathbf{D}K_d/K_{d0} + \mathbf{b}_2 \mathbf{D}K_f/K_{f0} \quad (\text{Eq.4.4})$$

Where, \mathbf{D} represents the change from 1998 to 2004 for each variable, and Y_0 , L_0 , K_{d0} , and K_{f0} , represent the initial levels of 1998 for each variable. The change in the foreign capital stock is in fact the Foreign Direct Investment; similarly, the change in the domestic capital stock can be represented by the Net Domestic Investment; thus, equation 4.4 can be rewritten as:

$$\mathbf{D}Y/Y_0 = \mathbf{a} \mathbf{D}L/L_0 + \mathbf{b}_1 \mathbf{N}DI/K_{d0} + \mathbf{b}_2 \mathbf{F}DI/K_{f0} \quad (\text{Eq.4.5})$$

The most influential literature regarding FDI's spillovers (Borensztein et al. 1995; Ram & Zhang 2002; Campos & Kinoshita 2002; Alfaro 2003; Nunnenkamp & Spatz 2003; Torau & Goss 2004) acknowledge the importance of the stock of Human Capital in the host country as a prerequisite for spillovers to take place. In fact, Borensztein et al. (1995) report that FDI is not significant in the model unless it is interacted with human capital. In this sense, it is believed that FDI's effects on economic growth are enhanced by their interaction with human capital; in other words, host economies with high levels of human capital may be able to rapidly take advantage of FDI's spillovers and to

increase capital productivity at a faster pace. Then, FDI's coefficient can be expressed as following:

$$\mathbf{b}_2 = c_0 + c_1 HC/L \quad (\text{Eq.4.6})$$

Where, HC/L measures the share of Human Capital (HC) to Total Labor (L). To simplify the notation I will use $hc_i = HC_i/L_i$. Then, inserting equation 4.6 in 4.5, I will have:

$$DY/Y_0 = \mathbf{a} DL/L_0 + \mathbf{b}_1 NDI/Kd_0 + (c_0 + c_1 * hc) FDI/K_{f0} \quad (\text{Eq.4.7})$$

$$DY/Y_0 = \mathbf{a} DL/L_0 + \mathbf{b}_1 NDI/Kd_0 + c_0 FDI/K_{f0} + c_1 hc*(FDI/K_{f0}) \quad (\text{Eq.4.8})$$

Where, c_1 will show the effect of the interaction between FDI and the level of human capital in the host country. Previous authors (Borensztein et al 1995; Ram & Zhang 2002; Nunnenkamp & Spatz 2003) have used the average years of education of the male adult population for their cross-country analyses as measured for human capital; however, based on the underlying assumption that FDI's spillovers might be spread across the economic sectors in each Mexican State, and that a significant share of the maquiladoras within the manufacturing sector also employs women, I propose to use a different measure for the stock of human capital, which is the share of labor with higher education – adult population with more than 12 years of education. This measure might positively contribute with increases in capital's productivity in the host country. Thus, following the previous rationale, and the fact that my measure of FDI is the ratio to the GSP, and that measures only the changes in the stock of foreign capital, I will need to

introduce a similar interaction between the share of human capital and the Net Domestic Investment (NDI) which measures the change in the stock of domestic capital. By introducing both interactions I will be able to measure the potential differences of the impact between FDI and NDI on the host country. Borensztein et al's argument is that FDI has a positive and significant impact when it interacts with higher levels of human capital in the host country; however, it may well be the case, that domestic investment has the same type of restriction.

It is noteworthy that the percent change in total labor (DL/L_0) in equation 4.8 includes unskilled as skilled labor; however, as I am using the share of human capital to total labor, as a condition for FDI's spillovers to take place in the host country, it would be important to consider the inclusion of the growth rate in the level of human capital by itself in the model; therefore, I will change the measure of total labor, for the percent change of unskilled labor (DLu/Lu_0).

Thus, re-arranging coefficients in equation 4.8, and adding the new interaction for NDI, as for FDI in equation 4.7, I can rewrite the empirical model testing for hypothesis 1 as follows:

$$\begin{aligned} \%DGSP_i = & \mathbf{b}_1 \%DLu_i + \mathbf{b}_2 (NDI_i/K_{0i}) + \mathbf{b}_3 (hc_i)*(NDI_i/K_{0i}) + \mathbf{b}_4 FDI_i/K_{0i} \\ & + \mathbf{b}_5 (hc_i)*(FDI_i/K_{0i}) + \mathbf{b}_6 \%DHC \end{aligned} \quad (\text{Eq.4.9})$$

Where, i represents each Mexican state from 1 to 32. $\%DGSP_i$ is the percent change in the Gross State Product per State. $\%DLu_i$ is the percent change in the registered unskilled labor in the Mexican Institute of Social Security, which accounts for the formal

Labor in the country. Unfortunately, INEGI, which is the main source of official statistical data in México, does not provide information regarding the stock of foreign capital nor regarding the Net Domestic Investment in each Mexican State; it only provides information regarding the total stock of capital measured as Total Fixed Assets for each Mexican State, and FDI inflows also for each Mexican State. Thus, using Total Fixed Assets as the total stock of capital for each Mexican State, I can estimate the Net Domestic Investment by subtracting FDI inflows from 1999 to 2003 from the Total Fixed Assets accumulated in the same period of time:

$$\Delta K_i = NDI_i + FDI_i$$

$$NDI_i = \Delta K_i - FDI_i$$

Due to the lack of data regarding the Total Stock Foreign Capital (K_f) I will be using the Gross State Product of 1998 instead of the total stock of foreign capital and domestic capital; thus:

$$\begin{aligned} \%DGSP_i = & \mathbf{b}_1 \%DLu_i + \mathbf{b}_2 (NDI_i / GSP_{0i}) + \mathbf{b}_3 (hc_i) * (NDI_i / GSP_{0i}) \\ & + \mathbf{b}_4 (FDI_i / GSP_{0i}) + \mathbf{b}_5 (hc_i) * (FDI_i / GSP_{0i}) + \mathbf{b}_6 \%DHC \end{aligned}$$

(Eq.4.10)

Where, NDI / GSP_{0i} is the Net Domestic Investment as ratio to the Gross State Product in 1998. FDI / GSP_{0i} is the Foreign Direct Investment as ratio to the Gross State Product in 1998. The interaction between the share of human capital to total labor, and NDI as ratio to GSP is measured by $hc_i * (NDI_i / GSP_{0i})$. Similarly, the interaction between

the share of human capital and FDI as ratio to GSP is measured by $hc_i * (FDI / GSP_{0i})$.

And $\%DHC$ measures the percent change in the level of human capital per Mexican State.

The overall premise is that FDI positively impacts economic growth through the creation of more businesses in the host country, as one of the spillovers' manifestations of FDI. Intuitively, one tend to believe that the number of businesses – firms – is positively correlated with the change in the stock of capital; however, given the fact that more than 95 per cent of all the businesses registered in México are micro or small businesses, and that do not invest heavily in technology nor in infrastructure for production – more than 60 percent of all business are in the tertiary sector within the food-retail services – then, I think it would be interesting to analyze the relationship of this variable with the Net Domestic Investment (NDI) and with Foreign Direct Investment (FDI). The underlying assumption is that new businesses are the conduit for which FDI's spillovers spread around the host country; thus, by analyzing the relationship between the change in businesses, NDI, FDI and economic growth across Mexican States, I might be able to better understand the economic dynamics in México for the period 1998 to 2003.

Then, I am including the percent change in the number of businesses in each Mexican State in equation 3.8 in order to measure the effect on economic growth of the new businesses created within the period of 1998 to 2003.

$$\begin{aligned} \%DGSP_i = & \mathbf{b}_1 \%DLu_i + \mathbf{b}_2 (NDI_i / GSP_{0i}) + \mathbf{b}_3 (hc_i) * (NDI_i / GSP_{0i}) \\ & + \mathbf{b}_4 (FDI_i / GSP_{0i}) + \mathbf{b}_5 (hc_i) * (FDI_i / GSP_{0i}) + \mathbf{b}_6 \%DHC + \mathbf{b}_7 \%Dbnsnspop_i \end{aligned}$$

(Eq.4.11)

Where $\%Dbsnspop_i$ represents the percent change in the number of businesses per 1000 people in each Mexican State; by dividing the number of business by the State's population I might be able to control for population density, given the fact that $\frac{1}{4}$ of Mexico's population is concentrated in México City; and the States along the México-U.S. border only account for a little less than 15 percent of the country's population.

In order to control for the State's economic structure, I am including the total output of the secondary sector as a ratio to the Gross State Product, which I will call *share of industrialization (secgspi)*. The six States along the México-U.S. border are the most industrialized states in the country, except for three states in the central zone which are: Jalisco, México State, and México City. In average, the rest of the States in México that are not along the México-U.S border, significantly depend upon retailing and agriculture, which are sectors with different production cycles and different market behavior. Thus, by controlling for the share of industrialization I might be able to control for existing structural differences across Mexican States.

As previously mentioned States across the country have different economic structures and are also embedded within different environmental constraints, mainly due to their geographic position in the country; thus, I will control for the geographic zone, particularly for those six states along the México-U.S. border under the assumption that due to their proximity to the U.S. market their economies may show different behavior than the rest of the states in México. The proximity to the U.S. market may impose advantages and disadvantages to those States along the border in the sense that the industrial production, within those States, might be more interlinked to the U.S. industrial

cycle than the rest of the Mexican States (Torau and Goss 2004). MNEs have found more attractive to established subsidiaries within those six States along the México-U.S. border due to lower transportation costs than in the central States in México. Border cities such as Laredo in Tamaulipas, Cd. Juárez in Chihuahua, Nogales in Sonora, and Tijuana in Baja California are the crossing points for most of México's exports to the U.S. and that sum more than 200 billion U.S. dollars a year. Also, states along the northern border in México account for more than $\frac{1}{4}$ of the cumulative FDI inflows since 1993 in the country; thus, I believe it is important to control for the potential effects that the State's geographic position may have on their economy. I will use, then, a dummy variable (*border*) that equals "1" for each one of the States along the México-U.S. border, and "0" otherwise.

I will introduce another dummy variable controlling for the highly concentrated FDI inflows into México City. This city holds almost 60 percent of the cumulative FDI inflows in México since 1994, mainly due to the highly centralized economy and political power that this city, as the country's capital, exerts over the rest of the country. México City, also accounts for 22 percent of the Gross Domestic Product; thus, it is not difficult to understand that many MNEs have their headquarters located in this city for political and for practical reasons, due to the largest markets (population and in regional income) are concentrated around México City. Therefore, I will control for the fact that México City holds most of the FDI inflows coming into the country with a dummy variable assuming "1" for México City, and "0" for the other 31 States.

Then, retaking equation 4.11 and adding the variables to control for the share of industrialization, the geographic zone, and México City, I will have that:

$$\begin{aligned} \%DGSP_i = & \mathbf{b}_1 \%DLu_i + \mathbf{b}_2 NDI_i / GSP_{0i} + \mathbf{b}_3 (hc_i) * (NDI_i / GSP_{0i}) + \mathbf{b}_4 FDI_i / GSP_{0i} \\ & + \mathbf{b}_5 (hc_i) * (FDI_i / GSP_{0i}) + \mathbf{b}_6 \%DHC + \mathbf{b}_7 \%Dbsnspop_i + \mathbf{b}_8 \%Dsecgsp_i \\ & + \mathbf{b}_9 border_i + \mathbf{b}_{10} df_i + \%D u_i \end{aligned}$$

(Eq.4.12)

Where: $\%Dsecgsp_i$ is the percent change in the secondary sector's output as ratio to the GSP for each Mexican State; $border_i$ is the dummy variable controlling for the geographic zone of the six States along the México-U.S. border; df_i is the dummy variable controlling for México City; and $\%Du_i$ is the idiosyncratic error, which is assumed to be uncorrelated with the exogenous variables in the model. In sum, equation 4.12 is the empirical model in its full expression measuring the effects of FDI on economic growth; this equation closely follows previous empirical models for analyzing the relationship between FDI and economic growth.

Model II Relationship between FDI and the entrepreneurial activity.

I will now turn to discuss the model for testing hypothesis 2, which states that FDI is statistically significant and positive correlated with the entrepreneurial activity in México. I am using, as starting point, Audretsch et al.'s (2006) model for entrepreneurship, in which:

$$E_i = f(y_i, x_i), \quad (\text{Eq.4.13})$$

Where i equals regions – or states – E_i accounts for entrepreneurial activity, y_i , accounts for factors reflecting the economic performance in the region, and x_i denotes other potential factors affecting the entrepreneurial activity in the region.

The authors estimated the correlation of businesses' start-up rates within Germany regions between 1998 and 2000, with variables such as: economic output, economic growth, knowledge investment (R&D), capital investment, population density, subsidies, unemployment, businesses taxes, social diversity, industrial diversity, and attractiveness of the region. They found that economic growth, population density, and industrial diversity are statistically significant and positively related with business' start-ups; however, they also found that capital investment, and business tax, are also statistically significant but negatively correlated with business' start-ups.

The fundamental question of this dissertation is whether FDI has helped México to create a new entrepreneurial class in the country. By a new entrepreneurial class I mean a new generation of entrepreneurs willing to take risks and to start new ventures. However, in order to test this hypothesis using data at the macro level in the country, I will have to

use the observable outcome of the entrepreneurial activity, which is the change in the number of businesses per Mexican State. Thus, being the change in the number of businesses per Mexican State as my dependent variable, I would expect that States with a more dynamic entrepreneurial activity present higher rates of new-firms' creation in the country.

FDI as the main predictor in my model, will be measured as the sum of the FDI inflows by year from 1998 to 2003, this way I will have the cumulative FDI in that particular period of time. FDI represents the change in the Total Fixed Assets per Mexican State coming from foreign capital. In this sense, I will also have to account for the change in Total Net Fixed Assets coming from domestic investment. Thus, I can use the same specification as for model 1, in which the total change in the stock of capital (Net Fixed Assets) can be written as:

$$DK_i = NDI_i + FDI_i$$

$$NDI_i = DK_i - FDI_i$$

Where FDI_i accounts for the cumulative FDI between 1998 and 2003 per Mexican State; and NDI_i is the Net Domestic Investment for the same period of time.

Thus, including a similar set of variables used in Audretsch et al.'s model, I can estimate the following empirical model testing for hypothesis 2.

$$bsns_i = \mathbf{b}_1 NDI_i + \mathbf{b}_2 FDI_i + \mathbf{b}_3 FDI*HC_i + \mathbf{b}_4 gsppc_i + \mathbf{b}_5 pop_i + \mathbf{b}_6 unem_i + \mathbf{b}_7 ed_i + \mathbf{b}_8 secgsp_i + \mathbf{b}_9 gov_i + \mathbf{b}_{10} border_i + \mathbf{b}_{11} ddf_i + u_i \quad (\text{Eq.4.14})$$

Given the fact that I am using two data sets one corresponding to the 1998 Economic Census, and the other for the 2004 Economic Census, I will use the first-differenced equation to capture the change in the number of businesses per Mexican State, from 1998 to 2004. Thus, I can re-write equation 4.14 as:

$$\begin{aligned}
 Dbsns_i = & \mathbf{b}_1 NDI_i + \mathbf{b}_2 FDI_i + \mathbf{b}_3 D(FDI*HC_i) + \mathbf{b}_4 Dgsppc_i + \mathbf{b}_5 Dpop_i \\
 & + \mathbf{b}_6 Dunem_i + \mathbf{b}_7 Ded_i + \mathbf{b}_8 Dsecgsp_i + \mathbf{b}_9 Dgov_i + \mathbf{b}_{10} border_i + \mathbf{b}_{11} ddf_i + Du_i
 \end{aligned}
 \tag{Eq.4.15}$$

Where $i = 1$ to 32, for each Mexican State. $Dbsns$ is the change in the number of businesses from 1998 to 2003. NDI is the Net Domestic Investment for the period between 1998 and 2003, in current U.S. dollars, and it is *per se* the change in domestic capital as part of Total Fixed Assets (K). Higher levels of domestic investment may be in the form of new businesses, as well as in the form of new technology investments; therefore, the hypothesis is that higher levels of net domestic investment may tend to increase the number of businesses in the country. FDI is the Foreign Direct Investment for the period between 1998 and 2003, in current U.S. dollars, and it also represents the change in the foreign capital as part of Total Fixed Assets in the country; therefore, the hypothesis, as previously mentioned, is that higher levels of FDI positively impact the creation of new firms in the country. By introducing both variables, NDI and FDI , I will be able to estimate whether FDI crowds-out domestic investment and eventually tend to reduce the number of businesses in the host country.

The interaction of $FDI*HC$ is assumed to emphasize the impact of FDI's spillovers in the host country. It is assumed that individuals with higher levels of education may take advantage of the new know-how learned by working in MNEs, and then decide to start their own businesses. In order to measure the impact of the market size - demand side – in the creation of more businesses, I will use the change in the Gross State Product per capita ($Dgsppc$) as a measure of per capita income, from 1998 to 2003 in current U.S. dollars. The hypothesis is that higher levels of GSP per capita may foster the entrepreneurial activity by increasing the attractiveness of the market. Another measure for the size of the market is the population of each Mexican State (pop). $Dunem$ is the change in the unemployed population from 12 years and older, from 1990 to 2000.

INEGI only publishes data regarding the population census every ten years. However, this period of time may be significant for this analysis considering that the hypothesis is that unemployed individuals may be willing to take the risk to start a new venture after looking unsuccessfully for a new job. Ded is the change in the average level of education in years, from 1998 to 2003.

The hypothesis is that higher levels of education may tend to increase the change in the number of businesses. Individuals with higher levels of education may be more prepared to face the challenges of starting a new venture, may be more aware of the market conditions surrounding their community, and may be better informed regarding the procedures for starting a new business. $Dsecgsp$ is the change in the output of the secondary sector as ratio to the GSP from 1998 to 2003; this variable measures the level of industrialization per State. Audretsch et al.(2006) used a similar measure accounting

for “industry specialization” within each German region. States with higher shares of industrial production may present higher industrial concentration, which in turn may present higher levels of competition or more specifically, more entry barriers within the industrial sector; however, despite the fact that I am not differentiating between businesses within the industrial sector with another economic sector, I need to control for structural differences across Mexican states; thus, by including the share of industrial production by State, I might be able to estimate the impact of structural differences on the creation of new businesses across Mexican States.

Dgov is the change in the *public investment for development* that accounts public infrastructure, roads, schools, public buildings, hospitals, water supply, and power supply, for the period between 1998 and 2003, in current U.S. dollars. State level administrations tend to be an important engine for the state’s economy in the senses that public investment creates jobs, and opportunities for industries such as construction and peripherals in the services sector. The hypothesis is that higher levels of public investment may foster the entrepreneurial activity given its impact on the aggregated demand at the State level

As for model 1, I will use in model 1, the dummy variables controlling for geographic zone and for México City. The dummy variable *border* is the one controlling for the six states along the México-U.S. border, which assumes 1 for each one of the States along the northern border in México, and 0 otherwise. In this model, I am interested in analyzing the potential effects on the entrepreneurial activity of being close to the U.S. market. The dummy variable *ddf* controls for the fact that more than 50

percent of FDI is registered in the country's capital, as previously explained in model 1.

And Du_i is the idiosyncratic error which is assumed to be uncorrelated with the exogenous variables.

Data

In order to collect the pertinent data for testing both hypotheses, I used data from two main types of sources from the National Institute of Statistics, Geography and Informatics in México, which is *INEGI* (Instituto Nacional de Estadística Geografía e Informática). The first source was the Economic Census (1998, 2003), and the second one was the Economic Data Bank, both are available in INEGI's webpage. INEGI collects information from all the governmental agencies at national, state, and county level, as well as it is responsible for the economic census every 6 years nationwide. The main restriction that I found regarding my data sources was to obtain updated data regarding the number of firms per state in México. These data – number of economic units – is only presented in every economic census; thus, I was only able to obtain the number of firms for each Mexican state for 1998 and for 2003, which is published within the economic census of 1999 and 2004, respectively. Given such limitation, I had to construct my econometric models using data from those two particular years, 1998 and 2003.

Hence, to test hypothesis 1, I ran an empirical model using the first-differenced equation between 2004 and 1998; this was done in order to capture the change between these two years but maintaining the usefulness of a cross-sectional model at the same time. The data are at regional level, in which each Mexican state is the unit of analysis; thus I had 32 observations for each variable.

Equation 4.12 is the empirical model for testing the hypothesis that FDI is statistically significant and positive correlated with economic growth in México.

$$\begin{aligned} \%DGSP_i = & \mathbf{b}_1 \%DLu_i + \mathbf{b}_2 NDI_i / GSP_{0i} + \mathbf{b}_3 (hc_i) * (NDI_i / GSP_{0i}) + \mathbf{b}_4 FDI_i / GSP_{0i} \\ & + \mathbf{b}_5 (hc_i) * (FDI_i / GSP_{0i}) + \mathbf{b}_6 \%DHC + \mathbf{b}_7 \%Dbsnspop_i + \mathbf{b}_8 \%Dsecgsp_i \\ & + \mathbf{b}_9 border_i + \mathbf{b}_{10} ddf_i + \%D u_i \end{aligned}$$

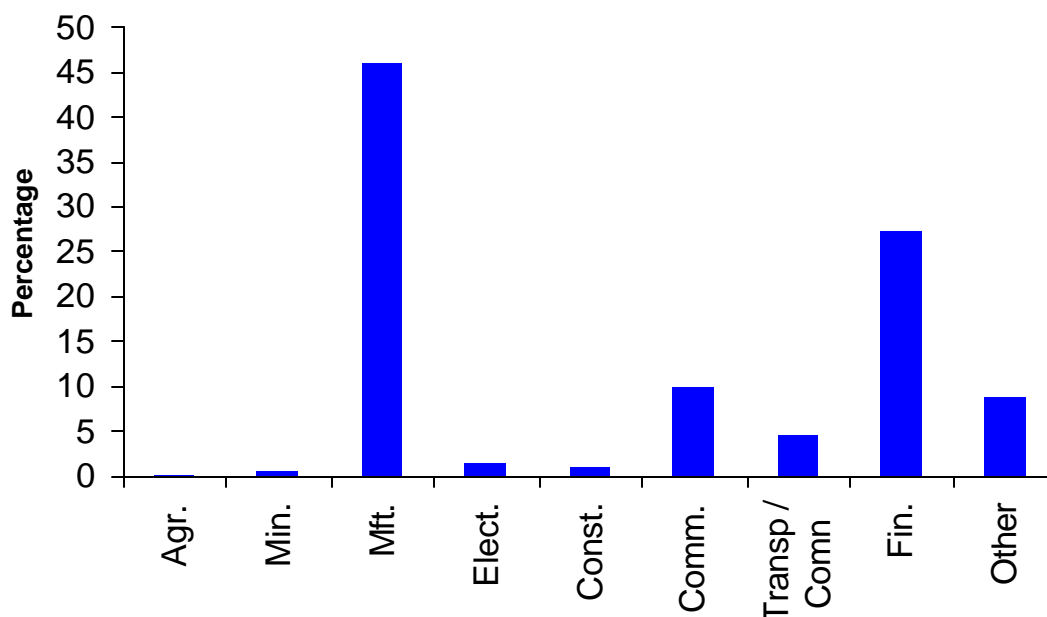
(Eq.4.12)

i = state i, where i = 1 to 32

As previously explained, I will measure economic growth as the percent change in the Gross State Product by Mexican State, and FDI as the cumulative FDI inflows towards each State for the period between 1998 and 2003. However, it is worth noting that 60 percent of the cumulative FDI goes to the manufacturing industry in México [see figure 4.5]; and similarly most of the FDI inflows usually go to the states along the U.S. - México border. As we can see in table 4.1 the six states along the U.S. – México border have received, in average, 26 percent of the total FDI in México from 1994 to 2005; México City, is by itself the region that has captured most of the FDI inflows in the country, leaving only 17 percent of the average FDI by year to the remaining 25 states.

This first-differenced equation (Eq.4.12) has two advantages over a pooled OLS for two years. One advantage is that I will not have to control for the year-effect with a dummy variable to avoid heterogeneity bias; and the second advantage is that differencing two years within a long span of time, may be quite useful to control for unobserved effects in the model (Wooldrige 2003)

Figure 4.5. Cumulative FDI by economic sector in México, from 1999 to 2005.



Source: Own elaboration with data from INEGI.

Table 4.1. Participation of the FDI inflows in México, by region.

Year	Total FDI Current U.S. Dollars	Border 6 states	México City	Rest of states 25 states
1994	10,646.60	19%	71%	9%
1995	8,374.60	29%	54%	17%
1996	7,847.80	24%	61%	15%
1997	12,145.60	34%	55%	11%
1998	8,373.30	32%	48%	20%
1999	13,704.20	30%	46%	24%
2000	17,772.60	32%	49%	19%
2001	27,428.60	16%	72%	12%
2002	19,343.90	22%	64%	14%
2003	15,347.90	20%	65%	14%
2004	22,282.60	15%	59%	26%
2005	18,933.80	41%	43%	17%
Average	15,183.46	26%	57%	17%

Source: Own elaboration with data from INEGI
 Border states are: Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas.

Table 4.2, shows descriptive statistics of the variables used in model 1. We can learn several things from table 4.2. The average GSP growth rate for the period 1998 to 2003 is 52.9 percent among Mexican States, and ranges from 38 percent for México State, to 80 percent for the State of Quintana Roo. Interestingly, three of the smallest States in terms of GSP showed the greatest growth rates in this period of time, these are Quintana Roo, Campeche and Baja California Sur, with 80, 73, and 66 percent of growth, respectively. The six states along the México-U.S. border present GSP's growth rates about the overall mean of 52 percent give or take 10 points: Baja California (50%), Coahuila (44%), Chihuahua (52%), Nuevo León (60%), Sonora (43%), and Tamaulipas (64%). I think it is noteworthy the fact that México was coming out of a deep financial crisis in 1995 and faced an external shock in 2001 with the U.S. economic slow-down; nonetheless, in general terms, all of the Mexican States managed to push their economies forward. Even though, the significant nominal GSP's growth rates among Mexican States, the jobs market did not show the same joyful figures. The average growth rate in the registered labor force within the Mexican Institute of Social Security is 18 percent; however, there are three northern States with nil formal labor growth rate, and one with a negative growth rate from 1998 to 2003. Coahuila, Nuevo León, and Baja California had less than 1 percent of labor's growth rate, whereas Chihuahua had a -4.8 percent growth rate. Conversely, States that are in the southern areas of the country, and that are usually less dependent upon the manufacturing industry showed the greatest labor's growth rates in the country. Tabasco, Oaxaca, Quintana Roo, and Chiapas, had 43, 36, 36, and 33 percent of growth, in their formal labor force from 1998 to 2003, respectively. This seemingly

odd situation can be explained by the fact that after the financial crisis in México, and during the U.S economic slow-down in 2001 and in 2002, many MNEs significantly cut jobs in order to improve productivity; at the same time, many low-wage maquiladoras along the México-U.S. border shutdown operations and move to China and to India, leaving the northern States in México with high levels of unemployment. Thus, despite the significant average GSP's growth rate in current U.S. dollars across Mexican States from 1998 to 2003, there was a difficult time for some States to create formal jobs, and to absorb the increasing labor supply due to layoffs among MNEs seeking for higher levels of productivity in other countries.

More interesting is the comparison between the average growth rate in total labor (grL) and the average growth rate of unskilled labor (grLu), 18 percent and 42 percent respectively. Not surprisingly, states along the México – U.S. border registered some of the lowest growth rates, including negative changes as it is the case for the states of Coahuila and Chihuahua, with -2.9 and -9.9 percent respectively. Conversely, states around the center of the country, such as México State (70%), Michoacán (66%), Hidalgo (59%), and Querétaro (47%) registered the highest growth rates of unskilled labor from 1998 to 2003. Clearly, those states along the México – U.S. border felt substantially more the negative impact of many maquiladoras leaving the country towards China and India looking for lower wages.

Also interesting is the behavior of both the ratio of Net Domestic Investment (ndigsp) and the ratio of Foreign Direct Investment to the GSP (fdigsp); whereas the mean of the latter is only 7.7 percent, the average growth rate of the former is above 30 percent level.

However, the standard deviation for NDI is three times higher than for FDI, in other words, similarly as for the GSP' growth rates, States with relatively lower sizes in terms of their GSP had the largest growth rates in domestic investment: Nayarit (115%), Guerrero (85%), and Chiapas (66%), but nil growth rates in their FDI ratios, 2, 0, and 0, percent respectively. In fact, there are 22 states that had a growth rate of 10 percent or less, in their FDI ratios, and among them there are two States along the México-U.S. border. This information suggests that there were relatively turbulent and uneven times for the Mexican States during this particular period of time. Turbulent because of the previous financial crisis of 1995, and because of the U.S economic slow-down that significantly affected the northern States of México; and uneven, due to the Mexican Government's effort to improve the economic conditions of Mexican States that had traditionally been "forgotten" from private investment and from public development projects. It would seem, then, that efforts from the federal government to make those states, which are mainly in the south of México, more attractive for private investment, are part of the reasons why those southern States now show higher rates of growth in their domestic investment ratio. The average growth in human capital from 1998 to 2003 across Mexican States is 4.3 percent; only Baja California, and Quinta Roo, had 10 percent growth rate, or more. Conversely, there are four States with less than 1 percent of growth: Michoacán, Veracruz, Zacatecas, and México City. As we can see in table 4.2 the standard deviation of the Human Capital's growth rate is *0.0269*, which implies a relatively homogenous Human Capital's growth rate across Mexican States.

One of the most interesting characteristics in my data is the fact that all of the Mexican States presented negative number in the businesses' growth rates per 1000 people; ranging from -20.89 to - 4.67 percent. The mean growth rate in the number of businesses per state is -13.79 percent. More interesting is the fact that the six States along the México-U.S. border (Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas) are among the 10 States with lower growth rates (-15 and -20 percent). It would be reasonable to conclude that the population growth over passed the growth in the number of businesses across Mexican States. However, such negative growth rates; however, only three Mexican States show positive number of businesses' growth rates: Quintana Roo (1%), Morelos (2%), and Querétaro (2%); but as we can see the absolute growth rate is significantly low. In other words, the official number of businesses – formal businesses – decreased 7.34 percent across Mexican States from 1998 to 2003. This number includes business units within all of the economic sectors across Mexican States, this means that while the overall number of business per States has declined from 1998 to 2003, it may well be true that in one or more particular sectors this number has increased, not has much as to balance the overall number, though.

I have to acknowledge that by examining the average growth in the number of businesses across Mexican States, and the average growth rate in the formal labor force, registered within the Mexican Institute of Social Security, may lead us to troublesome conclusions, particularly for those States along the México-U.S. border. States along the northern border had sluggish labor growth rates in the five year period from 1998 to 2003, around 2 percent by year in average; at the same time, they all had negative growth

rates in the number of formal businesses; what leads us to conclude that, even though, those states still show positive GSP's growth rates they are not creating more formal jobs nor businesses; thus, most – or all – of the economic growth among those States has been carried out by MNEs in combination with large domestic companies within the exporting sector. At the same time, this situation of slow jobs creation and not formal businesses has pressured the informal sector of the economy by creating more micro and small size businesses, which are not necessarily formally registered in any industry or economic sector.

By observing the behavior of the secondary sector's output as a ratio to the GSP by Mexican State, may contribute to better understand the way the economic structure changed within the Mexican States from 1998 to 2003. The average growth rate of the secondary sector's output, as ratio to the GSP is -2.50 percent. Only ten of the 32 states in México had a positive growth from 1998 to 2003; however, all of the six states along the México-U.S. border had a negative growth in the ratio of secondary sector's output to GSP. The fact that the secondary sector, as ratio to the GSP, lost ground vis-à-vis the primary and the tertiary sector in most of the Mexican States from 1998 to 2003, might suggest that in general terms, México's economic structure is changing, probably forced by external factors such as the U.S. economic slow-down in 2001, nonetheless a change that imposes challenges to the country to maintain its attractiveness for FDI and its pace of economic growth.

Table 4.2 Descriptive statistics for variables in model 1.

Variables	Range Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Error	Std. Deviation Statistic	Variance Statistic
Growth rate GSP (grgsp)	0.417	0.384	0.800	0.529	0.017	0.096	0.009
Growth rate Labor (grl)	0.479	-0.048	0.431	0.184	0.020	0.112	0.013
NDI as ratio of GSP 1998 (ndigsp)	1.321	-0.169	1.152	0.305	0.049	0.278	0.077
FDI as ratio of GSP 1998 (fdigsp)	0.347	0.000	0.346	0.077	0.016	0.088	0.008
Growth rate of Human Capital (grhc)	0.128	0.000	0.128	0.043	0.005	0.027	0.001
Growth rate unskilled labor (grLu)	1.687	-0.100	1.587	0.421	0.066	0.374	0.140
Interaction NDI ratio and share of HC (ndigsp*hc)	0.626	-0.071	0.555	0.146	0.026	0.148	0.022
Interaction FDI ratio and share of HC (fdigsp*hc)	0.126	0.000	0.126	0.033	0.006	0.035	0.001
Growth rate Business by 1000 people (grbspop)	0.162	-0.209	-0.047	-0.138	0.008	0.044	0.002
Growth rate secondary sector's output as ratio of GSP (grsecgsp)	0.648	-0.172	0.476	-0.025	0.026	0.148	0.022

N = 32

For hypothesis 2, I also ran an OLS model that shows the relationship between FDI and the creation of businesses. Hypothesis 2 states that FDI is positively and significantly correlated with the creation of businesses in México; thus, equation 4.15 represents the empirical model for testing hypothesis 2.

$$\begin{aligned}
 Dbsns_i = & \mathbf{b}_1 NDI_i + \mathbf{b}_2 FDI_i + \mathbf{b}_3 D(FDI*HC_i) + \mathbf{b}_4 Dgsppc_i + \mathbf{b}_5 Dpop_i \\
 & + \mathbf{b}_6 Dunem_i + \mathbf{b}_7 Ded_i + \mathbf{b}_8 Dsecgsp_i + \mathbf{b}_9 Dgov_i + \mathbf{b}_{10} border_i + \mathbf{b}_{11} ddf_i + Du_i
 \end{aligned}
 \tag{Eq.4.15}$$

Where, as previously explained, *Dbsns* represents the change in the number of all businesses in state *i*, from 1998 to 2004. To measure this variable I used what INEGI registers as “economic units” or “establishments”, which represent the basic unit of production and services in the country. INEGI presents the information, regarding the number of economic units, by state and by sub-sector, which are fishing, mining, manufacturing industries – including maquiladoras – electricity and water supply, construction, commerce, transportation and communication, non-financial private services, financial private services, and public services. Thereby, I was able to compile the total number of economic units by state, as for the year 1998 as well as for 2003.

Table 4.3 shows descriptive statistics for the variables in model 2. Most of the variables are the same as in model 1; however, in table 4.3 those variables show the change from 1998 to 2003, and not the percent change. Thus, I think it is worth noting that the interaction between FDI and Human Capital is shown in a different way as for model 1.

In model 2, the interaction between FDI and Human Capital, is the product between the cumulative FDI from 1998 to 2003, in current U.S. dollars and the change in the number of people with higher education for the same period of time per Mexican State. The fact that the average change in the number of unemployed people by Mexican State from 1998 to 2003 is negative (-7,351) implies that there were less unemployed people in 2003 than in 1998 in average per Mexican State. This number goes hand to hand with the positive change (18.41%) in the labor force registered within the Mexican Institute of Social Security, presented in table 4.2. Nonetheless, let us remember that those States along the México-U.S. border did not show significant changes in the creation of new formal jobs; thus, this numbers suggest that states not along the México-U.S. border are the ones creating those new jobs.

It should be expected that the creation of new businesses be positively correlated with the growth of the market size. Unfortunately, the mean of the change in the GSP per capita across Mexican States, is less than two thousand dollars for the period between 1998 and 2003. Despite the fact that the average change in population is close to 200 thousand people per Mexican State, there are 24 states out of the 32 with an increase of 2000 dollars or less in their GSP per capita (México City's increment is above five thousand dollars, and Jalisco's increment is above four thousand pushing the average to two thousand) suggesting a relative low increment in the market's purchasing power in average. Thus, it is not difficult to understand the negative mean in the change of businesses from 1998 to 2003 across Mexican States (-8,423).

Table 4.3 Descriptive Statistics for variables in model 2.

Variables	Range Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Error	Std. Deviation Statistic	Variance Statistic
Change in the number of businesses (dbsns)	42,367	-41,226	1,141	-8,423	1,704	9,639	92,914,017
Net Domestic Investment 1998 to 2003 (thousands current U.S. dls) (ndi)	24,349,735	-14,240,313	10,109,422	1,814,836	659,403	3,730,149	1.39E+19
Foreign Direct Investment 1998 to 2003 (thousands current U.S. dls) (fdi)	25,247,116	-1,196,679	25,245,919	1,701,913	801,021	4,531,262	2.05E+19
Interaction FDI with the change in Human Capital (fdihc)	1.36E+14	-4.31E+09	1.36E+14	1.52E+13	5.61E+12	3.18E+13	1.01E+27
Change in the GSP per capita (dgsppc)	4,718	405	5,123	1,677	191	1,082	1171442
Change in population (dpop)	1214854	3937	1218791	196665	38356	216972	4.71E+10
Change in the number of unemployed people (dunem)	22,491	-21,461	1,030	-7,351	992	5,613	31507370
Change in the average years of education (ded)	0.5800	0.3500	0.9300	0.6319	0.0241	0.1362	0.0186
Change in public investment (current U.S. dls) (dgov)	434,795,595	-153,587,134	281,208,460	36,715,740	15,276,791	86,418,579	7.E+15
Change in the secondary sector's output as ratio to GSP (dsecgsp)	0.1200	-0.0700	0.0500	-0.0144	0.0047	0.0268	0.0007

N = 32

After each model, I ran the appropriate tests for OLS assumptions: multicollinearity, specification error, and for homoskedasticity STATA[®] has built-in commands that permit to test for all of the above OLS assumptions. In order to test for multicollinearity I used the *vif* command on STATA[®] that stands for *variance inflation factor*, which allows testing for redundancy of the variables, a common standard is to use a 10 percent level of tolerance ($1/vif$) on the variance of each coefficient in the model.

In order to test the potential omission of one important variable in my models, or the existence of irrelevant variables, I tested for model specification error, using two built-in commands in STATA[®]; one is the *linktest* command, that test the assumption that if the model is properly specified one should not be able to find a relevant independent variable except only by chance. This command creates two new variables, the variable of prediction and the squared prediction. The model is refit using these two variables as predictors, the expectation is that only the variable of the prediction should be significant, not the squared prediction. I should not expect the variable of the squared prediction to be significant, if the model is properly specified. Then, the null hypothesis is that the model is specified correctly. The second command in STATA[®] to test for specification error is the *ovtest* command. This command performs a regression specification error for omitted variables, and it also creates new variables based on the predictors. The null hypothesis is that the model has no omitted variables. Rejecting the null hypothesis of not having omitted variables may be an important finding for my both hypotheses, since one of the purposes of this research is to analyze the power of prediction of the exogenous variables

for both of my hypotheses, for the relationship between FDI and economic growth, and for the relationship between FDI and the creation of new firms in México.

The final test I did on my models was for heteroskedasticity. Another important assumption of the OLS regression is the homogeneity of the variance of the residuals. Using the Breusch-Pagan / Cook-Weisberg test for heteroskedasticity built-in in STATA[®]; however, using the first-differenced equations for *GSP* and for *bnsns* from 1998 to 2003 eliminated the problem of heteroskedasticity.

Analysis

Analyzing results for hypothesis 1

Hypothesis 1, states that there is a positive and significant relationship between FDI and economic growth. Economic growth has been estimated by the percent change in the Gross State Product, from 1998 to 2003. Equation 4.12 is the empirical model for testing hypothesis 1.

$$\begin{aligned} \%DGSP_i = & \mathbf{b}_1 \%DLu_i + \mathbf{b}_2 NDI_i / GSP_{0i} + \mathbf{b}_3 (hc_i) * (NDI_i / GSP_{0i}) + \mathbf{b}_4 FDI_i / GSP_{0i} \\ & + \mathbf{b}_5 (hc_i) * (FDI_i / GSP_{0i}) + \mathbf{b}_6 \%DHC + \mathbf{b}_7 \%Dbsnspop_i + \mathbf{b}_8 \%Dsecgsp_i \\ & + \mathbf{b}_9 border_i + \mathbf{b}_{10} ddf_i + \%D u_i \end{aligned}$$

(Eq.4.12)

I estimated several models with the purpose to analyze the impact of each variable in equation 4.12 [see table 4.4]. Model 1, explores the basic Cobb-Douglas production function showing the coefficients for Labor, and for the change in the stock of capital measured by the Net Domestic Investment (*fdigsp*) and by the Foreign Direct Investment (*fdigsp*) as ratio to the GSP of 1998. The power of prediction of the model is relatively low with an adjusted *R squared* = 0.2746. However it is noteworthy that the coefficients for both *ndigsp* and for *fdigsp* are negative, though not significant. The coefficient for the change in labor is also not significant. The only variable with a significant coefficient is the growth in the number of businesses by 1000 people (*grbspop*), at the 1 percent level; although it is negative (-1.2851). This negative coefficient for *grbspop* implies that the growth rate in the number of businesses per Mexican State negatively affect economic growth. This result seems to be counterintuitive, due to the rationale that the greater the

number of businesses in the economy, the greater the economy's output. However, for the Mexican case, and at least for this period of time, the percent change in the number of businesses from 1998 to 2003 by Mexican State was negative (-8.24%). In fact, the country as whole had less "economic units" in 2003 than it had in 1998 (moving from 3,272,922 to 3,003,390). Nevertheless, the GSP (current U.S. dollars) grew 53 percent in average for the 32 States within this same period of time. Besides, not only the absolute number of businesses decline from 1998 to 2003, but because the population did grow during that period of time, the ratio of businesses per 1000 people decreased across Mexican States, from 1,144 to 987. It is noteworthy that only five States hold 52 percent of all the lost businesses in the country from 1998 to 2003. México City lost 41,226 businesses; Puebla 27,626; Veracruz 25,212; Jalisco 22,906; and Oaxaca 22,563 businesses out of 269,532 lost businesses across the country. It is also important to have in mind the fact that 60 percent of all the "economic units" registered in those States belong to the food-retail industry; in other words, most of those businesses that were lost from 1998 to 2003 were more likely micro and small restaurants – *taquerías* or convenience stores. This information suggests that the increase in productivity and value-added from MNEs, and from large companies within the export sector, more likely offset the lost of production of those micro and small businesses within the food-retail industry, for the period of 1998 to 2003. Thus, we are still able to observe an increase in production, despite the reduction in the number of businesses.

The growth rate in the share of the industrial production to total GSP (*grsecgsp*) did not produced a significant coefficient, neither the dummy variables for both the states along the México – U.S. border (*border*), and for México City (*ddf*).

Model 1.2 shows the inclusion of the interaction between FDI as ratio to the GSP and the share of human capital to total labor (*fdigspchl*); this coefficient is not statistically significant tough. This model attempts to test Borensztein et al's (1995) findings that FDI is positive and statistically significant when interacts with human capital in the host country. As we can learn from model 1.2 there is no evidence to support Borensztein et al's findings for the Mexican case, and for this period of time.

Table 4.5 shows the variance-covariance matrix for model 1.2; I think it is worth noting several results from this matrix. First, there is a positive correlation (0.2538) between the domestic investment as ratio to GSP (*ndigsp*) and the growth rate in the formal labor (*grL*) by Mexican State. This correlation suggests that labor grows as more domestic capital is invested in the country. Conversely, there is a negative correlation (0.12) between the ratio of FDI to GSP (*fdigsp*) and the Labor's growth rate (*grL*). This negative correlation between *fdigsp* and *grL* provides evidence to the special conditions in which the manufacturing industry operated in México right after the U.S.'s economic slowdown; in which many MNEs significantly reduced their workforce to improve their productivity levels; while at the same time they were also investing in capital and technology to increase productivity. The previous argument is also supported by the negative correlation between the growth rate in the share of industrial production (*grsecgsp*) and the ratio of both domestic and foreign investment (*ndigsp* and *fdigsp*,

respectively). Despite the fact that both domestic and foreign investment ratios increased from 1998 to 2003, the share of the industrial production to GSP decreased for the same period of time, as we could also observed it in table 4.3.

However, given the high covariance coefficient between the ratio of FDI to GSP, and the interaction between FDI and human capital (-.8505), and that table 4.6 shows problems of multicollinearity between these two variables, I ran model 1.3 in which I also introduced the interaction between the NDI ratio to GSP 1998 and the share of human capital to total labor (*ndigsphcl*), but I left out both ratios FDI to GSP (*fdigsp*) and NDI to GSP (*ndigsp*) from the model. This model attempts to provide evidence whether the share of human capital also affect domestic capital in the country. There is no evidence to support that thought. Both interactions *ndigsphcl* and *fdigsphcl* have no significant coefficients; and as in the previous models, the only significant coefficient is the one for the growth rate in the number of businesses per 1000 people (*grbspop*).

The adjusted R-squared in model 1.3 is somehow better than the one in model 1.2, however, it is still relatively small (0.2939); and as previously mentioned, the only significant coefficient is the one for the growth rate in the number of businesses per 1000 people.

Model 1.4 shows what could be called the “parsimonious” model, one in which there is no interaction between the ratio of FDI and NDI to GSP, with the share of human capital; but shows the impact of the growth rate of unskilled (*grLu*) and skilled labor (*grhc*) to economic growth.

The last column in table 4.4, then, shows the best model with an adjusted R squared equal to 55.22%, and significant coefficients not only for the growth rate in the number of businesses (*grbspop*), but also for the growth rate in the share of industrial production (*grsecgsp*), for the growth rate in the level of human capital – skilled labor – (*grhc*), and for the dummy variable controlling for México City (*ddf*). The coefficient for the growth rate in the number of businesses (*grbspop*) remains negative, and significant at the 5 percent level; although with a lower impact on the dependent variable – Economic Growth (*grgsp*). Despite the fact that the coefficient for the share of industrial production remains about the same level as in model 1.1 and 1.3, it is now significant at 10 percent. This result implies that Mexican States with higher shares of industrial production tend to grow faster than other States in the country. Despite the fact that the industrial production in México, for the first years of the millennium, remained sluggish, due to the economic slow down in the U.S. market; in general terms the industrial sector is the driving force for moving forward the regional economies in the country.

Table 4.4 Regression Analysis for Hypothesis 1

Variables	Model 1.1	Model 1.2	Model 1.3	Model 1.4
Growth in total Labor (grL)	0.1896 (0.1711)	0.215 (0.1829)	0.1924 (0.1756)	
NDI ratio to GSP 1998 (ndigsp)	-0.0568 (0.0671)	-0.0514 (0.0692)		-0.297 (0.0520)
FDI ratio to GSP 1998 (fdigsp)	-0.0092 (0.3500)	-0.2689 (0.6768)		-0.2637 (0.2808)
Growth in the number of businesses per 100 people (grbspop)	-1.2851 *** (0.4110)	-1.2824 *** (0.4180)	-1.2977 *** (0.4039)	-0.7306 ** (0.3574)
Growth in the share of industrial production (grsecgsp)	0.1539 (0.1125)	-0.1625 (0.1160)	0.1535 (0.1126)	0.1584 * (0.0871)
Dummy for border zone (border)	-0.0403 (0.0625)	-0.0394 (0.0637)	-0.0485 (0.0589)	-0.0447 (0.0482)
Dummy for México City (dffc)	0.0366 (0.1132)	0.0263 (0.1175)	0.024 (0.1128)	0.1794 * (0.0951)
Interaction between FDI ratio and share of HC to total Labor (fdigspchl)		0.7837 (1.7373)	0.0924 (0.8657)	
Interaction between NDI ratio and share of HC to total Labor (ndigspchl)			-0.127 (0.1193)	
Growth rate of unskilled labor (grLu)				0.0022 (0.0378)
Growth rate of Huan Capital - population with higher education (grhc)				2.31 *** (0.5479)
_cons	0.3449 *** (0.0677)	0.3333 *** (0.0735)	0.3419 *** (0.0687)	0.3646 *** (0.0489)
F	(7.24) = 2.68	(8.23) = 2.29	(7.24) = 2.84	(8.23) = 5.78
Prob > F	0.0338	0.0574	0.0262	0.0004
R-squared	0.4384	0.4433	0.4533	0.6677
Adj R-squared	0.2746	0.2497	0.2939	0.5522
N	32	32	32	32

Standard errors in parenthesis

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4.5 Variance covariance matrix for model 1.2

	grL	ndigsp	fdigsp	fdigsphcl	grbspop	grsecgsp	border	ddf	cons
grL	1								
ndigsp	0.2538	1							
fdigsp	-0.12	0.1079	1						
fdigsphcl	0.3083	0.1696	-0.8505	1					
grbspop	0.1692	0.2246	0.1077	0.0141	1				
grsecgsp	-0.1186	-0.0266	-0.0376	0.1645	0.1951	1			
border	0.2473	-0.0725	-0.2994	0.0322	0.3275	0.0122	1		
ddf	-0.0942	-0.1006	-0.1506	-0.1933	-0.145	-0.1688	0.4272	1	
cons	-0.5946	-0.421	0.1197	-0.3472	0.5169	0.1595	0.1679	0.0899	1

Table 4.6 Multicollinearity test for model 1.2

Variable	VIF	1/VIF
fdigsphcl	16.66	0.060009
fdigsp	16.14	0.061971
border	2.87	0.347979
ddf	1.94	0.51434
grL	1.9	0.52585
ndigsp	1.68	0.596946
grbspop	1.56	0.641528
grsecgsp	1.34	0.748052
Mean VIF	5.51	

Thus, model 1.4 shows the effect of the growth rate in the level of human capital (*grhc*) on economic growth, and we can see that both *ndigsp* and *fdigsp* remain not significant in the model. Also, the growth rate in the unskilled labor (*grLu*) loses impact on the dependent variable, from the previous models, although its coefficient is not significant. The relevance, then, of this model is the fact that the coefficient of the growth rate in the level of human capital (2.31) is significant at 1 percent; and the adjusted R-squared reaches the 55 percent level. This result could have an interesting impact on policy development in the country, in the sense that States across the country might be able to pursue strategies to improve their levels of education – higher education – and their attractiveness for domestic or foreign investment into the secondary sector.

In the same vein, the human capital's elasticity of 2.31 over the GSP's growth rate – *ceteris paribus* – suggests that developing countries should consider implementing policies, not just for attracting FDI, but for improving their levels of education to the extent to which, their workforce becomes highly productive, independently of the economic sector in which they operate.

In sum, model 1.4 suggests that developing countries do not just need more capital, or more labor, but better-qualified human capital able to become the vehicle for spreading better practices, and innovations brought by foreign and domestic capital into the country or its regions.

In table 4.7 we can see that the covariance coefficient between *fdigsp* and *grhc* is -0.0964, suggesting that higher ratios of FDI to GSP go to states with lower human capital's growth rates. Despite the implicit logic of that covariance between the two variables, let us remember that most of FDI inflows are registered in México City; however, México City does not necessarily have the highest growth in human in capital for the period between 1998 to 2003; thus, this relationship might be deceptive.

Table 4.8 shows the results of the built-in command in STATA[®] *linktest*, which test for specification. This command creates two new variables out of the predictors; one is *_hat*, and the second one is *_hatsq*. In this test, *_hat* should be significant, and *_hatsq* should not, under the assumption that if the squared of the predicted value is significant, there should be, then, other predictors missing in the model. This test shows no indication of specification error, despite the fact that *_hat* is not significant. The second test is the Ramsey RESET test in which null hypothesis is that the model has no omitted variables; thus we should expect to have a low *p-value* to avoid rejecting the null of no omitted variables. The Ramsey test for Model 1.4 shows a *p-value* = 0.9844; thus I fail to reject the null. In sum, there are no problems of specification error in model 1.2.

I also used the built-in program in STATA[®] *hettest*, which tests for homoskedastic errors, which is the Cook-Weisberg test for heteroskedasticity. The null hypothesis is that the model has a constant variance; thus, a *p-value* = 0.8662 confirms that the model has homoskedastic errors.

Finally, the test for multicollinearity is the *Variance Inflation Factor* test, also built-in in STATA[®]. Testing for multicollinearity helps to identify the level of “tolerance” for a linear relationship between predictors. This test is important to avoid redundancy among our exogenous variables. As we can see in table 4.9, the mean of the *VIF* is lower than the level of tolerance 10 percent (2.19 percent); the same is also true for each one of the variables in the model; thus, there are no problems of multicollinearity among the variables in model 1.4.

Table 4.7 Variance-covariance matrix for model 1.4

	grLu	ndigsp	fdigsp	grhc	grbspop	grsecgsp	border	ddf	cons
grLu	1								
ndigsp	0.1697	1							
fdigsp	0.3198	0.4431	1						
grhc	0.0909	0.2032	-0.0964	1					
grbspop	0.1854	0.2785	0.1646	0.4319	1				
grsecgsp	-0.0354	-0.0325	0.2417	-0.0516	0.1811	1			
border	0.144	-0.0981	-0.5496	0.0746	0.3141	0.0458	1		
ddf	-0.0742	-0.0052	-0.6173	0.3368	0.0127	-0.1551	0.4416	1	
cons	-0.4028	-0.382	-0.3302	-0.1335	0.5243	0.1685	0.2991	0.0009	1

Table 4.8 Testing for specification error in model 1.4

Source	SS	df	MS			
Model	0.1898	2	0.0949	Number of obs =	32	
Residual	0.0942	29	0.0032	F(2, 29) =	29.21	
Total	0.2841	31	0.0092	Prob > F =	0.0000	
				R-squared =	0.6682	
				Adj R-squared =	0.6454	
				Root MSE =	0.0570	

gr gsp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
_hat	0.722749	1.335688	0.54	0.5930	-2.0090 3.4545
_hatsq	0.239405	1.147807	0.21	0.8360	-2.1081 2.5869
_cons	0.078244	0.3815973	0.21	0.8390	-0.7022 0.8587

Ramsey RESET test using powers of the fitted values of gr gsp

Ho: model has no omitted variables

F(3, 20) = 0.05

Prob > F = 0.9844

Cook-Weisberg test for heteroskedasticity using fitted values of gr gsp

Ho: Constant variance

chi2(1) = 0.03

Prob > chi2 = 0.8662

Table 4.9 Test for multicollinearity in model 1.4

Variable	VIF	1/VIF
fdigsp	4.65	0.2149
border	2.76	0.3624
ddf	2.13	0.4684
grbspop	1.91	0.5239
ndigsp	1.66	0.6029
grhc	1.64	0.6088
grLu	1.51	0.6623
grsecgsp	1.26	0.7919
Mean VIF	2.19	

Given that the previous results are to some extent troublesome, in good part, I believe, due to the lack of longitudinal data that would tend to better reflect a more accurate behavior of each variable across Mexican States, I am including a different form of the model to test hypothesis 1. The following model is based on the assumption that there is the possibility of a linear additive production function for the Mexican case. Being this case, I will use as starting point the conventional linear equation:

$$y_i = a + bX_i \quad (\text{Eq.4.16})$$

Where y_i represents the GSP for each Mexican State, and X_i the set of variables predicting the behavior of GSP, which are the same variables used in the previous model.

Due to the fact that I am using two data sets, one for 1998 and the other for 2003, I will use the first differenced-equation of 4.16, to empirically test hypothesis 1.

$$Dy_i = bDX_i \quad (\text{Eq.4.17})$$

Thus, the empirical model would be:

$$DGSP_i = b_1DL_i + b_2NDI_i + b_3FDI_i + b_4FDI*DHC_i + b_5DBSNS_i + b_6DSECGSP_i + b_7border_i \quad (\text{Eq.4.18})$$

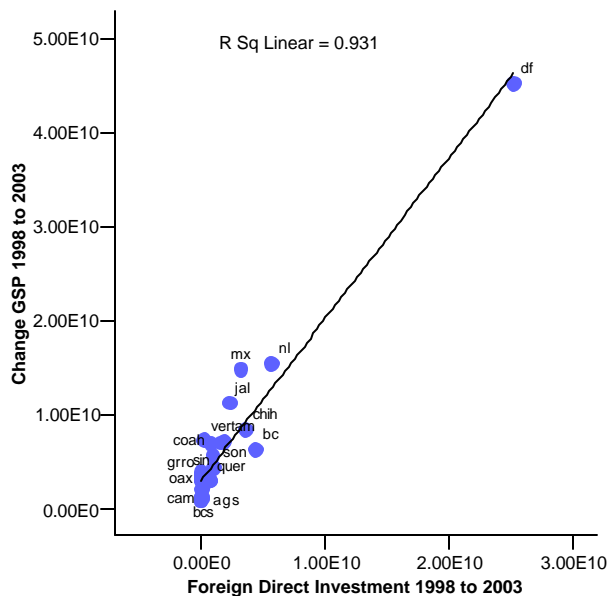
$i = \text{Mexican States from 1 to 32.}$

Where GSP_i is the Gross State Product measured in current U.S. dollars; L_i is measured by the amount of labor officially registered within the Mexican Institute of Social Security; NDI_i is the cumulative Net Domestic Investment (U.S. dollars) from

1998 to 2003; FDI_i is the cumulative Foreign Direct Investment (U.S. dollars) from 1998 to 2003; $FDI * DHC_i$ is the interaction between FDI and the change in the level of human capital from 1998 to 2003 (population with higher education). $BSNS_i$ measures the number of businesses – economic units; $SECGSP_i$ is the share of industrial production as ratio to the GSP; and $border_i$ is the dummy variable controlling for the geographic zone.

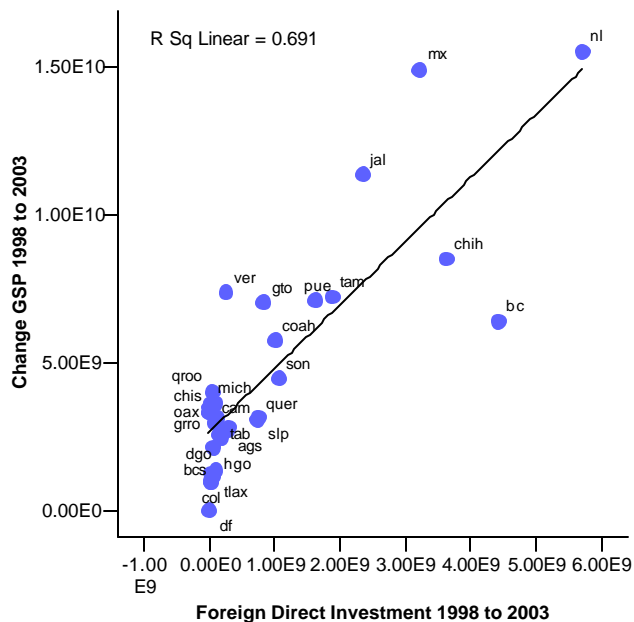
Let us recall that figure 4.2 shows the correlation between FDI as ratio to the GSP and the GSP's growth rate, and such correlation is negative, although practically horizontally flat. However, figure 4.6 shows the correlation between the cumulative FDI and the change in the GSP from 1998 to 2003 for each Mexican State.

Figure 4.6 Correlation between cumulative FDI in U.S. dollars, and the GSP change from 1998 to 2003.



Source: Own elaboration with data from INEGI

Figure 4.7 Adjusted correlation between cumulative FDI and GSP change, without México City.



Source: Own elaboration with data from INEGI

By comparing figure 4.2 and figure 4.6, we can observe a significant change in the correlation between the two variables. Even though, after eliminating México City (*df*) from the data to adjust the correlation, there is a high positive correlation between the variables [see figure 4.7]. Thus, I believe that by running the linear form of the model (equation 4.18) I will be able to tell a different story regarding the relationship between FDI and Economic Growth in México.

Table 4.10 shows descriptive statistics for the variables in equation 4.18, and there are two key points that we can learn from this table. One is the fact that the absolute change in the official registered labor within the Mexican Institute of Social Security accounts only for almost 2 million people for a five year period, averaging only 400 thousand jobs a year in the whole country ($62,114 * 32$ states). I think it is evident the sluggish rate of new jobs creation in the country from 1998 to 2003, which in addition of being problematic by itself, this average change in the formal jobs in México turns dramatically painful when we know that the country needs to create more than one million jobs, in order to absorb the natural increase in the labor market, nationwide. Therefore, the data suggest that there was a deficit of 600 thousand jobs by year in México for this period of time. Two, we can also estimate that México lost approximately 270 thousand economic units – businesses – from 1998 to 2003 ($-8,423 * 32$ states) averaging almost 54 thousand a year. Thus, the situation in México turns complicated in terms of jobs creation and in terms of setting the economic structure for a sustainable development; this, given the sluggish rate of jobs creation and that the country's output tends to dependent significantly more on MNEs, and on companies within the exporting sector. This

situation seems to leave a void in the domestic economy that under different conditions micro and small size companies could have filled with their own production.

Table 4.11 shows the results of running OLS on equation 4.18. The adjusted R-squared is above the 97 percent level, which implies that the predictors explain largely the behavior of my dependent variable. The change in labor (*d_labor*), the cumulative NDI (*ndi*), the cumulative FDI (*fdi*), and the interaction between FDI and HC (*fdi_dhc*), all have positive and significant coefficients. It is noteworthy that *fdi*'s coefficient is larger than *ndi*'s (1.5071 vs 0.2745) implying that FDI's contribution to the GSP's changes is greater than the domestic capital's contribution. This result in addition with the fact that MNEs, and companies within the exporting sector – which are usually large companies – are more likely to receive larger FDI inflows, support the idea that MNEs and companies within the exporting sector are the ones moving the Mexican economy forward; this, in spite of the significant reduction in the number of businesses, and the sluggish rate of new jobs' creation, as previously mentioned. Despite the relatively low coefficient of the interaction between FDI and the change in human capital (*fdi_dhc*), it is interesting that it remains statistically significant and positive. However, in this model, this interaction does not support the hypothesis that FDI's spillovers are augmented by their interaction with the level of human capital, either. The change in the number of businesses (*d_bsns*) has a negative coefficient, although it is not significant. In sum, whereas the economy in México was primarily pushed by MNEs and by companies within the exporting sector, the overall change in the number of businesses declined from 1998 to 2003.

Table 4.10 Descriptive Statistics linear model using first-differenced equation

Variables	Range Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Error	Std. Deviation Statistic	Variance Statistic
Change GSP 1998 to 2003 (d_gsp)	44,230,374,150	950,168,978	45,180,543,128	6,016,863,960	1,418,686,132	8,025,300,672	6.44065E+19
Change Labor 1998 to 2003 (d_labor)	354,653	(34,738)	319,915	62,114	11,558	65,382	4274830148
Net Domestic Investment 1998 to 2003 (ndi)	24,349,734,730	(14,240,312,532)	10,109,422,198	1,814,835,637	659,403,371	3,730,148,760	1.3914E+19
Foreign Direct Investment 1998 to 2003 (fdi)	25,247,116,146	(1,196,679)	25,245,919,467	1,701,913,210	801,021,482	4,531,261,776	2.05323E+19
FDI times change in Human Capital 98-03 (fdi_dhc)	1.36486E+14	-4309533386	1.36482E+14	1.52291E+13	5.61465E+12	3.17612E+13	1.00878E+27
Change in number of businesses 98-03 (d_bsns)	42,367	(41,226)	1,141	(8.423)	1,704	9,639	92,914,017
Change in secondary sector's output ratio GSP 98-03 (d_secgsp)	0.122	-0.070	0.052	-0.015	0.005	0.027	0.001

N= 32

Table 4.11 Linear model using first-differenced equation

Variables	Coef.	Std. Err.
d_labor	24919	6215 ***
ndi	0.2745	0.1319 **
fdi	1.5071	0.1527 ***
fdi_dhc	2.19E-05	0.0000 **
d_bsns	-56395	41889
d_secgsp	-2.8700E+09	1.0100E+10
border	-5.2600E+08	8.7200E+08
_cons	6.5400E+08	4.3000E+08
Prob > F	0.0000	
R-squared	0.9817	
Adj R-squared	0.9764	
N	32	

Despite the lack of significance in the coefficient of the change of the number of businesses (d_bsns), it is interesting to observe in table 4.10 that the covariance between d_bsns and fdi is positive and relatively large (0.6853). This coefficient implies that there is a positive covariance between the two variables when they are measured in absolute terms and not in relative terms as in the previous model (equation 4.12). The same situation applies for the relationship between the change in the number of businesses (d_bsns) and the cumulative domestic investment from 1998 to 2003 (ndi) with a covariance coefficient = 0.6555 . The covariance between fdi and d_bsns may hint the possibility that FDI does in fact contribute to the creation of more businesses in the host economy. I will address this issue in the analysis of my second hypothesis further on.

Table 4.12 Variance-Covariance matrix for the first-differenced equation

	d_labor	ndi	fdi	fdi_dhc	d_bsns	d_secgsp	border	cons
d_labor	1							
ndi	-0.0060	1						
fdi	-0.3529	0.8307	1					
fdi_dhc	-0.2338	-0.1234	-0.062	1				
d_bsns	0.1861	0.6555	0.6853	-0.1265	1			
d_secgsp	0.2333	0.1311	0.0492	0.3041	0.1124	1		
border	0.5247	-0.3068	-0.4584	-0.4793	-0.1563	0.1046	1	
_cons	-0.5638	-0.3094	0.0258	0.1492	0.0177	-0.0164	-0.3264	1

I also ran the appropriate tests for OLS assumptions on this model, and there are reasons to believe that the model has no significant problems. Table 4.13 shows the mean of the *Variance Inflation Factor*, which is lower than the 10 percent level of tolerance.

Table 4.13 Testing for multicollinearity on first-differenced equation

Variable	VIF	1/VIF
fdi	9.77	0.102377
ndi	4.94	0.202597
d_labor	3.37	0.296841
d_bsns	3.33	0.300633
border	2.44	0.410164
fdi_dhc	2.03	0.49276
d_secgsp	1.47	0.680112
Mean VIF	3.91	

Testing for homoskedastic errors, using the Cook-Weisberg test, shows no evidence of heteroskedasticity, with a *p-value* = 0.6184.

Testing for homoskedastic errors.

Cook-Weisberg test for heteroskedasticity using fitted values of `d_gsp`

Ho: Constant variance

chi2(1) = 0.25

Prob > chi2 = 0.6184

I also used two tests for specification error, both built-in in STATA®. Both tests show no evidence of specification problems. Table 4.13 shows that `_hatsq`, which is the squared of the prediction is not significant, implying that there are no omitted variables in the model. Similarly, the Ramsey test for omitted variables shows a *p-value* = 0.8353, which implies that I fail to reject the null hypothesis that the model has no omitted variables.

Table 4.14 Testing for specification error.

Source	SS	df	MS	No. Of obs	
Model	1.96E+21	2	9.80E+20	F(2, 29) =	32 779.99
Residual	3.64E+19	29	1.26E+18	Prob > F =	0.0000
Total	2.00E+21	31	6.44E+19	R-squared =	0.9817
				Adj R-sq =	0.9805
				Root MSE =	1.10E+09

d_gsp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
_hat	0.9885	0.0821	12.04	0.0000	0.8205832	1.156463
_hatsq	0.0000	0.0000	0.15	0.8840	-3.46E-12	4.00E-12
_cons	4.E+07	4.E+08	0.11	0.9120	-7.44E+08	8.30E+08

Ramsey RESET test using powers of the fitted values of `d_gsp`

Ho: model has no omitted variables

F(3, 21) = 0.29

Prob > F = 0.8353

In sum, by using both models – equation 4.12 and equation 4.18 – we can better understand the relationship between FDI and economic growth in México, from 1998 to 2003. Although, the lack of longitudinal data makes difficult the possibility to obtain a closer look at such relationship, I believe this is a good attempt to explore, and to analyze, the degree in which foreign capital contributes to economic growth, and its relative importance vis-à-vis domestic capital in the host country.

Equation 4.12 shows no evidence to support previous findings regarding the positive impact that FDI has on economic growth; although, it does support the thesis that human capital is in deed a significant predictor for economic growth. However, the linear model shows some evidence to suggests that there might be a linear relationship between FDI and economic growth in a developing country; and that the interaction between FDI and human capital is significant for economic growth, although its effect is rather small.

In the following section I will analyze the model for testing hypothesis 2, regarding the relationship between FDI and the entrepreneurial activity in the country. However, given the results thus far, I believe that the following phases of this dissertation – the in-depth interviews on Sonoran Entrepreneurs, and the nationwide survey on entrepreneurs within the tertiary sector – might significantly contribute to our better understanding of the relationship between FDI, economic growth, and the entrepreneurial activity in the México.

Analyzing results for hypothesis 2

Hypothesis 2 states that FDI has a positive and significant correlation with the creation of new firms in México. The fundamental purpose of this dissertation is to provide evidence that FDI is the conduit for which the entrepreneurial activity grows in the country. The change in the number of businesses per Mexican state is the proxy variable for measuring the entrepreneurial activity in the country. The raise of a new entrepreneurial class in México is what we should observe after FDI's spillovers take effect in the host country; however, "a new entrepreneurial class" is indeed a latent variable; thus, one way to measure the observable effects of FDI's spillovers in the host economy is to measure the change in the number of businesses from one year to another, in this case, due to data restrictions, from 1998 to 2003.

Equation 4.19 shows the theoretical model for testing hypothesis 2:

$$\begin{aligned} Dbsns_i = & \mathbf{b}_1 ndi_i + \mathbf{b}_2 fdi_i + \mathbf{b}_3 fdi_Dhc_i + \mathbf{b}_4 Dgsppc_i + \mathbf{b}_5 Dpop_i + \mathbf{b}_6 Dunemp_i + \mathbf{b}_7 Ded_i \\ & + \mathbf{b}_8 Dsecgsp_i + \mathbf{b}_9 Dgov_i + \mathbf{b}_{10} border_i + \mathbf{b}_{11} ddf + Du_i \end{aligned} \quad (\text{Eq.4.19})$$

Where $i =$ Mexican states from 1 to 32.

$Dbsns_i$ represents the first-differenced equation for the change in the number of businesses as a function of the cumulative domestic investment (ndi), the cumulative foreign direct investment (fdi), the interaction between FDI and the change in human capital (population with higher education) from 1998 to 2003 (fdi_Dhc), the change in the Gross State Product per capita ($Dgsppc$), the change in population size ($Dpop$), the change in the level of unemployment (unemployed workforce) ($Dunempl$), the change in the average years of education (Ded), the change in the share of industrial production as ratio

to GSP ($Dsecgsp$), the change in public investment ($Dgov$), and two control variables, one dummy variable controlling for geographic zone (border), and the other for the fact that México City is the major recipient of FDI in the country (ddf).

Table 4.15 shows descriptive statistics for the variables used in the model testing for hypothesis 2. Model 2 – equation 4.19 – attempts to empirically test whether FDI has a positive and significant effect on the entrepreneurial activity in México, measured as the change in the number of businesses across Mexican States, from 1998 to 2003. Due to some of the variables used in equation 4.19 have already been described in the previous models, I will focus my attention, particularly, on three variables: on the change in the GSP per capita, on the change in the number of unemployed people, and on the change in the average years of educations. We can see in table 4.15 that the mean of the change in GSP per capita per Mexican State is 1,677 dollars from 1998 to 2003. Considering that entrepreneurs may be more willing to start a new venture when there are incentives such as an increasing demand or the lack of goods and services needed in the market, it would be expected that the higher the GSP per capita's change, the greater the entrepreneurial activity in the economy. It is noteworthy the fact that increments in the GSP per capita do not necessarily mean that the market is growing, and that the market's purchasing power is also growing. Unfortunately, in a developing country such as México, the population suffers from a great unequal distribution of income, in addition, if we accept that most of México's economic growth – as previously argued – is the result of more productive MNEs as well as from large companies within the exporting sector; then, it is very likely that such increments in the GSP per capita, may not necessarily mean greater levels of

purchasing power but just more output overall. Being that the case, such increments of the GSP per capita may not necessarily push forward the entrepreneurial activity in México.

Another variable measuring the market's context, in which the entrepreneurial activity takes place in México, is the change in the number of employed people. This variable measures the change in the formal unemployed workforce (individuals 15 years old and above). As we can observe in table 4.15 the mean of the change in the unemployed workforce by Mexican State is negative, suggesting that all of the states in México reduced their unemployed labor. This figure goes in line with the increment in the number of registered labor within the Mexican Institute of Social Security shown in table 4.10; however as previously explained, the increment size in the formal labor as much as the reduction in the unemployed workforce per Mexican State are far from the desired level in the country.

In a similar vein, the improvement in the average level of education in México, measured by the change in the average years of education, is also sluggish for the five years period, from 1998 to 2003. The mean of the average change in the number of years of education across Mexican States is only 0.63 years. The States of Querétaro and Quintana Roo show the largest increments in the average years of education 0.92 and 0.93 respectively; not even one full year. Though, the average years of education in México changed from 7.19 to 7.82 from 1998 to 2003.

Table 4.15 Descriptive statistics for model 2

Variables	N Statistic	Range Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Error	Std. Deviation Statistic	Variance Statistic
Change in the number of businesses	32	42,367	-41,226	1,141	-8,423	1,704	9,639	92,914,017
Net Domestic Investment 1998 to 2003 (thousands current U.S. dfls)	32	24,349,735	-14,240,313	10,108,422	1,814,836	659,403	3,730,149	1,39E+19
Foreign Direct Investment 1998 to 2003 (thousands current U.S. dfls)	32	25,247,116	-1,196,679	25,245,919	1,701,913	801,021	4,531,262	2,05E+19
Interaction FDI with the change in Human Capital	32	1,36E+14	-4.31E+09	1.36E+14	1.52E+13	5.61E+12	3.18E+13	1.01E+27
Change in the GSP per capita	32	4,718	405	5,123	1,677	191	1,082	1171442
Change in population	32	1214854	3937	1218791	196665	38356	216972	4.71E+10
Change in the number of unemployed people	32	22,491	-21,461	1,030	-7,351	992	5,613	31507370
Change in the average years of education	32	0.6800	0.3500	0.9300	0.6319	0.0241	0.1362	0.0186
Change in public investment (current U.S. dfls)	32	434,795,595	-153,587,134	281,208,460	36,715,740	15,276,791	86,418,579	7.E+15
Change in the secondary sector's output as ratio to GSP	32	0.1200	-0.0700	0.0500	-0.0144	0.0047	0.0268	0.0007

Table 4.16 shows the regression analysis for testing hypothesis 2. I found it useful to present step by step the introduction of the variables in the model, so I can better explain their relationship with the entrepreneurial activity in the country. Model 2.1 shows the coefficients for the change in capital stock, measured by domestic and foreign investment from 1998 to 2003. Despite the fact that both coefficients are rather small ($-1.70E-06$ for NDI, and $-2.45E-06$ for FDI), both are statistically significant but negative. Interesting, the adjusted R-squared is almost 60 percent. Let us recall that the absolute change in the number of businesses is negative [See table 4.15], and NDI as well as FDI are both positive numbers. This situation goes in line with the argument that most of the cumulative investment, domestic as well as foreign, goes to either large and existing domestic companies, or to also existing MNEs in the country; and that most of the businesses either created or closed down, were part of the food-retailing industry, which do not capture large capital investments. Most of the food-retailing firms in México are not franchise-types of businesses, but micro and small family businesses that usually rent a house or an empty lot nearby a populated area; thus, the amount of the initial investment is significantly low and it is also offset by multimillionaire investments such as those of the domestic telephone company in México, or by Ford, or any other MNEs in the country.

Model 2.2 introduces the interaction between FDI and the change in human capital, the coefficient is significant, and it is positive, though it is also rather small. Model 2.3 shows the coefficients for the variables controlling for market conditions: GSP per capita, population and unemployment. Only the change in unemployment has a positive and

significant coefficient. This positive coefficient is certainly interesting, because it suggests that greater levels of unemployment tend to increase the change in the number of businesses. However, given the nature of the dependent variable, the relationship between the change in the level of unemployed people and the change in the number of business per Mexican State, is telling us that those states with higher levels of unemployed labor also had smaller reductions in their number of businesses. This situation is easily explained by the fact that under difficult times, businesses tend to reduce their workforce in order to avoid closing down their operations, or even to avoid bankruptcy.

Model 2.4 shows the coefficients for the variables controlling for the context in which the entrepreneurial activity takes place, these are: the change in the level of education, the change in the share of industrial production, and public investment. None of the previous variables are statistically significant. Model 2.5 includes the dummy variable controlling for geographic zone, which is not statistically significant. Only the introduction of the dummy variable controlling for México City, and the fact that it accounts for more than half of FDI inflows, made both dummy variables significant. Nonetheless, table 4.17 shows that testing for multicollinearity, this model (2.6) has serious problems between FDI and the dummy variable for México City. Thus, eliminating the dummy variable for México City from the model, table 4.18 shows no problem of multicollinearity in the equation. The adjusted R-squared in model 2.5 is close to 80 percent and the coefficients for NDI, for FDI and for the level of unemployment are statistically significant.

Table 4.16 Regression Analysis Hypothesis 2:
Correlation between FDI and Entrepreneurial activity in México

Variables	Model 2.1	Model 2.2	Model 2.3	Model 2.4	Model 2.5	Model 2.6
ndi	-1.70E-06 *** (4.49e-07)	-1.96E-06 *** (4.59e-07)	-9.33E-07 * (5.59e-07)	-1.15E-06 ** (6.03e-07)	-1.41E-06 ** (6.36e-07)	-1.51E-06 *** (5.81e-07)
fdi	-2.45E-06 *** (3.70e-070)	-2.70E-06 *** (3.88e-07)	-1.55E-06 *** (5.78e-07)	-1.78E-06 *** (6.24e-07)	-1.95E-06 *** (6.34e-07)	-9.48E-06 *** (3.32e-06)
fdi_dhc		6.28E-11 * (3.65e-11)	6.43E-11 * (365e-11)	1.11E-10 * (6.45e-11)	9.34E-11 (6.55e-11)	3.41E-10 *** (1.23e-10)
d_gsppc			-1.2031 (1.404)	-1.63796 (1.5246)	-1.614 (1.5098)	-0.6469 (1.4377)
dpop			1.97E-06 (.0055)	-0.0011 (.0060)	-0.0019 (-0.063)	0.0027 (.0058)
d_unempl			0.7536 *** .2722	0.7376 *** (.2810)	0.6499 ** (.2877)	0.6202 ** (.2624)
d_ed				3564 (9905)	7732 (10407)	4320 (9593)
d_secgsp				-22465 (45735)	-18498 (45410)	-60320 (45164)
d_gov				-0.00002 (.00002)	-0.00002 (.000017)	-0.000022 (.000016)
border					4192.61 (3498)	8920 ** (3789)
ddf						183202 ** (79474)
_cons	-1170.635 (1736.05)	-1228 (1680)	2478 (2947)	1649 (6299)	-1203 (6677)	199 (6112)
Prob > F	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000
R-squared	0.6188	0.6553	0.7386	0.7578	0.7733	0.8209
Adj R-squared	0.5925	0.6184	0.6759	0.6587	0.6653	0.7223
N	32	32	32	32	32	32

Standard errors in parenthesis

* significant at 10%, ** significant at 5%, and *** significant at 1%

Table 4.17 Testing for multicollinearity in model 2.6

Variable	VIF	1/VIF
fdi	271.58	0.0037
ddf	237.18	0.0042
fdi_dhc	18.34	0.0545
ndi	5.63	0.1775
d_gsppc	2.91	0.3437
border	2.71	0.3685
d_unempl	2.61	0.3836
d_gov	2.33	0.4296
d_ed	2.05	0.4874
dpop	1.93	0.5176
d_secgsp	1.75	0.5700
Mean VIF	49.91	

Table 4.18 Testing for multicollinearity in model 2.5

Variable	VIF	1/VIF
fdi	8.23	0.1215
ndi	5.61	0.1784
fdi_dhc	4.31	0.2321
d_gsppc	2.66	0.3757
d_unempl	2.6	0.3846
d_gov	2.33	0.4296
d_ed	2	0.4993
border	1.92	0.5211
dpop	1.71	0.5860
d_secgsp	1.47	0.6797
Mean VIF	3.28	

Table 4.19 shows the model's variance-covariance matrix, and we can observe that the covariance between the change in the level of unemployment with both NDI and FDI, has a relative large and positive coefficient, suggesting that unemployment increases when there is more FDI or more NDI. It would seem that from 1998 to 2003, private investment in México was primarily focused on improving productivity levels in existing MNEs and large domestic companies than in creating more firms across Mexican States. The covariance coefficient of the change in the share of industrial production (d_secgsp) with NDI and FDI provides support to the previous thought. Higher levels of private investment, either domestic or foreign, increase the share of industrial production across Mexican States. Being that the case, and considering that 95 percent of all businesses across the country are classified as micro and small businesses, which are very unlikely to be the ones receiving FDI; it is not difficult to conclude that a relatively large proportion of all the lost businesses across Mexican States from 1998 to 2003 are not in the secondary sector, which includes the manufacturing industry accounting for more than 60 percent of the cumulative FDI inflows in the country.

Table 4.20 shows the test for specification error for model 2.5 (without ddf), and it is safe to say that there is no evidence of specification error using the built-in command in STATA® *linktest*. The squared of the prediction is not statistically significant; suggesting that there are no omitted variables in the model. The cook-Weisber test for homoskedastic error shows no evidence of hetoreskedastic errors.

Table 4.19 Variance-covariance matrix for model 2.5

	ndi	fdi	fdi_dhc	d_gsppc	dpop	d_unempl	d_ed	d_secgsp	d_gov	border	cons
ndi	1										
fdi	0.8176	1									
fdi_dhc	-0.2095	-0.1116	1								
d_gsppc	-0.0902	-0.4406	-0.3973	1							
dpop	0.0433	-0.0284	-0.4136	0.3556	1						
d_unempl	0.6399	0.6898	-0.0407	-0.2534	0.2297	1					
d_ed	-0.2936	-0.0423	0.4382	-0.2582	-0.3516	-0.1698	1				
d_secgsp	0.0456	0.1146	0.2651	-0.0528	-0.1693	-0.0695	0.1485	1			
d_gov	0.254	0.2577	-0.647	0.2431	0.1854	0.0577	-0.2891	0.0945	1		
border	-0.3428	-0.2279	-0.2188	0.0131	-0.1171	-0.2542	0.3342	0.0729	0.0039	1	
cons	0.2581	0.1545	-0.2051	-0.1522	0.1424	0.3359	-0.8764	-0.1028	0.1006	-0.3566	1

Table 4.20 Testing for specification error in model 2.5

Source	SS	df	MS			
Model	2.23E+09	2	1.11E+09	No. of obs =	32	
Residual	652862895	29	22512514	F(2, 29) =	49.47	
Total	2.88E+09	31	92914017	Prob > F =	0.0000	
				R-squared =	0.7733	
				Adj R-squared =	0.7577	
				Root MSE =	4744.7	

d_bsns	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
_hat	0.9797733	0.2477457	3.95	0	0.4730764	1.48647
_hatsq	-5.83E-07	6.53E-06	-0.09	0.929	-0.0000139	0.0000128
_cons	-88.37053	1548.952	-0.06	0.955	-3256.332	3079.591

Cook-Weisberg test for heteroskedasticity using fitted values of d_bsns

Ho: Constant variance

chi2(1) = 0.86

Prob > chi2 = 0.3526

These results suggest that there is not yet a clear effect of FDI's spillovers in México. Despite the fact that FDI has been relatively stable across time, and that the GSP has been increasing, as shown in the previous model the country had less "economic units" – businesses – in 2003 than in 1998. If FDI is contributing with economic growth in México, it has not done it by creating more businesses, but by making the existing ones more productive.

As previously mentioned it, the negative sign of FDI's coefficient implies that higher levels of FDI may reduce the change in the number of businesses from one period to another, by Mexican State. This goes in line with occupational choice's thesis that foreign capital crowds out domestic entrepreneurial activity in the host country (Lim 2001; Backer & Sleuwaegen 2003). Occupational choice models show that individuals are willing to start a new venture if and only if the expected benefits of such new venture are higher than the expected benefits of being employed. This argument implies that MNEs distort the domestic market – at least in the short term – by attracting the most qualified men and women in the host country, with higher wages. In doing so, MNEs shift the potential balance between the expected benefits of being employed and being an entrepreneur, by offering higher wages. If this has been the case in México for the period under analysis from 1998 to 2003, it would imply that the increments in FDI's inflows in México during this period of time, were used to create more better-paid jobs, presumably among MNEs; thus, making the self-employment market – entrepreneurial activity – less appealing. Individuals might not just shift jobs to improve their salaries and personal income; they might also choose to close down operations of low productive businesses for seeking better opportunities in the labor market.

Nonetheless, there is no evidence of significant increments in the formal and registered number of employees from 1998 to 2003 with the Mexican Institute of Social Security. The 400 thousand jobs created in average per year, are in no way sufficient to absorb the natural increment in the labor supply in México; thus, there is no clear evidence to suggest that the owners of the 270 thousand formal firms lost in the 1998 -

2003 period are now working in MNEs. This situation leads me to believe that there is also another possibility affecting the change in the number of formal firms in México, during this period of time.

Let us recall that México suffered a deep financial crisis in 1995, and as a result, the interest rates jumped up to above 100 percent, making almost impossible to many firms to have access to financial resources, or to pay their existing loans. Under such circumstances, it is plausible that many firms decided to close down their operations, and very likely to move into the informal sector. Once in the informal sector, these small and micro businesses do not pay taxes, and do not cover for employment benefits, reducing significantly their operations costs. Even though, the value-added of such businesses within the informal sector is not accounted in the Gross Domestic Product, sometimes they do pay for public services, rent, and value-added taxes that are indeed accounted in the GDP; however, these informal businesses are not registered in INEGI; thus, there is no way to account for such firms in my analysis.

In sum, there is no clear evidence to support the hypothesis that FDI is positive correlated with the entrepreneurial activity in the country; although, there is evidence to support previous results indicating that FDI's spillovers take place when there is certain level of human capital in the host country (Borensztein et al. 1995) by the positive and significant coefficient of the interaction between FDI and HC.

One important caveat derived from these results is the fact that my analysis is based on only two data sets, one for 1998 and the other for 2003, and not on longitudinal data that might better capture the behavior of the variables across time in the country. I believe that one way to add in-depth to these results is to have first-hand information about the market behavior in México, in this sense, I think the interviews on Sonoran Entrepreneurs and the nationwide survey on entrepreneurs in the tertiary sector may contribute to enhance our understanding of the relationship between FDI and the entrepreneurial activity in México.

Conclusions

In this chapter I have presented the empirical analysis of the relationship between FDI, economic growth, and entrepreneurial activity in México. I have tested two central hypotheses; the first, that FDI has a positive and significant impact on economic growth across Mexican states; and the second, that FDI has a positive and significant impact on the entrepreneurial activity across Mexican states.

Regarding my first hypothesis I am concluding that (1) the Cobb-Douglas production function does not provide evidence for a positive relationship between FDI and economic growth in México; however, an additive-linear model does provide significant evidence of the positive relationship between FDI and economic growth. (2) The growth in the level of human capital by itself does have a significant impact on economic growth, but there is no evidence, for the Mexican case, that the interaction between FDI and human capital enhances FDI's spillovers yet. (3) The growth in the number of businesses per 1000 people in México has a negative and statistically significant impact on economic growth, implying that most of such businesses are micro and small firms that do not receive foreign capital and do not add much value to the GDP. (4) There is evidence to suggest that FDI has a greater impact than NDI on economic growth in México, while using the linear model, but not the Cobb-Douglas production function.

Regarding my second hypothesis, I can conclude that, (1) FDI has a negative and significant relationship with the rate of creation of new firms across Mexican states. This finding suggests crowding-out effects of FDI in the host country. (2) The interaction

between FDI and HC is statistically significant, but it has a rather small positive impact on the rate of new firms' formation. (3) The positive relationship between the change in the level of unemployment and the change in the number of businesses across Mexican States, suggests that being unemployed push individuals to explore new ventures as starting their own businesses.

Thus far, I have presented partial empirical evidence that support only one of my hypotheses. In addition, the previous findings are limited in explaining the context in which the entrepreneurial activity takes place across Mexican states. There are several questions regarding the entrepreneurial activity in México that emerge from the present analysis. Questions such as: are there systematic differences in the rate of new-firms' creation across Mexican States? What is the context in which the entrepreneurial activity takes place in Mexican States? What institutional factors affect the rate of creation of new firms in México? How could México implement policies to improve and accelerate FDI's spillovers to positively impact the creation of new firms?

In the next chapter I will describe the findings of a cross-sectional analysis on Sonoran entrepreneurs, within the manufacturing industry. In this second stage of my research I explored both the context in which the entrepreneurial activity takes place in Mexico and its relationship with FDI.

CHAPTER V. CROSS-SECTIONAL STUDY ON SONORAN ENTREPRENEURS

In this chapter I will describe the results of the in-depth interviews I conducted on Sonoran entrepreneurs within the manufacturing sector in the city of Hermosillo. Given the fact that most of the FDI's inflows from industrialized to developing countries, are concentrated on establishing manufacturing plants that take advantage of low costs of production, that usually prevail on less industrialized economies, the bulk of the academic research has, then, focused on analyzing the effects of FDI's spillovers within the manufacturing sector on host countries (Acs and Audretsch 1989; Acs, et al. 1994; Aitken et al. 1997; Binder and Björn 2005; Blömstrom 1986; Blömstrom and Kokko 1996, 1998; Branstetter 2006; Fosfuri et al. 2001; Freenstra and Hanson 1997; Fritsch et al. 2005; Love and Lage-Hidalgo 2000; Zarszky and Gallagher 2004). Therefore, this chapter contains the results of the second stage in my research that analyzes the relationship between FDI and the entrepreneurial activity in México, and that attempts to bridge the gap between FDI's spillovers and economic growth, through the entrepreneurial activity in a host country.

This cross-sectional analysis on Sonoran entrepreneurs has the purpose of exploring the factors that tend to foster, or to inhibit, the desire to become an entrepreneur, as well as to identify key factors that impact the creation of new firms within the manufacturing sector in the state of Sonora. In doing so, I will be providing context to the findings of my econometric model from the previous chapter.

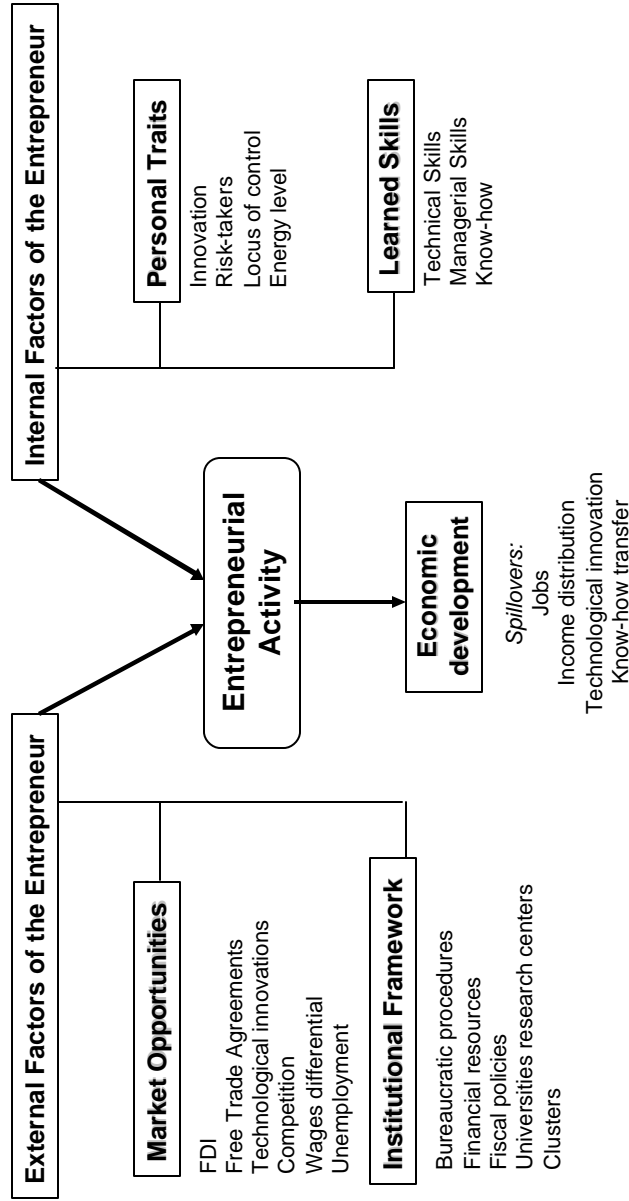
I have found that the factors affecting the willingness to become an entrepreneur, as well as the factors that affect successful start-ups within the manufacturing sector in Sonora, can be classified upon their impact and the nature of their origin. There are external and internal factors, relative to the individual or the potential entrepreneur, that interact among each other affecting the conditions in which individuals are willing to become entrepreneurs. On one hand, most of the literature on entrepreneurship has studied psychological traits as the engines that motivate individuals to become entrepreneurs; on the other hand, organizational theory scholars, in trying to close the gap between human behavior scholars and economists, have proposed to study entrepreneurship by combining the psychological traits of individuals with environmental conditions, and with the way both of these elements affect the rate of new businesses' start-ups.

As starting point I am using a modified version of the Global Entrepreneurship Monitor's conceptual model. Global Entrepreneurial Monitor is an international project with the goal of describing and analyzing the entrepreneurial activity in a wide range of countries. GEM has three goals: (1) to measure differences in the level of entrepreneurial activity between countries; (2) to identify factors that determine the level of entrepreneurial activity; and (3) to identify policies oriented to foster entrepreneurial activity (Minniti et al. 2006). In figure 5.1, I show a conceptual model that attempts to describe the relationship between internal and external factors, relative to the individual – or to the potential entrepreneur – that might affect entrepreneurial activity, and consequently economic growth in a community. Market opportunities and the

Institutional Framework are two broad elements that constitute external factors. These external factors might affect the environment surrounding individuals within a particular community. Thus far, we know that not all of the individuals within a particular community possess the same psychological traits; thus, we can assume that not all of the individuals within a community have the willingness to become entrepreneurs. Therefore, these external factors might interact with the individuals' characteristics and in turn affecting the entrepreneurial activity within the community.

The extent, to which all of the external factors described in figure 5.1 affect the individual's willingness to become an entrepreneur, is out of the reach of the present analysis. However, I will still be able to describe the experience of the entrepreneurs in my sample; regarding the way that some of the external factors affected their willingness to become entrepreneurs.

Figure 5.1 Factors nurturing the entrepreneurial activity



Source: Own elaboration, modified from GEM's conceptual model.

Let us consider a situation in which there are the appropriate institutions in place that facilitates all the pertinent procedures to start up a new business; in other words, there are institutions that diligently and efficiently carry on all of the processes to start a new business in the community. There are also appropriate market conditions, such as a relatively stable economy, a substantial purchasing power within the market, and there are enough productive resources (capital and high skilled labor) within the region to start a company that manufactures small electrical thermometers for industrial applications, for instance. Let us also assume that we might have an individual that works for a multinational company, say, as production manager, and given her position in the company, she has the appropriate knowledge regarding who are the main producers of electrical thermometers for industrial applications in the country. Let us assume that this production manager finds out that there are no companies in the western region of México that manufacture such type of electrical thermometers, and that there is a relative high demand for them in the industry. She then, foreseeing such market opportunity decides to quit her job to start up a new company, one that produces such electrical thermometers.

Assuming that this potential entrepreneur, in my case, has the ability to raise the capital needed to start her new company (either by using her own savings, or by asking for a bank-loan) and that she also is able to find skilled labor in the community (either by hiring new workers from other industries, or by bringing with her former co-workers from the multinational company) she would very likely be able to start her own company with relatively minimum complications. In so doing, she will also reveal evidence of

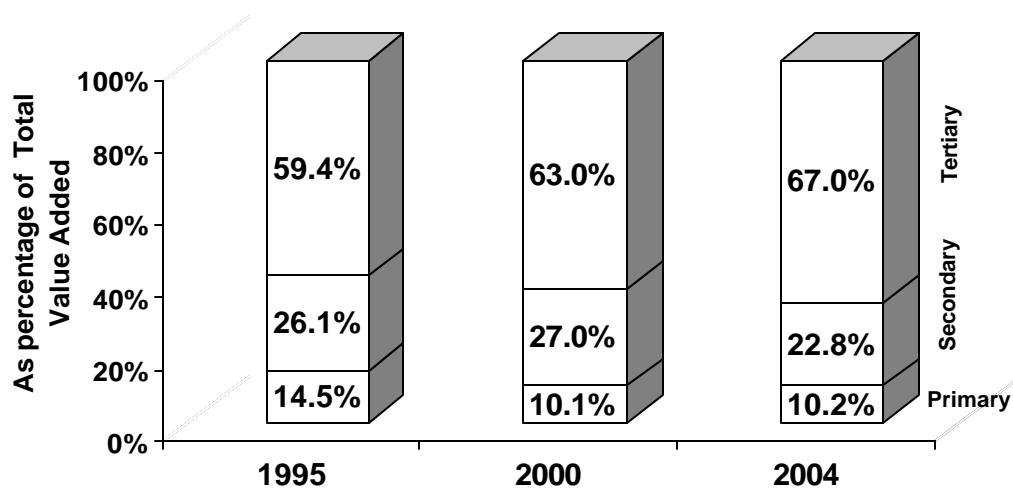
FDI's spillovers in the community. In time, and assuming that this nascent company successfully survive its firsts years of life in the market, and successfully achieve sustainable growth rates in the short-term, it will certainly contribute to economic growth by creating jobs and wealth within its own community. Conversely, assuming that there are not efficient institutions in the community, and that the administrative procedures take much longer than expected, this potential entrepreneur might feel discouraged to pursue her goal. By discouraging potential entrepreneurs with procedural hassles, the potential spillovers in the community might, at the very least, be stalled for indefinite time. In spite of the inherent limitations of this cross sectional analysis, particularly the potential biases of my interviewees' responses, I think this cross-sectional analysis on Sonoran entrepreneurs within the manufacturing sector still provides interesting evidence of both the existence and the importance of external and internal factors affecting the entrepreneurial activity; more importantly, this analysis attempts to shed light on the understanding of the external and the internal factors that affect the desire to become an entrepreneur, and that ultimately affect the entrepreneurial activity in México, particularly in the state of Sonora. It is also of particular interest to examine the impact that FDI has on the entrepreneurial activity in the community.

The present chapter is divided up into the following sections: the first section provides basic information about the manufacturing sector in the state of Sonora, and its relative importance for both the state's economy and for the entrepreneurial activity within the region; the second section describes the data set and methods used in this analysis; the third section contains the results of my in-depth interviews on Sonora entrepreneurs within the manufacturing sector; and the final section presents the conclusions and final thoughts of this cross-sectional analysis.

Sonora's economic structure

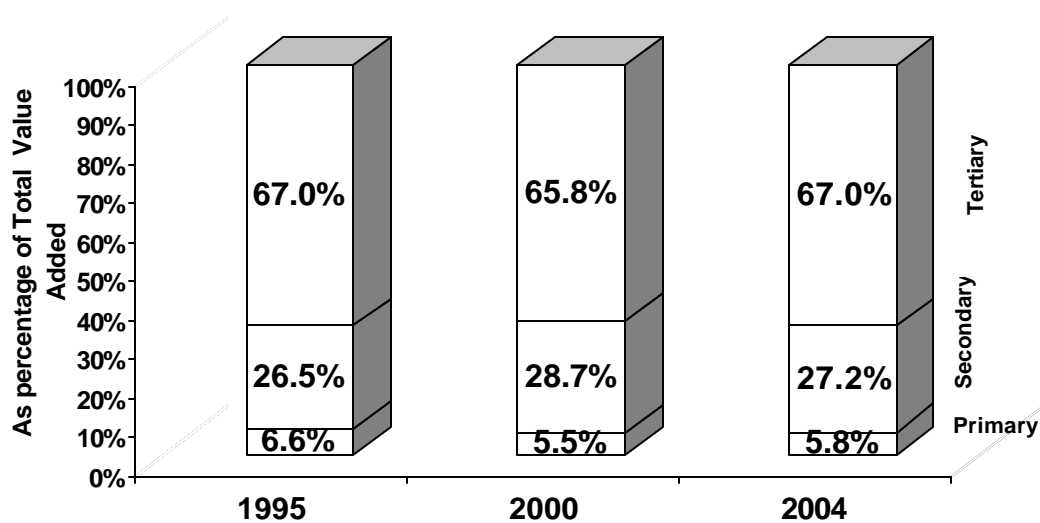
Sonora's economy is the 12th in the country, measured by its GSP, and lags behind the other five states along the U.S. – México border (Nuevo León, Chihuahua, Coahuila, Baja California, and Tamaulipas, in that order). The state of Sonora is recognized as one of the major producers of primary products in the country, with a wide diversity of crops, sea food, and mineral products. While the primary sector (agriculture, timbering, and fishing) represented 5.8 percent of the gross value added nationwide in 2004 in Sonora, the primary sector contributed with more than 10 percent of state's gross value-added; although, this relative proportion has been declining since the early 1990s, when more than 14 percent of the state's gross value-added came from the primary sector. [See figure 5.2]

Figure 5.2 Gross Value-Added by economic sector in Sonora



Source: Own elaboration with data from INEGI.

Figure 5.3 Gross Value-Added by economic sector in México

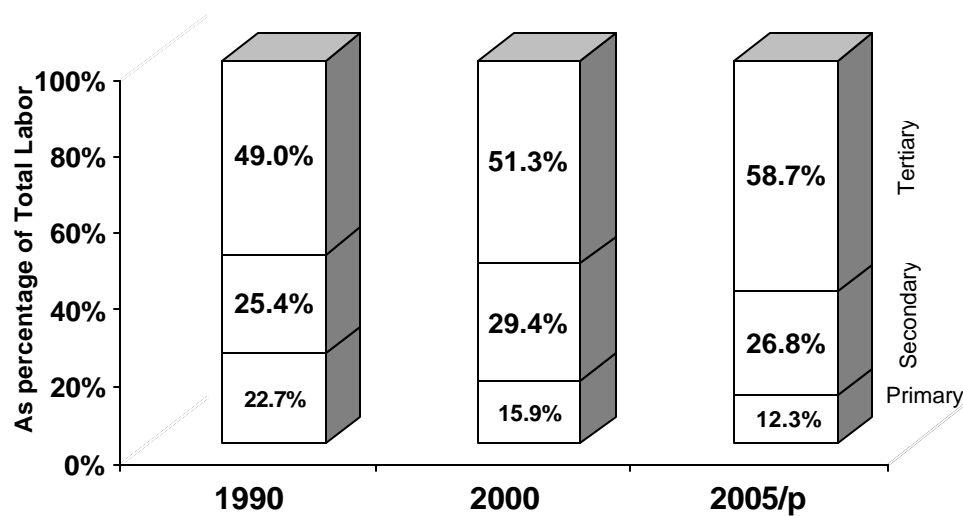


Source: Own elaboration with data from INEGI.

In turn, as we can see in figure 5.2, the secondary sector in the state's economy, which includes the manufacturing industry, represents a smaller proportion than the average of that sector nationwide [see figure 5.2] (i.e. in 2004 Sonora's secondary sector represented 23 percent of the total gross value added, whereas the secondary sector held 27 percent of the total gross value added, nationwide). This may suggest that the Sonoran economy is in a transition stage, in which it is departing from being a traditional economy depending upon primary goods, towards a more sophisticated economy with both sectors – industry and services – nowadays, playing a more significant role within the state's economy. Supporting the argument that Sonora is in a transition stage, there is also the fact that the labor share by the primary sector in 2005 is practically half of what it used to be in 1990 (12 and 23 percent respectively) [See figure 5.4]. Interestingly, we can observe a peak from 1990 to 2000 in the share of labor within the secondary sector in Sonora, from 25 to 29 percent respectively, although this figure later declined to 27 percent in 2005.

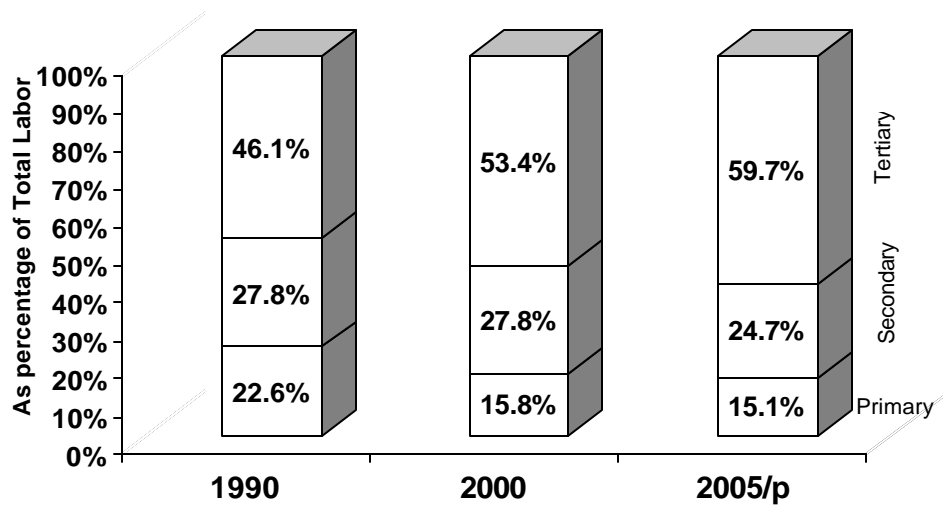
This relative reduction in the labor share by the secondary sector seems to have been absorbed by the tertiary sector – that includes commerce, services and tourism – which jumped from 46 percent in 1990 to 59 percent in 2005.

Figure 5.4 Share of Labor by economic sector in Sonora



Source: Own elaboration with data from INEGI /p preliminary data

Figure 5.5 Share of labor by economic sector in México

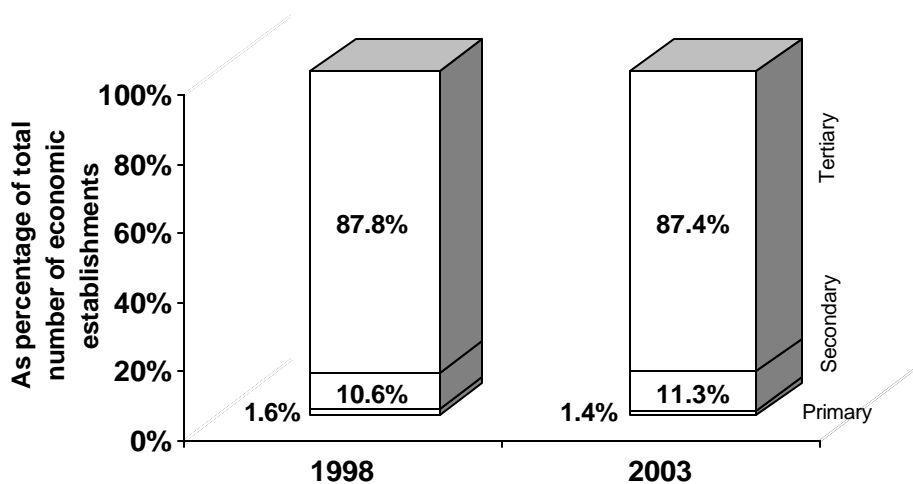


Source: Own elaboration with data from INEGI. /p preliminary data

We can also observe that the primary sector went through a significant reduction, as I mentioned it above; thus, even though, assuming that the population in the State of Sonora would have remained constant for fifteen years, nevertheless, we would be observing a change in the state's economic dynamics, a change that implies an economic structure less dependent on the primary sector and more dispersed between the secondary and the tertiary sector. Now, considering that the population in the state of Sonora has been growing at an average pace of 2.5 percent a year, it is reasonable to accept that there are more people working in both the secondary sector and in the tertiary sector, in absolute terms. However, the reduction in the relative share of employment within the manufacturing sector from 1990 to 2005 in Sonora might be explained by the U.S.'s economic slowdown in 2001 which dragged the industrial production in México with it, as well as the industrial production in Sonora, which both are significantly dependent on the American market.

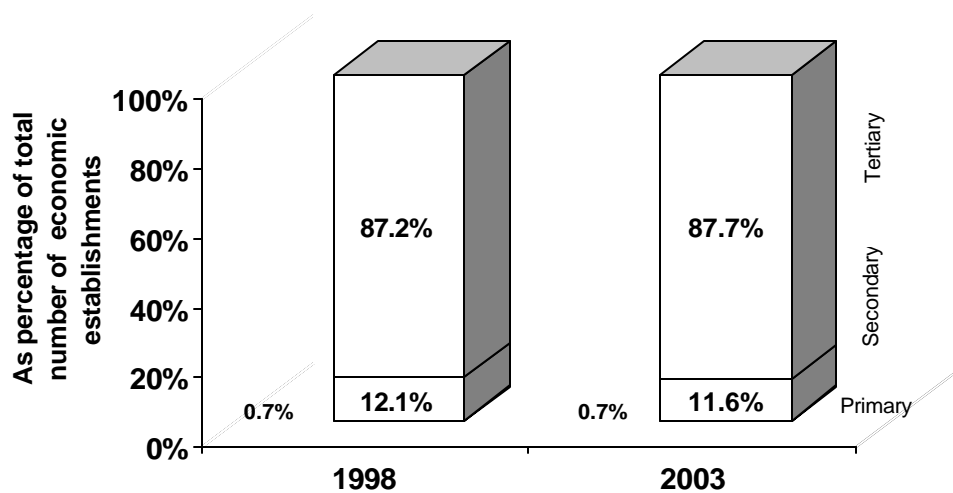
As it was expected, the tertiary sector in Sonora also holds most of the economic establishments within the state (88 percent); whereas the secondary sector, only accounts for 11 percent of all the establishments in the state, for the year 2003. This distribution of establishments in Sonora is similar as the distribution of establishments nationwide [See figures 5.6 and 5.7].

Figure 5.6 Share of establishments by economic sector in Sonora



Source: Own elaboration with data from INEGI.

Figure 5.7 Share of establishments by economic sector in México



Source: Own elaboration with data from INEGI.

In both cases, in the country and in the state of Sonora, roughly 12 percent of all economic establishments are part of the secondary sector, and roughly 87 percent are part of the tertiary sector, leaving less than 1 percent for the share of establishments within the primary sector. What it is worth noting though, is that this 12 percent of all the establishments in the secondary sector contribute almost with one third of the gross value added nationwide; whereas 88 percent of all establishments within the tertiary sector contributes with less than three quarters of the national gross added value.

Evidence suggests that most of the FDI inflows in Sonora go directly to the manufacturing industry [See table 5.1]. The manufacturing industry alone has accumulated 2/3 of the FDI in the state, from 1999 to 2005; whereas mining, which is the second sector in the State as a large recipient of FDI, accounts for 9 percent. In the third place, with 7 percent, is the agriculture sector which also includes cattle, fishing, and timber. Even though the account of “other services” has received 8 percent of the accumulated FDI’s inflows, during from 1999 to 2005, this account includes a wide variety of activities such as social services, hotels and restaurants, professional services, technical and personal services, and it also includes services to all of the other sectors; thus, FDI coming into the account of *other services* may well be too disperse.

Table 5.1 Foreign Direct Investment distribution by economic sector in Sonora
Thousands of current U.S. dollars

Sectors	1999	2000	2001	2002	2003	2004	2005	2006	Accumulated 1999-2006	Part. %
TOTAL	214,252.2	416,647.4	180,001.7	196,750.2	121,700.7	252,611.1	223,771.5	28,854.7	1,634,589.4	100.0
Agriculture and cattle-raising	32,054.8	76,260.6	2,857.3	6,941.2	0.9	0.0	4.0	0.0	118,118.9	7.2
Mining	7,138.5	126,944.5	1,050.5	12,901.1	-6,301.2	1,360.3	6,636.5	0.0	149,730.2	9.2
Manufacturing	144,770.7	184,698.8	149,914.2	126,484.9	117,453.8	159,371.2	167,604.6	28,305.9	1,078,604.2	66.0
Electricity and water	10,836.9	14,617.1	0.0	0.0	0.0	0.0	-6,479.6	-3,409.2	15,565.1	1.0
Construction	5.8	6,401.8	14,903.8	8,883.6	4,192.6	-1,888.6	5,787.2	431.1	38,717.3	2.4
Commerce	15,134.6	1,680.9	4,899.4	3,162.0	1,835.3	57,143.4	-6,306.1	0.0	77,549.4	4.7
Transport and communications	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Financial Services	75.5	25.8	840.8	22,362.3	50.2	159.7	475.5	0.0	23,989.8	1.5
Other services ^{1/}	4,235.5	6,017.9	5,535.7	16,015.0	4,469.0	36,465.0	56,049.4	3,526.9	132,314.4	8.1

^{1/} Social services; hotels and restaurants; professional services; technical and personal; it includes services to all of the other sectors.
Source: Secretaría de Economía, Dirección General de Inversión Extranjera.

This disproportioned FDI's inflows into the Sonora's economy, for the period of 1999 to 2005, suggests that the gross value added in the state, to some extent, may be influenced by foreign capital poured into the manufacturing sector; if such claim turns out to be true, we could expect FDI's spillovers to the rest of the Sonoran economy. There is a particular large body of literature regarding FDI's spillovers, but I am focusing on the effects that FDI might have on knowledge transfer through training, and through previous working experience that might result on fostering a new entrepreneurial class in the host economy. Noteworthy among the current literature is the work of Borensztein, De Gregorio, and Lee (1995) in which the authors analyzed how FDI may affect economic growth on host countries. These authors found that FDI seems to be a more important vehicle for technology transfer than domestic investment; thus, FDI tends to contribute more with economic growth on the host country. However, FDI's contribution only holds when the recipient country has a minimum threshold of human capital stock. In sum, the authors found that FDI's contribution to economic growth is the result of two effects: (1) FDI usually adds to capital accumulation overall in the economy, and in turn, to economic growth; and (2), FDI can contribute more to economic growth than domestic investment if FDI is, in fact, more productive than domestic investment by its interaction with the stock of human capital in the host country.

Blomstrom, Lipsey, and Zejan (1996) building on previous works found that FDI is key to economic growth but only when certain environmental factors were in placed such as: institutions, economic and political climate, policies encouraging education. In a similar paper, Blomstrom and Kokko (1996) analyzed the FDI's impact on host countries,

and stressed the situation that foreign MNEs may contribute to efficiency by breaking supply bottlenecks, introducing new know-how, and training workers who later may take employment in domestic firms, and also by forcing local firms to increase their productivity and competitiveness.

Conversely, Backer and Sleuwaegen (2003) found evidence to support the theory that FDI crowds out domestic entrepreneurs due to the individuals' occupational choice in the short term. Occupational choice models suggest that individuals will tend to choose starting their own businesses if and only if, the expected profits of their own businesses, are higher than the expected wages that otherwise they would receive by being working on a MNE. Nonetheless, Backer's and Sleuwaegen's findings also suggest that this crowding out effect, may be reversed in the long term, due to the positive effects of FDI in host countries.

Considering that the state of Sonora has been FDI's recipient since the 1960s, with the maquiladora program, it would be reasonable to expect FDI's spillovers in the state, particularly know-how transfer from MNEs to domestic businesses. This spillover effect might better be understood in two ways, one in which a former MNE's employee change jobs and diligently applies his/her knowledge on his/her current employer's business – say in a domestic company. This may be the case in which a supervisor that used to work for, say, the FORD plant in Hermosillo, is now working as supervisor, or even as general manager at a medium size company owned by a Sonoran entrepreneur. The other way to understand the spillover effect of knowledge transferability from a MNE to a domestic company, it is closely related to which I am looking for. This is the case in which a

former MNE's employee, quit his/her job at a MNE to start his/her own company, doing a relatively similar or a complementary type of job than in his/her previous work. There are some cases in which the MNE help to found another company – spinoffs – as a strategy to improve productivity and to cut costs. However, there are other cases in which MNEs do not necessarily help the start-up of other firms; however, the result is fundamentally the same, which is know-how's transfer from a MNE to a domestic company also to a company in either the same, or in a different industrial sector. This means that knowledge transferability is not restricted to happen in companies within the same industrial sector, say automotive industry; but it may well be the case in which we could observe know-how's transfer from a MNE in the automotive industry to a domestic company in the food and beverage industry.

Therefore, in this cross-sectional analysis I conducted a series of interviews on entrepreneurs within the manufacturing sector in Sonora, under the expectation that if I were to find a direct relationship between FDI and new entrepreneurs in the state, I would more likely do so within the manufacturing sector, which is the largest recipient of FDI in Sonora.

Methods

I conducted seventeen in-depth semi-structured interviews in the city of Hermosillo, capital city of Sonora state. Each one of the entrepreneurs I interviewed was strategically selected from the industrial data base built by the National Industry of Transformation Chamber (known as *CANACINTRA* in México) in Hermosillo.

Even though, the *CANACINTRA* data base is not an exhaustive list of all the businesses' establishments within the manufacturing sector in the state, it does include some of the most representative companies, in terms of size and output, within the manufacturing sector, as well as other establishments within the service sector. This business association – *CANACINTRA* – is the most active business association in Hermosillo, with more than three hundred companies associated. *CANACINTRA* provides a variety of services focused on the strengthening of the relationship between its business-members and the community. Despite the fact that *CANACINTRA* is focused on providing services (also provides representation upon the state's and city's government to the establishments within the manufacturing sector) more than 1/3 of all of its business-members are part of the service sector, which most of them, in turn, provide services to the manufacturing sector directly or indirectly [See table 5.2].

Table 5.2. Distribution of establishments by economic sector,
within CANACINTRA data base in Sonora.

Economic sector represented in the CANACINTRA data base	Total	%
Agriculture, cattle and fishing	3	0.8%
Mining	8	2.2%
Electricity, gas, and water supply	0	0.0%
Construction	6	1.6%
Manufacturing industry	206	56.6%
Commerce, services and tourism	141	38.7%
Total	364	100%

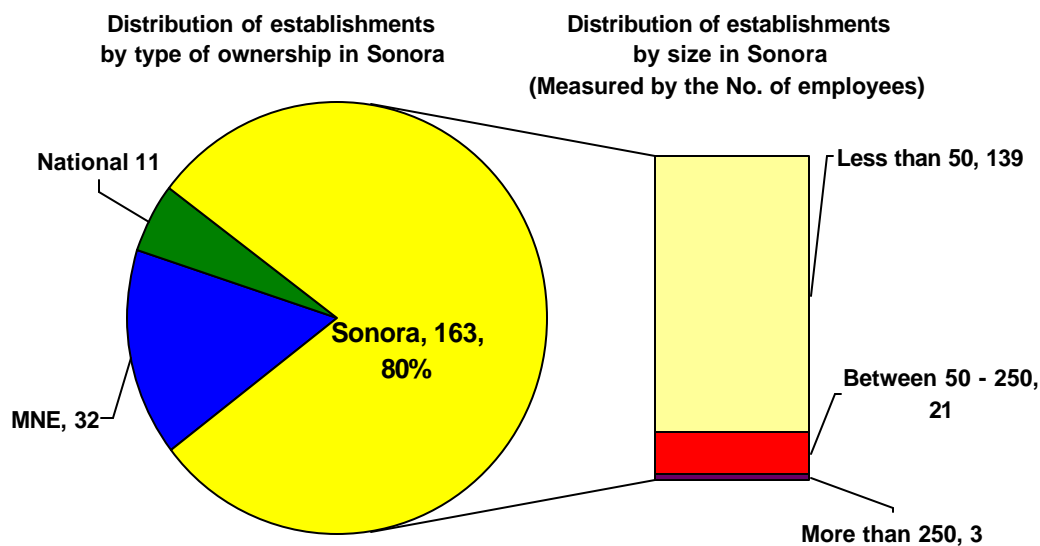
Source: Own elaboration with data from CANACINTRA Hermosillo, Sonora September 2006

As we can see in table 5.2, 57 percent of all the companies enlisted in the *CANACINTRA* data base are part of the manufacturing sector. These are companies that transform raw materials into both, semi-finished and finished products for the domestic as well as for the international market.

Despite the fact that the *CANACINTRA* data base was mainly built for communication purposes, basically including general information about each business such as: owner, general manager, phone, fax, manager's and owners' e-mail, address, etc., it does also include enough information to distinguish between MNE, and domestic companies. Also by using this data base, it was possible to distinguish between Sonoran owned companies and other Mexican companies established in the city of Hermosillo.

Of the two hundred and six companies within the manufacturing industry, enlisted in the *CANACINTRA* data base 80 percent of them are owned by Sonoran families, 15 percent are multinational enterprises (MNE), and 5 percent are owned by Mexican owners, different from Sonora's entrepreneurs. [See figure 5.8]

Figure 5.8 Distribution of establishments by type of ownership and by size in the CANACINTRA data base in Sonora.



Source: Own elaboration with data from CANACINTRA, Hermosillo, Sonora. September 2006.

As I am interested in exploring the potential relationship between FDI and the creation of a new entrepreneurial class in México I will use the entrepreneurs within the manufacturing sector in Sonora, as a cross-sectional analysis. In doing so, I found useful to examine the distribution of companies in the *CANACINTRA* data base to have a clearer idea of how many establishments, at least of those registered in this data base, could fulfill my selection criteria to be part of my sample.

I defined three criteria to select companies for my sample: First, all companies should be part of the manufacturing sector, this means that they should transform something either into a semi-finished, or finished products. This first criterion helped me to focus my attention on those companies with a higher likelihood of having been impacted by FDI in the state; let us remember that more than 2/3 of the accumulated FDI in Sonora has gone to the manufacturing sector, and even though it is likely that MNE hold most of the FDI inflows in the state, there is also a chance that domestic establishments, owned by Sonoran families, might be linked to MNE as either suppliers or competitors. Being that the case, once the spillovers' effects take place, Sonoran companies might also be benefited by FDI.

Second, all companies should be owned, and have to had been established by Sonoran families – preferably founded by the current owner and not by his/her father or grandfather. This second criterion is important in the sense that I am aiming at having information at first hand from the entrepreneur that had to overcome the difficulties of starting a new business in México. I think that there is no one better suited than those individuals who started their owned business to tell me what factors were keyed to successfully start their own businesses.

Third, all companies should have at least 50 employees, so they should be considered as medium size companies according to the standardized classification of business' size by the Secretariat of Economy in México that classifies as small, medium, and large companies, to those companies with less than 50 employees, between 50 and 250 employees, and more than 250 employees, respectively. The size criterion is useful to

avoid including small workshops with none, or very little use of technology in their productive process. The reason for considering the use of technology is due to its relationship with FDI within MNEs. Foreign companies usually have the most advanced technology, at least relatively to the technology used by domestic companies, within the manufacturing sector. Thus, it would be more likely to find former MNE's employees as owners of medium size firms that also use a certain degree of technology, than in small workshops.

After analyzing the *CANACINTRA* data base, I found that there were only 21 companies fulfilling my selection criteria [See figure 5.8]. Therefore, I decided to include in my sample companies within the service sector, specifically companies that I previously knew were linked with MNE as suppliers, and that their owners have had a rich experience within the business community, and not only within the manufacturing sector. The entrepreneurs I included had extensive experience as business leaders, or as presidents of important businesses associations; thus, their perspectives on the business environment should be quite useful for the purpose of my analysis.

In order to start my interviews, I decided to use a *purposive sampling method*. By using this method I was able to select those entrepreneurs to whom I had a prior professional relationship with, and I consider could be able to provide useful information regarding my research purpose. As director of the graduate school and continuous education in ITESM Campus Sonora Norte in Hermosillo, I had the opportunity to work with a relative large number of business people in the state of Sonora; thus, I was able to assure having an open access to conduct my interviews to the entrepreneurs I had

previously selected. By purposive sampling I also mean that I looked for those companies fulfilling the selection criteria explained above. Nevertheless, despite the criterion of ownership and founding, I did include two cases in which the interviewees inherited their company from their fathers, because they not only inherit the company but also helped to start the company along with their fathers, I was still able to capture the essence of their experience as entrepreneurs overcoming the difficulties faced by their venture. Once I established contact with the entrepreneurs I had previously selected within the *CANACINTRA* data base, I noticed that the business size datum, for some companies, was not correct. However, even though, some companies are smaller than my size criterion of 50 employees, they do use a relatively advanced technology in their production system; thus, those companies fulfilled the requirement of being technological advanced as to potentially have as owner a former MNE's employee.

Of the 21 companies originally selected for my sample, I was only able to contact 15 of them. Table 5.3 shows the industrial types distribution of the 15 companies within the manufacturing sector, plus the 2 companies that are manufacturing suppliers (transportation and software). It was useful to include these two companies in my sample due to the fact that both of the owners have extended experience as business leaders within the community, and have been closely related with the multinational and domestic companies within the manufacturing sector. Thus, the total number of companies in my sample is 17.

Table 5.3 Number of establishments and labor per establishment in the sample.

Economic sub-sector	Establishments		Labor	
	Units	Share	No.	Share
Processed Foods	1	6%	100	2%
Textil	1	6%	180	4%
Wood products	1	6%	60	1%
Construction	2	12%	1700	36%
Basic Metal industry	2	12%	162	3%
Metal Machinery / Equipment	8	47%	1263	27%
Transportation	1	6%	1200	26%
Services - software	1	6%	30	1%
TOTAL	17	100%	4,695	100%

Note: Transportation and software services both belong to the tertiary sector, which includes commerce services and tourism.

The first column in table 5.3 represents the number of establishments within a particular economic sub-sector in which the manufacturing sector is divided. There are eight economic sub-sectors represented in my sample; as previously explained, I focused my attention mainly on companies that used a higher degree of technology within their productive processes. Thus, it is not strange that 60 percent of the companies within my sample are within these three sub-sectors: *basic metal industry*, *metal-mechanics*, and *machinery and equipment*, which are the sub-sectors requiring higher levels of technology in their productive system.

The fourth column in table 5.3 shows the companies' share of employees within each economic sub-sector. The two companies within the construction sub-sector plus the transportation company, combined account for more than 50 percent of the jobs represented by the companies within my sample. The two companies in the construction sub-sector are two of the largest companies in the state oriented to industrial construction,

that are mainly focused on attending construction needs for MNEs as well as for domestic companies in the industrial sector. The company in the transportation sub-sector is the largest company in the state within that particular industrial sub-sector, and provides services to a wide variety of companies across all the economic sectors in the state and nationwide; thus, as previously mentioned above, I considered of high value to obtain the company's owner perspective upon the entrepreneurial activity in the state of Sonora. Additionally, companies within the *metal machinery and equipment sub-sector* are responsible for one third of the jobs' share in my sample. In total, the seventeen entrepreneurs, I interviewed, create 4,685 jobs in Hermosillo, but more importantly, the worth of my sample does not come from the employees each one of these firms creates, but it comes from what each one of the entrepreneurs has to offer to the purpose of my research. All of the seventeen entrepreneurs I interviewed are quite well known and successful businessmen in the community, henceforth; they all could offer valuable information regarding the difficulties of becoming entrepreneurs in México.

I think it is worth noting that five of the entrepreneurs within my sample, have been presidents of different national business associations with offices in Hermosillo. As presidents of such associations, they had to interact with the companies within their own association, coordinating needs and developing programs for the development and the improvement of their economic activity within the state. They also had to lobby and to represent the interest of their association upon both the state and the federal Congress' policy making processes. There are also three of the seventeen entrepreneurs that are members of the board of trustees of a well known private university in the country. Being

a member of the board of trustees of such university puts them in a position of having constant interaction with the academic community, and to some extent, it might create upon them a certain degree of leadership, and worthiness within the business community in the city, and in the state of Sonora.

In short, I believe that the perspective that these seventeen entrepreneurs have on the business environment in the state, and in the country, is relatively well funded by their experience as businessmen, and as leaders within the community.

In the following pages, I will discuss the findings of my interviews on the seventeen entrepreneurs in the city of Hermosillo. Firstly, I will describe some general findings about my sample, such as firm's size, age, market orientation, and the way these companies were funded. Secondly, I will discuss some interesting findings regarding the entrepreneurs' characteristics and the way their family's environment potentially affected their willingness to become entrepreneurs. Finally, I will discuss the entrepreneurs' perspective on the factors that potentially motivate and inhibit the creation and development of new firms in the state of Sonora, and in more general terms, in México.

Results

Entrepreneurs' characteristics within the sample

I have focused this stage of my research on interviewing entrepreneurs whose companies' size were larger than fifty employees; however, despite the fact that I contacted entrepreneurs that according with the CANACINTRA data base, own companies with more than fifty employees; the actual number of employees in each firm within my sample, ranges from 12 to 1200, being 54 employees the median size for a company within the manufacturing sector registered in the *CANACINTRA* data base. Some companies that saw their company's size shrink to less than fifty employees were seriously affected by the U.S. economic slowdown in 2001 and 2002. Most of those companies used to export their products to the American market; however, after the American market reduced their imports of Mexican products, their exports were slashed, and so their company's size. This situation forced most of those companies to change their strategy and to become more productive, by reducing their labor costs and to become leaner. Now, these companies that increased their productivity by reducing their labor force, have been able to maintain a relatively stable growing rate without the need of adding more employees to their payroll; nonetheless, these are companies that have gone through difficult times, and more importantly their owners, as entrepreneurs, have first hand experienced of the challenges of being entrepreneurs in a developing country competing in a globalized market.

The average age of the companies within my sample is 18 years [see table 5.4]. The younger companies are about 7 years old, whereas the older companies have more than 30 years in the industry. Given the fact that the Mexican economy has been anything but stable in the last 20 years, Mexican entrepreneurs have had to find innovative strategies to keep their companies afloat, either by restructuring their productive processes in order to become more productive or by taking long term debts at preferential interest rates to help them go through the country's financial imbalances. In any event, the collection of experiences of all these companies – and entrepreneurs – representing different cohorts is what makes my sample rich for exploring the challenges that entrepreneurs have to overcome in the Mexican economy.

Table 5.4 General characteristics of Sonoran entrepreneurs in the sample.

Characteristic	Number or average of the total sample
Number of Employees	279
Median number of employees	54
Age in years	18
Personal savings	88%
Bank - credit	12%
Domestic Market	35%
International Market	24%
One of the parents entrepreneur	76%
Siblings entrepreneur	24%
Have had FDI?	29%
MNE experience	41%
Previous experience in a Family business	47%
Previous experience in other Enterprise	12%
Bankruptcy experience in a previously owned Enterprise	35%

Despite the fact that the inflation rate in México, and consequently the interest rate, has declined from two to one digit in the last 10 years, the main source of financial support for starting a new business is the entrepreneurs' own savings, followed by family resources, and lastly by bank loans. Personal savings represent 88 percent as the main source for financing the starting of a new business. Even though there are three large companies in the sample with around 1,000 employees, they were also started as small companies with limited resources and mainly founded by their owners' personal savings. It is noteworthy that 35 percent of the entrepreneurs in my sample had a partner when they started their company; this implies that the combination of personal savings plus a financial partner are both the main sources for founding new ventures in my sample. However, in less than 10 years all of the entrepreneurs have already bought their partners shares, so they are now the sole owners of their companies.

The finding that 88 percent of the entrepreneurs in my sample started their own businesses with their own financial resources might be explained by three arguments: (1) potential entrepreneurs tend to start relatively small ventures that in turn, need relatively small amounts of capital that can be easily risen by their own means. (2) Due to the fact that the average age of the companies in my sample is 18 years, it is understandable that 88 percent of the sample did not use a formal financial institution for raising capital; this because México experienced several severe financial crisis in 1982, 1988, and in 1994, which significantly raised the interest rates and made it difficult for small and medium size firms to obtain loans, and to raise capital within the formal financial market. Nonetheless, most of the entrepreneurs expressed a persistent lack of trust on the

financial institutions when it comes to raise money for small and medium size firms in México; this sentiment, according to one of the entrepreneurs' own opinion, is based on previous and pervasive experiences of financial crisis in the country.

I found it interesting that all of the entrepreneurs I interviewed had had a previous working experience in either a foreign company, or in a domestic company. Of the seventeen entrepreneurs I interviewed, 41 percent of them had a previous working experience in a multinational enterprise (MNE); 47 percent had working experience in their family business; and 12 percent had working experience in other companies, mainly, in large companies owned by Mexican entrepreneurs but not by Sonoran entrepreneurs. However, in spite of their previous experience, 35 percent of the entrepreneurs in my sample had bankruptcy experience in previously owned companies. All of those companies that went into bankruptcy after 1995, during México's financial crisis, had a large level of leverage; thus they were more likely to file for bankruptcy after the interest rates climbed sky high for the following years after 1995. All of those entrepreneurs that filed for bankruptcy and closed up operations with a previous company of their own, started either a different company but closely related to the previous one, or a similar company with different market orientation; instead of selling their products to the domestic market, for instance, they focused their attention to the international market that, at the time, seemed more stable than the Mexican market, and depended less upon the Mexican peso fluctuations.

One of every four firms sells their products solely to the international market; whereas two out of five sell their products in both markets, domestic and international. One of the entrepreneurs that previously had to shut down operations of a previously owned company is now selling all his products only to the American market. What I found of interest in this case, is that this entrepreneur told me that after their previous company was terminated – a construction company originally founded by their father – they decided to start a different company that manufactures their products in Hermosillo and sells them into the U.S.'s market. These four brothers started their new company right after the 1995 financial crisis, and successfully took advantage of both the devaluated Mexican peso and the closeness of Hermosillo to the state of Arizona; this way, they could sell their products at relatively low prices in a relatively well known market for them, which was the state of Arizona. Despite the fact that the Mexican economy is significantly more stable than it was in 1995, this company is not interested in selling their products in the Mexican market. They have found a profitable market niche in the U.S., and they now sell their products across the country. Also interesting, is the fact that they have not ask for bank loans since they started operations, nor in México or in the U.S. However, they do have a partner in the U.S. that has helped them significantly to successfully sell their products across the U.S.; and has also provided working capital when needed, so the company can fulfill contracted agreements with its clients, in time and in volume.

Contrary to the previous case, there is another company in my sample that the owner also experienced bankruptcy in a previous company, which was originally founded by his father back in the 1970s. After terminating operations of the previous company, the owner started another company within the same economic sub-sector and in the same industry – manufacturing of wood-made furniture. However, this company does sell its products domestically as well as internationally, and more interestingly is the fact that this company did receive foreign direct investment to start its operations. FDI helped the company to avoid the need to request seed capital in the Mexican financial market, and be financially vulnerable, by higher interest rates in the Mexican market. This previous company in my example is one of the 30 percent of the companies that have received FDI either at the beginning of their operations and/or for expansionists' purposes. However, as I already mentioned it before, all of the entrepreneurs that at one point received FDI or started their companies in a partnership, they have already bought, or paid back, both their partners' shares and their debt. In sum, at the time I did the interviews, all of the entrepreneurs and their families, were the sole owners of their companies. In another example, another entrepreneur had to sell the company he had inherited from an uncle, due to financial pressures derived from the financial crisis of 1995. By selling the previous company, this entrepreneur was able to raise enough money to establish a new company with a different market orientation, but taking advantage of the acquired know-how while working with his uncle.

Despite the fact that most of the current literature, regarding the factors that foster the entrepreneurship attitude within a community is based on the study of individuals' traits such as innovation, locus of control, risk propensity, energy level (Thomas and Mueller 2000); and on the analysis of environmental conditions such as the level of unemployment, financial resources accessibility, and market opportunities (Schmitz 1989; Holmes and Schmitz 1990; Shane and Venkataram 2000; Sorensen and Pino 2000; Black and Strahan 2002; Vo Bargaen et al. 2003; Shane 2002, 2004, 2005; Binder and Sautter 2005; Carlson 2005; Craig et al. 2005; Fritsch and Mueller 2005; Luckgen et al 2005; Wagner et al 2005), rather than on social influences derived from the individuals' family and friends; I found it interesting that four out of five entrepreneurs, within my sample, were sons of entrepreneur parents.

This finding stresses the notion that most of my interviewees were nurtured to become entrepreneurs from the very core of their own families. Families in which the father or the mother, or both, were self-employed and entrepreneurs (regardless of their social-economic status) and were able to transmit certain attitudes and values to their children, that made them less risk-adverse and, to some extent, made them walk unconsciously toward self-employment just because that was the natural thing to do, as they have learned within their own home. One of the entrepreneurs in my sample stressed the importance of having a parent being entrepreneur, because he was able to closely observe, and to learn, his father's behavior while conducting his businesses. This particular entrepreneur, also expressed the importance of creating a home environment that fosters and encourages free-will, and the willingness to take risks.

When I asked this entrepreneur why he decided to become entrepreneur, he answered me that it was because he wanted to have his own company and to “run things” by his own; he also acknowledged some sort of ambition of being the sole responsible of his own destiny. This interviewee also expressed that one of the most important things he remember while he was a teenager, was the time he spent with his father driving across their ranch and taking care of the businesses. He stressed the importance of having a first hand experience with an entrepreneur as his father.

Another interviewee also expressed that he started his own company as a spin-off of his father’s company, and that doing it this way, was something natural for him to do. He told me that he never considered the alternative of seeking for a place to work; becoming an entrepreneur was the “next step” to do after finishing his college degree. This entrepreneur was the youngest of three brothers, and each one of his older brothers are also running their own businesses. The interesting part of this family is that they all work in a similar industrial sector, and they complement each other businesses, while covering, at the same time, a wider geographical extension, basically all the northwest of México.

It is also interesting that almost half of the entrepreneurs in my sample earned previous experience while working with their fathers; thus, spending time with an entrepreneur parent, and learning managerial and leadership skills while working in the family business, it is something these entrepreneurs regard as highly important for becoming themselves entrepreneurs later on.

Lastly, but extremely important for the purpose of my research, it is the fact that 2 out of 5 entrepreneurs had previously worked in a MNE. This finding is consistent with the FDI's spillover literature, which stresses the importance of knowledge transfer from MNE to the host country in the form of labor mobility and new firms-formation by former MNE employees. These former MNE employees usually learned managerial skills and productive techniques, and are able to transfer that knowledge to their new working places. Of the entrepreneurs who had previous experience in MNEs, two thirds of them started a company within the same sector, the rest of the entrepreneurs explored different ventures; nevertheless, they all agreed that the experience and managerial skills learned while working for a MNE were key, for the success of their own companies.

Thus far, I have described general characteristics of the entrepreneurs within my sample; now, I will focus my attention to the entrepreneurs' perspectives regarding the factors that foster or inhibit the rate of new-firms formation, and the entrepreneurial activity in the state of Sonora. In this section I will describe the entrepreneurs' perspectives on five key questions regarding the factors that, positively or negatively, affect the creation of new firms and the desire to become entrepreneurs in Sonora, and to some extent in the country. These key questions were built upon the work of Thomas and Mueller (2000), and Neace, M.B. (1999). Thomas and Mueller examined the relationship between culture and four entrepreneurial traits, which are attributes, attitudes, and values that seem to motivate individuals to start their own businesses. Such entrepreneurial traits are *innovativeness*, which measures the tendency to be creative; *internal locus of control* which was defined as the degree of which individuals are willing to take their future on

their own hands; *risk-taking* which measures the degree in which individuals tend to take higher or lower risks; and *energy level* which measures the degree of enthusiasm, and endurance of individuals in their every day activities. The work of Neace is focused on analyzing the extent to which entrepreneurs are able to create social capital in emerging economies, and their role in doing so. Neace implemented a survey tool in which it was asked for the factors that encouraged the entrepreneurs to start their own businesses; as well as the difficulties that the entrepreneurs found while starting their own businesses.

Neace's findings are consistent with what I have found on my own research, and that I am about to describe.

The first question I did during my interview, after exploring general characteristics of the entrepreneurs, was oriented to know the factors that positively affect the desire to become an entrepreneur. In addressing this first question I wanted to have the entrepreneur's perspective on what kind of internal and external factors trigger the desired to become entrepreneur. By external factors I mean environmental, and market conditions, such as the level of unemployment, market opportunities, economic stability, and cultural aspects within the community that might foster the desired to become an entrepreneur; same factors were analyzed by Neace. By internal factors, I mean learned skills, knowledge, level of education, and any other individual attribute that might influence the individual's desired to become an entrepreneur. The second and the third questions were focused on obtaining the entrepreneurs' perspective on the factors that positively affect the formation of new firms (start-ups), and the factors that inhibit the formation of new firms within their community. The fourth question I asked during my

interviews was focused on obtaining the entrepreneurs' perspectives on the factors that they believe impede the development and growth of nascent firms within their community.

Finally, the fifth question was made to know the entrepreneurs' perception on the relationship between FDI and the rate of new-firms formation. I believe that all of the entrepreneurs within my sample are relatively well connected within their own industry and with their industrial sector in general terms in the state of Sonora; thus, they could be able to offer an educated perspective on the degree to which FDI has helped to create more firms in the state.

Table 5.5 shows the results for each question that I will following discuss. The answers were arranged accordingly to the order in which the interviewees expressed their perception. With the help of a notebook and a table previously designed, I rank the answers upon the order they were given to me.

The following discussion about the interviewees' responses is based on the first, second, and third most important factors they perceived affect the entrepreneurial activity in the community.

Table 5.5 Key questions to Sonoran Entrepreneurs within the Manufacturing Industry.

1. Factors that positively contributed with the desire to become Entrepreneur

	1st Most Important	2nd Most Important	3rd Most Important
Market Opportunity	40%	40%	13%
Special Skill	40%	33%	20%
Education	13%	7%	13%
Unemployment	0%	0%	7%
Low wages	0%	0%	7%
Culture of Innovaton	7%	20%	40%
Other	0%	0%	0%
	100%	100%	100%

2. Factors that inhibit the creation of new businesses in the community

	1st Most Important	2nd Most Important	3rd Most Important
Availability of financial resources	13%	14%	15%
Bureaucratic procedures	27%	14%	31%
Corruption	0%	0%	8%
Lack of Market opportunities	0%	21%	0%
Many competitors	7%	0%	0%
Legal Issues	0%	14%	8%
Lack of entrepreneurial culture	53%	14%	23%
Lack of suppliers	0%	0%	0%
Lack of skilled Labor	0%	7%	8%
Inadequate Infraestructure	0%	14%	0%
Other	0%	0%	8%
	100%	100%	100%

3. Factors that positively affect the creation of new businesses in the community

	1st Most Important	2nd Most Important	3rd Most Important
Lack of market opportunities	80%	21%	0%
Business Associations	0%	14%	17%
Clients/suppliers trust	0%	14%	17%
Market Norms and Rules	7%	7%	33%
Trained Labor	0%	21%	25%
Availability of financial resources	0%	14%	8%
Other	13%	7%	0%
	100%	100%	100%

Table 5.5 - *continued*

4. Factors that negatively affect the growth and development of the businesses in the community

	1st Most Important	2nd Most Important	3rd Most Important
Availability of financial resources	47%	20%	14%
Lack of Market opportunities	0%	13%	29%
Many competitors	6%	33%	7%
Legal Issues	18%	7%	29%
Lack of entrepreneurial culture	18%	7%	7%
Lack of suppliers	0%	7%	0%
Lack of Labor	0%	13%	14%
Inadequate Infraestructure	6%	0%	0%
Other	6%	0%	0%
	100%	100%	100%

5. Relationship between FDI and the rate of creation of new businesses in the community

	Percentage of responses
We cannot create more businesses without FDI	33%
FDI has helped in creating half of the current businesses	53%
FDI has helped in creating less than half of the current businesses	13%
FDI has not helped to create new businesses in the community	
	100%

Factors that positively affect the desire to become entrepreneur.

Before describing the results of my interviews I would like to review the concept of entrepreneurship thus far addressed in the literature; hence, I can smoothly take the reader along the rest of this chapter under the pertinent conceptual framework of entrepreneurship, for this particular research.

We know that entrepreneurs are innovative individuals able to both perceive new opportunities and to take adequate actions to break down resistance in an innovative way (Schumpeter 1947). For Schumpeter the “defining characteristic” of an entrepreneur is the ability of “innovation”; entrepreneurs can innovate not just in doing new things but also in doing old things differently. Schumpeter also stresses that entrepreneurs are the fundamental need of a capitalist society, which creates the incentives for entrepreneurial activity. In a broader conceptualization, Nathaniel Leff (1979) considers that entrepreneurship involves innovation, investment, and active expansion of new markets, products and techniques [1979:47]. For Leff, there should be additional requirements such as “adequate” institutional conditions that help to mobilize resources in such a way that transactions costs are reduced, increasing the likelihood of entrepreneurship activity.

Combining Schumpeter’s defining characteristic of innovators, and Leff’s broader conceptualization of entrepreneurs as activists and expansionists of the market, Holmes and Schmitz (1990) argued that entrepreneurs are individuals that respond to market opportunities emerging from technological breakthroughs. The authors stressed the idea that entrepreneurial activity responds more to an occupational task, in which the individual – or potential entrepreneur – has the choice either to pursue the development

of a new idea or product, and create a new venture (start a new business) or to specialized in managing businesses instead of creating new businesses (occupational choice model). Lazear (2003) proposes that entrepreneurs are “jacks-of-all-trades” who do not have any particular specialization but the need of having a wide variety of knowledge and skills to assure their success as business people. Lazear clearly distinguishes entrepreneurs from self-employed individuals, arguing that the latter do not need the same kind of skills and managerial aptitudes to work alone as the former.

In a more recent work, Michael Peneder (2006) proposes a modular conceptualization of entrepreneurship, one that allows different research approaches, but also one that keeps the essential distinctions of a behavioral, a functional, and an occupational dimension. With these three dimensions, Peneder attempts to distinguish the analytical path for the understanding of entrepreneurship, a distinction that allows the analysis of psychological characteristics of the potential entrepreneurs, and that also allows the conceptualization of entrepreneurship by its functional and occupational dimensions, as previously proposed by Holmes and Schmitz (1990), and by Lazear (2003).

In short, entrepreneurial activity seems to be a function of two factors; one, a function of personal attributes – psychological traits – which may imply that entrepreneurs could learn and transfer them across generations and cultures; and two, a function of external factors which are related with both, market conditions and with the institutional framework, that might determined the individual’s occupational choice.

There are several studies that focus their analyses on the conditions under which individuals are prone to start their own businesses, and on the individuals’ psychological

attributes that might influence their desire to become entrepreneurs. David Evans and Linda Leighton (1989) used longitudinal data to analyze some key factors of entrepreneurship such as the rate of entering self-employment at different ages, the probability of becoming an entrepreneur based on wages differentials, job tenures, occupation, marital status, level of education, father's occupation, family assets, previous experience in owned businesses, and internal locus of control. The authors focused their study on white men representing 76 percent of all full-time employed workers in 1985 in the U.S., their data source was the National Longitudinal Survey of Young Men, which integrates a sample of almost 4 thousand white men who were between 14 and 24 years old in 1966, and who also were surveyed 12 times between 1966 and 1981. Evans and Leighton run several *probit* models to estimate the probability of entering self-employment. I think that there are two worth noting findings from Evans and Leighton's study; the first, is that individuals with relatively low-wages and that change works regularly, tend to switch more easily to self-employment. The second is that certain psychological attributes (such as internal locus of control) are a significant determinant for being self-employed; this suggests that individuals with more internal locus of control are more likely to become entrepreneurs. In sum, according to Evans' and Leighton's findings, there are external and internal factors that foster the desire to become an entrepreneur; external factors as market conditions - such as low-wages - and internal factors which are psychological attributes such as internal locus of control.

In a more thorough study about "what makes an entrepreneur?" Blanchflower and Oswald (1998) proposed a theoretical framework for understanding the conditions under

which individuals become self-employed. The authors argue that the probability of an individual to be self-employed depends upon the joint probability of having entrepreneurial vision, and the probability of having enough capital, plus the probability of being able to obtain that capital. For the authors, these probabilities depend upon a set of personal characteristics – or traits – such as personal assets, civil status, father’s occupation, age, level of education, skills, the amount of inheritance and/or gifts, and psychological attributes which measured risk aversion and the internal locus of control. In this study, the authors paid more attention to the theoretical constraint of capital availability for individuals who wish to become entrepreneurs. Drawing data from the National Child Development Study, the British Social Attitudes Surveys, the International Social Survey Programme, The U.S. General Social Survey, and the National Survey of the Self-Employed, the authors found that their empirical results are consistent with the hypothesis that entrepreneurs face capital constraints. According to their findings, individuals who received inheritance or gifts, seem to be more likely to become entrepreneurs, this is because these individuals do not face capital constraints any more. However, interestingly, the authors also found that most small businesses were not founded with bank loans or any other formal source of capital, but with family loans and with personal savings, which implies that despite the fact that most individuals acknowledge the lack of capital, as the main constraint to start their own business, most of the current entrepreneurs – individuals who already started their own businesses – say that they overcome that constraint, to some extent, using their own savings and borrowing money within their own families.

As mentioned above, Neace (1999) interested in analyzing the extent to which entrepreneurs are responsible for creating social capital in emerging economies, also studied the factors that encouraged individuals to become entrepreneurs, and the challenges that they had to face to remain successful. Neace explains that market opportunity was the most common response for the factors that encouraged individuals to start their own business; however, also importantly were both a perceived necessity by some manufacturers to solve problems – which, to some extent, relates to market opportunity – and the “venturous spirit” possessed by the entrepreneurs. Consistent with previous works, the lack of capital and cash flow were the main constrains faced by individuals while starting and running their own businesses; however, once again, Naece’s findings are also consistent with previous studies regarding the way individuals overcome the lack of capital for starting their new ventures. According to Naece’s life’s savings, and what individuals can borrow from family and friends, are among the main sources of capital, when entrepreneurs are starting and running their new businesses.

On the study previously cited by Thomas and Mueller (2000), the authors focused their research on systematically study cultural differences, and similarities, among nine countries, to determine whether individual’s attributes across countries determine the likelihood of becoming entrepreneur. As the authors explain, their research was motivated by the question: “Are entrepreneurial attributes universal or do they vary systematically across cultures?” [Thomas and Mueller 2000:290]. As we can deduct from their research question, their study is based on the assumption that there are greater propensity toward entrepreneurship in some cultures than in others. The authors use, as

starting point, the conceptualization of entrepreneur as an individual with certain psychological traits, attitudes and values that motivate him or her, to start a new venture. Those psychological traits which were used to define the entrepreneurial profile are – as previously mentioned – innovation, risk-propensity, internal locus of control, and energy level. With the United States as model for representing the “ideal” entrepreneur profile, Thomas and Mueller measured the variation in the frequency of entrepreneurial traits as cultural distance from the United States; in other words, the authors analyze the extent to which other countries are cultural different from the United States, using the previous entrepreneurial traits as distinctive parameters. The authors used a survey on 1800 students of third and fourth year of college in nine different countries, and it was applied during 1996. The survey was designed to obtain responses regarding the respondents attitudes and perceptions about free-markets, competition, and the contribution of entrepreneurs to economic development. The survey also included questions regarding the students’ personal values, beliefs, and aptitudes associated with the entrepreneurial profile. After constructing four scales for measuring innovativeness, locus of control, risk-taking, and energy level, the authors used a composite index based on the deviation along each of the four cultural variables of each country from the United States index. One of the most interesting findings of this study is the fact that innovativeness, one of the key factors for entrepreneurial activity, seems to remain constant across countries independently of the cultural distance between each country with the United States. The authors explain that regardless of culture, entrepreneurs are individuals who look for opportunities and are willing to create new ventures, taking advantage of whatever they

have at hand, and also overcoming risks and challenges imposed by their own environment. This means that, entrepreneurs might behave differently in the ways they solve problems and face challenges in accordance with their own surroundings; nevertheless, the distinctive ingredient of an entrepreneur, which is innovativeness, remains constant in different settings.

In sum, and in accord with the previous studies discussed above, I argue that there are external and internal factors that are jointly responsible for triggering the desire to become an entrepreneur. Internal factors to the individual are related with personal characteristics and personal assets. Personal characteristics, or psychological traits, are among the most common factors associated with the entrepreneurial spirit; such as risk-taking and internal locus of control; while inheritance or gifts, and family assets are also individual's characteristics that may increase the likelihood of starting a new businesses. In addition there are external factors more related with the market and economic conditions than with cultural aspects; such as: market opportunities, the relative difference among wages, and the economic stability, are also factors that might help to create the conditions for nurturing potential entrepreneurs in a given community.

For the entrepreneurs I interviewed in Hermosillo, *market opportunities* and having a *special skill or know-how*, were the two most important factors that contributed with their desire to become entrepreneurs. As the third most important factor that contributes to become an entrepreneur, is the *culture for innovation*. Consistent with previous research, these three factors represent external, as well as internal, conditions that nurture the entrepreneur's profile. For most of the entrepreneurs in my sample, *market opportunities*

are closely related with the individual's ability to identify a profitable opportunity within their own industry; such ability is learned after being working within a particular industry for a relative long time. Once that the potential entrepreneur has been able to know in detail the perils of his/her own industry, he or she, might be able to identify business' opportunities to either improve the productivity of the firm in which he or she is working for, or to explore serving a different market need within the same industry but with different products or services. One of the entrepreneurs in my sample, for instance, had started a small welding firm with his brother and other partner, and when the FORD plant came to Hermosillo in 1983, they were hired to build the exterior staircases and exterior and interior catwalks in the plant. After the construction of FORD's plant was finished, these two brothers had already built a good relationship with FORD, so they continue being part of a relatively short list of local suppliers to the multinational; however, more importantly, they were aware of the potential increase in population due to the new jobs that FORD and its network of suppliers were about to create in the city of Hermosillo; an increase that might result in a positive spiral for demanding a wide variety of more and new services and products within the city. One of the services they foresaw as a profitable opportunity for them was education, more particularly classroom's chairs, cabinets, and any other scholar furniture that new schools – and old schools – might required as the resultant of a population's increase. Given their *know-how* on welding, and the relationship built with several suppliers around the region, the two brothers started a new company for supplying local schools with furniture and chairs that required welding and metal molding. After some years, they lunched their own brand of cabinets,

filing-draws, and bookshelves. The two brothers took their business from being a 5 workers firm when they started working at Ford's plant construction, to a 90 workers at the pick of their operations in 2001. The company has shifted markets, and it has significantly reduced its production of classroom's chairs, and scholarly cabinets. The company has increased the production of a more sophisticated line of industrial products, such as medium size stamping machines and conveyors, for small size manufacturing plants in the region.

The decision of getting out of their previous market – classroom's chairs and scholarly cabinets – was mainly triggered by the lack of a formal and systematic payment process by its clients; particularly when the client was the State of Sonora, which was in fact its largest client. The long periods of time without payment while working for the State's government, pushed the company to acquire bank loans for working capital, and ultimately to fall into an unsustainable financial situation. In addition, in order to win a public contract that was usually assigned through public biddings the company had to “invest” in public relations with the proper administrative levels in the “correspondent” agency. This “investment” was usually in the form of a percentage of the total price in the contract; or in the form of relatively constant “gifts” to the people in charge of assigning new deals. This form of corruption had also the complication of ending with the administration in turn, and a new “order” and “system” had to be learned once a new administration took over the State's government. Thus, these two brothers decided to change the focus of their company to reduce their vulnerability and dependency upon “the bureaucratic game” in public agencies.

There is another interesting example of how the interaction between a market opportunity and a particular skill, or know-how – both learned during the individual's previous work – can foster the birth of an entrepreneur. The oldest company in my sample belongs to an entrepreneur who had the opportunity to buy, with his own savings, a relatively small plant to elaborate polyurethane products for the construction industry. This opportunity came while the entrepreneur was still working for a multinational company in the city of Hermosillo. This entrepreneur is part of the 40 percent of my interviewees, with a previous working experience in a MNE. This entrepreneur was able to manage the start-up of his own company – a relatively small one at the time with only three workers – while doing his job at the MNE. In fact, he managed to grow as an executive in the company, and by the time of his retirement he was one of the top executives in México in that company. The decision of his retirement came by the need to dedicate more time to his own company that it was growing faster than expected. This new company was the only producer within the region of polyurethane products, and very soon the company expanded their production for serving several industries across the market. However, the construction industry remains as its biggest client, yet.

According to this entrepreneur, the opportunity of buying this particular plant came because the previous owners had gone into bankruptcy; therefore, they were selling the plant at a very low price; the fact that this entrepreneur knew an acquaintance of both parties – him and the seller – helped him to seal the deal, and despite the fact that this entrepreneur did not know much about this relatively new industry of polyurethane, he did know how to run a manufacturing plant, skilled learned at the MNE. Now, this

company employs more than 800 workers and its operations spread all over the Pacific and the western region in México.

As the third most important factor that, according to the entrepreneurs in my sample, positively contributes with the desire to become entrepreneur, is what it is known as “*culture for innovation*”. Culture for innovation is an internal factor, according to the interviewees’ perspective; however, it is extremely related to what they considerer should be an adequate environment that allows, and nurtures, both entrepreneurship and innovation within the community. As an example of how the culture for innovation might affect the desired and the likelihood of becoming an entrepreneur, there is the owner of a well-known company in the community that produces software and provides information technology services to companies all across the country. This particular company offers what the owner likes to call “information technology and communication solutions”. This company started with the help of investors who at the time owned the company in which my interviewee was working on. The future entrepreneur was the manager of information systems at that company when he developed a particular software that improved the company’s efficiency, for both recording and invoicing the company’s services per client. At that time, it was the end of the 1980s, there was not any known system that could help the company, and its subsidiaries, to standardize their operations, particularly for the operations of recording and invoicing.

After developing the software, this entrepreneur convinced their employers and owners of the company in which he was working with, to form a new partnership to sell the software to similar companies within their industry. The idea did work, and now the

entrepreneur has bought out their investors and remains as the sole owner of his company. During my interview, the entrepreneur acknowledged the fact that his previous employers, and owners of the company in which he was working with, gave him enough room for innovation, and to some extent, stimulated him to fully develop his skills in programming. When this entrepreneur was able to prove to his employers that he had the capacity to develop innovative products, and that there was a market opportunity within their own industry, it was not difficult to obtain financial support for the start-up of a new partnership.

It can be argued that in this last case, this particular entrepreneur had already a particular skill that not most of individuals have, which it was the ability and knowledge for programming; however, it is worth noting that besides his own skills, having other resources such as knowing potential capitalists – who were the owners of his previous job – and having foreseen a market opportunity did help this entrepreneur to start his company with the right foot.

Another interesting example of a combination between having a culture for innovation, and having a particular skill or know-how, is the case of a local company which started to manufacture hot-sauces in the family kitchen more than 20 years ago. Now this company employs more than 100 workers, sells its products all over the country, and it also exports them to the southwestern region of the United States. This company was started as a family business, mainly by father and son, taking advantage of an “old family recipe” for hot-sauces. Father and son started this venture more like a hobby than a long term business. However, the success of their hot-sauces was such that

the son raised enough money – from savings, family loans, and garage sells – to start a larger production than the one they had on their family kitchen. They moved from selling their product on small moms-and-pops convenience stores, to national chains within the region. They finally built their current production plant ten years ago, and it has been expanded a couple of times, doubling its capacity, and it is expected to double once again its capacity by the end of 2007. The company is now vertical integrated manufacturing its own bottles that previously used to buy from a national producer with based in Guadalajara City, which is more than one thousand miles away. With this vertical expansion, the company is now flexible enough to manage its production at world class standards using Lean Manufacturing System, and Just In Time methods to improve and to maintain high quality products in a highly competitive market.

Despite the fact that this particular company did not start with a high tech innovation, I think it is worth noting that the perseverance and the hard working spirit of the owner opened up market opportunities for the product, and in turn, helped the owner to maintain a high level of innovation for new products, and for different market niches in the region.

In sum, I believe that the above cases represent good examples of how we could interpret the entrepreneurs' perspectives about the factors that they consider positively contribute with the desire to become an entrepreneur. Not just the existence of a market opportunity, but the ability to recognize it, also having the adequate resources such a special skill or the appropriate know-how, might substantially help individuals to take the necessary risks to start a new venture and become entrepreneurs. All of the above may be more likely to happen if there is an environment that nurtures a culture for innovation,

either within the individual's family or within his/her own community (Van Praag and Cramer 2001; Lückgen et al. 2005). However, there are also distinctive factors that may inhibit the entrepreneurship spirit among individuals, and in turn, negatively affect the rate of creation of new businesses within a community. Next, I will describe what are the factors that the entrepreneurs, within my sample, considered as the most likely to affect the creation of new businesses.

Factors that negatively affect the creation of new business in the community.

Consistent with the previous responses, 53 percent of the entrepreneurs in my sample agreed that the most important factor that inhibits the creation of new businesses, within their community, is *the lack of an entrepreneurial culture*. As in the previous discussion, my interviewees described entrepreneurial culture as the individual's motivation for innovation and for taking risk for new ventures. Cultural values shape personal traits that may motivate individuals to engage in new ventures [Mueller and Thomas 2000(b)]. However, when asked for potential policies to foster both, the desire for innovation and the desire to become entrepreneurs, most of my interviewees responded that implementing special academic programs since basic education, in which students should be trained and counseled for developing innovative and entrepreneurial skills might increase the likelihood of becoming an entrepreneur when those kids reach adulthood. Similarly, Carlsson (2005) had previously stressed the importance of having a supportive national or regional culture that nurtures the characteristics and the spirit of potential entrepreneurs.

Thus, it seems that despite the seemingly lack of entrepreneurial culture in the community, most of the entrepreneurs in my sample acknowledge the potential impact that educational programs, such as developing the interest for innovation and for the entrepreneurial spirit since basic education, may have on individuals at young ages, particularly for potentially shaping their personalities to increase the likelihood to become entrepreneurs.

In table 5.5 we can observe that 27 percent of my interviewees also selected as the first factor affecting the creation of new businesses *bureaucratic procedures*, which significantly impose a heavy burden for new entrepreneurs at the start-up stage. By considering bureaucratic/administrative procedures as the second factor, this leaves the lack of market opportunities as the third most important factor affecting the creation of new business in the State. Grilo and Thurik (2004) also found that “administrative complexities” significantly affect negatively the odds of starting a new business in Europe. The authors were interested in measuring the factors that shape the demand and supply for entrepreneurship in European countries, and for that, they used data of two *Entrepreneurship Flash Eurobarometer* surveys from 2003 and from 2004, which contained more than 20 thousand observations from 15 European nations. As I mentioned it before, the authors found that the perception of “administrative complexities” plays a significant and negative role for the odds of becoming an entrepreneur in European countries. The individual’s perception was measured by questions seeking to reflect the level of involvement in entrepreneurial activities; the authors used a range of questions that covered since whether the individuals were thinking in starting a new business, up to

whether the individuals had already started a business; whether they have closed it, and whether they were again taking steps to open another business. Grilo and Thurik analyzed the impact of the perception of lack of financial support, the perception of administrative complexities, and the risk tolerance on each one of the range of questions regarding the level of involvement in entrepreneurial activities; they found that only the perception among individuals of administrative complexities, while they are starting a new business, affect significantly and negatively the odds of starting a new business.

One of the most common complains from Sonoran entrepreneurs in my sample, regarding bureaucratic and fiscal procedures, is the time it takes to start a new business which is bounded by processes such as acquiring licensees, and registering property rights. There are usually overlapping processes at the federal, state and municipal level, which are not centralized in only one agency; thus, the entrepreneur has to invest a considerably large amount of time to complete all of the required administrative processes. According to the World Bank's publication "Doing Business in 2007", México ranks 43 out of 175 countries, below Chile (28) and above Argentina (101), and Brazil (121) in the *Ease of Doing Business Index*. The average number of days that it takes to an entrepreneur to open a new business in México, according to this report, is 27 days; however, if this entrepreneur is also dealing with licenses, say for processing food, it will take him/her more than 140 days to obtain the appropriate license. In addition, if this entrepreneur is also registering a property, say land, it might take him/her 74 days to finish the appropriate procedures. This does not mean that all of those days have to be in a consecutive way; nevertheless, it usually takes three to six months to actually be

operating a new business in México. Despite the fact that the previous federal administration in México, significantly reduced and decentralized most of the bureaucratic procedures in order to improve the time it takes to start a new business, and to avoid overlapping procedures with the state and with municipal agencies, yet, there are significant large areas of opportunity to improve current procedures and to accelerate the rate of new firm's start-ups in México. Consistent with Grilo and Thurik, if the entrepreneur's perception is that there are complex administrative procedures to start a new business, it might, at the very least, reduce the rate of new firm's start-ups in the community.

The perception of a lack of *market opportunities* is also an important factor that tends to inhibit the creation of new businesses. In fact, 20 percent of my interviews explained that the persistent economic crises in México and the inadequate financial institutions that charge exorbitant interest rates inhibit market opportunities. Economic instability and high interest rates, not just affect the willingness of individuals to become entrepreneurs, but also affects negatively, the market's purchasing power. More particularly, the individuals' purchasing power is reduced by the economic instability and by higher interest rates, that both tend to create a negative spiral affecting the domestic industry's sales and eventually its production capabilities. For this particular reason, one of the entrepreneurs in my sample, explained that when he and his brother planned to start a new business – after they had closed their previous family business due to bankruptcy – they were focusing on the American market to sell their products in order to take advantage of a relatively less volatile economy.

I would like to stress my surprise for the answers my interviewees gave me regarding the factors that inhibit the creation of new business; because, contrary to what I originally expected, the entrepreneurs, in my sample, did have a relatively broad perspective about the external and the internal factors to the individual that might affect both, the willingness to become an entrepreneur, and the rate of new-firms formation. The entrepreneurs that I interviewed clearly acknowledged the existence of internal factors relative to the individual that tend to limit the raise of more entrepreneurs in the community. They, in their majority, point at the lack of entrepreneurial culture as the main reason why there are no more entrepreneurs in the state of Sonora. The culture for innovation and the belief that individuals can take control of their own destiny (locus of control) are psychological traits that explain the entrepreneurial culture; as it has been previously addressed in the literature. They also acknowledged the existence of external factors to the individual – market and economic factors – that inhibit the creation of new businesses. In sum, according to the entrepreneurs in the sample there is a combination of personal traits, and market conditions that ultimately affect the creation of new businesses in the community.

I believe that these previous findings shed more light to the results of my econometric model, particularly for the results in model 2 that tested the hypothesis that FDI is statistically significant and positively correlated with the creation of new businesses in the host country. Table 4.16 shows that FDI is indeed statistically significant in the model, but it is negatively correlated with the creation of new firms. My conclusion pointed out to the fact that the country's economic instability make more vulnerable

small and micro businesses, which in their majority are in the retail-food industry, and forced them to shut down operations; thereby, affecting the overall number of businesses across Mexican States. However, according to the Sonoran entrepreneurs' perspective, FDI is indeed, positively correlated with the creation of more firms in the transformation sector; thus, such perception implies that FDI does not have a homogenous effect on all of the economic sectors, and that it also has a lagged effect for its spillovers to fully take effect.

The factors perceived by Sonoran entrepreneurs that negatively affect the creation of new firms in the community, also stress the importance of environmental factors (market conditions – market opportunities) and institutional arrangements (bureaucratic and administrative procedures) that may hinder the entrepreneurial activity when inefficient, despite the amount of FDI receive in the community.

Factors that positively affect the creation of new businesses

In addition to the previous question, I asked the entrepreneurs for the factors that they believe positively contribute with the creation of new businesses in their community. It is important to distinguish between the factors that might trigger the desire to become entrepreneur from the factors that affect the actual creation of a new business. Individuals may be willing to start a new business; however, there might be environmental conditions that are not favorable for this entrepreneur to start his/her new venture. Needless to say, these factors go hand to hand with the factors that inhibit the creation of new businesses in the community. As the same as for the factors that positively contribute with the

desire to become an entrepreneur, 80 percent of my interviewees identified *market opportunities* as the most important factor that positively contributes with the creation of new businesses in the community. As previously explained, market opportunities cover individual's purchasing power, financial conditions, and the relative stability of the economy. This might be true, under the assumption that a stable economy and having positive conditions for the domestic market to maintain a constant rate of consumption, might create favorable conditions that in turn might open up new business' opportunities in the market.

As the second most important factor that positively contributes with the creation of new businesses in Sonora is having in the market, and in the industry, a relatively well *trained and skilled labor force*. My interviewees believe that the relative high level of competitiveness in the *labor force* in Sonora substantially helped them to start and run a successful business; most particularly for labor-intensive companies. Several entrepreneurs in my sample stressed the importance that the Ford plant in Hermosillo has had for improving the blue-collar working culture. Due to the fact that Ford and its suppliers are the largest employers in Hermosillo, the working culture brought by these multinationals is transferred to other industries within the region; this happens once former Ford workers start to move to other domestic companies, or to start establishing their own workshops. Even though, most of these workshops are relatively small, with less than 10 employees, the owners – former Ford workers – are now in the position of training their employees in new productive techniques previously learned at Ford or at any of its affiliates.

The government in Sonora also implemented an intensive training program in which companies were able to save a proportion of their payroll taxes by providing training to workers. My interviewees also believe that this program has to some extent helped the industry to improve, in general terms, the capabilities and skills of the labor market in the State of Sonora.

One of the entrepreneurs in my sample, who manufactures and exports metal-made furniture to the U.S., explained that most of his workers formerly worked in the welding process at Ford in Hermosillo; thus, these workers are extremely skillful in welding and molding metal, and are also able to achieve higher quality standards on each one of their unique products, that are sold to the American market. Another entrepreneur, who manufactures garment also for the American market, expressed that one of the reasons for his success, was the fact of having a well trained and reliable working force. The fact that this entrepreneur used to work as the general management for a group of maquiladoras in Hermosillo, helped him to know the market and to employ the right people within the labor market. He explains that the turn-out in his company is significantly lower than for the rest of the companies in Hermosillo, and that he had to invest less in training for his workers, because they already had the basic knowledge of the manufacturing process in their industry.

Finally, one third of my interviewees agreed on that *legal norms, rules, and administrative procedures*, combined, are the third most important factor that positively affect the creation of new businesses in the community. As already explained above, entrepreneurial activity might increase to the extent to which individuals who are willing

to take the risks to become entrepreneurs, perceive the existence of clear norms and administrative procedures for starting their own businesses in the community. This way, they might face less restrictions, or inhibitors, within the environment to start their own businesses.

Thus far, I have described, accordingly to what the entrepreneurs in my sample perceive, the factors that positively and negatively affect the creation of new businesses in the community. In the following section I will discuss the factors that my interviewees perceive positively impact the growth and development of the new businesses within the community. As stressed before, this question is focus on the idea that once the entrepreneur started his/her new business, there is a critical period of time for the nascent company to grow successfully. Thus, the question was aimed at to find the factors that my interviewees consider were key in the successful growth of their businesses, right after they started them.

Key factors for the successful growth and development of new businesses in the community.

There was not much of a surprise for the responses I received from my interviewees, regarding the factors that they consider were key to the successful growth and development of their businesses right after the start-up process. Consistent with most of the literature at hand (Astebro and Bernhardt 2003; McMillan and Woodruff 2002; Weyh 2005) and also consistent with the responses of the previous questions above, the interviewed entrepreneurs point at the *lack of financial resources (availability)*,

competition, the *lack of market opportunities*, and the *excess of fiscal regulations*, as the most important factors that may affect the success of nascent businesses.

Approximately 50 percent of my interviewees expressed that the lack of *financial resources* is the most important factor for the success of nascent businesses within the first five years of life. By the lack of financial resources, my interviewees considered the availability of financial resources at competitive interest rates. Given the proximity of Hermosillo to the State of Arizona in the U.S., there has been the case in which individuals preferred to borrow money from American banks than from Mexican banks, absorbing the risk of exchange rates depreciations, but at significant lower interest rates. One of the entrepreneurs in my sample, owner of a company that manufactures metal-made furniture, and decorative items, was also president of one of the business associations in the community several years ago; thus, his perspective turned out to be quite helpful regarding the difficulties that nascent small, and medium size businesses, have to face within their first years of life. This entrepreneur stressed that more important than having enough financial resources to start a new business, is to have enough resources to keep running the business during the first years of its life, at least up until the business is strong enough and able to achieve certain level of sustainability by its own resources and capabilities. This finding is in fact interesting, because according to the general characteristics of the entrepreneurs in my sample, 88 percent of them, obtained the financial resources to start their own business from personal and family savings, and only 12 percent of the entrepreneurs obtained formal bank loans to start their businesses; in addition and according to the information I was able to collect from them, only one of

the entrepreneurs in my sample had a relatively wealthy position, above the rest of the entrepreneurs, that was able to start his company with resources to spare, due to the fact that his father was already a successful entrepreneur with several businesses in the community and in the state.

This situation leads me to believe that most of the entrepreneurs that used their personal savings, or were able to obtain financial resources from their families to start their own businesses, might tend to be more vulnerable to financial constraints than other entrepreneurs that could have started their own businesses using financial resources from a formal financial institutions (Astebro and Bernhardt 2003). Bank loans usually include clauses for periodical withdraws instead of providing the money in only one mayor withdrawal; this way, entrepreneurs might manage their money requirements in a way that help them to face potential financial disruptions during the first years of life.

Unfortunately, given the nature of my sample, I cannot test the hypothesis that entrepreneurs with bank loans are less vulnerable to financial constraints than entrepreneurs that used their personal savings to start their own businesses; however, what I can confirm is that some of the entrepreneurs that used bank loans in a different stage of their life cycle, did find themselves in great financial pressure after the Mexican financial crisis in 1995, of course this is only the case for those companies that started their operations before that date. In 1995, México experienced a deep financial crisis, in which, among other things, the interest rates went sky high, surpassing the 70 percent level in April of 1995 for the short term (monthly) interest rate (Banco de Información Económica INEGI). It was not until June of 2001 when the Treasury Certificates' interest

rate (CETES), which is the reference for the short term interest rate for the Central Bank (Banxico), reached back to one digit level. With this in mind, it is understandable that most of the entrepreneurs who tried to finance their operations with bank loans before 1995, were dramatically hurt – financially – and since then, they have remained skeptical of the Mexican financial institutions' efficiency; conversely, entrepreneurs that started their business after 1995, are also careful of taking any risk in asking for financial resources from the Banking system in México.

It is also understandable that the higher the *level of competition* within one particular industry, the higher the vulnerability of new and nascent businesses. 33 percent of the entrepreneurs in my sample, expressed that the existence of *many competitors* within the industry, negatively affect the growth and development of their new businesses. This is not difficult to understand, due to the fact that in a relatively growing sector that is the manufacturing sector in the state of Sonora, also within an economy that relatively lacks of both, financial resources and highly skilled labor, the survival rate – or at the very least – the successful growth and development of every business within that sector, turns out to be limited by such constrains. In most of the cases, the interviewees express their concern for the level of competition; however, not for a direct competition for the same market with the same products, but for a competition for resources; resources that, as I already explained it are limited and scarce.

There are two key factors in third place, which may affect the growth and development of nascent businesses. With 29 percent of the responses the *lack of a strong market*, and the existence of many *legal and administrative procedures*, are also key

factors affecting the success of businesses in the community. As explained before, the *lack of a strong market*, is mainly understood as the purchasing power of the market; measured by the market size in terms of population, or by the market's per capita income.

The state of Sonora is the 12th regional economy in México, representing 2.5 per cent of México's GDP. Sonora's GDP per capita is about the same as the national average, around 6,000 dollars a year. The state of Sonora, with a little bit more than 2.3 million people (Banco de Información Económica INEGI), does not represent a significant growing market as the U.S market does for local manufacturers. Thus, entrepreneurs in the state of Sonora, within the manufacturing sector, tend to look for international markets to sell their products rather than for the local economy. If this situation is not necessarily bad for the entrepreneurs, it certainly does present different challenges – as well as opportunities – for those entrepreneurs that do not have experience with international trading. However, despite the challenges that the international market may impose on domestic manufacturing plants, under the assumption that their products might be sold at better premiums prices than in the local market in Sonora, one of every five entrepreneurs are willing to face those challenges.

Regarding the *legal issues and bureaucratic procedures*, entrepreneurs in my sample emphasized that the current fiscal laws and the bureaucratic procedures to start and to run a small and medium size firm, significantly hinder the growth and development of their businesses. One of the interviewees, owner of a firm that develops software for communication and information technology, expressed his concern about the fact that most of the small and medium size firms do not have enough financial resources to hire

experts for helping the company to deal with fiscal and legal requirements every year; and in some cases, even though, some of the firms were able to hire professional services, the constant changes on the fiscal law practically makes it impossible for avoid committing errors at their fiscal responsibilities. This entrepreneur explained that he has had to pay penalties for relatively small errors on the calculus of their annual taxes, which were originally made by, presumably, expert bureaus on fiscal laws. It seems, though, that having complex tax codes is in no way exclusive of the Mexican government, to some extent, all countries have more or less complex tax codes and fiscal systems; however, given the fact that México is a developing country, and there is the need to create, at a faster pace possible, more formal jobs in the economy, it would seem that the federal government, in México, at having fiscal policies that threat the entrepreneurial spirit and deter the growth and development of small and medium size businesses, is in no way contributing with the productive sector to help the country to successfully face its economic challenges.

Finally, as part of the interview I asked the entrepreneurs to give me their perspective about the impact that FDI has had in the community, particularly about the FDI's potential impact in generating more businesses in the community. I asked the interviewees to consider two extremes, on one end to consider whether FDI is indispensable to create more businesses; and on the other end, to consider that FDI is not needed for creating more businesses in their community. Interestingly, 53 percent of the entrepreneurs considered that FDI has help to create about half of new businesses in the community, at least for the past 10 years. However, there are 33 percent of the

interviewees that also considered that Sonora would not be able to create more businesses without having foreign direct investment. It would seem, then, that more than 80 percent of the entrepreneurs within my sample considered that FDI is significantly linked with the creation of new businesses in the community, and that without it, the local economy would be only able to create half of the businesses that otherwise would with FDI's help.

These findings are of course biased due to the close relationship these entrepreneurs have with MNEs within the manufacturing industry. Despite the fact that the econometric analysis in chapter IV does not provide evidence of this perception – that FDI is closely related with the creation of new businesses in the community – it is worth noting that it may well be the case that FDI is indeed positively correlated with the creation of new firms in the manufacturing industry, but not at all in the rest of the economic sectors – retailing and services. In addition, the time span for FDI's spillovers to take place, at least in the case of knowledge transfer in the form of new domestic firms, may take longer than expected in a country that has gone through several economic crises in the last 20 years. As previously mentioned it, one of the entrepreneurs started his company while he was working at the same time in a MNE, but this happen after being working in this company for more than 10 years. Another case, the entrepreneur that owns a textile company in Hermosillo, worked more than 15 years for a company that provides shelter services to MNEs in Sonora.

However, there are two particular cases in my sample that might be worth noting, regarding the way FDI has helped local businesses to successfully start and to grow. The first case is a company that manufactures wood-made furniture and it was started in a

joint-venture between the entrepreneur I interviewed, and an American company. The American company bought the machinery with which the new firm started to manufacture its products; years later the entrepreneur bought the American company out and it is now fully owned by the Sonoran entrepreneur. However, this entrepreneur acknowledged that the American company's help was not only limited to buy the machinery at the beginning of their operations, but it was also of great help to find clients and to promote the products in the American market. The second case is of a company that manufactures garments for American and for Mexican firms, it is a maquiladora. This company was also started in a joint-venture with an American company, and after a couple of years of operation, the Sonoran entrepreneur bought the American company out, so it is now owned solely by this entrepreneur.

Thus, the importance of have started with an American company, as a partner, was of great help to develop trust among the American clients, now it is possible that this company successfully competes in the international market, due to the experience and know-how that was developed in partnership with the American company.

Conclusions

In spite of the inherent limitations of my sample, which have been explained in previous pages, I think there are some interesting findings that shed light on the understanding of the entrepreneurial activity in México. The interviews I conducted in Hermosillo, Sonora, had four particular purposes. (1) to explore the reasons for which the individuals become entrepreneurs; (2) to understand the factors that might inhibit or foster the creation of new businesses in the community; (3) to know the factors that negatively affect the growth and development of nascent businesses in the community; and (4) to know the perception of the entrepreneurs regarding the effects of FDI on the community's capability for creating new businesses. The collected information from the analysis on Sonoran entrepreneurs has not just given me a general perspective of the factors that affect the entrepreneurial activity in the State, but also it has given me evidence of the context in which FDI's spillovers take place and affect the rate of new-firms' creation in the community.

Thus, the most important findings of this cross-sectional study in Sonora are the following: (1) One third of my interviewees have used FDI in one stage or another of their businesses' life cycle. This finding provides support to the results of my econometric model. (2) According to my interviewees' experience, the factors that significantly affected their desires to become entrepreneurs are: having special skills, having locus of control, self-motivation, and having a particular know-how ready to be transfer to other ventures. (3) Having an entrepreneur parent was distinctive for nurturing the desire of becoming entrepreneurs.

(4) There are external factors such as: market opportunities, and the existence of a culture for innovation within the community that nurtures individuals' interest for exploring new ventures, that positively contribute with the desire of becoming entrepreneurs. There is, then, a combination of external and internal factors relative to the individual that might positively interact to increase the entrepreneurial activity in the community.

(5) The excess of bureaucratic procedures, unclear norms and rules, and the lack of market institutions are among the most important factors that tend to deter the creation of new businesses in the community; (6) conversely, the existence of clear rules and norms, market institutions that foster market opportunities, and a well trained labor force, are among the key factors that positively impact the creation of new businesses in the community.

(7) Consistent with previous works, the lack of financial resources is among the most important factor that might inhibit the successful growth and development of nascent businesses; however, competition for productive resources, excessive fiscal policies and the lack of an efficient market structure, are also considered key factors for the long-term success of their businesses.

The present study had the purpose to explore the factors that affect the creation of new firms in México, I believe that in this chapter I have presented evidence that there are external and internal factors to the individual – entrepreneur – that affect his/her willingness to start a new venture; although, I presented evidence of a positive relationship between FDI and the rate of new-firms' formation in chapter IV, here, I also

provide evidence that there are institutional factors that significantly contribute to the entrepreneurial activity in México. However, these findings are inherently limited to what entrepreneurs within the manufacturing sector in Sonora have told me; the question, thus, whether these factors affect other economic sectors, and other geographic regions should be addressed in the following chapter.

In this regard, I will discuss in the following chapter, the findings of a national survey on more than 2,000 members of the Camara Nacional de Comercio Servicios y Turismo (CANACO SERVYTTUR) run by Monterrey Tech during the fall of 2006. I expect to provide a wider perspective on the internal and external factors that tend to affect the desire to become an entrepreneur, and the entrepreneurial activity in México.

CHAPTER VI. ANALYSIS OF THE FACTORS AFFECTING THE ENTREPRENEURIAL ACTIVITY IN THE TERTIARY SECTOR IN MÉXICO

Introduction.

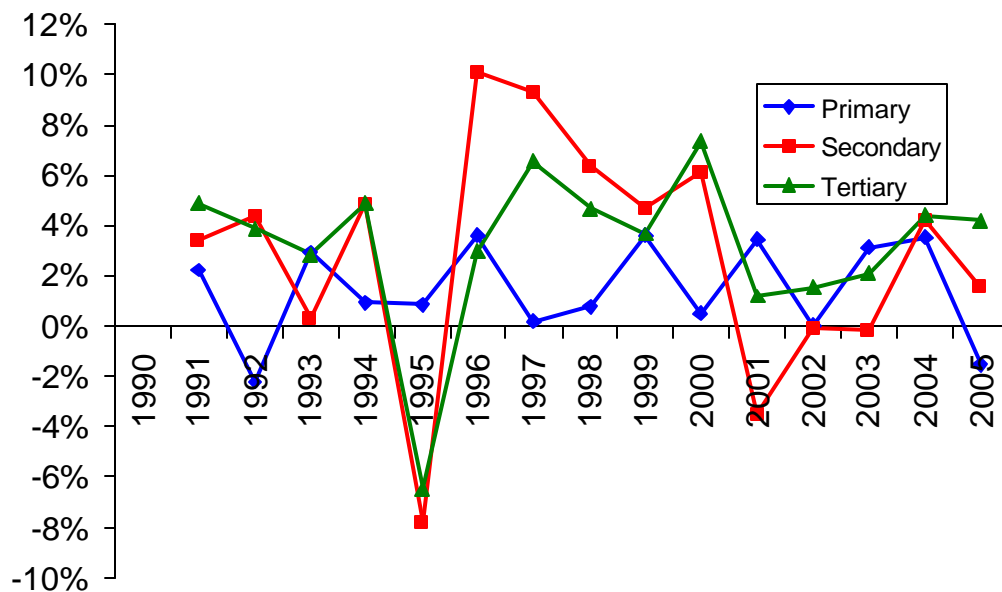
This chapter represents the third and the last stage of my research; the previous two chapters reported the findings of the econometric model, and the in-depth interviews on Sonoran entrepreneurs, respectively. The econometric model was built to analyze the relationship between FDI and the entrepreneurial activity in México; whereas the in-depth interviews were focused on identifying the factors that affect the desire to become entrepreneur, and the factors that affect the rate of new firms' formation within the manufacturing sector. This last stage has the purpose to provide more context to the findings of the previous analyses, by exploring the entrepreneurial activity within the tertiary sector in México.

Following, I will describe the results of a national survey conducted by Monterrey Tech (ITESM) on members of the National Chamber of Commerce, Services and Tourism in México (CANACO-SERVYTUR), during the fall of 2006. Firstly, I will describe the current status of the tertiary sector in the Mexican economy, which includes commerce and services (including tourism); secondly, I will describe the CANACO-SERVYTUR survey in terms of the purpose for my research, and finally I will explain and compare with the Sonora cross-sectional analysis, the results of the CANACO-SERVYTUR survey. Hopefully, this way the reader could have a better understanding of the context of the entrepreneurial activity in the tertiary sector in México.

The Tertiary sector in the Mexican economy.

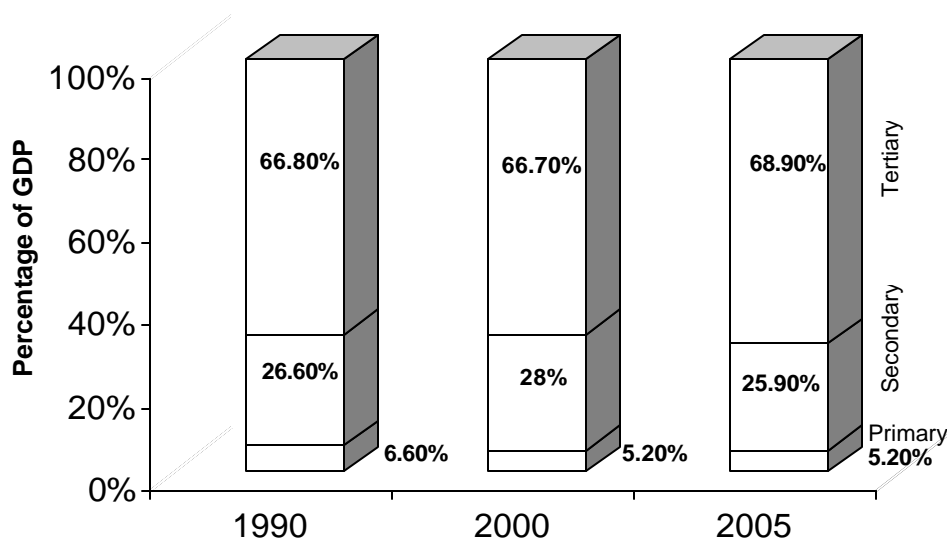
The tertiary sector in México represents almost 70 percent of the country's real Gross Domestic Product (GDP), despite the fact that this sector has also suffered from domestic financial crises, as the one in 1995, and from external shocks in 2001; it has slightly increased its relative position against the primary and the secondary sector in the country [See figure 6.1]

Figure 6.1 GDP share by economic sector in México (Annual growth rate)



Source: Own elaboration with data from INEGI

Figure 6.2 Participation of each economic sector in México's GDP.



Source: Own elaboration with data from INEGI.

Both sectors, the secondary and the tertiary, had a negative growth rate near the 10 percent level in 1995, whereas the primary sector did not change its production level in that same year. After 2001, the tertiary sector that includes the economic activities of *commerce, restaurants, hotels, financial services, and individual and aggregated services*, has maintained a relatively constant growing rate, going from 1 percent to above the 4 percent level; while both the secondary and the tertiary sector have had a more unstable situation for the same period of time. We can observe that in the last 15 years the primary sector, as well as the secondary sector, have both lost a couple of percentage points relative to México's real GDP [See figure 6.2]; whereas the tertiary sector has gained those points, going from 66.8 percent to 68.9 percent from the year 2000 to 2005 of its share on México's GDP. This implies that the Mexican economy is depending less upon the primary sector, which represents less value-added, and moving towards a more sophisticated economy of commerce and services. Table 6.1 shows that, in fact, what it has been increasing in the Mexican economy for the last 15 years, is the sub-sector of *transportation, communications and storage services*, and not precisely the sub-sector of *commerce, restaurants and hotels*, which it is the one represented by CANACO-SERVYTUR.

Table 6.1 Distribution of the tertiary sector in México, selected years.

Year	Tertiary U.S. dollars of 1993	Commerce, restaurants and hotels	Transportation, storage and communications	Financial services, insurantes, and real estate	Individual and aggregated services
1990	220,685,979	31.3%	13.2%	22.1%	33.5%
2000	310,298,440	31.8%	16.4%	22.7%	29.1%
2005	354,049,923	30.4%	18.6%	24.8%	26.2%

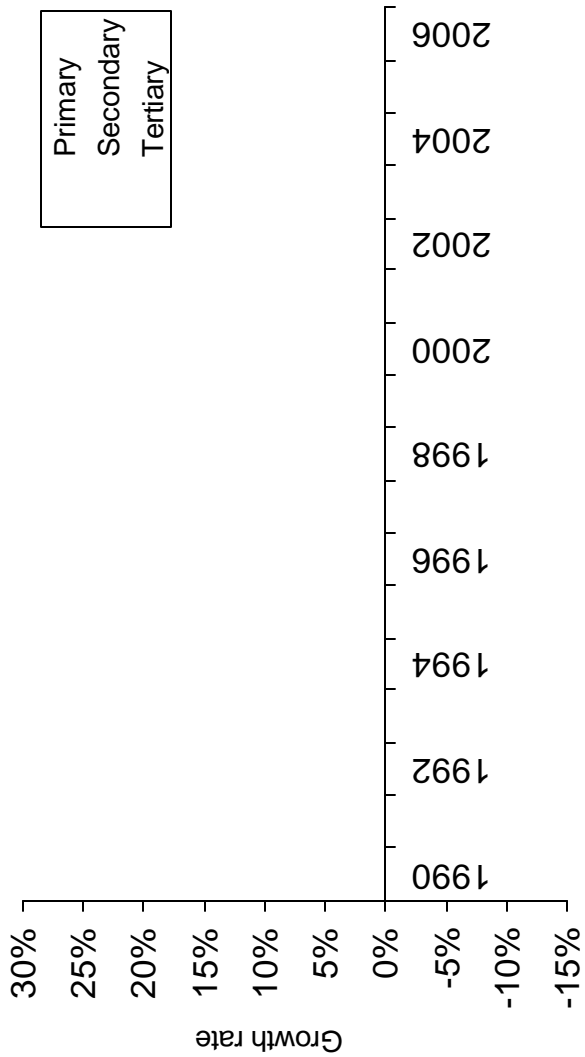
Source: Own elaboration with data from INEGI.

In 1990, president Carlos Salinas de Gortari, started a wide privatization process as part of a strategic package for reducing the public deficit, and to set the market conditions for entering into the North American Free Trade Agreement (NAFTA). Since then, both *transportation and communications industries* have received substantial private – domestic and international – funds to increase its productivity and to better compete in the international market.

The economic sub-sector of *financial services, insurances and real estate*, has gained a couple of percentage points relative to the rest of the sub-sectors within the tertiary sector, as we can see in table 6.1; however, despite this increment, the generalized sentiment among small and medium size businesses' owners is that there is a lack of accessibility to financial resources, due to relative higher interest rates, or by stringent requirements and procedures for accessing such resources, as I have already discussed it in the previous chapter. It may well be the case that most of the financial resources have mainly gone to finance multinational and large domestic companies, particularly since the financial crisis in 1995, instead of financing small and medium size domestic-firms.

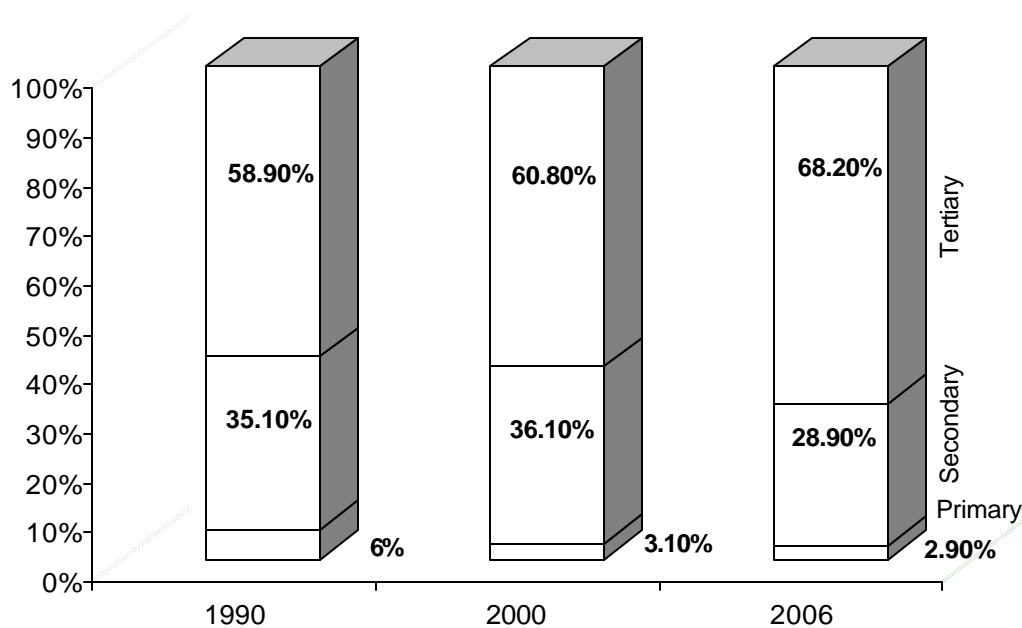
Surprisingly, despite the financial crisis in 1995, and the economic slowdown in 2001, the tertiary sector in México has maintained a relative sustained rate of growth in its workforce registered in the Mexican Social Security Institute (IMSS). However, the secondary sector, which represents the transformation industry, has had a more unstable situation [See figure 6.3]. The secondary sector's registered labor had a negative growth rate in 2001, which is mainly explained by the economic slowdown in the American market in the year 2000.

Figure 6.3 Growth rate in the registered labor -force in the Mexican Institute of Social Security (IMSS) by economic sector.



Source: Own elaboration with data from INEGI.

Figure 6.4 Registered labor shares by economic sector within the Mexican Institute of Social Security



Source: Own elaboration with data from INEGI

México's economy is closely related to the U.S.' economy, more than 85 percent of México's exports go to the U.S and most of those exports belong to the transformation industry; thus, a reduction in the American imports – globally – significantly impact Mexican exports, and companies with lowered levels of production would tend to reduce their labor force to adjust themselves for potential financial constraints. We can also see in figure 6.5 that the secondary sector hired relatively less labor in 2006 than it did in the year 1990, 28.9 percent and 35.10 percent, respectively. The primary sector has also lost 4 percentage points in the same period of time, this may also be explained by the relative transition of the Mexican economy, which now depends less upon the primary sector – mainly from commodities – and it has moved seeking to invest in industries with higher value-added. This reduction in the relative labor share in the primary sector may also be explained by the fact that Mexico has increased its imports of commodities and agricultural products in general, after NAFTA came into effect in 1994. Thanks to NAFTA, México has access to relatively cheaper commodities worldwide; thus, the Mexican primary sector has lost its relative competitiveness against other countries, forcing the industry to reduce its workforce.

In turn, the tertiary sector has increased 10 percentage points its share of permanent and formal labor in the Mexican economy. Following, I will discuss the perception of business people within this tertiary sector, more specifically entrepreneurs within the economic sub-sector of *commerce, restaurants and hotels*, which is represented by the CANACO-SERVYTUR, regarding the factors that might contribute with the formation

of new business within their community, as well as the factors that might inhibit the formation, and development of nascent businesses in México.

But before entering into that discussion, I would like to share interesting information regarding the flows of Foreign Direct Investment in México, so we could have a complete perspective of the potential effects of FDI's inflows into the Mexican economy. Let us remember that the purpose of this research is to analyze the impact of FDI's inflows on the rate of new-firms formation in the country. Thus, I think it is important to have a snap shot of which are the main recipients of FDI in México, and to some extent, to have a longitudinal perspective of FDI's behavior in the country, by economic sector.

Table 6.2 shows FDI's inflows in México by sub-sector; it is worth noting the jump from 2000 to 2001 in the total FDI from 17.7 to 21.5 U.S billions of dollars. This jump is explained by the increase in FDI within the sub-sector of *financial services*, from 4.86 US billions dollars to 14.4 US billions of dollars from 2000 to 2001. Citi Group sealed the deal of buying one of the two largest banks in México – Banamex – for more than 12 billions US dollars in 2001; thus, this operation may explain such dramatic jump of FDI in that particular year.

Table 6.2. FDI's distribution in México by economic sub-sector, I
in millions of current US dollars.

Year	Total Current US dollars	Agriculture and Cattle	Mining	Manufacturing Industry	Electricity and Water	Construction	Commerce	Transportation and Communications	Financial Services	Aggregated services
1994	10,647	11	98	6,192	15	260	1,252	719	942	1,159
1995	8,375	11	79	4,862	2	49	1,013	876	1,070	412
1996	7,848	33	84	4,819	1	26	752	428	1,216	489
1997	12,146	10	131	7,290	5	110	1,871	686	1,117	925
1998	8,373	29	49	5,010	25	136	1,039	439	733	913
1999	13,704	83	138	9,153	150	110	1,409	296	775	1,592
2000	17,773	92	199	9,912	134	172	2,437	(2,082)	4,857	2,051
2001	27,429	64	22	5,792	333	108	2,219	2,782	14,415	1,695
2002	19,344	93	248	8,647	398	348	1,778	832	5,765	1,237
2003	15,348	11	78	6,685	323	83	1,394	1,631	3,306	1,838
2004	22,283	16	146	12,694	202	385	1,183	1,254	5,489	913
2005	18,934	3	24	11,363	192	277	2,648	1,173	944	2,311

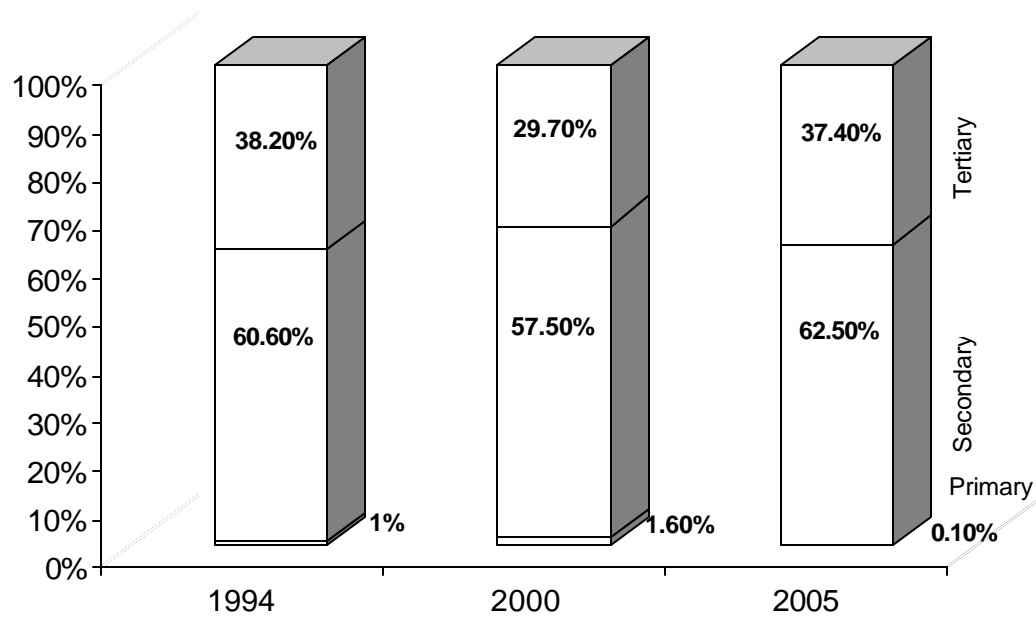
Source: INEGI and The Secretariat of Economy in México

Supporting the argument that the US economic slowdown dragged down the industrial activity in México, we can observe a reduction in FDI's inflows from 2000 to 2001 in the manufacturing industry, from 9.9 US billions of dollars, to 5.8 US billions of dollars. Nonetheless, this 42 percent reduction of FDI within the manufacturing industry was offset by the increment previously explained within the *financial* sub-sector in the same year; thus the overall picture does not show the peculiarity of the FDI's trend in the manufacturing sector.

Despite FDI's fluctuations, within the manufacturing industry, this particular industry has received more than 60 percent of the FDI' inflows in México [See figure 6.5]; while the tertiary sector, in turn, maintained a relatively constant share of FDI's inflows since 1994, around 38 percent; whereas the primary sector has significantly lost ground in this area.

We can see in table 6.2 that FDI's inflows into the *agricultural and cattle* sub-sector hit rock bottom with a historical low of 3 US billions dollars in 2005; which represents only 3 percent of its historical high in the year 2000.

Figure 6.5 Share of FDI by economic sector in México.



Source: Own elaboration with data from INEGI.

In sum, the tertiary sector holds two thirds of México's GDP; it creates more than two thirds of the permanent jobs in the economy, and it attracts less than 40 percent of FDI's inflows in the country. With that in mind, I will turn to discuss the results of the CANACO-SERVYTUR survey, which might shed some light on our understanding of the factors that affect the entrepreneurial activity in México, and which were addressed in the cross-sectional analysis on Sonoran entrepreneurs. Given the limitations of the in-depth interviews in Sonora, due to its main focus on the manufacturing sector, I am expecting to enhance our perspective on the external factors that affect the desire to become entrepreneur, and that tend to affect the creation of new firms in the country. At the end of this chapter, I will have presented a comparison between the factors affecting the entrepreneurial activity within the manufacturing industry in Sonora, and in the tertiary sector nationwide.

Analysis of the CANACO-SERVYTUR survey.

The CANACO-SERVYTUR survey had the goal of obtaining a general perspective regarding the current economic situation in the *Commerce, Service, and Tourism* economic sectors in México, which are nationally represented by the CANACO SERVYTUR association. The Chamber of Commerce, Services and Tourism is known in México as CANACO SERVYTUR. This national association includes all of the regional Chambers of Commerce and it is known as CONCANACO, which stands for the Confederation of Chambers of Commerce. The goal of obtaining a national perspective regarding the situation within this national association of businesses was achieved through a nationwide survey within members of the National Chamber of Commerce, Services and Tourism. This survey was part of a nationwide study made by The *Instituto Tecnológico y de Estudios Superiores de Monterrey* (ITESM), in order to (1) make a diagnosis of the current economic situation in the sector of *Commerce, Services, and Tourism* in México; and (2) to identify potential public policies for the entrepreneurial development in the country. By CANACO-SERVYTUR request, the ITESM Campus Guadalajara applied a structured questionnaire for obtaining the perspective of presidents and members of the board of directors, and of the presidents of the national commission of the CONCANACO SERVYTUR in all of the Mexican states, during the fall of 2006. This structured questionnaire was originally designed by the ITESM with the purpose of obtaining qualitative information regarding:

1. Market conditions
2. Strengths of the regional productive sectors

3. Degree of internationalization of the productive sectors in the region
4. Government intervention
5. Management and productivity
6. Quality of life
7. Infrastructure
8. Human Capital
9. Financial resources ability
10. Technological development in the region
11. Social capital
12. Innovative systems within the region
13. Information and communication Technology

The questionnaire includes closed questions; multiple choice, and Likert scale type questions, to measure the individuals' perspectives on all of the previous topics, within the CANACO-SERVYTUR members. As a personal favor, the coordinator of the CANACO-SERVYTUR's study included several questions in the survey instrument for me, so I could take advantage of this nationwide study to collect the perspective of entrepreneurs within the *commerce and service economic sector*, regarding the factors that contribute and inhibit the creation of new firms in the country, and the potential relationship between the FDI and the rate of creation of new firms in the tertiary sector. Thus, in addition of having an in-depth interviews about the entrepreneurial activity in the state of Sonora, I would be able to add a wider perspective about the entrepreneurial activity nationwide within the tertiary sector. In other words, I will be able to compare the results of the in-depth interviews in Sonora, with the results of a nationwide survey within the tertiary sector, and analyze whether the factors affecting the entrepreneurial activity in the manufacturing sector in Sonora, are also the same factors affecting the entrepreneurial activity in the tertiary sector nationwide.

This study is focused on three groups of individuals as target population: (1) Nationwide presidents of CANACO-SERVYTUR; (2) members of the board of directors; and (3) presidents of the national commission. The final selection of each one of the members for taking the questionnaire was done by CANACO-SERVYTUR in each one of the cities in which there is a CANACO-SERVYTUR association.

ITESM received 2008 answered questionnaires from the 263 districts in which there is a CANACO-SERVYTUR association, nationwide. Questionnaires were answered either electronically or by hand, from October the 2nd to the 30th of 2006. Table 6.3 shows the distribution by state of the answered questionnaires, which were processed by ITESM Campus Guadalajara. Unfortunately, the application of this survey was not in charge of the ITESM Campus Guadalajara, but in charge of each one of the Chamber of Commerce in the Mexican States; thus, the application of the survey was subject to the individual effort of each one of those association. As a result, we can see that the state of Puebla holds more than $\frac{1}{4}$ of the total questionnaires in this survey. Hence, the results of this survey should be taken with caution due to measurement validity problems as a result of the disproportionate survey turn out.

Table 6.3 Sample distribution of CANACO-SERVYTUR Survey

City or State	Percentage	City or State	Percentage
Puebla	26%	Edo. De México	2%
Tamaulipas	8%	Colima	2%
Chihuahua	8%	Aguascalientes	2%
Nuevo León	5%	Hidalgo	2%
Baja California	4%	Baja California Sur	2%
San Luis Potosi	4%	Guerrero	2%
Distrito Federal	4%	Guanajuato	1%
Coahuila	4%	Campeche	1%
Morelos	4%	Durango	1%
Sinaloa	4%	Yucatán	1%
Oaxaca	3%	Tabasco	1%
Veracruz	3%	Quintana Roo	1%
Tlascala	3%	Zacatecas	0.40%
Jalisco	2%	Chiapas	0.30%
Michoacán	2%	Sonora	0.20%

N = 2008

As explained above, this questionnaire was a self-administered questionnaire, which was useful to reduce costs and to improve convenience for individuals in the sample to answer the questionnaire at their own pace; however, it is important to acknowledge some issues regarding the validity and reliability of this type of research design. The potential random error associated with the consistency of this questionnaire, due to the timing or the place in which this questionnaire was applied might be reduced by the size of this sample, and by the source of the sample unit (Singleton and Straits 1999). There were more than 2,000 questionnaires in more than 30 different cities nationwide in México. Questions were also made with the goal to improve the accuracy of the responses in the sense that the questions included in the CANACO-SERVYTUR survey were first tested in the Sonora's cross-sectional analysis. It was also helpful to have a relatively high degree of concentration on the options that respondents needed to evaluate to answer each questions.

The goal of making these questions concerning the entrepreneurial activity in the tertiary sector was twofold, first to obtain the individuals' perception regarding the factors that affect the desire to become entrepreneur, and the factors that affect the creation of new firms in this particular sector. And second, to contrast those findings with the findings in the cross-sectional analysis on Sonoran entrepreneurs.

In order to avoid validity problems of the survey instrument, questions were also designed to maintain simple concepts on entrepreneurial activity that all individuals are familiar with. Concepts such as "starting a new business", "growing and development of the business" and "becoming entrepreneur", were the main focus of my questions, and given the fact that all of the individuals within the CANACO-SERVYTUR survey were owners of small and medium size businesses, they all have gone through the problems addressed with this survey instrument.

An important limitation of this survey is that it only provides the entrepreneurs' perception regarding the issues addressed within the questionnaire; and to some extent, those perceptions may be biased by the ability of the individuals to recall the main problems that they faced when started their own business. However, despite the fact that this questionnaire is collecting only the perception of entrepreneurs within the tertiary sector – and the generalization of the results is limited – it does provide good approximation of the main problems that entrepreneurs face for starting a business in México, mainly because this particular topic of entrepreneurial activity has been the central focus of extensive discussions among the business community in the country.

Following, I will describe the results of the CANACY-SERVTUR survey, regarding the five key questions I also made on Sonoran entrepreneurs with the in-depth interviews. As a reminder, the five key questions were: (1) what are the factors that positively contribute to the individuals' desire to become entrepreneur?; (2) What are the factors that positively affect the rate of new-firms' formation in the community?; (3) What are the factors that inhibit the rate of new-firms' formation in the community?; (4) What are the factors that hold back the development and growth of nascent firms in the community?; and (5) What is the perceived relationship between FDI and the rate of new-firms' formation in the community?. See Table 6.4 for the comparison on the answers between the in-depth interviews in Sonora and the CANACO survey. See Appendix B.1 for a more complete description of the answers in each question.

Table 6.4 Comparison between the responses in the in-depths interviews in Sonora and the CANACO survey

	CANACO Survey Commerce, Service and Tourism n = 2008; nationwide, National survey	Sonora's Entrepreneurs Manufacturing Sector n = 17; in Hermosillo, Sonora - in-depth interview
I. Factors that positively affected the desire of becoming and entrepreneur	<ol style="list-style-type: none"> 1. Special skill - know how 2. Market Opportunity 3. Level of Education 	<ol style="list-style-type: none"> 1. Market Opportunity 2. Special skill and know-how 3. Culture of innovation
II. Factors that positively affect the formation of new firms	<ol style="list-style-type: none"> 1. Market Opportunity 2. Business' support centers 3. Trust on clients and suppliers 	<ol style="list-style-type: none"> 1. Market opportunity 2. Trained Labor 3. Market norms and rules
III. Factors that inhibit the formation of new firms	<ol style="list-style-type: none"> 1. Bureaucratic procedures 2. Corruption 3. Lack of market opportunities 	<ol style="list-style-type: none"> 1. Lack of entrepreneurial culture 2. Lack of market 3. Bureaucratic procedures
IV. Factors that hold the development and growth of new firms	<ol style="list-style-type: none"> 1. Lack of financial resources 2. Many competitors 3. Lack of market knowledge 	<ol style="list-style-type: none"> 1. Lack of financial resources 2. Many competitors 3. Lack of market / legal issues
V. Relationship between FDI and new-firms formation (perspective)	<p>FDI has helped to create less than half of the current businesses within the state, in the commerce, service and tourism sector, but it has still helped to create a good number of businesses</p>	<p>FDI has helped to create at least half of the current business within the state in the manufacturing sector.</p>

Factors affecting the desire to become entrepreneur.

Despite the inherent differences between the methodology of the cross-sectional analysis on Sonoran entrepreneurs, and the CANACO-SERVYTUR survey, there are some interesting similarities on the results of both studies. The in-depth interviews in Sonora were made on entrepreneurs within the manufacturing sector in the city of Hermosillo; whereas the CANACO-SERVYTUR survey was made nationwide, on entrepreneurs within the tertiary sector, which includes commerce, restaurants and hotels, in 30 of the 31 states in the country.

Both groups of entrepreneurs, from Sonora, and from the CANACO-SERVYTUR data base, agreed that the main source for founding a new venture – starting a new business – is *personal savings*. For Sonora's entrepreneurs 88 percent of the entrepreneurs said that the main source of *financial resources* for starting a new business was personal savings too; interestingly, more than 50 percent of the entrepreneurs within the CANACO-SERVYTUR survey said that personal savings is the main source of financial resources for starting a new business. For the entrepreneurs within the tertiary sector, the second most important source for founding a new business is *formal financial institutions* - banks. Finally, as the third most important source of financial resources for starting a new business is the *family*. It is not striking that among the first three main sources of financial resources for starting a new business, within the sector of *commerce, restaurants and hotels* are personal and family savings. Considering that most of the businesses registered within the CANACO-SERVYTUR data base are small and medium size businesses, it is understandable that these types of firms are usually founded by

personal savings instead of by bank-loans, or by any other formal financial institution, including government's financial incentives for the micro and small business.

Following with the key questions that I also did during my interviewees in Sonora, it is quite interesting that there is a strong similarity in the responses between these two studies, the CANACO-SERVYTUR survey and the in-depth interviews in Sonora. Members of the CANACO-SERVYTUR data base answered the following question.

Question: From the following list, could you identify those factors that you consider trigger the desire to become an entrepreneur within your region? Please rank from 1 to 7, based on the level of importance, where 1 equals the most important factor for you, and 7 equals the least important factor that trigger the desire to become entrepreneur.

The list of options included the following factors in this particular order:

1. Identifying a market opportunity
2. Having a special skill or know-how
3. The level of education
4. Being unemployed
5. Having a relatively low wage or income
6. The culture for innovation
7. Other (specify)

For this particular question, 28 percent of the responses on the CANACO-SERVYTUR survey identified that having a *special skill or know-how* was the main factor that positively affected their desire to become an entrepreneur. In second place is *finding a market opportunity* (with 27 percent) and in third place is the *level of education* (with 19 percent) as the most important factor that positively affects the desire of becoming an entrepreneur. Not far from third place, is the *culture for innovation* (with 18 percent) that it was found as to be the third most important factor for the case study in Sonora. I think it is worth noting the fact that both groups of entrepreneurs identified that

having a *special skill or know-how*, along with the perception of a *market opportunity* as the most important factors that stimulated them to become entrepreneurs. This might suggest that entrepreneurs are the resultant of a combination of forces, as I already mentioned it before, internal plus external forces; that when they meet, trigger a series of events that may well end up in a new venture. This may also suggest the importance of developing special skills, since early ages, to form potential entrepreneurs on students at traditional schools. It may well be the case that some of those individuals will find a market opportunity that match their skill, and become an entrepreneur in the future.

Factors that positively contribute with the creation of new businesses in the community.

Members of the CANACO-SERVYTUR data base were also asked for the factors that they believed, positively contribute to the creation of new firms in their community.

The following is the translation of such question.

Question: Rank from 1 to 7, where 1 equals the most important, and 7 the least important; those factors that you believe positively contribute with the creation of new firms in your community.

The options for the respondents to choose were given in the following order:

1. Market opportunities (a growing economy)
2. Business associations
3. Trust of clients and suppliers
4. Clear norms and rules in the market
5. Trained labor
6. Financial resources accessibility
7. Other (specify)

According to the survey's responses *market opportunities* is the main factor that positively contributes with the rate of creation of new firms in the community (50 percent of responses). With 25 percent of the responses, the existence of *business associations* that provide support to nascent firms is the second most important factor that positively contributes with to creation of new businesses. This last answer may not be striking given the fact that this questionnaire was distributed by a business association, which is the CANACO-SERVYTUR; thus, it may be the case that this particular response may be biased due to the respondents are already involved in a business association and closely know the type of activities CANACO-SERVYTUR carries on the community. Also important, is the fact that some of the respondents are active members of the Chamber of Commerce; thus, their perspective on this particular issue may be biased. Members of the Chamber of Commerce have, with no doubt, a better insight on the activities this business association does for its members, and to some extent, they tend to support such activities; thus, it would be expected that individuals within this survey respond positively to this particular question. Interestingly, these respondents point at *trust on clients and on suppliers* as the third most important factor that positively contributes with the creation of new businesses. Due to the inherent limitations of this survey, I cannot identify with precision what the respondents meant by *trust on clients and suppliers*; however, based on my in-depth interviews in Sonora, I may be able to add some insight on this issue.

Even though, this factor – trust on clients and suppliers – was not identified as one of the three most important factors that positively contribute with the creation of new business in Sonora’s in-depth interviews, it was certainly addressed by several entrepreneurs as one important issue. Interviewees in Sonora stressed the importance of trust between and with clients and suppliers, in order to start a new business; this could be understood in the sense that due to constant financial constraints that small and medium size businesses usually face, nascent businesses need to depend on credit from their suppliers to operate their production processes. Small and medium size businesses also need to build trust with their clients to maintain, and to sustain their demand for their products; this, in order to keep up their production and to be able to develop a sustainable production cycle, this is a sustained production cycle able to bring in fresh financial resources for the company. To the extent to which nascent businesses are able to build a certain degree of trust with their clients and with their suppliers, in that extent they might be able to increase their survival likelihood.

As we can see in table 6.4 entrepreneurs in Sonora point at *market opportunities*, *trained labor*, and at *market norms and rules*, as the three main factors that positively contribute with the creation of new firms in their community; whereas, members of the CANACO-SERVYTUR, identified *market opportunity*, *businesses associations*, and the *trust on clients and suppliers*, as the three most important factors that positively contribute with the creation of new firms in their communities. It is understandable that given the fact that entrepreneurs in Sonora are owners of manufacturing plants, they might need highly skill labor, perhaps more than the sub-sector of commerce, at least.

The transformation industry may also face different institutional challenges at exporting their products to different markets; and perhaps, because they are continually seeking for innovating procedures, they feel more the need to have highly *trained labor*, and efficient and easier *market norms and rules*, than for the members of the tertiary sector. Whereas members of the tertiary sector are small and medium size businesses, and they mainly sell their products and services domestically; thus, they are not bounded by international restrictions or by the same environmental regulations as the companies within the transformation industry. It may also be arguable that some of the training techniques needed for working in small and medium size businesses, within the tertiary sector, are not as specialized as the type of training needed for working in a high-tech manufacturing plant. Nonetheless, these results are only the perception of individuals responding this questionnaire, and it may be understandable that these perceptions are biased by their own needs and by the environmental circumstances at the moment of answering these questions.

Factors that negatively affect the creation of new businesses in the community.

Entrepreneurs within the CANACO-SERVYTUR data based were asked for the factors they consider negatively affect the creation of new firms within their communities.

Question: From the following list, what are the factors that you consider inhibit the creation of new firms in your community? Please rank those factors from 1 to 7, where 1 equals the most important factor and 7 equals the least important factor inhibiting the creation of new firms.

The options were enlisted as follows:

1. Lack of financial institutions
2. Bureaucratic procedures
3. Corruption
4. Lack of market (purchasing power)
5. Many competitors
6. Legal issues
7. Lack of entrepreneurial culture
8. Lack of suppliers
9. Lack of labor
10. Inadequate public infrastructure
11. Other (specify).

The main factors that the respondents of the CANACO-SERVYTUR survey considered inhibit the creation of new firms within their communities are: *bureaucratic and administrative procedures*, with 30 percent of the responses; in second place is *corruption*, with 19 percent of the responses; and in third place is *the lack of market opportunities*, with 16 percent of the responses. The *bureaucratic and administrative procedures* (30 percent of responses), which is in first place, and the *lack of market opportunities* (16 percent of responses), which is in third place; were also identified by the entrepreneurs in Sonora as two of the most important factors inhibiting the formation of new businesses. However, considering that the most important factor that inhibit the creation of new firms obtained only 30 percent of the responses, and the second one obtained 19 percent, and 16 percent the third one; it may be arguable that none of those factors obtained an absolute majority of the responses overall. Although, it is noteworthy, that the perception of an excess of bureaucratic and administrative procedures to start and to run a nascent business, is one of the most important factors that inhibit the creation of new businesses in the tertiary sector, as well as it was for the secondary sector in the Mexican economy.

Let us remember that according to the World Bank's publication "Doing business in 2007: How to reform", México ranks 42 out of 175 countries on the "ease of doing business index". Thus, despite the fact that the individuals' responses on the CANACO-SERVYTUR survey may be biased, there might be some truth on that perception. The bottom line is that authorities in México should implement strategies to ease the procedures for starting and for running a business, this in order to improve the perception of the business community; and in turn, the entrepreneurs willingness to start new ventures.

Factors that negatively affect the development and growth of nascent businesses.

Members of the CANACO-SERVYTUR were also asked to identify the main factors that affect the development and the growth of nascent firms. Once a new business is born, it faces certain challenges that may threat their survival in the market. The following is the translated version of question.

Question: According to your perception, what are the main obstacles that nascent – new – firms usually have to face in your community? Please select those factors that you consider are the most important and rank them from 1 to 7, where 1 equals the most important one, and 7 equals the least important of those selected factors.

The options were enlisted as follows:

1. Lack of financial resources
2. Lack of market (purchasing power)
3. Many competitors
4. Lack of market knowledge
5. Economic instability
6. Lack of suppliers
7. Lack of labor

8. inadequate public infrastructure
9. Other (specify)

The main threat that individuals in the CANACO-SERVYTUR survey identified was the lack of *financial resources*; 42 percent of the respondents point at the lack of financial resources as the main factor that stall the development and the growth of nascent businesses. This result is consistent with what entrepreneurs in Sonora told me. Also consistent with the cross-sectional analysis on Sonoran entrepreneurs, is the existence of *many competitors in the market* as the second most important factor that stalls the development and the growth of nascent businesses (30 percent). This factor may be relatively more important within the tertiary sector, than within the transformation industry, given the fact that, as I previously mentioned it, most of the businesses registered within the CANACO-SERVYTUR data base are small and medium size businesses, and they basically compete within the same market niche; thus, competition may be more tight in this sector than in the secondary sector, in which competitors tend to be relatively more disperse; this is due to the fact that México is a developing country with not much domestic industry competing within the same market niches; either large multinational corporations, or large domestic companies mainly dominate the market.

With 20 percent of the responses, the *lack of market knowledge* is the third most important factor that tends to stall the development and growth of nascent businesses in the tertiary sector. Relatively close to the lack of market knowledge as the third factor that it is perceived by the entrepreneurs in the tertiary sector, is the *economic instability* – with 18 percent of the responses. I think it is understandable that individuals in this

survey considered the lack of market knowledge as an important factor that affect the development and growth of nascent businesses. Assuming that the argument of a tight competition within the commerce and services sectors is true, then it follows that nascent businesses' owners need to have an efficient system to acquire information regarding their market niche, this, in order to improve their survival likelihood within the market. Also, accepting by true the individuals' perspective that the first factor that stall the development and growth of nascent businesses is the *lack of financial resources*, it is safe to say, then, that small and medium size business that regularly face financial constraints, are relatively less capable than large businesses to efficiently obtain market information for improving their likelihood of survival within the market. It would seem that individuals that participated in this survey are very well aware of that situation.

In sum, the CANACO-SERVYTUR survey has helped me to confirm, and to compare, to some extent, the entrepreneurs' perspectives within the manufacturing sector from the in-depth interviews in Sonora, regarding the factors that motivate the entrepreneurial activity in the country. I have been stressing the differences and similarities between the two studies, and I think it is safe to say, that there are more similarities between the two studies than otherwise. In general terms: having a *special skill* and *know-how*, being able to identify *market opportunities*, and having *efficient administrative and bureaucratic procedures*, all affect the willingness of individuals to start new business, and in turn, the rate of new-firms formation in the country. The *lack of financial resources*, the *level of competition*, and the *ethical environment* within their

communities – corruption - also affect the efficient development and growth of nascent businesses in the tertiary sector.

Despite the fact that entrepreneurs in Sonora identified: the *entrepreneurial culture* within the community, the *culture for innovation*, and the *lack of trained labor*; as part of the main factors hindering new-firms start-ups and their development, the entrepreneurs in the CANACO-SERVYTUR survey did not identify them as the main factors holding back the growth and development of their businesses. I can safely say, then, that there is a certain degree of similarity between the perspectives of both entrepreneurs in both economic sectors. The differences, as I previously explained it, are based on the inherent differences on both economic sectors; one dependent more on high technology, trained labor, and FDI, which is the case of the manufacturing industry; whereas the other, the commerce and services sector, is less dependent on high skilled labor and on FDI; but conversely, it seems to rely more on its relationship with clients and suppliers to build a certain degree of trust, that might increase its likelihood of survival within their market niche.

The previous analysis had the sole purpose to contrast the results between the in-depth interviews on Sonora's entrepreneurs within the manufacturing sector, and the results of the nationwide survey on entrepreneurs within the tertiary sector. Despite the differences and similarities on the responses of both groups of entrepreneurs there are several questions that might be important to address. For instance, is there any difference on the willingness to take risks from the entrepreneurs living in the northern states in

México, to those entrepreneurs living in central and in southern states? Are the perceived factors inhibiting the creation of new firms the same for entrepreneurs along the U.S. – México border than for entrepreneurs in the rest of México?

In the next section, I will discuss such questions by taking advantage of the CANACO-SERVYTUR data based which was done nationwide.

Analysis of the CANACO-SERVYTUR survey. A Regional Analysis

In order to explore the differences of the entrepreneurs' perception on the factors that inhibit and foster the entrepreneurial activity depending upon their geographic region, I divided the CANACO-SERVYTUR data set by region: Northern states, central states, and southern states. There are six states in the first region "Northern" that are along the U.S. – México border, these states are: Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas. In the second region "central" are the following states: Colima, Durango, México City, Hidalgo, Jalisco, Michoacán, Morelos, Puebla, San Luis Potosí, Sinaloa, Tlaxcala, and Zacatecas. In the third and last region "south" the following states were included: Guerrero, Oaxaca, Quintana Roo, Tabasco, Veracruz, Campeche, and Chiapas [see appendix B.2]. The northern region represents 33 per cent of the collected questionnaires in the CANACO-SERVYTUR survey; the central region holds 58 per cent of the observations, and the southern states hold 9 per cent of the total survey.

Table 6.5 shows 7 contrasting factors between the three regions in México. Although, there are no significant differences on the entrepreneurs' willingness to take risks by region, there are interesting similarities and differences on the perceived factors that inhibit and foster the entrepreneurial activity within their regions. As for the central states as well as for the southern states identifying market opportunities as the main factor triggering the desire of becoming an entrepreneur; whereas for the states along the U.S. – México border, having a special skill or know-how is the main perceived factor that triggers the desire to become entrepreneur.

Table 6.5 Key factors affecting the entrepreneurial activity by region in México.

	States along the U.S.- México border	Central States	Southern States
Willingness to take risks (1 = never 7 = always)	5.89	4.92	5.22
Main factor triggering the desire to become an entrepreneur	Having a special skill (know-how)	Market Opportunities	Market Opportunities
Main factor that contributes with the creation of new businesses	Market Opportunity	Market Opportunities	Market Opportunities
Main obstacle faced by new businesses	Lack of financial resources	Lack of financial resources	Lack of financial resources
Main factor inhibiting the creation of new businesses	Bureaucratic procedures	Bureaucratic Procedures	Many Competitors
Procedures for starting a new business are clear, simple, and fast (1 = disagree; 7 = agree)	3.65	3.18	3.34
Procedures for operating a nascent business are clear, simple, and fast (1 = disagree; 7 = agree)	4.07	3.47	3.39

The entrepreneurs' perception regarding the main factor contributing with the creation of new firms coincides across all regions. Entrepreneurs in the northern, central and southern states consider that identifying a market opportunity is the main factor that fosters the creation of new firms within their regions. It is also interesting that the perceived main obstacle that new firms have to face during the first years of life is the lack of financial resource across all regions. This result is consistent with the results of the in-depth interviews on Sonoran entrepreneurs, and it is also consistent with previous research projects. Most entrepreneurs need not just seed resources for starting their own ventures, but also need resources to maintain operations during their first years of life, which are suppose to be the years in which the nascent firm has to build credibility and legitimacy within its own industrial cluster and market, to increase its likelihood of survival.

Bureaucratic procedures are to be thought as the main factor inhibiting the creation of new firms in the northern and central states, whereas the existence of many competitors is the main factor for the southern states. Also consistent with previous research projects, the existence of excessive administrative procedures for starting a new business usually is a heavy burden for entrepreneurs that for the first time are starting a new venture. Individuals who already know the process and that are starting similar or related businesses as the ones they already have, may also find those procedures burdensome; however, for individuals starting for the first time the process of starting a new business may find those procedures hindering their willingness to continue with their venture. One plausible reason why southern states consider the existence of many

competitors as the main factor inhibiting the creation of new firms, might be because southern states do not have a large industrial sector, as those states in the northern region. States with more industrial activity may have a different business environment than those more dependent on agricultural and on services – mainly commerce. It may well be the case that markets in the southern states are still more dependent on small and medium size businesses within the commerce sector, which mainly compete in the same market niche, such as convenience stores, agricultural activities, and personal services such as welding, landscaping, painting, etc.

As the same as for the entrepreneurs' willingness to take risks, the perception of entrepreneurs' regarding the procedures for starting a new firm, and for operating a nascent firm, is not significantly different between each region. In average, entrepreneurs across all regions perceive that the procedures for starting a new firm and procedures for operating a nascent firm are not quite clear, simple or fast, which is consistent with the previous factor that inhibits the creation of new firms in México.

Thus far, I have contrasted the results of the in-depth interviews in Sonora on entrepreneurs within the manufacturing industry, with the CANACO-SURVEY results, which are entrepreneurs representing the tertiary sector nationwide. I have also discussed the difference and similarities on the entrepreneurs' perception across regions in México; however, I think it is important to statistically test how different or similar are the CANACO-SERVYTUR results across regions. Given that most of the questions within the CANACO-SERVYTUR survey were made to obtain nominal responses with no numerical order whatsoever, it would be difficult to perform a *t-test* on the means of

questions with such structure. However, I will use the entrepreneurs' willingness to take risks response, which has a Likert-type scale, to perform a *t*-test on the means of the entrepreneurs' responses by geographic region. In so doing, I might be able to find whether entrepreneurs in the northern states perceive their environment differently than entrepreneurs in the central and in the southern states in México, which in turn makes them to evaluate differently their willingness to take risks.

I performed two sets of *t*-test, the first one tests for the difference of the means of each region with respect a test value of 5; the second one tests for the difference between the means of each region, particularly, for the difference between the mean of the entrepreneurs' willingness to take risks in the northern states with the entrepreneurs' willingness to take risks in the central states, and for the difference between the mean of the entrepreneurs' willingness to take risks in the northern states with the entrepreneurs' willingness to take risks in the southern states.

Table 6.6 and table 6.7 present the statistics for the *t*-test on the willingness to take risks of the entrepreneurs across regions in México. Once again, the CANACOSERVYTUR data base is divided in three regions: northern, central and southern states. Even though, the number of observations vary between each other, this *t*-test is done to analyze how different is the individuals willingness to take risks from the test value, which in this case is set to 5, due to this number is the approximate mean for all of the regions on the level of willingness to take risks. Thus, this test will provide statistical evidence whether the mean of the entrepreneurs' responses regarding their willingness to take risks differs from 5, which stands for "almost always willing to take risks".

Table 6.6 One-Sample Statistics. Entrepreneurs' willingness to take risks

	N	Mean	Std. Deviation	Std. Error Mean
Norhtern States	594	5.8872	1.22746	0.05036
Central States	999	4.9239	1.54304	0.04882
Southern States	157	5.2166	1.12272	0.08960

Table 6.7 t-test Willingness to take risks.

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Northern States	17.6162	593	0.0000	0.8872	0.7883	0.9861
Central States	-1.5583	998	0.1195	-0.0761	-0.1719	0.0197
Southern States	2.4169	156	0.0168	0.2166	0.0396	0.3936

Test Value = 5

Table 6.6 shows that the mean of the entrepreneurs' willingness to take risks within the northern states is 5.88; the mean for the entrepreneurs within the central states is 4.92, and the mean for the entrepreneurs within the southern states is 5.21. It is noteworthy to mention that the mean of the entrepreneurs within the northern states is higher than the rest of the means for the entrepreneurs in the other two regions. This implies that entrepreneurs along the U.S. – México border show a higher level of willingness to take risks. However, it is also true that the means of the entrepreneurs' willingness to take risks in the other two regions, is considerably close to 5, which according to the Likert scale in the CANACO-SERVYTUR survey, stands for "almost always willing to take risks"; thus, the question is whether those means are statistically significant different from 5, and if those means are also significantly different from each other.

Table 6.7 shows the results of the t-test. The Null hypothesis is that the difference between the means for each region with respect the test value of 5 is statistically different and not just by chance. The mean difference of the entrepreneurs within the northern states is significantly higher than 5, due to its confidence interval lies within the level of significance at the 1 per cent level. The same is true for the mean of the entrepreneurs' willingness to take risks in the southern states, which is significantly higher than 5, but at a 5 per cent level of confidence. And for the entrepreneurs in the central states the mean of their willingness to take risks is not significantly lower than 5. Although, this test demonstrates that the mean of the entrepreneurs' willingness to take risks in the CANACO-SERVYTUR survey differs from certain predefined and arbitrary level of

five, it does not tell us whether the means between each region are different from one another.

Table 6.8 shows the *t-test* for paired samples between the entrepreneurs in the northern states and the entrepreneurs in the central states, regarding their willingness to take risks; and also, the paired difference between the entrepreneurs in the northern states and the entrepreneurs in the southern states, regarding their willingness to take risks. In order to perform this test I had to randomly select 100 cases for each region. Thus, I randomly selected 100 observations out of the 594 cases within the northern states, 100 cases out of the 999 cases within the central states, and 100 cases out of the 157 observations within the southern states. The idea of randomly select 100 cases for each region is to have the same number of observations to perform this paired sample test.

For pair 1, which measures the difference between the mean of the entrepreneurs willingness to take risks in the northern states with the entrepreneurs in the central states, the average difference is 0.8478 between the entrepreneurs in the northern states and the entrepreneurs in the central states. Since the significance value of the difference between the means of the entrepreneurs' willingness to take risks between the northern and the central states is less than 1 per cent, I can conclude that the 0.8478 difference between the two is not random, entrepreneurs in the northern states are more willing to take risks than those entrepreneurs in the central states in México. Similarly, for the difference between the entrepreneurs' willingness to take risks between the northern states and the entrepreneurs in the southern states, I can also conclude that entrepreneurs in the northern states are more willing to take risks than those entrepreneurs in the southern states.

Table 6.8 Paired samples t-test for Entrepreneurs' willingness to take risks

		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
		95% Confidence Interval of the Difference							
Pair 1	WTR North - WTR Center	0.8478	1.9608	0.2044	0.4418	1.2539	4.15	91	0.0001
Pair 2	WTR North - WTR South	0.5055	1.7216	0.1805	0.1470	0.8640	2.80	90	0.0062

WTR = Willingness to Take Risks

Hence, I think it is safe to say that entrepreneurs along the U.S. – México border are more willing to take risks than those entrepreneurs in the rest of the country, this of course, is their sole perspective, and I have to be careful in making generalizations; however, it is of course interesting that individuals in the tertiary sector within the northern region in México “feel” that they could be more willing to take risks than those individuals in other regions in the country. I think it is important to address the issue that according to INEGI’s Economic Census of 2004, 97 per cent of all the businesses within the tertiary sector are micro businesses, this means that they have between 1 and 10 employees each. It is also interesting that 47 per cent of all the businesses within the tertiary sector are focused on the food retailing industry – convenience stores. However, what makes these figures more distinctive is the fact that the northern states hold less than 15 per cent of all of the businesses in this sector, whereas the central states in México (Colima, Durango, México City, Hidalgo, Jalisco, Michoacán, Morelos, Puebla, San Luis Potosí, Sinaloa, Tlaxcala, and Zacatecas) hold 60 per cent of all of the businesses in the tertiary sector; thus, the level of competitiveness within the central states seems to be tighter than in the northern states.

In sum, I think that one key aspect of this analysis is that individuals in the northern states say that are more willing to take risks than their counterparts of other regions in México, and that there are several reasons that support their perspective, particularly, regarding environmental differences across Mexican states.

Conclusions

The CANACO-SERVYTUR survey is the last of three parts for analyzing the entrepreneurial activity in México, within my dissertation. This survey had the purpose to provide a broader view about the factors that potentially affect the entrepreneurial activity within the tertiary sector, which includes commerce, services and tourism. In doing so, I was able to contrast the findings of the in-depth interviews in Sonora on entrepreneurs within the manufacturing sector, with the entrepreneurs' perception in the tertiary sector nationwide. It was interesting to find certain similarities and difference between the two studies. Despite the fact that I cannot generalize any of those results, I could safely say that both studies helped me to better understand the problematic within the entrepreneurial activity in México.

Consistent with the cross-sectional study on Sonoran entrepreneurs, entrepreneurs in the CANACO-SERVYTUR data base believe that having a *special skill* or *know-how*, and being able to *identify a market opportunity* are the two most important factors that trigger the desire of becoming entrepreneur. The culture for innovation within the community, which may nurture individuals with certain skills and personal traits that makes them more willing to take risks, and the level of education, were also important factors that entrepreneurs in Sonora within the manufacturing sector, and entrepreneurs within the tertiary sector believe trigger the desire of becoming entrepreneur in their communities.

Also consistent in both studies is that the *ability of finding a market opportunity* is one of the most important factors that positively affect the creation of new business in their communities; however, the existence of *business associations* and *building trust with clients and suppliers* are also significantly important but only for entrepreneurs within the tertiary sector.

Regarding the factors that inhibit the creation of new businesses in the tertiary sector and in the manufacturing sector in Sonora are the *lack of market opportunities*, and the *lack of market purchasing power*; as well as the *excessive of bureaucratic and administrative procedures* for starting a new business.

It is important to distinguish between the challenges that entrepreneurs face during the process of starting a new business, and the challenges they face during the first years of their life. The *lack of financial resources* and participating within a *tight competitive market niche*, are the two most important factors that entrepreneurs perceive hinder the growth and the development of their businesses, in both studies.

The finding that the entrepreneurs' willingness to take risks is affected by the geographic zone strongly suggests that entrepreneurs, in the tertiary sector in México, respond differently to external influences across the country. 97 per cent of the tertiary sector in México is mainly represented by micro businesses, which have between 1 and 10 employees; and 46 per cent of the total of businesses in the tertiary sector are focused on the food retailing industry; thus, the competitive conditions in which all these firms participate may vary across Mexican states depending upon regional competition and economic fluctuations.

CHAPTER VII. CONCLUSIONS, LIMITATIONS, AND FURTHER RESEARCH

Conclusions

This dissertation had the purpose of analyzing the impact of Foreign Direct Investment (FDI) on the entrepreneurial activity in México. To do so, I used three different research tools that together provided a more comprehensive perspective of the context in which the entrepreneurial activity takes place in México. Thus far, the bulk of the literature studying the relationship between FDI and economic growth has focused its attention to cross-country analysis and regional analysis in the U.S. and Europe; however, there is no substantial evidence yet of this relationship for Latin American countries or for México, even among the existing literature. This dissertation attempts to bridge this gap in the literature, and goes beyond it in two ways; one, by analyzing the effects of FDI on the creation of new firms at the regional level – Mexican States – and two, by exploring the internal and external factors that affect the entrepreneurial activity in the country.

My results then, provide partial support to previous works (Borensztein et al. 1995; Ram & Zhang, 2002; Nunnenkamp & Spatz, 2003; Alfaro 2003; Torau & Goss, 2004) that FDI is positively correlated with economic growth; partial support in the sense that the Cobb-Douglas production function, a traditional tool for testing a similar relationship, does not provide evidence that FDI positively impacts economic growth in México, not even when interacts with the level of human capital by Mexican State. However, the first-differenced equation of an additive linear model, does provide such evidence, that FDI is statistically significant, and positively correlated with economic growth; and also that its

interaction with the level of human capital is significant but it has a smaller impact on economic growth, though a positive one. Conversely, my results show evidence that FDI is negatively correlated with the creation of new firms in the country; however, given data restrictions and the particularities of the Mexican economy from 1998 to 2003, this relationship might be deceiving.

Additionally, the cross-sectional analysis on Sonoran Entrepreneurs, and the national survey on Entrepreneurs within the tertiary sector in México, both provided the context to better understand the institutional arrangements, and the factors that affect the entrepreneurial activity in the country.

In the following pages I will present the conclusions of my research, and I will do so covering the research questions and the set of hypotheses that triggered this research project.

Research question 1: Has FDI positively contributed with México's economic growth?

The following sets of hypotheses are intended to better explain my findings regarding my first research question.

H1: Foreign Direct Investment is statistically significant and positive correlated with economic growth in México. By using the Cobb-Douglas production function I did not find significant evidence that FDI is positive correlated with economic growth in México. One plausible explanation is the fact that México City concentrates almost 60 percent of the FDI in the country; however, this does not mean that FDI's inflows are indeed arriving mainly to México City, this basically mean that most of the headquarters of MNEs and large domestic companies are based in the country's capital city, and they formally registered any FDI inflows coming to their companies there in that particular city.

Nonetheless, the first-differenced equation of the additive linear model does show a positive and significant impact of FDI on economic growth; even though, FDI's impact is higher than the impact of the domestic investment (6.6 times higher), suggesting that México's economic growth fom 1998 to 2003 has been significantly affected – and positively – by foreign capital. This result is not hard to understand given the fact that México has turned itself in becoming an attracting market for FDI, particularly for the manufacturing industry, in the expectation that the secondary industry be reinforced by long term foreign capital, which seeks for comparative advantages in México that cannot find in Asia.

H1a: The effect of FDI on economic growth is higher when interacts with the level of human capital in the host country. As previously mentioned my research provides partial evidence to Borensztein et al's (1995) arguments that FDI is positively correlated with Economic Growth when interacts with the level of human capital. Using the Cobb-Douglas model I found not evidence to support Borensztein et al's arguments. However, by using the first-differenced equation of the additive linear model, I did find evidence that the interaction between FDI and the level of human capita is statistically significant and positive correlated with economic growth; although, the impact of such interaction on economic growth is rather small. In other words, there is no evidence that the interaction between FDI and human capital for the Mexican case enhances FDI's spillovers. It may well be the case that, given that the coefficient is small but statistically significant, there is not yet in México a significant critical mass of human capital capable of becoming the vehicle for technology transfer, as the literature argues. The average level of education in México is below 8 years, and only 7 percent of the population has higher education; thus, FDI may not have found yet fertile ground to enhance its potential spillovers in the country.

H1b. The level of industrialization within Mexican States is statistically significant and positive correlated with economic growth in México. The growth in the share of industrialization by Mexican State does have a positive effect on economic growth, as it was shown using the Cobb-Douglas model, in fact, its effect is rather important (15.84 elasticity); however, using the additive linear model the share of industrialization does

not produce significant results. This contrasting results may tell us that Mexican States that are able to significantly increase their share of production from the secondary sector relatively to their GSP, might be able to have significant results in the growth of their economies, than otherwise. I believe that this result has interesting policy consequences, in the sense that Mexican States should be able to focus on the development of their industrial comparative advantages rather than compete between one another for foreign capital in similar industries; in which sometimes, they are not even able to create regional clusters due to the atomization of the resources.

H1c. The rate of new firms' formation is statistically significant and positive correlated with economic growth in México. According to the Cobb-Douglas model, the growth rate in the number of businesses is statistically significant but negative. This result implies that States with higher rates of growth are having negative rates of new firms' formation. However, given the highly concentration of micro and small businesses within the food-retail sector among the central states in the country, it is not difficult to understand that much of the reduction in the number of businesses in the country is related to micro and small “*taquerías*” or convenience stores – mom’s and pop’s – that are not heavy contributors to the national value-added in the country; therefore, we were able to observe, despite the 8 percent reduction in the number of businesses from 1998 to 2003, a positive growth in the average GSP per Mexican State. Perhaps I would be able to obtain better results by disaggregating the data by economic sectors, so I could control for firms with low and high valued-added in the economy; nonetheless, this idea will be discuss further on in this chapter.

H1d. Mexican States along the U.S. – México border have higher economic growth rates than the rest of the Mexican States. The dummy variable controlling for the States along the México – U.S. border is not significant in either one of the models in my analysis. It is noteworthy that the six states along the northern border in México all have higher shares of industrial production, and all depend more on the U.S. market, particularly on the U.S.' industrial cycle; however, despite the fact that these six states – Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas – are closely linked to the American market, they also reacted differently to the last economic downturn in the U.S. economy, mainly due to their structural industrial differences. There are States, along the northern border, that depend upon the *maquila* sector more than others (Baja California, Sonora, Tamaulipas), and there are states that have a more diversified economy, thus less vulnerable to external shocks (Nuevo León, Chihuahua). Nonetheless, controlling for geographical region in my models did not produce significant results.

Research question 2: Have FDI's inflows helped México to create a new entrepreneurial class?

From this research question, I derived hypothesis 2: *Foreign Direct Investment is statistically significant and positive correlated with the creation of new firms in México.*

Results of my econometric analysis show that FDI is statistically significant but negative correlated with the creation of new firms in the country – measured by the change in the number of businesses per Mexican State. This result implies that there is a crowding-out effect by foreign investment in México, in which domestic medium size investors stop investing in the country, and potential entrepreneurs choose to find a job rather than to start their own venture, because the expected benefits of being employed exceed the expected benefits of become entrepreneurs. In addition, the Net Domestic Investment (NDI) is also statistically significant and negative correlated with the change in the number of businesses per Mexican State; implying that despite the increment in domestic investment across Mexican States the number of firms decreased from 1998 to 2003; supporting, then, the argument of a crowding-out effect in which potential entrepreneurs prefer to find jobs in either MNEs or large domestic companies rather than to start their own businesses.

H2a: The effect of FDI on the creation of new firms is higher when interacts with the level of human capital in the host country. My model does provide evidence to support this hypothesis; despite the relative small coefficient of the interaction between FDI and human capital, the coefficient is statistically significant and supports the hypothesis that

FDI's spillovers take place when there is certain level of human capital in the country. The positive coefficient of the interaction between FDI and human capital also suggests that we should expect higher rates of new firms' formation as evidence of FDI's spillovers, when there is a larger population with higher education in the companies receiving FDI. This result has interesting policy implications, because the impact of FDI alone seems to crowd-out potential entrepreneurs from the market; however, when the potential entrepreneurs have higher levels of education and they work in a MNE receiving FDI, we could expect a marginal increase in the number of businesses across Mexican States. Then, States across the country should focus on improving the levels of education to set the conditions for the creation of more firms, when FDI arrives; however, as I found in my in-depth interviews on Sonoran entrepreneurs, there are more factors involved affecting the entrepreneurial activity in the market, that I will discuss in the following pages.

H2b: The level of industrialization within Mexican States is statistically significant and positive correlated with the creation of new firms. The share of industrial production does not have a significant impact on the change in the number of businesses across Mexican States; then, there is no evidence to support this hypothesis. However, as explained in hypothesis 1b, what it seems to be important, is the relative growth rate in the share of industrial production that is positive correlated with the rate of change in the number of businesses, as shown in table 1.4; suggesting then, that the industrial activity does have a multiplying effect in the economy, perhaps by enhancing regional clusters

around MNEs and large domestic companies. Although, the previous claim should be taken carefully, due to the fact that 60 percent of micro and small businesses in the country are not directly related with the industrial – manufacturing – sector but with the retail-food industry; in addition there is not clear evidence to suggest that FDI is indeed enhancing industrial clusters in the country.

H2c: Mexican States along the U.S. – México border have higher rates of new firms' formation. The coefficient of the dummy variable controlling for geographic zone is statistically significant only when the dummy variable controlling for the fact México City in the model. By controlling for México City I am taking into account the fact that México City holds almost 60 percent of the cumulative FDI in the country from 1993 to 2003, and the fact that México City, alone, contributes with 1/5 of the country's GDP. Nonetheless, States along the México – U.S. border seem to enjoy a more favorable situation for the entrepreneurial activity than the rest of the States in the country. The argument behind that claim is that those six states, along the northern border in México, take advantage of their neighbor's market conditions (the U.S.), reducing their vulnerability to domestic shocks or internal unbalances, which other States cannot avoid.

The econometric model testing for hypothesis 2, also includes other set of variables that shed more light to the context in which the entrepreneurial activity take place in the country.

Contrary to what other studies claim, the change in the Gross State Product per capita (GSPpc) is not significant in my model. However, it is noteworthy that GSP pc is only a rough measure for per capita income, in the sense that MNEs and large domestic companies might be the main engines contributing more with the State's output; thus there could be a great disparity in income distribution across Mexican States, which is not accounted in the model.

Another interesting finding is the fact that the change in the level of unemployment (unemployed workforce) is statistically significant and positive correlated with the change in the number of businesses across Mexican States. This finding does support previous studies claiming that unemployed people are more willing to take risks and to start new ventures. Unfortunately, due to limitations in my data, I could not control for the types of businesses unemployed people are more willing to start. In other words, given the business' structure across Mexican States, in which a large proportion of micro and small firms belong to the retail-food industry, it would be more likely that unemployed people start businesses that do not add much value to the Mexican economy; nonetheless, they would be positively impacting the entrepreneurial activity in the country.

In sum, the econometric analysis shows interesting findings, regarding the relationship between FDI and economic growth, and FDI and the entrepreneurial activity in México; however, the second and the third stages of my research both provide a more complete context for the better understanding of my findings thus far.

Research question 3: What are the factors that foster or inhibit the creation of new firms in México?

Stages two and three of my research project provided the elements to answer this research question. The second stage of my research was focused on in-depth interviews on Sonoran entrepreneurs within the manufacturing sector, and the third stage was focused on a national survey on entrepreneurs within the tertiary sector in the country.

The in-depth interviews on Sonoran entrepreneurs within the manufacturing industry provide evidence that there are internal as well as external factors affecting the entrepreneurial activity in the community. By internal factors to the individual, studies in psychology and sociology both stress the importance of locus of control, self-motivation, and special skills as determinant factors that foster the desire to become entrepreneur; whereas by external factors, literature in economics, organization and sociology stress the importance of institutional factors such as: financial system, rule of law, bureaucratic procedures, norms and legal requirements, as key determinants fostering and nurturing the creation of new firms in the economy. Among the seventeen entrepreneurs in my sample, 40 percent of them had previously worked for MNEs supporting the FDI's spillovers argument that workers mobility and knowledge transfers are also conduits for increasing the entrepreneurial activity in the host country. This evidence supports the finding of my second econometric model in which the interaction between FDI and human capital has a positive effect on the creation of new firms in the country; even though, the coefficient of this interaction is rather small evidence from my interviews suggests that this interaction is indeed significant within the manufacturing sector.

Also interesting was the fact that one third of the entrepreneurs in my sample had received FDI in one or more stages of their business' life cycle, which also provides support for the hypothesis that FDI is positively related with the entrepreneurial activity in the country. However, this finding contrast with what I found in my econometric analysis. Nonetheless, it is noteworthy that all of my interviewees are businessmen within the manufacturing sector, and that the econometric model does not distinguish the impact of FDI on businesses from different economic sectors.

Despite the improvements in México regarding the administrative processes for starting a new business, almost 50 percent of the Sonoran entrepreneurs expressed that bureaucratic and administrative procedures are a significant factor hindering the creation of new businesses in the community; however, almost equally important is the need to foster the entrepreneurial spirit since early ages of the individuals. This finding implies that if people in the community have not been motivated, since early ages, to become entrepreneur, it will not matter much whether more FDI comes to the community or whether the government significantly improves the administrative processes to start a new business. The message from the entrepreneurs in Sonora is that, as a society, we need to start to nurture the entrepreneurial spirit across the educational system in the country.

All of the entrepreneurs in my sample are, in one way or another, successful entrepreneurs, which had to overcome nationwide economic crisis, personal financial crisis, and adverse competition after México signed the NAFTA. However, it was clear to me that a common factor, across all of these entrepreneurs, is their willingness to keep going, and their desire of creating “something” of their own. More than once, the entrepreneurs expressed that they have had enough opportunities to sell their companies, or in some cases, to retire; however, they all share the drive to keep going with what they like to do, which is their own businesses.

Even though, results from the cross-sectional study on Sonoran entrepreneurs, were interesting and useful to understand the context in which the entrepreneurial activity takes place in the community, there were more questions regarding the generalization across Mexican States, of those findings. Questions such as: to what extent the findings of the in-depth interviews are valid for other Mexican States and other entrepreneurs within a different context? Are those factors affecting the entrepreneurial activity within the manufacturing sector, the same that potentially affect other economic sectors? The CANACO-SERVYTUR survey helped me to explore such questions and to enhance the understanding of the factors that affect the entrepreneurial activity in México.

The CANACO-SERVYTUR survey helped me analyze across Mexican States what are the factors affecting the entrepreneurial activity within the economic sectors of commerce and services. However, the most useful analysis was the possibility to contrast the findings across regions in México. Thus, by contrasting the results of this nationwide

survey with the results of the entrepreneurs in Sonora, I was able to determine similarities and differences on the entrepreneurs' perspectives about the factors that affect the entrepreneurial activity in the country. Entrepreneurs in both economic sectors expressed that bureaucratic procedures and limited access to financial resources are among the most important factors hindering the creation of new businesses. More importantly is the fact that entrepreneurs within the CANACO-SERVYTUR data base, across Mexican regions, share the same sentiment regarding the factors that affect the entrepreneurial activity in México. However, it is noteworthy that there are indeed some differences, as the willingness to start a new venture, among entrepreneurs depending upon their geographic location. Analyzing the survey's results by region in México – north, center and south – I found that entrepreneurs in the northern states within the commerce and services sectors are more willing to start new ventures than those entrepreneurs in the southern States. Even though, entrepreneurs within the northern States of México are proportionally less in number than those in the central and in the southern States, the evidence provides supports to my findings in the econometric model, in which the dummy variable controlling for geographic zone, has a positive impact on the rate of creation of new firms. Presumably, because entrepreneurs within the northern States in the country find better opportunities than other states, by the fact that they can take advantage of their proximity to the American Market.

Thus, results of both studies the cross-sectional analysis on Sonoran entrepreneurs, and the CANACO-SERVYTUR survey, suggest that there are not only important institutional factors affecting the entrepreneurial activity in the country, but that there are also inherent differences between the individuals that ultimately become entrepreneurs depending upon their geographic location in the country.

Such results, also suggest that there are important contextual factors that may affect the potential FDI's spillovers to take place, by affecting the entrepreneurial activity across regions in México. I might argue that such contextual factors as bureaucratic procedures, an inadequate financial system, and the rule of law, are key factors that reduce the likelihood of FDI's spillovers to take effect in the country. México could continue receiving large amounts of FDI, but without changing the institutional environment within which the entrepreneurial activity takes place, it will not be possible to accelerate the pace of growth in the country.

Limitations

Despite using three different approaches to analyze the entrepreneurial activity in México, there are inherent limitations that I need to account for before making generalizations of my findings.

Due to INEGI only publishes information regarding the number of businesses across Mexican states every six years through its Economic Census I had to build an econometric model using only two years, 1998 and 2004. Although, by using a first-differenced model helped me to improve the reliability of the model; nonetheless, the model is limited in the sense that it is only capturing the behavior of two years in the data, instead of taking advantage of a longitudinal observation that might better capture the behavior of my dependent variable across Mexican States.

There are two important limitation regarding the cross-sectional study on Sonoran entrepreneurs, one is that my sample only includes “successful” entrepreneurs, being this the case, I was not able to compare and to contrast differences and similarities among them in order to develop a better understanding of the entrepreneurial activity in the community, and about the factors that make a successful entrepreneur within the manufacturing sector in Sonora. The second limitation attempts against the reliability of my results. Due to the nature of the study, I had to rely on the individuals’ perspectives regarding the factors that they consider affect the entrepreneurial activity in the community, the individuals’ personal biases may alter the reliability of my results.

Regarding the CANACO-SERVYTUR survey, there are also two important limitations; one is the lack of individual and business level characteristics within the survey. Without individual and business level characteristics it is not possible to contrast regional results of the survey to estimate the factors that affect entrepreneurs at different stages of their businesses' life cycle, or by their type of businesses; it is also impossible to contrast the differences of the entrepreneurs' perspectives according to their socio-economic status. The second limitation is related with problems of systematic error while collecting the data, which in turn affect the validity of the results. The data collection was in charge of each of the Chambers of Commerce across Mexican States; thus there are potential problems of systematic error while obtaining the data. Nonetheless, the sample was large enough to be able to work with sub-samples randomly selected across regions, this way help to reduce the effects of such systematic errors.

Further research

Considering that some of the limitations of my data in the econometric model are difficult to overcome, particularly the fact that INEGI only publishes the number of businesses across Mexican States in the Economic Census every six years, there would be difficult to make a longitudinal analysis of the relationship between FDI and the entrepreneurial activity in México; however, the current state of the data does allow cross-sectional analysis on the rate of firms' creation for each economic sector – primary, secondary and tertiary. Alfaro (2003) found evidence to support the hypothesis that FDI positively affect economic growth, but this impact varies across economic sectors. Due to the highly skewed level of industrialization in Mexican States, to those along the Mexican border with the U.S., it would be useful to disaggregate the impact of FDI across regions and across sectors. FDI inflows to México have mainly gone to the manufacturing sector; thus, the question whether FDI has affected homogenously all economic sectors in the country, remains unanswered.

A related study would be testing for FDI's spillovers in México, particularly the one related to technology spillovers from MNEs to domestic companies. One way to analyze the technology spillover hypothesis would be analyzing industrial clusters around MNEs, such as the automotive industry for instance; and determine the level of integration within the cluster to domestic companies, which are producing with high quality standards and using state of art technology to support the MNEs. It has been the case that when a large MNE arrives to a host country – particularly a developing country

– it brings along, at least, the first and the second tier of its suppliers, in turn, limiting the participation of domestic companies in the new industrial development.

A third study, now related with the CANACO-SERVYTUR survey, would be to include in future surveys, individual and business level characteristics to be able to contrast and to control for socio-economic status within the commerce and services sectors across Mexican States. In doing so, results of such analysis could contribute more with the literature regarding the environmental factors that determine the success of businesses across their life-cycle, and the extent to which individual level factors affect the entrepreneurial activity in the country.

APPENDIX A. CROSS-SECTIONAL ANALYSIS ON SONORAN ENTREPRENEURS

A.1 Semi-structure questionnaire on Sonoran entrepreneurs

The following survey was originally conducted in Spanish, and it was applied on 17 entrepreneurs in the city of Hermosillo, capital of the state of Sonora in México, during the fall of 2006. As it was explained to each one of the interviewees, these questions were by no mean exhaustive, the following questions were only a departing point for the me as interviewer, to establish a guideline to efficiently conduct the survey, and for obtaining the pertinent information for the purpose of my study.

This following introduction was, in general terms, what I explained to each interviewee moments before starting the survey to set the tone of the interview.

Introduction:

As I briefly explained to you during our previous conversation by phone, I am finishing my Ph.D. degree in Public Administration and Policy, at the University of Arizona, and I am currently working on my dissertation project in which I am measuring the effects of the Foreign Direct Investment as a conduit for the creation of a new entrepreneurial class in México.

As part of my dissertation, I am interviewing entrepreneurs like you to know what environmental factors may directly affect the creation of new firms in México, specifically in the state of Sonora. This interview is divided up into three sections.

The first section concerns with general information about your company and how did you start it as an entrepreneur.

The second section, deals with the environmental factors that you have found are the most important factors affecting the success or failure of a new company such as yours in the state of Sonora.

The final section explores any recommendation that you may have as a product of your experience as entrepreneur, so public policies may foster the creation of new firms in the state of Sonora, and in México.

QUESTIONS.-

The following questions are by no means exhaustive; their only purpose is to have a guideline for collecting the relevant information during the interview.

I. Section: Overview

1. What are the main products that your company produce or manufacture in this plant?

2. How many people work for you in this company?

3. When did you start your company? How did you start it?

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4. Do you have other plants? Where? What type? What do you produce in them?

5. How did you raise the money to start your company?

5.1. Personal savings _____

5.2. Family _____

5.3. Financial Institution _____

5.4. Foreign Capital _____

5.5. Other _____ explain _____

6. Are you the sole owner of your company? Yes _____; No _____

6.1. If your answer is negative, how is your company structured?

7. What is the economic sub-sector in which you company is classified?

Automotriz, Textil, etc..

8. What is the destiny of your products? Which market? (Mark one or more)

8.1. National _____

8.2. International _____

8.3. Intermediate goods _____

8.4. Final consumption _____

9. Who are your main clients?

10. Why did you decide to establish your company here in Sonora?

11. Is someone else within your family an entrepreneur? If there is and what is the nature of your relationship?

- 11.1. Grandfather _____
- 11.2. Father _____ / mother _____
- 11.3. Brothers _____ / Sisters _____
- 11.4. Children _____
- 11.5. Uncle/ Aunt____ / Cousins _____

12. ¿What made you go into business? Why this type of business? What motivated you? What contributed with your desire of becoming an entrepreneur? What were the most important and least important factors that affected your desire of becoming an entrepreneur?

13. What is your profession? Higher academic degree?

14. Where did you work before becoming an entrepreneur? Did you have any previous experience in this type of business? ¿Did you know someone in this type of business?

II. Section Environment

1. When you decided to start your own business, what are the main factors that positively or negatively affected your startup process? Example:
 - 1.1. Financial resources
 - 1.2. State or Federal Regulations
 - 1.3. Bureaucratic process
 - 1.4. Facilities, land, physical space
 - 1.5. Competitors
 - 1.6. Other _____

2. Could you list the factors that positively affected your start up process, in a hierarchical way, from the most to the least important?

3. Could you list the factors that negatively affected your start up process in a hierarchical way?

4. Did you have any financial support or administrative support by any agency or organization? (mark one or more)
 - 4.1.1. Business chamber _____

III. Section: Perspectives

1. What are the main factors that you think might affect the creation of new businesses in México?

2. Could list the factors that you think might affect positively the creation of new businesses in México, in a hierarchical way?

3. Could list the factors that you think might affect negatively the creation of new businesses in México, in a hierarchical way?

4. Do you consider that it is easier to start a new business nowadays than when you started your own company? Why?

5. What kind of actions or policies, should be implemented to foster the entrepreneurial spirit in México and in Sonora?

6. What kind of actions or policies, should be implemented to foster the creation of new businesses in México and in Sonora?

APPENDIX B. CANACO-SERVYTUR

B.1 Answers to key questions

What is the main factor triggering the desire of becoming entrepreneur in your community?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Identification of a market opportunity	494	26.91	27.23	27.23
	Having a special skill or know - how	502	27.34	27.67	54.91
	Level of education	276	15.03	15.21	70.12
	Unemployment	290	15.80	15.99	86.11
	Having a relatively low-wage	66	3.59	3.64	89.75
	Culture for innovaton	184	10.02	10.14	99.89
	Other	2	0.11	0.11	100
	Total	1814	98.80	100	
Missing	System	22	1.20		
Total		1836	100		

What is the main factor that positively contributes with the creation of new firms in your community?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Market Opportunity	893	48.64	49.23	49.23
	Business associations - specialized business' centers	236	12.85	13.01	62.24
	Trust of suppliers and clients	107	5.83	5.90	68.14
	Clear norms and rules	101	5.50	5.57	73.70
	Skilled labor	83	4.52	4.58	78.28
	Availability of financial resources	391	21.30	21.55	99.83
	Other	3	0.16	0.17	100
	Total	1814	98.80	100	
Missing	System	22	1.20		
Total		1836	100		

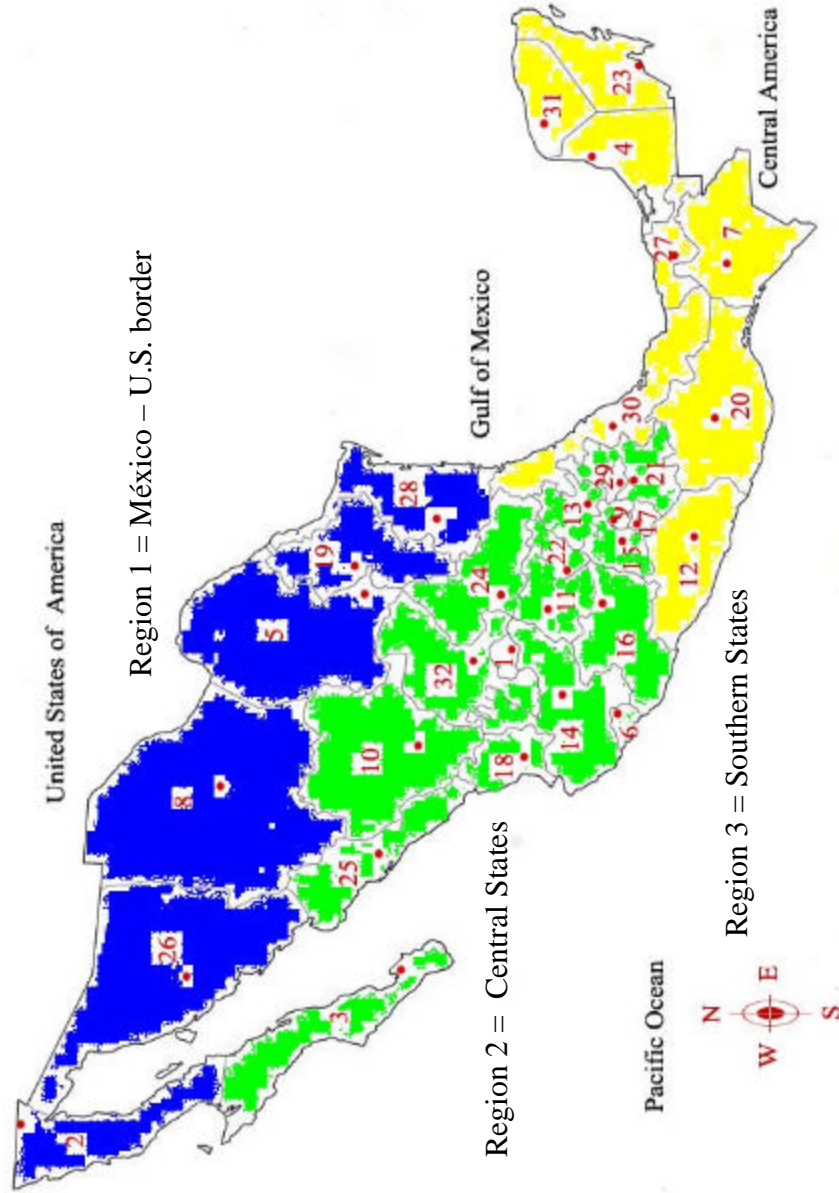
What is the main factor inhibiting the creation of new firms in your community?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lack of financial resources	181	9.86	9.92	9.92
	Bureaucratic and administrative processes	549	29.90	30.10	40.02
	Corruption	280	15.25	15.35	55.37
	Lack of market opportunities	231	12.58	12.66	68.04
	Many competitors	223	12.15	12.23	80.26
	Legal requirements	31	1.69	1.70	81.96
	Lack of culture for innovation	211	11.49	11.57	93.53
	Lack of skilled labor	25	1.36	1.37	94.90
	Infrastructure	89	4.85	4.88	99.78
	Other	4	0.22	0.22	100
	Total	1824	99.35	100	
Missing	System	12	0.65		
Total		1836	100		

What is the main challenge that new and nascent firms have to face?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lack of financial resources	775	42.21	42.84	42.84
	Lack of market opportunities	253	13.78	13.99	56.83
	Many Competitors	204	11.11	11.28	68.10
	Lack of knowledge of the market niche	313	17.05	17.30	85.41
	Economic instability	181	9.86	10.01	95.41
	Lack of suppliers	16	0.87	0.88	96.30
	Lack of skilled labor	40	2.18	2.21	98.51
	Inadequate Infrastructure	24	1.31	1.33	99.83
	Other	3	0.16	0.17	100
	Total	1809	98.53	100	
Missing	System	27	1.47		
Total		1836	100		

B.2 Map of México and its regions



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