Family characteristics and entrepreneurship among immigrants in the Netherlands:

The association of marital status and children with entrepreneurship among immigrants and the differences between first- and second-generation immigrants

Abstract

This study analyses the family characteristics of entrepreneurs among immigrants. This study discusses first what entrepreneurship is with its functions and determinants. Next, it describes differences between entrepreneurship in the total population and entrepreneurship among immigrants. A historical overview is given of recent immigration streams in the Netherlands. The empirical analyses of this study focus on the association of marital status and children with entrepreneurship (compared to all other possible occupations) among immigrants in general. The differences between the associations of marital status and children with entrepreneurship among first- and second generation immigrants are also researched separately. The analyses are based on a sample of 1,557 immigrants living in the Netherlands that participated in the Immigrant Panel of the LISS Database. The empirical analyses show no significant associations of marriage and divorce with entrepreneurship among immigrants and among first- and second-generation immigrants separately. No significant evidence is found for having children in the household, having young children (in the age 0-6 years) and children older than 18 years being associated with entrepreneurship among immigrants or among first- and second-generation immigrants separately. This study further discusses possible explanations for the absence of significant results.

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Master thesis Entrepreneurship and Strategy

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22 July 2014

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Content

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1. Introduction

An association is found in the existing literature between the marital status, children and entrepreneurship in the general population. Several explanations have been proposed, such as the entrepreneur leveraging his or her occupational risks, gaining tax benefits and finding emotional support via his or her marriage. The consequences of divorce lead to either supporting or discouraging the single parent becoming an entrepreneur.

Moreover, having children can create cheap or unpaid labour and an opportunity to pass on a family business. Finally, for parents entrepreneurship can provide the opportunity to work at home while taking care of the children at the same time.

Study on this topic, specifically among the immigrant population, is still scarce. It is even less when considering the first- and second-generation immigrants separately. An unambiguous answer to the question whether these associations also exist among the immigrant population has not yet been found. Thus, the main question of this study is to examine the association between entrepreneurship and family composition among the immigrants in the Netherlands, in terms of marriage, divorce and children.

This study specifically looks at the association of being married, being divorced, having children in the household, having young and adult children and entrepreneurship among immigrants and among first- and second-generation immigrants separately. With the theoretical framework and empirical analyses in a sample of Dutch immigrant population, this study aims to throw light on the literature gap of the topic family characteristics and entrepreneurship among immigrants.

It is generally accepted that entrepreneurship is responsible for a significant growth of the economy through job creation and innovation (Wennekers & Thurik, 1999; Van Praag & Versloot, 2007). This makes it interesting for policy makers to stimulate the determinants that are the drivers of entrepreneurship. These determinants differ and can be categorised in many ways and based on different perspective. The determinants concerning the demographical aspects of human beings also include the characteristics of family composition on entrepreneurship among immigrants which are explored insufficiently. Based on the found significant evidences, policy makers may develop new taxation and integration laws in order to stimulate entrepreneurship among their immigrant population.

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Before conducting the empirical analyses, Section 2.1 and 2.2 provide an introduction to entrepreneurship research. These sections explain what is understood by entrepreneurship in this study and what functions entrepreneurship has in the economy. This study makes use of the occupational choice model to explain why certain family characteristics are associated with entrepreneurship among immigrant. This model explains occupational choices based on the expected utility. This study argues that the expected utility from entrepreneurship varies over family characteristics among immigrants.

Next, Section 2.3 gives a historical overview of the immigration streams that have laid a base for the actual immigration rates in the Netherlands. As the Netherlands has always been an attractive country for trade, immigrants have been settling here since Golden Age (Centrum voor de geschiedenis van migranten [CGM] (2014)). The actual biggest ethnic groups however have started settling here since the reconstructions after the world wars. Their family reunions and family expansions over the years have also contributed to the actual great share of the immigrant population.

Section 2.4 discusses the determinants of entrepreneurship among immigrants in general. Here, the possible reasons are discussed for individuals who choose entrepreneurship above all other occupational choices. Existing literature so far has neglected the determinants of family composition among immigrants. Section 2.5 first explores the associations of marriage and divorce with entrepreneurship among immigrants. In the existing literature about (immigrant) entrepreneurship, being married is found to have a significant positive association with entrepreneurship among immigrants in general, while being divorced shows mixed associations. Overall, there is little study performed on the association between marital status and entrepreneurship among first- and second generation immigrants separately. Next, Section 2.5 explores the associations of children with entrepreneurship among immigrants. In the existing literature, having children in the household and having adult children has a positive association with entrepreneurship among immigrants, while having young children hinders them to become entrepreneurs. In this section all the hypotheses are formulated.

The data and methodology are explained in Section 3. The results of the empirical analyses are presented in Section 4. In Section 5, the discussion part, the results are compared to the existing literature and Section 6 contains the conclusion of this study and suggestions for further research.

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2. Theoretical framework

2.1 Introduction to entrepreneurship

What does entrepreneurship mean? Is it being innovative, risk taking and creative or operating a firm? Does it involve the creation of new ventures or activities that exist in incumbent firms? Originally, the word 'entrepreneur' is derived from the French verb "entreprendre", which means undertake, initiate, begin, start or make. In the Dutch dictionary Van Dale, the word 'entrepreneur' is defined as an "ondernemer", meaning a person who undertakes something or an individual who works on his own account in a sector of an industry or in a business (Van Dale & Sterkenburg, 1996).

Over the past decades, entrepreneurship has received a broad array of different definitions. There is rich literature about the topic, but there has been no consensus reached over the years about a single definition. There is no common understanding of what the term entrepreneurship should be and usually it is explained as a multilevel, multidisciplinary occupation with multiple perspectives (Parker, 2009). While Gartner (1990) defines entrepreneurship as "The process of new business creation", Shane and Venkataraman (2000) see it more as "the scholarly examination of how, by whom and with what effects opportunities to create future goods and services are discovered, evaluated and exploited".

On the other hand, Casson (1982; 2005) gives it a more specific definition by specializing it to a specific area in the economic cycle: "someone who is specialized in making judgemental decisions about the co-ordination of scarce resources". This is then broadened by Hébert and Link (2006) by adding a responsibility for the actions taken by the entrepreneur and also broadening the areas that are affected by his judgemental decisions: the location, the form and the use of goods, the use of resources and the use of institutions.

What entrepreneurs actually do can be divided in two categories. The first category is that of the occupational notice, meaning that the individual owns and manages a business on his own account and risk. The second category is based on the behavioural notion, meaning that the entrepreneur shows behaviour in the sense of seizing an economic opportunity (Sternberg & Wennekers, 2005). According to Wennekers and Thurik (1999) there are three types of entrepreneurs. Based on there (self-) employment activity they divided individuals in

independent entrepreneurs, (managerial) business owners end corporate entrepreneurs within a firm.

In this study, entrepreneurship is defined as self-employment / business ownership in the same sense as Parker defines entrepreneurship in his book 'The economics of entrepreneurship' (2009). By combining many studies that have been conducted on the topic "entrepreneurship", Parker (2009) defines entrepreneurship as followed: "Individuals who earn no regular wage or salary but who derive their income by exercising their profession or business on their own account and at their own risk".

This definition of entrepreneurship follows the occupational choice model of maximizing the expected utility gained from the occupational choice. The determinants that are associated with entrepreneurship among immigrants provide utility that make the immigrant to choose for entrepreneurship. Choosing for entrepreneurship is not a continuous decision for entrepreneurs among immigrants to be switching from one occupation to another and back. It is rather a discrete choice of choosing entrepreneurship above all other occupational choices for gaining the highest utility (Parker, 2009). Utility in that matter is as well monetary benefits as non-monetary benefits. In the next sections the different functions of entrepreneurship and the different reasons for immigrants to be choosing for entrepreneurship are explained.

Immigrants enjoy several disadvantages compared to the natives, as will be discussed later. Based on the occupational choice model, the decision of immigrants to choose for entrepreneurship is because this offers them maximized utility compared to other occupational choices. Entrepreneurs among immigrants are not born as an entrepreneur like the Knightian theory of economic function of entrepreneurship (Knight, 1921) will explain in the next section. They rather make the choice of becoming an entrepreneur in an environment with great uncertainty that offers them opportunities for survival and the possibility of gaining the highest possible utility.

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2.2 Economic function of entrepreneurship

As entrepreneurship has different definitions, it is also described as having different economic functions, depending on different historical perspectives. These perspectives explain why entrepreneurship is important and in what way it affects the economy. In general, entrepreneurship has three economic functions.

First, entrepreneurship has the function of arbitrage and the bearing of risk. According to Cantillon (1755) the entrepreneurial activity exists only in pure arbitrage by an entrepreneurial class that does not affect demand and supply. The sole reason that this entrepreneurial class survives is because of uncertainty that lets him exchange and circulate in the economy. Knight (1921) and Kirzner (1973) also highlight the importance of uncertainty in the process of arbitrage, as it keeps the entrepreneur alert for exploitation of profitable opportunities. The entrepreneur moves the economy towards equilibrium while he is restricted in his actions by calculable uncertainty (risk) and limited information about the availability of natural resources, technological change and prices. This view of arbitration is broadened by Say (1836) by giving the entrepreneur a managerial role in the production and distribution of factors.

The second function of entrepreneurship is therefore co-ordination of the factors of production. By coordinating both on the market level as well as on the firm level, the entrepreneur creates utility by giving existing factors of production a utility they did not possess before. In this perspective, the number of entrepreneurs is limited which gives the opportunity of creating relatively high rewards.

While the arbitration and the co-ordination perspectives give entrepreneurship a more balancing role in the economy of working towards equilibrium, the third function of entrepreneurship lays its importance in the innovation and creative destruction of the existing economy. According to Schumpeter (1934), entrepreneurship is a temporary activity that creates disequilibrium by innovating towards new combinations of factors of production. By being an innovator who introduces new products and services, the entrepreneur is the driver behind the economic progress. The reach of his innovation is dependent of different determinants of entrepreneurship.

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2.3 Immigration in the Netherlands

2.3.1 Immigration streams

Immigration is defined as the establishment of persons from abroad in the Netherlands. In order to be counted as an immigrant these persons should be included in the municipal population registers. One is registered in the municipal population registers if his stay is expected to last longer than 4 months (Centraal bureau voor de statistiek [CBS], 2014). To understand what the origins are of the current immigrants, we have to look at the immigration streams throughout the history of the Netherlands.

First mass-immigration

Since the sixteenth century the Netherlands has been a very attractive nation for immigrants to settle. Being one of the entry ports to Europe, its agriculture and industry bloomed during the Golden Age. During this age the Netherlands consisted of seven provinces that were called together the Dutch Republics. The population of the Republics was very low and without immigrants it could not keep up to the worldwide demand for more products. This caused a positive stream of immigrants and a lot of unskilled and skilled labour emerged to a top layer of traders, merchants, intellectuals and entrepreneurs who brought numerous technical and cultural innovations. After this period of mass immigration and great wealth, the economic growth stagnated. Since the number of immigrants also declined, the Dutch politics did not concern then about immigration policies (Lucassen & Lucassen, 2011; CGM, 2014).

Based on different historical sources such as birth certificates that were handed over during a marriage registration, Lucassen and Lucassen (2011) constructed the share of immigrants among the Dutch population. The table below (Figure 1) shows that wile during the Golden Age the immigration had reached a top of almost 8 percent of the population, by the year 1900 this share had dropped to only 1.8 percent. This decline of the immigration was also due to the loss of the Republics dominant position in his neighbouring countries.

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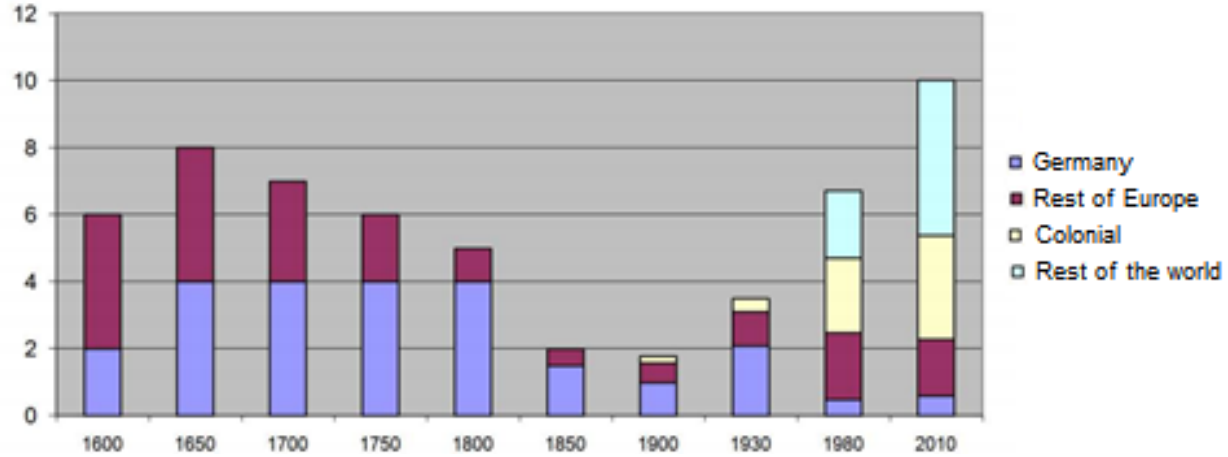
Figure 1 ***First-generation immigrants* in the Dutch population in percentages (1600-2010)***



Note: * The share of those born abroad in the Dutch population in percentages
Source: Lucassen and Lucassen (2011), "The Netherlands"

The immigrants that did settle during the years 1820-1940 had a positive influence on the society and on themselves. Starting from traders to aircraft technicians, they contributed to the economy and were demanded for their high qualifications and their entrepreneurial intentions. In the 1930's, along with other particular organisations, it were the immigrants who took care of the upcoming stream of Belgian and Jewish refugees and later the stream of repatriation of 300,000 well-educated Dutch, Indo' and Moluccan migrants (Lucassen & Lucassen, 2011; CGM, 2014; Vermeulen & Penninx , 2000; Engbersen, Leun, & Boom, 2007).

Second mass-immigration

After the Second Wold War, there was a period of rather fast reconstruction and industrialisation, and the economy grew prosperously. There was a demand for labour and the Dutch started actively stimulating migration to the Netherlands. The Dutch government started actively attracting a great stream of labour migrants from Spain, Italy and later Turkey (in the year 1963) and Morocco (in the year 1969) (Lucassen & Lucassen, 2011; Vermeulen & Penninx , 2000). These workers were called 'guest workers', for their stay was only for a period that their contract was signed for.

This situation of economic blooming changed due to economic recession from the mid of the 1970's, but most of these guest workers never returned back home (Engbersen, Leun, & Boom, 2007). Instead they settled themselves and even called their family members to unite with them in the Netherlands (Vermeulen & Penninx , 2000); Rusinovic, 2006). This family reunification combined with the arrival of ten thousands Surinamese after their declaration of independence in

1975, was followed by an increase in the significant number of asylum seekers. This period is seen as the second mass immigration after the Golden Age. Due to the economic recession and the low immigration policies, - in the eyes of a lot of natives - this immigration flow was not accepted as positively as before (Lucassen & Lucassen, 2011; CGM, 2014).

From the end of the twentieth century, the demand for labour, particularly in agriculture, horticulture, industry and services, started to rise again. This attracted a lot of labour immigrants from Eastern Europe, particularly from Poland. Also skilled workers from India, Japan and the United States have kept immigrating and have shown a great contribution to the innovative strength of the current Dutch economy (Lucassen & Lucassen, 2011; CGM, 2014).

Refugees and asylum seekers

A category of immigrants that has also always existed, is that consisting of refugees and asylum-seekers. These are persons applying from another country who are applying for admission as a refugee. Asylum requests are submitted by persons who for various reasons have left their homeland to find protection or asylum in another country (CBS, 2014).

The past has shown that there is significant evidence of association between this group of immigrants and civil wars / persecutions. This is the case for the Ex- Yugoslavs in 1990, the Iraqis, Afghans and Somalis who have started migrating since the war on terror in the Middle East (Lucassen & Lucassen, 2011). Although in the beginning of the 21st century the number of asylum requests was almost 40,000 per year as Figure 2 shows below, this number has dropped to 9,700 in 2012. Figure 2 also shows that the asylum request had reached a peak of 52,600 requests in 1994.In 2012 the largest number of asylum seekers came from Iraq (1,4 thousand) and Afghanistan (1,0 thousand) (Sprangers & Winter, 2013).

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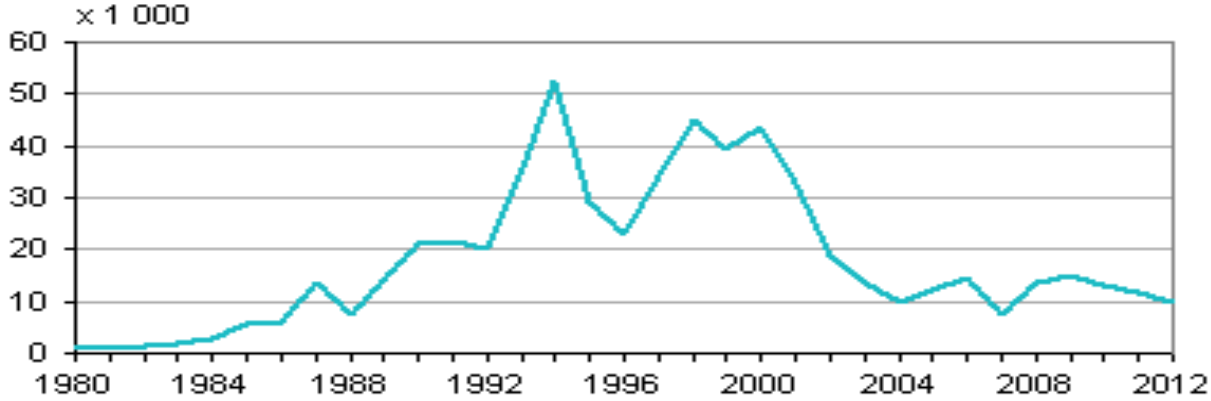
Figure 2 ***Number of first* asylum requests per year (1980-2012)***



Note: * The numbers in this article relate from 2007 only first asylum requests. Until 2007, the figures are the total of first and subsequent requests
Source: Immigratie- en Naturalisatiedienst (IND, 2014) and CBS (2014)/Statline Bevolking Kerncijfers 2013

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2.3.4 Actual numbers of immigrants

The actual numbers of immigrants are higher than the numbers shown in figures 1 and 2. The population that is shown in Figure 1 and 2 is an indication of the first-generation immigrants. First-generation immigrants are individuals who are living in the Netherlands but were born elsewhere. There is also another group that is considered to be immigrants: second-generation immigrants. These are individuals who were born in the Netherlands, with at least one parent who is born elsewhere (CBS, 2014). Other categorizations of first- and second-generation immigrants are also possible, like western-immigrants / non-western immigrants (CBS, 2014; Engbersen, Leun, & Boom, 2007; Rusinovic, 2006; Martens & Veenman, 1996; Jansen, Spronsen, & Willemsen, 2003). Based on the official Dutch statistics (CBS, 2014), Table A in the Appendix shows specifically which countries are included in either western-countries or non-western countries. In literature, these categories are usually summarized under the names of parts of the world. Western countries include all countries in Europe (except Turkey) and North-America, Oceania, Indonesia and Japan. The non-western countries are including Turkey, the countries in Africa, South America and Asia (Rusinovic, 2006; Engbersen, Leun, & Boom, 2007).

The actual numbers of the total immigrants, considered the first- and second- generation together, is shown in Table 1 below. Measured on the 1st of January 2014, of the 16,829,289 people in the Netherlands, 3,594,744 people are considered to be an immigrant. The share of immigrants is more than 1/5th (21.4 percent) of the total population. According to Figure 1, constructed by Lucassen and Lucassen (2011), the lowest share of the first-generation immigrants was in the year 1900 by a small 1.8 percent of the total population. From 1900 till 1 January 2014, the population has multiplied by 3.29 from 5,104,000 people (CBS, 2014) to 16,829,289 people (Table 1), while the first-generation immigrants share has multiplied by 10 from 1,8 percent to 10.81 percent (Table 1). This means that a great share of the Dutch population growth is because of foreign-born immigrants / first-generation immigrants and their descendants. According to Table 1, the share of the second-generation immigrants is 10.6 percent of the total Dutch population on the 1st of January 2014.

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Table 1 ***Demographic developments Dutch population, 1996 – 2014****

	1996	2000	2005	2010	2014
Total population	15,493,889	15,863,950	16,305,526	16,574,989	16,829,289
Immigrants (absolute numbers)	2,498,715	13,088,648	3,122,717	3,359,603	3,594,744
Immigrants (percentage)	16.1	17.5	19.2	20.3	21.4
Total first-generation immigrants	1,284,106	1,431,122	1,606,664	1,699,751	1,818,497
Western immigrants	522,554	544,890	582,278	644,486	722,766
Non-Western immigrants, including:	761,552	886,232	1,024,386	1,055,265	1,095,731
Moroccans	140,572	152,540	168,400	167,305	168,320
Antilleans and Aruba	55,808	69,266	82,321	81,175	82,148
Surinamese	179,266	183,249	188,367	185,089	180,863
Turks	167,248	177,754	95,678	196,385	194,759
Other non-Western immigrants	218,658	303,423	389,620	425,311	469,641
Total second-generation immigrants*	1,214,609	1,344,180	1,516,053	1,659,852	1,776,247
Western immigrants	805,048	821,645	841,397	856,823	874,394
Non-Western immigrants, including:	409,561	522,535	674,656	803,029	901,853
Moroccans	84,516	109,681	147,421	181,700	206,676
Antilleans and Aruba	31,016	37,931	48,217	57,245	64,707
Surinamese	101,349	119,265	41,063	157,190	167,428
Turks	104,266	131,136	163,168	187,572	201,655
Other non-Western immigrants	88,414	124,522	174,787	219,322	261,387

Note: * Till 2014, numbers are generated on 21st of October of each year. In 2014 the numbers are generated on the 1st of January.
* Second-generation immigrants were born in the Netherlands, but at least one of their parents was born elsewhere
Source: Based on CBS/Statline Bevolking Kerncijfers 2005 (Rusinovic, 2006) and CBS/Statline Bevolking Kerncijfers (2014)

So the growth of the Dutch population is for a great part due to the growing number of immigrants who have migrated to the Netherlands, are still migrating to or are born here.

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2.4 Determinants of entrepreneurship among immigrants

As entrepreneurship is defined in many ways, and many functions have been attributed to it throughout the years, the determinants that influence the decision of individuals to participate in entrepreneurship are also dynamic and are still being discovered till now. As explained by the occupational choice model, the utility derived from entrepreneurship is not only the monetary benefits that are comparable with wage-employment, but also non-monetary benefits.

So what drives people to engage themselves in entrepreneurship? In the United Kingdom's Labour Force Survey (LFS) that was held in 2000 (Parker, 2009), the common given answer for this question was a non-monetary reason, namely the choice of being independent and choosing the nature of your occupation. To understand the role of the determinants in entrepreneurship among immigrants, this study will first looks at the determinants of entrepreneurship in general and subsequently narrow it down to entrepreneurship among immigrants.

2.4.1 Categories of determinants of entrepreneurship

The determinants of entrepreneurship can be divided in many categories according to different insights from psychological perspectives, social perspectives, economical perspectives and demographical perspectives (Jansen, Spronsen, & Willemsen, 2003; Verheul, Wennekers, Audretsch, & Thurik, 2002). Psychological factors concern the background of the entrepreneur himself, whereas the sociological and demographical perspective looks at the factors concerning the demographical composition of a country. The economical perspective looks at the factors of entrepreneurship, that are being influenced by the economic climate and the economic changes that influence the costs and yield of production (Grilo & Thurik, 2004; Jansen, Spronsen, & Willemsen, 2003; Verheul, Wennekers, Audretsch, & Thurik, 2002).

Verheul, Wennekers, Ausdretsch and Thurik (2002) and later Grilo and Thurik (2004) have considered an eclectic framework in which they explain the origins and different categories to which the determinants of entrepreneurship can be divided into. In both their studies the determinant of entrepreneurship can also be categorized according to the micro-, meso- and macro-level of entrepreneurship. The micro-level determinants of entrepreneurship regard the basic reasons and motives of individuals for choosing to become an entrepreneur. The important factors are partly formed by the background of the individual, the family composition and the

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education level. The meso- level determinants of entrepreneurship concern factors of a specific sector of industry, profit opportunities and the factors concerning the entry to or exit from a specific market. At the macro-level, the determinants of entrepreneurship are explained more form a general environmental view, concerning the technology, the economical state and the cultural variables (Grilo & Thurik, 2004; Jansen, Spronsen, & Willemsen, 2003; Verheul, Wennekers, Audretsch, & Thurik, 2002).

Another important framework of the determinants of entrepreneurship is done by Parker (2009)in his book "The economics of entrepreneurship". Based on existing literature that includes controls for other explanatory variables, Parker has made a summary of determinants of entrepreneurship. In Table 2 the numbers of studies are shown that have researched the specific determinants and have shown either a significantly positive, significantly negative or insignificant results. As can be seen, the determinant "immigration" is rather underrepresented in the existing literature.

Table 2 ***Summary of determinants of entrepreneurship***

Explanatory variable	No. +	No. −	No. 0
1. Income differential	8	2	4
2. Age	83	6	14
3. Experience	24	1	2
4. Education	69	21	27
5. Risk aversion	0	11	3
6. Married / working spouse	52	9	8
7. Number of children	16	2	3
8. Ill health / disability	5	4	6
9. Entrepreneur parent	40	2	2
10. Technological progress	4	4	2
11. Unemployment			
Cross-section	22	14	18
Time series	33	5	2
12. Urban location	7	7	4
13. Immigration[a]	5	1	0
14. Interest rates[b]	1	9	3
15. Personal wealth[c]	40	2	4
16. Personal income tax rates[d]	12	5	1

Notes: +, − and 0 denote significantly positive, significantly negative and zero (insignificant) coefficients, respectively. Only multivariate studies (i.e. those including controls for other explanatory variables) are included; descriptive studies are excluded. For row 11, panel studies with large N and small T are classified as cross-section; those with large T and small N are classified as time-series.

Source: Parker, The economics of entrepreneurship (2009)

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2.4.2 Summary of determinants of entrepreneurship

In the next part, the determinants of entrepreneurship will be briefly examined in general, as the focus lies on entrepreneurship among immigrants and their family composition. This summary of determinants of entrepreneurship is based on the framework of determinants that Parker has made in his book 'The economics of entrepreneurship' (Parker, 2009) and the fact that this study is performed on the micro-level, when considering the demographical aspects of entrepreneurship among immigrant population.

Monetary benefits, independence and risk attitudes

According to the UK's LFS in 2000 (Parker, 2009) the incentive of earning more money was at the third place of the most common reasons for choosing for entrepreneurship. However, it is not clear whether earning a higher income plays a significant role in the choice of becoming an entrepreneur. While some literature has generated statistically significant positive results (Clark & Drinkwater, 2000; Taylor, 1996), there is also a lot of literature showing no significance between the incentive of earning more and becoming an entrepreneur (Rees & Shah, 1986; Dolton & Makepeace, 1990). What makes it even more peculiar is that there are also examples of researches where in the first study there was positive and significant association found, but the same study performed 10 years later did not show any significance anymore (Fraser & Greene, 2006; Parker, 2003).

As said in Section 2.2, according to Knight (1921) and Kirzner (1973), the entrepreneur is a person who is always alert for exploitation of profitable opportunities. This highlights the fact that the entrepreneur wants to be his own boss. He has a desire for autonomy or independence to operate or occupy himself without a higher force telling him what to do. Being able to choose his or her occupation, makes approximately 46percent of self-employed very satisfied with their job, while only 29 percent of employees are happy with the jobs they are occupied with in their wage-labour (Blanchflower & Oswald, 1998)

Just like the pecuniary incentive, there is also no clear significant direction for the different risk attitudes as risk-aversion, risk-taking or over-confidence. Based on most multivariate analyses as shown in Table 2 (Parker, 2009), entrepreneurs appear to be more risk taking than the average employee. Using the revealed preference theory, Van Praag and Cramer (2001) have also found

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significant evidence of Dutch entrepreneurs being more risk taking than employees, but they only do this when they are assured of strong family ties like marriage and children and good health (Puri & Robinson, 2005). In other words, entrepreneurs are 'risk-calculators'. It is also possible that they just have reacted this way during the answering of the questionnaire. They might have thought that it was expected from them to be confident of their choices and they have answered the questionnaire in this way (Coelho, Meza, & Reyniers, 2004).

Technology, knowledge spillover and human capital

According to Blau (1987), improvements and innovations in the methods of production have driven the growth of the economy. The spread of computers and ICT improvement have made it possible to get access to advanced and cheap production methods and have caused, among other things, a growth in the number of self-employed individuals.

Since this also gives a lot of room for knowledge spillovers, researchers have investigated the rate of small and medium enterprises (SME's) near universities and corporate research laboratories. The existing literature shows that there is a significant positive association of locating knowledge based and technology based ventures next to existing knowledge based institutes or corporations (Parker, 2009).

This does not only help the new ventures to grow and extend faster, but also more educated human capital is trained and attracted (Audretsch, Keilbach, & Lehmann, 2006).The gained experience and knowledge later helps individuals to choose entrepreneurship (Casson, 1995).

According to Light (1984), Yuemgert (1995) and Hammarstedt (2001), experience also plays a significant role for immigrants to choose entrepreneurship. Using US Census data, these researchers have found significant evidence for immigrants who already had entrepreneurial experience in their home country, also become entrepreneurs in the host country. Having access to cheap and trustworthy workers through low-paid and unpaid family members or members from their ethnic group, the need for social capital is rather quickly fulfilled. This way, they can survive the high competition form the existing and almost overfilled markets (Light, 1984; Rusinovic, 2006).

Based on the existing literature on immigrants, in his book 'The economics of entrepreneurship', Parker (2009) summarizes that immigrants are on average better educated and motivated than

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natives. However, this often does not help immigrants to get access to the same occupations as the natives do. Besides the unemployment rates of countries, immigrants often get hold back or discriminated from white-coloured jobs by language barriers, lack of labour market information and lack of occupational skills that are asked for in the host country (Yoon, 1997; Light, 1984) (Yoo, 2000). Entrepreneurship is then the alternative to turn to for these immigrants who are motivated to generate income and get higher up on the economic ladder. This way they do not let this natural barriers hold them back (Le Espiritu, 1999; Yoon, 1995; Yoo, 2000; Wadhwa, Rissing, Saxenian, & Gereffi, 2007)

The decision to become an entrepreneur also has advantages for the immigrant. With their background education, immigrants are often advanced and better skilled in their entrepreneurial activities like organizing and operating a business, than native entrepreneurs. Furthermore, entrepreneurs among immigrants have advantages over the native entrepreneurs with the knowledge and background information about their home country and the communities where they settle their businesses (Sanders & Nee, 1996; Portes, Haller, & Guarnizo, 2002). According to Sanders and Nee (1996), entrepreneurs among immigrants also enjoy a higher position in the social class of their ethnical communities and their home country.

Immigrants who are raised in the host country or second-generation immigrants who are born here, usually are better educated, at the same level as natives, and integrated better then the first-generation immigrants (Jansen, Spronsen, & Willemsen, 2003; Lucassen & Lucassen, 2011; Rusinovic, 2006). While this makes the possibility of them entering wage-employment higher, according to Jansen, Spronsen and Willemsen (2003), second-generation immigrants are more likely to enter entrepreneurship than first-generation immigrants (Dagevos & Gesthuizen, 2005). Where entrepreneurs among first-generation immigrants enter markets that have connections with their ethnic background, entrepreneurs among second-generation immigrants enter markets concerning the ICT, finance and real-estate (Baycan-Levent & Nijkamp, 2009) However, literature on entrepreneurship among second-generation immigrants remains scarce.

Demographic characteristics

While it is possible to think that married people which children are less likely willing to take the risks that are involved with entrepreneurship, in the general entrepreneurship literature the determinants concerning the demographical characteristics of entrepreneurship, show a

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significant positive association with entrepreneurship. Three prominent demographic characteristics of entrepreneurship are health issues, marital status and the family background (Parker, 2009).

In his study, Quinn (1980) shows that health can have either a positive or negative association with entrepreneurship. Being an entrepreneur offers greater flexibility in the choice of occupation, time spent working and the location where the working activity is taking place. For a lot of individuals with a family and children, as well as people with health problems or disabilities, entrepreneurship is a then a natural choice. In a sense, entrepreneurship might also offer a kind of protection from discrimination at work for the disabled.

When looking at the other side of the coin, entrepreneurial activities are rather time taking and stressful, what might scare this group of people in choosing entrepreneurship. Individuals in poor health might find it harmful for their health to involve themselves in an entrepreneurial occupation (Rau, Hoffmann, Metz, Richter, Roesler, & Stephan, 2008; Taris, Guerts, Schaufeli, Blonk, & Lagerveld, 2008).

Taking care of a family takes a lot of time for both sexes, and literature so far has shown significant association of the components of family composition with entrepreneurship. For example, because spouses can provide start-up capital providers (Davidsson & Honig, 2003), trustworthy workers (Borjas, 1986) and a shoulder-to-cry-on (Brüderl & Preisendörfer, 1998).

Spouses are not the only one who can provide start-up capital. Based on Mexican immigrants near the US-Mexico border, Mora and Dávila (2006) find even more significant evidence that immigrants usually settle in places where there are high ethnic concentrations. This provides them access to resources from their personal equity, their extended family and lenders from their communities, rather than turning to social resources as banks or the governmental grant providers. Having strong ties to both their family and ethnical community, gives entrepreneurs advantages in their pursuit of economical heights. The family and community members do not only provide cheap or unpaid labour, but also help advancing the business by their mutual obligations and trust from the solidarity feeling of togetherness (Sanders & Nee, 1996; Jansen, Spronsen, & Willemsen, 2003).

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For parents it is also important to spend time with their children. By being an entrepreneur and working from home they can make a good distribution between time for work, house chores and childcare. Besides having children who can help out in the family business (Sanders 1996) and later take over the family business, immigrants with children see entrepreneurship as a strategy for intergenerational mobility (Zhou, 2004; Raijiman & Tienda, 2000).

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2.5 Family composition

Based on the facts mentioned above and highlighting the gain of maximized utility in the occupational choice of entrepreneurs among immigrants, shows that immigrants usually start their businesses in markets related to their ethnic background such as shops and restaurants. However, study on this specific topic concerning entrepreneurship among immigrants, is rather scarce in both international and Dutch literature. Separating the components of family composition, this study will explore the determinants marriage, divorce and children as determinants of entrepreneurship among immigrants.

2.5.1 Marriage and entrepreneurship among immigrants

Being married brings a lot of responsibilities, affection, devotedness and willingness to support your spouse. According to general entrepreneurship literature and the field study that Sanders and Nee (1996) conducted among Chinese, Korean and Filipino immigrants in Los Angeles in the year 1996, the family is often seen as the most important social organisation that supports the setup and managing of a small business. The fact that having a spouse increases the chance of engaging in entrepreneurship was also researched by Loewen (1988) in his study of Chinese immigrants in Mississippi. In his book The Mississippi Chinese, Loewen (1988) reviews the history of Chinese immigrants who first started working as agricultural workers in the cotton fields and were discriminated and treated as the native black people. However, soon after they had arrived, these immigrants started leaving the cotton fields to become entrepreneurs in small business like merchants in grocery. According to Loewen (1988) this was partly due to the reunion with their wives, who came over from China, and the establishment of new families. Marriage being a push factor to entrepreneurship was also researched by Baycan-Levent and Nijkamp (2009) who had found significant evidence of marriage rates to be associated with entrepreneurship among immigrant Indians in Europe.

According to Borjas (1986) and Bosma, Van Praag, Thurik and de Wit (2004), having a spouse who can back you up financially, is also positively associated with an individual's choice for entrepreneurship. Beside start-up capital, the spouse can provide unpaid or below market-rates labour such as doing the books, keeping up the accounts, doing the errands or answering the telephone for their entrepreneur spouses business. Having a spouse who is helping, makes it also less likely for him or her to shirk or do the job not thoroughly enough compared to a hired

employee (Portes & Zhou, 1998). A spouse is trusted to be more productive and careful enough to handle sensitive transactions of their entrepreneur spouses business (Sanders & Nee, 1996). As entrepreneurship also provides riskier income than steady wage-jobs, having a spouse who can also financially support the family is seen as insurance for the husband or wife who is involved in entrepreneurship (Parker, 2009). Being married also gives certain tax benefits due to income sharing (Parker, 2009).

Beside the financial and physical support, spouses also provide emotionally supporting their partner (Brüderl & Preisendörfer, 1998; Bosma, Praag, Thurik, & Wit, 2004; Bogan & Darity Jr, 2008). In his study on Dutch entrepreneurs who had participated in the questionnaire of the Dutch Chamber of Commerce, Bosma, Van Praag, Thurik and de Wit (2004) investigated among other things the importance of emotional support of a spouse on the entrepreneurial performance of their partner. They found significant evidence for entrepreneurs to be earning approximately 40% more income when supported by a spouse, compared to entrepreneurs who did not experience emotional support

On the other hand, there can also be a lot of knowledge spillover from a husband or wife to their entrepreneur partner and they can share important information with each other about markets and organisation of a firm. In his study of entrepreneurship among married couples in the United States of America, Parker (2008) found significant evidence for knowledge transfer between spouses to be associated with the business ownership propensity. In their study Jansen, Spronsen and Willemsen (2003) examine the possible causes for the different rates of entrepreneurship between ethnic groups and native Dutch population. Based on the empirical analyses of their study, they found that the most entrepreneurs among immigrants were married or had a girlfriend / partner besides them. They find that the odds ratio of being an entrepreneur is 8% higher for individuals who are married than for unmarried individuals.

The income driven form entrepreneurship together with the financial, emotional and physical benefits that spouses provide derive a greater utility that makes the immigrant individual to choose for entrepreneurship. For this reason the following hypothesis is formulated:
H1: Being married as compared to never having been married is positively associated with entrepreneurship among immigrants.

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2.5.2 Divorce and entrepreneurship among immigrants

There is little known about the association of divorce with entrepreneurship among immigrants. Although divorce has become a common phenomenon in modern societies, in ethnic societies it still remains to be taboo and shameful towards the family and ethnic background (Galbraith, 2003; Essers, 2007). In some literature, entrepreneurship is considered to lead to divorce. Based on Korean entrepreneurs among immigrants in Los Angeles, Min (1993) found significant evidence for a group of immigrant marriages being destroyed by the negative consequences of entrepreneurship. These negative consequences are usually marked as the long working hours, stress and the absence of leisure time for children that lead to family conflicts, wife abuse and marital problems (Min, 1993; Dyer & Handler, 1994).

While entrepreneurship can lead to divorce, the threat of divorce can also lead to entrepreneurship. In societies where divorce is seen as a disgrace towards the family name and future generations of that family, women usually fulfil a central position in the household as a housewife and caretaker of the children. In the study of Moroccan and Turkish women business owners in the Netherlands, Essers (2007) researched the motives of these immigrant women for becoming an entrepreneur. To get a grip on a little freedom in their daily life, these women had to choose between becoming entrepreneurs instead taking wage-jobs where the chance of interacting with total strangers would be bigger. However, if their husbands or family were against them starting their own business, they used tricks as the threat of getting a divorcing if they were not allowed to do so.

But what happens when ‘the happily ever after’ is over and the couple breaks up and gets divorced? After a divorce, it is hard for both the male as the female to cope with the break up and the pressure is even bigger if there are also children present form that marriage (Galbraith, 2003). According to Galbraith (2003), divorce takes away the safety net of fall backs that marriage had creates for spouses when entering entrepreneurship. This leaves his influence on the wealth of the divorced and makes him or her more risk-averse according to the occupational choice model (Saridakis, Marlow, & Storey, 2013).

Saridakis, Marlow and Storey (2013) performed a study on official time-series data from the United Kingdom over a 30 year period. In the long run, they found that divorce lowers the rate of women entrepreneurship. Women are thought to be more severely affected by divorce than men,

usually also because they are the ones who get the custody over children. With more responsibilities to handle as a single parent and or not wanting to cooperate anymore with the ex-partner, it can be explained by the occupational choice model that the utility obtained from a spouses support is gone and this makes that the family business is neglected. Eventually it can get shut down by as well the ex-wife as the ex-husband. On the other hand, ex-couples could be so mad at each other, that from a feeling of vengeance, one could try to destroy the business of the ex-partner (Galbraith, 2003).

On the other hand, an example given by Essers (2007) explains that first-generation immigrant women usually turn to entrepreneurship after a divorce because their family founds them to start their own business. This way they will be able to survive in the unfamiliar environment that they have been brought to by their ex-husbands.

Having also the possibility of remarrying and forming new families in the future, gives ex-partners access to new resources and human capital for becoming an entrepreneur. However, families disrupted by divorce, loose social bonds between parents and children and this eventually has a negative association with the family businesses (Aldrich & Cliff, 2003).

The small number of literatures that is available about divorce and entrepreneurship among the native and immigrant population, shows mixed significant associations. But based on the occupational model, with the loss of a spouses support, the utility gained for becoming an entrepreneur, also becomes less. Concerning the fact that divorce influences males and females, the first hypothesis concerning the determinant divorce is as following:

H2.1: Being divorced as compared to never having been married is negatively associated with entrepreneurship among immigrants.

Considering the fact that existing literature suggests the wives being more severely affected by a break-up than their ex-husbands, this study will also look at the specific association of divorce with entrepreneurship among immigrant women. The hypothesis for this is as following:

H2.2: Being divorced as compared to never having been married is negatively associated with entrepreneurship among immigrant women.

2.5.3 Marital status and first- and second-generation differences

There is another gap in the existing literature concerning both marriage and divorce, this time considering the generational differences of entrepreneurship among immigrants. The existing literature concerns mostly the integration aspect of both generations into the labour market and not specifically entrepreneurship (Rusinovic, 2006). According to Rusinovich (2006), although the chances of second-generation immigrants look better on the labour market compared with first-generation immigrants, there is growth in entrepreneurship by second-generation immigrants. These group of immigrants is usually better educated and integrated in the customs and habits of the receiving country and is suggested to start businesses that need higher educational bases like finance and real-estate (Jansen, Spronsen, & Willemsen, 2003; Dagevos & Gesthuizen, 2005; Rusinovic, 2006; Baycan-Levent & Nijkamp, 2009; Lucassen & Lucassen, 2011).

Based on these literatures about entrepreneurship among second-generation immigrants and the occupational choice model that shows gain of utility from a spouse, it can be concluded that for both first- and second-generation immigrants, the family characteristic marriage is significant positively associated with entrepreneurship. In case of a divorce, the existing literature speaks of mixed associations with entrepreneurship among the total population and a negative association with entrepreneurship among immigrants. Also based on the occupational choice model, with the disappearance of the gained utility form a spouse divorce is negatively associated with entrepreneurship among both first- and second-generation immigrants. The hypothesis for the generation differences will be as following:

H3.1: Being married as compared to never having been married is positively associated with entrepreneurship among first-generation immigrants.

H3.2: Being divorced as compared to never having been married is negatively associated with entrepreneurship among first-generation immigrants.

H3.3: Being married as compared to never having been married is associated with entrepreneurship among second-generation immigrants.

H3.4: Being divorced as compared to never having been married is negatively associated with entrepreneurship among second-generation immigrants.

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2.5.4 Children and entrepreneurship among immigrants

Literature about children and entrepreneurship in general shows mixed associations, but the literature about having children and its association with entrepreneurship among immigrants is scarce. There is significant evidence for having children being positively associated with entrepreneurship (Carr, 1996; Portes & Zhou, 1993; Jansen, Spronsen & Willemsen, 2003). For parents it is important to choose their own working hours and spend enough time with their children, but also earn enough income to be able to take care of their family. Furthermore, the high prices of externally provided childcare like nurseries could drive parents into the choice for staying at home and taking care of their children themselves. For parents who then still want to work, the turn to entrepreneurship is a natural choice to be made since it provides more utility for the parent.

Working on your business can usually be done from home, where the entrepreneur can combine the house chores, child caring and work all together (Edwards & Field-Hendrey, 2002). According to Carr (1996), both men and women turn to entrepreneurship but for different reasons. While women use entrepreneurship to better balance work, household and parenting, men use entrepreneurship to advance their careers.

The existing literature on entrepreneurship among immigrants and children usually speaks only about the association with children being raised in an immigrant family and their integration in the receiving country. According to Portes and Zhou (1993), growing up as an immigrant has always been difficult. Not only because of cultural and social differences that usually result from hostility from the natives, but also because of the economic situation that the immigrant family has. In a later study, Portes and Zhou (1998) have found significant evidence for the number of children to be positively associated with entrepreneurship among immigrants. While Portes, Haller and Guarnizo (2002) found no significant evidence, Jansen, Spronsen and Willemsen (2003) supported the significant positive association in a later study based on entrepreneurship among the four ethnic groups Turks, Moroccans, Antilleans and Surinamese compared to the native Dutch entrepreneurs.

While the number of children of almost all researched ethnic groups increases the rate of entrepreneurship among immigrants, the ethnic group Turks show an opposite association. According to Jansen, Spronsen and Willemsen (2003) this is because an average Turkish family

has more children than the other ethnic groups, including the native Dutch families, which increases the costs and the responsibility for child caring. Since entrepreneurship has higher risks than wage-employment, families with a lot of children tend to choose for a fixed income through weight employment.

Based on the available literature concerning children and entrepreneurship in general population and among immigrants being positively associated, the following hypothesis is formulated for the fact of having at least one child in the household:

H4.1: Having a child in the household is positively associated with entrepreneurship among immigrants.

According to immigrant literature child caring in immigrant families is in most ethnic cultures the responsibility of the wives instead of the husbands. For this reason immigrant women are thought to be more spending time at home than men are (Essers, 2007). This increases the probability of entrepreneurship among immigrant women and for this reason the following hypothesis is formulated:

H4.2: Having a child in the household is positively associated with entrepreneurship among immigrant women.

2.5.5 Child age category and entrepreneurship among immigrants

Literature on the child age categories and entrepreneurship among immigrants is also scarce and mixed. In the families of most immigrant firms, the women and children live as oppressed workers, but do not consider themselves oppressed (Bonacich, 1987). As mentioned in the previous sections, in these families the family members are the providers of cheap or unpaid labour (Sanders & Nee, 1996; Jansen, Spronsen, & Willemsen, 2003; Light, 1984; Rusinovic, 2006). In their study, Sanders and Nee (1996) give an overview of interviews with immigrant business owners, in which they explain the start-up of their business. Children who are of age of helping out in their parents business are commonly mentioned to be a potential source of capital pooling and family labour. Based on their research, Sanders and Nee (1996) conclude that the presence of teenagers in the household significantly contributes to the parental entrepreneurship in immigrant families.

Working from home can make the fixed costs of work less and is more attractive for women who have young children or children with disabilities (Edwards & Field-Hendrey, 2002). According to Wellington (Wellington, 2006) there is significant positive association with having young children under the 6 six years and entrepreneurship among women in general population.

On the other hand, having young children gives in general more responsibilities to the parents. In their study among ethnic minorities in England and Wales, Clark and Drinkwater (Clark & Drinkwater, 2000) found a significant opposite association with having young children and entrepreneurship among immigrants. According to them, having young children reduces the entrepreneurship rate of their parents because of increased responsibilities.

Taking into account that children of younger age versus children who have come of age of doing some work, can be negatively versus positively associated with the rate of their parents being an entrepreneur, the following hypotheses are formulated:

H5.1 Having young children (in the age 0-6 years) is negatively associated with entrepreneurship among immigrants.

H5.2 Having children of the age 18 years and older is positively associated with entrepreneurship among immigrants.

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According to literature about immigrants, child caring in immigrant families is in most ethnic cultures the responsibility of the wives instead of the husbands. For this reason immigrant women are thought to be more spending time at home than men are. In case of having young children, most of the responsibility is left on the mothers. When the immigrant family does not have any other family members like grandmothers or grandfather who can take care of the children, this leaves for the immigrant mothers no choice but not to work and only take care of the child and the household (Essers, 2007). When the children have come of age, the responsibilities at home become less for the immigrant mothers and the older children can help them in starting a business from home (Sanders & Nee, 1996; Jansen, Spronsen, & Willemsen, 2003; Light, 1984; Rusinovic, 2006). For this reason the following hypotheses are formulated:

H5.3 Having young children (in the age 0-6 years) is negatively associated with entrepreneurship among immigrant women.

H5.4 Having children of the age 18 years and older is positively associated with entrepreneurship among immigrant women.

2.5.6 Children and first- and second-generation differences

The association of the determinant children with entrepreneurship among immigrants has only scarcely been studied in the existing literature. Besides this, there is another gap in the existing literature concerning the associations of the determinant children with entrepreneurship among first- and second-generation immigrants separately. The existing literature concerns mostly the immigrants in general, taking the two generations together not considering the fact that there are differences between the generations.

First of all, the second generation is better integrated that the first-generation and their behaviour and attitude are mostly like of that of natives (Rusinovic, 2006; Lucassen & Lucassen, 2011). According to Rusinovich (2006), although the chances of second-generation immigrants look better on the labour market compared with first-generation immigrants, there is growth in entrepreneurship by second-generation immigrants. These group of immigrants is usually better educated and integrated in the customs and habits of the receiving country and is suggested to start businesses that need higher educational bases like finance and real-estate (Jansen, Spronsen, & Willemsen, 2003; Dagevos & Gesthuizen, 2005; Rusinovic, 2006; Baycan-Levent & Nijkamp, 2009; Lucassen & Lucassen, 2011).

The explored literature so far has said the second-generation immigrants to be still too young to perform study on (Portes & Zhou, 1993; Lucassen & Lucassen, 2011) and so the existing literature has been mostly finding evidence on new settled immigrants who still had to integrate in the host environment, generally the first-generation immigrants (Lucassen & Lucassen, 2011). As mentioned before, the existing literature shows a significant positive association with having children in the household who either keep the parents at home who then start a business from home, or provide cheap or unpaid labour and stimulate their parental entrepreneurship in this way. Child caring of young children takes a lot of time and older children can help out in the family business either as working force or as provider of information of the native regulations. For these reasons the following hypotheses are formulated for researching the generational differences concerning children and entrepreneurship among first-generation immigrants:

H6.1: Having a child in the household is positively associated with entrepreneurship among first-generation immigrants.

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H6.2 Having young children (in the age 0-6 years) is negatively associated with entrepreneurship among first-generation immigrants.

H6.3 Having children of the age 18 years and older is positively associated with entrepreneurship among first-generation immigrants.

As explained in the previous sections, the literature concerning child caring and the different child age categories are found to have significant associations with entrepreneurship among the natives (Lucassen & Lucassen, 2011). Based on the existing literature about entrepreneurship among second-generation immigrants and considering the fact that the second-generation immigrants can be compared to the native in their actions, the same association considering the determinants children and entrepreneurship among native should apply to entrepreneurship among second-generation immigrants. For these reasons the following hypotheses are formulated for researching the generational differences concerning children and entrepreneurship among second-generation immigrants:

H7.1: Having a child in the household is positively associated with entrepreneurship among second-generation immigrants.

H7.2 Having young children (in the age 0-6 years) is negatively associated with entrepreneurship among second-generation immigrants.

H7.3 Having children of the age 18 years and older is positively associated with entrepreneurship among second-generation immigrants.

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3. Dataset and methodology

3.1 Data

3.1.1 Database

This study uses data from the Longitudinal Internet Studies for the Social Sciences (LISS) Database (Scherpenzeel & Das, 2010). The LISS panel is the core partner-project between the following 3 partners: the Measurement and Experimentation in the Social Sciences (MESS), the official Dutch statistics (CBS, 2014) and the Department of Cross-cultural psychology of the Faculty of Social Sciences at Tilburg University. These partners also finance the project jointly (Scherpenzeel & Das, 2010).

The aim of this project is to give researchers the opportunity of making use of the data to enrich the existing literature by carrying out their own surveys and designing new experiments. All the data that is published on the website is freely available to academic researchers. To gain access to the website, one is asked to register himself and later to publish any study that he or she has done based on the used data's (Scherpenzeel & Das, 2010).

The year 2014 is the last year of the seven-year –period project (2006 to 2014). The MESS project has collected and refreshed and updated her data every month for studies in the social sciences and the financial resources. In October 2010 the LISS panel was extended with a special sample of immigrant data that was obtained by the official Dutch statistics (CBS, 2014) from the population register, which was characterized by country of origin of the representatives. The immigrant households were contacted and asked to participate in the panel by answering questions about their household. All members of the households of the age 16 years or older, were asked to participate in the questionnaire. This resulted in the Immigrant panel database with the latest data collected in September 2011. The total Immigrant panel database consists of 4,288 participants of the age 16-92 with immigrant backgrounds, of which only 2,410 persons have answered the questions about their origin. The participants, who did not answer the questions regarding their background, received a missing value. Some of the participants did not know their country of birth or that of (one of) their parents, or gave an answer that the panel designers were unable to code and also had to mark it as missing (Scherpenzeel & Das, 2010; TILCOM, 2013).

Except the ‘Avars / Background-variables’, the Immigrant panel is a single-wave study which means that the variables concerning a topic were conducted only once. Panel members were asked to complete an online questionnaire that took about 15 to 30 minutes in total. If the MESS immigrant participants did not have a computer and/or Internet connection, they received a simPC’s and broadband Internet access to be able to participate in the study. For each completed questionnaire, the panel members got a financial compensation of 15 euros per hour (Scherpenzeel & Das, 2010; TILCOM, 2013).

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3.1.2 Dataset

The dataset that is used in this study is conducted from the Immigrant panel database from the LISS Database. The variables used in this study were selected from the 'Avars / Background-variables' and from the 'Family and Household'-study. The selected variables concern the different topics like the background, history, demography, family and household situation of the participants.

In the Netherlands there are legal provisions and restrictions to protect children. For example, they are not allowed to work with machines and their school performance should not suffer under their occupation. In the weekends and on holidays they may perform more work than on schooldays. From the age of 16 they can perform almost all work types and from 18 years, there are no limits and they are seen as adults (Rijksoverheid, 2014). Although there are exceptions in case of a premature pregnancy, according to the national law, Dutch citizens are also only allowed to get married from the age of 18 years (Rijksoverheid, 2014)

Taking into account that participants younger than 18 years are unlikely to be working, to be married, to have children and to be separated, a dataset is composed where all the participants are 18 years or older.

The variables form the 'Family and Household'-study were conducted in March 2011 and the variables concerning the topic origin were added to the Avars / Background-variables' in September 2011. This resulted in 2 datasets of different waves: Wave 1 with background and family variables from March 2011 and Wave 2 with only background variables from 2011. This two datasets are merged is such a way that the missing values and coded observations for each individual were updated with the observations available in the dataset from September 2011. Then, the merged dataset was formatted for use in this study and the participants who were missing observation for the dependent variable were dropped out. This resulted in a sample size of 1.557 immigrant individuals who had answered all the questions that derive the observations for the variables used in this study for the analyses concerning entrepreneurship among immigrants in the Netherlands in general.

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Generating the dependent variables entrepreneurship among first- and second-generation immigrants resulted in a sample size of 860 first-generation immigrants and 697 second-generation immigrants.

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3.2 Variables

3.2.1 Dependent variable entrepreneurship among immigrants

The dependent variable entrepreneurship is a dummy variable that measures if the immigrant individual is an entrepreneur. It stands for entrepreneurship among the immigrant population in the Netherlands. The dummy variable takes the value 1 if the individual is an entrepreneur and the value 0 otherwise. In the analyses the dependent variable is called *entrepreneurship among immigrants* and is generated from the background variable *occupation*. In the questionnaire the participants were asked to indicate what best described their principal occupation. Individuals who were either self-employed, were occupied in an autonomous professional, were a freelancer, owned a company and worked or participated in a general partnership in the family business at the time the questionnaire was taken, are considered to be an entrepreneur.

This study does not only make a comparison between entrepreneurship and paid-employment: all other possible occupation choices are referred as the reference category. The other possible occupation choices are paid employment, job seeker following job loss, first-time job seeker exempted from job seeking following job loss, attends school or is studying, care taker of the housekeeping, pensioner ([voluntary] early retirement, old age pension scheme), (partial) work disability, performer of unpaid work while retaining, unemployment benefiter, performer of voluntary work, does something else or the participant is too young to have an occupation.

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3.2.2 Independent variables

Marriage

For testing the hypotheses concerning the marital status and entrepreneurship among immigrants, the variable *marital status* is used. This variable was a categorical variable that has 3 categories explaining weather the individual is: (1) married, (2) divorced, separated or widowed and (3) never been married.

Divorce

The independent variable *divorce* is an accumulation of the divorced, separated and widowed immigrant participants. Break up, separation and divorce are considered to be the same. After the death of the spouse, a widow or widower is less prepared to face the daily life of work, household and child caring all alone by herself or himself. Although the consequences of widowhood are more severe, they are considered to be the same as for separation and divorce (Holden & Kuo, 1996).

Children living in the household

For testing the hypotheses concerning children in the household and entrepreneurship among immigrants, a dummy variable is generated that measures whether an individual has at least one child in the household. This variable is called *children living in the household* and is generated from the variable *number of children of the participant* that describes the number of living-at-home children in the household, children of the household head or his/her partner. The variable *children living in the household* takes the value 1 if the participant has one or more children in his household and 0 if the participant has no children.

Child age categories

For testing the hypotheses concerning the different child age categories and entrepreneurship among immigrants, a dependent categorical variable is generated that represents the age category of the participant's child. In the questionnaire, the participants were asked to fill in the birth year of each of their children. Taking into account that the participant might have till 15 children, the variables for each birth year were coded from the birth year of the first child till the birth year of the fifteenth child. Based on the fact that the questionnaire was held in the year 2011, the age of the youngest child in the household is generated. This variable is called *age category of youngest child* and has 5 categories: (1) participant doesn't have a child / (2) age of the child is between 0

– 6 years, (3) age of the child is between 7 – 12years, (4) age of the child is between 12 – 18 years, (5) the child is older than 18 years.

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3.2.3 Control variables

Besides the dependent and independent variables, this study also uses a couple of control variables. This is to reduce the cofounding effect of irrelevant variables that are not specifically being studied in this research. Controlling for these variables means that that specific variable is being held constant while the association of the independent variables concerning the family characteristics with the dependent variable are analysed. The control variables are selected based on the general literature about entrepreneurship among immigrants.

Age

The variable *age* controls for the association of older people being more likely to become entrepreneurs than younger people. After a certain age, this association of being an entrepreneur is less likely. For this reason, the variable age^2 (*age squared*) is used to control for the hyperbolical association of age turning to be negatively association with entrepreneurship at some point in the life cycle. From a certain age, old people start being more risk averse to entrepreneurship. According to Borjas (1986), the first arrivals of an ethnic group were less likely to become an entrepreneur. The variable age^2 is also included to control for the cohort effect that the older people from a certain ethnic group might have lower rates of entrepreneurship than the new arrived ones and the second-generation immigrants.

Gender

Given the possibility that men are more likely to become entrepreneurs than women, gender is also controlled for in the analyses using the variable *gender*.

Urban

According to the described literature, immigrants use their family members and members of their ethnic society as resources for the start-up of their businesses. Living in an urban area gives immigrants more opportunities of finding these resources. The higher mobility and population density also increases their chances of becoming an entrepreneur. For this reason, this research also controls for the possible association of living in urban area compared to rural area with entrepreneurship among immigrants. The variable *urban* that is used, takes the value 1 if the population density per squared kilometre (km2) is higher than 1000 individuals. According to Sanders and Nee (1996) immigrants who arrive without their families or start their families with natives or individuals of other ethnic groups, can also be compared to common immigrant families, since they also turn to every resource possible to get what they want. For this reason,

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the variable *urban* also controls for this associations with the entrepreneurship among immigrants.

High education

Based on the existing literature on immigrants Parker (2009) summarizes in his book 'The economics of entrepreneurship' that immigrants are on average better educated and motivated than natives. However they are not aware or accustomed to the native customs, language and rules and therefore do have problems with entering the labour market. The immigrants who are well educated or second generation immigrants whose education and integration levels can be compared with the natives, have a higher chance of becoming an entrepreneur. Because of this, this study will also control for the association of higher education with entrepreneurship among immigrants. This control variable is called *high education* and takes value 1 if the participant has completed a high education compared to the technical school (HBO) or higher. It takes the value 0 if otherwise. Controlling for this variable also accounts for the true measurement of the level of education of the participant. Since with only the number of years of education cannot be measured if someone is really educated, the measurement has been taken into account that measures the finished education level with a diploma (Long, 2014).

Country of origin

Previous studies in the Netherlands have shown that immigrants from different countries show different association with entrepreneurship (Jansen, Spronsen, & Willemsen, 2003; Lucassen & Lucassen, 2011). According to Jansen, Spronsen and Willemsen (2003) each immigrant group has its own contingency effect on the odds ratio of becoming an entrepreneur compared with the native Dutch population. Immigrants from Turkey who live in more urbanized areas have a significantly higher chance of becoming an entrepreneur than the immigrants from Suriname and the native Dutch. However, the odds ratio of Turkish family members choosing for entrepreneurship decreases with the number of children present in the household. To control for this contingency effect, a control variable is used in the analyses of this study that stands for the *country of origin* of as well the first- and second-generation immigrant participant. This variable is a categorical variable with 6 categories: (1) Turkey, (2) Morocco, (3) Netherlands Antilles, (4) Suriname, (5) Indonesia, (6) other Western origin and (7) other non-Western origin.

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Origin

For testing the generational differences between marriage, divorce and entrepreneurship among immigrants, the dependent variable is divided into entrepreneurship among first- and second-generation immigrants separately using a restriction based on the variable *origin.* The variable *origin* stands for the background of the participant and is divided in 4 categories: (1) participant is first generation foreigner with a western background / (2) participant is first generation foreigner with a non-western western background / (3) participant is second generation foreigner with a western background / (4) participant is second generation foreigner with a non-western background.

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3.2.3 Variable definitions and summary statistics

The table 3 below gives an overview of the variables and their definitions that are used in this research.

Table 3 ***Definition of variables***

Variable	*Definition*
Dependent variable	
Entrepreneurship	Whether the individual is an entrepreneur (1= yes, 0=no)
Independent variables	
Marital status	Marital status (1= Married, 2= Divorced/Separated/Widowed, 3= Never been married)
Children living in the household	Dummy variable that measures whether there is a child currently in the household (1=yes, 0=no)
Child age category	Age of the youngest child (0 = No children, 1= 0 – 6 years, 2= 7 – 12 years, 3= 13 – 18 years, 4= > 18 years)
Control variables	
Age	Age of the participant at the time the questionnaire took place
Gender	Gender (1= Female, 0= Male)
Urban	Dummy variable that measures whether someone lives in an urban area
High Education	Dummy variable that measures whether the individual has completed higher education (HBO or higher) (1=yes, 0=no)
Country of origin	This variable stands for the country of origin of the participant (1= Turkey, 2= Morocco, 3= Netherlands Antilles, 4= Suriname, 5= Indonesia, 6= other Western origin, 7= other non-Western origin)
Origin	Background of the participant (1= participant is first generation foreigner with a western background, 2= participant is first generation foreigner with a non-western western background, 3= participant is second generation foreigner with a western background, 4= participant is second generation foreigner with a non-western background)

Source: Immigrant Panel Data 2011 , Longitudinal Internet Studies for the Social Sciences (LISS) Database 2014 (Scherpenzeel & Das, 2010).

For the analyses it is necessary to have a sample size that represents the actual rates of the measured variables in the Netherlands (Zwan, Hessels, Hoogendoorn, & Vries, 2012). To explore the dataset used in this study and to find patterns, the summary statistics have been drawn and are represented in the table 4 below. According to the official Dutch statistics (CBS, 2014), the entrepreneurship rate in the Netherlands is approximately 7.4 percent in the year 2011 (1,214,000 of 16,65,799 individuals). The rate of entrepreneurship among immigrants in the

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sample used (8 percent) is close to the actual rate of entrepreneurship. This is also the case for the other variables that are represented in the summary statistics below (CBS, 2014).

Table 4 ***Summary Statistics***

Variable	Mean / percent	SD	Min	Max	Observations
Entrepreneurship among immigrants	0.08	0.28	0	1	1557
Entrepreneurship among first-generation immigrants					860
Entrepreneurship among second-generation immigrants					697
Marital Status	2.80	1.83	1	3	1557
Married	47.70%				
Divorced/Separated/Widowed	14.84%				
Never been married	37.46%				
Children Living in the Household	0.55	0.50	0	1	1557
Age category of Youngest Child	1.18	1.56	0	5	1169
No Children	55,25%				
0 – 6	13.03%				
7 – 12	7.71%				
13 – 18	6.38%				
> 18	17.62%				
Age	42.13	15.33	18	92	1557
Gender	0.52	0.50	0	1	1557
Urban	0.78	0.42	0	1	1557
High education	0.33	0.47	0	1	1557
Country of origin	5.05	1.80	1	7	1557
Turkey	6.49%				
Morocco	7.51%				
Netherlands Antilles	6.94%				
Suriname	8.99%				
Indonesia	13.29%				
Other Western origin	36.74%				
Other non-Western origin	20.04%				
Origin	146.27	49.61	1	4	1557
First-generation, western	21.23%				
First-generation, non-western	33.98%				
Second-generation, western	28.77%				
Second-generation, non-western	15.99%				

Source: Immigrant Panel Data 2011, Longitudinal Internet Studies for the Social Sciences (LISS) Database 2014 (Scherpenzeel & Das, 2010).

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3.2.4 The correlation test

Correlation of variables or coefficients measures the degree of association between variables and if the correlation is symmetric. Two variables are correlated if and only if observing the value of one provides information about the other, and this is also symmetric (Reiss, 2013).

The correlation matrix in Table B in Appendix, displays the correlation coefficients among the variables used in this research and their significance. For the variable *marital status* the correlation is given of the different categories. For the variable *origin* only the category of first-generation immigrants is given since the correlation coefficients of the second-generation differ only with the sign of the coefficient.

The variable *country of origin* is left out of the correlation test for it is a nominal variable with seven categories and it is only used as a control variable in the analyses. The correlations that are significant are the following:

Table 5 ***Significant correlations between variables***

Significant correlations from -1 till 1	**Correlation variables**	**Discussion**
-0.7017***	Never married & married	Moderate negative correlation
-0.5150***	Age & never married	Moderate negative correlation
-0.4353***	Child age category & never married	Weak negative correlation
-0.4094***	Divorced & married	Weak negative correlation
-0.3628***	Never married & divorced	Weak negative correlation
-0.3106***	Age & children living in the household	Weak negative correlation
-0.2560***	First-generation immigrant & never married	Very weak negative correlation
-0.1257***	Urban & married	Very weak negative correlation
-0.1127***	Urban & age	Very weak negative correlation
-0.1127***	Urban & age	Very weak negative correlation
-0.1082***	Children living in the household & divorced	Very weak negative correlation
-0.0941***	High education & children living in the household	Very weak negative correlation
-0.0906**	urban & child age category	Very weak negative correlation
-0.0874***	children living in the household & never married	Very weak negative correlation
-0.0652**	Gender & age	Very weak negative correlation
-0.0652**	Gender & age	Very weak negative correlation
-0.0627*	Gender & never married	Very weak negative correlation
-0.0119 ***	Urban & gender	Very weak negative correlation

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-0.0598*	High education & divorced	Very weak negative correlation
0.0590*	Gender & children living in the household	Very weak positive correlation
0.0630*	High education and married	Very weak positive correlation
0.0655**	First-generation & children living in the household	Very weak positive correlation
0.0789**	Gender & child age category	Very weak positive correlation
0.1013***	High education & age	Very weak positive correlation
0.1018***	First-generation & child age category	Very weak positive correlation
0.1114***	First-generation immigrant & divorced	Very weak positive correlation
0.1268***	Gender & divorced	Very weak positive correlation
0.1293***	High education & entrepreneurship among immigrants	Very weak positive correlation
0.1353***	Urban & never married	Very weak positive correlation
0.1684***	Children living in the household & married	Very weak positive correlation
0.1742***	First-generation immigrant & married	Very weak positive correlation
0.1835***	Child age category & married	Very weak positive correlation
0.2331***	Age & married	Very weak positive correlation
0.2468***	Child age category & children living in the household	Very weak positive correlation
0.2901***	Child age category & divorced	Very weak positive correlation
0.5393***	Age & child age category	Moderate positive correlation

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: Immigrant Panel Data 2011, Longitudinal Internet Studies for the Social Sciences (LISS) Database 2014 (Scherpenzeel & Das, 2010).

The strongest significant negative correlations in this study are moderate correlations between never married & married, and age & never married.

The correlation between never married and married shows a significant moderate negative correlation of 0.7017. This correlations arises by construction, if an individual is in one of the marital status categories, he cannot be in the other ones, therefor the correlation is negative between the respective dummies.

The correlation between age and never married shows a significant moderate negative correlation of 0.5150. According to this correlation, with the participant getting older, means that the opposite direction is headed for the marital status never married. This can be interpreted as normal, since older people in the sample are more often married or divorced.

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The strongest significant positive correlation in this study is a moderate correlations between age & child age category. Having a significant moderate positive correlation of 0.4349 between age and child age category, means that with the participant getting older, the possibility of having children in the different age categories increases. This can be interpreted as normal, since children also get older and the increase of the age of the participant goes together with the increase of the age of the child.

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3.3 Methodology

A model is needed that measures the association of the determinants of family composition with entrepreneurship among immigrants. Since the dependant variable is a categorical variable that takes the value 1 if the individual is an entrepreneur and the value 0 otherwise, the analyses are performed using logistic regression.

The Logit model is defined as the log of odds and it is linear in the Logit. The full estimated equation for the latent variable underlying this model - which in this case can be interpreted as the propensity for being an entrepreneur, has the following formulation:

$Y^* = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_k x_k + \varepsilon$

From this follows: $Pr(y=1|x) = Pr(y^*>0|x) = F(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_k x_k)$

In this model, a unit change of the independent variable x_k changes the logit with β_k while all other variables are held constant. The logit model can only tell something about the sign and the significance of the variables, but not the magnitude of the association of these variables. To be able to do so, the average marginal effects need to be calculated.

The considered significance level in all models is 5% (α=0.05). At this significance level the variables are considered statistically significant when the P values of these variables is lower than 5% (α=0.05) or in statistics: lower than P>|t|=0.05 The statistical analyses are performed in the statistical software package Stata, version 2012 (Stata, 2002).

For the analysis of the hypotheses concerning marriage, divorce and entrepreneurship among immigrants, the category of *married* and *divorced* individuals is compared to the individuals who have never been married at the time that the individuals participated in the questionnaire. The category of the individuals who have never been married is the reference category in these models.

Gender differences

For the analysis of the hypotheses concerning the gender differences, for each independent variable, an interaction term of gender and the independent variable under consideration is included in the model. The interaction term describes if the simultaneous influence of gender with the independent variables is additive on the dependent variable entrepreneurship (Cox,

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1984). In this specific study the interaction terms allows the association of, for instance, divorce with entrepreneurship to differ between males and females. An alternative approach would be to estimate these associations for males and females separately. However, this yields less efficient estimates, since the sample size for males and females separately is smaller than when considered jointly.

Generational differences

For testing the generational differences between marriage, divorce and entrepreneurship among immigrants, the dependent variable is divided into entrepreneurship among first- and second-generation immigrants separately using a restriction based on the variable *origin*. For both first- and second-generation immigrants, dummies for different *countries of origin* are included.

In the analyses of entrepreneurship among second-generation immigrants, none of the Moroccan individuals is entrepreneur. Hence, the coefficient estimation procedure for the Moroccan dummy variable does not converge. To still perform the analyses of second-generation immigrants in the full dataset of 697 participants, controlling for *country of origin*, this study considers the people of the two least frequent origins (i.e., Moroccan or Turkish) to have one common *"country" of origin*.

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4. Results

For analysing the association of the determinants of family composition with entrepreneurship among immigrants a couple of models have been constructed. The models and the associated hypotheses are discussed hereafter.

4.1 Results hypotheses H1, H2.1 and H2.2 (marital status)

The hypotheses concerning the association of the marital status marriage and divorce, and the interaction between gender and divorce with entrepreneurship among immigrants, are the following :

- *H1: Being married as compared to never having been married is positively associated with entrepreneurship among immigrants.*
- *H2.1: Being divorced as compared to never having been married is negatively associated with entrepreneurship among immigrants.*
- *H2.2: Being divorced as compared to never having been married is negatively associated with entrepreneurship among immigrant women.*

In the analyses, the category never married of the variable marital status is used as the base category. In Table 6 below, the results of hypothesis H1 and H2.1 are shown in the column Model 1 and the results of hypothesis H2.2 in the column Model 2.

Table 6 Marital status and entrepreneurship among immigrants
(Logit regression models and average marginal effects)

Variables	Model 1 (H1, H2.1) Marriage / divorce and entrepreneurship among immigrants	Model 1 Average marginal effect numbers	Model 2 ((H2.2) Interaction between gender and divorce on entrepreneurship among immigrants	Model 2 Average marginal effect numbers
Marital status				
Married	0.08	0.0053	-0.13	0.0087
Divorced/Separated/Widowed	0.07	0.0047	0.21	0.0168
Never married	(base)	(base)	(base)	(base)
Marital status * Female				
Married	-	-	0.43	0.0306
Divorced/ Separated/Widowed	-	-	-0.19	0.0135
Never Married	-	-	(base)	(base)
Age	0.23***	0.0162	0.23***	0.0160
Age Square (age^2)	-0.00***	0.0002	-0.00***	0.0002
Gender	-0.34	0.0242	-0.53	0.0373
Urban	0.21	0.0151	0.22	0.0157
Higher Education	0.72**	0.0511	0.73***	0.0514
Country of origin				
Turkey	(base)	(base)	(base)	(base)
Morocco	-1.23	0.0476	-1.23	0.0477
Netherlands Antilles	-0.21	0.0119	-0.24	0.0137
Suriname	0.14	0.0093	0.14	0.0090
Indonesia	0.15	0.0101	0.15	0.0098
Other Western origin	0.49	0.0377	0.49	0.0374
Other non-Western origin	-0.11	0.0068	-0.12	0.0074
Constant	-7.89***	-	-7.77***	-
Observations	1557	1557	1557	1557
Pseudo R^2	0.0773	-	0.0793	-

- * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
- Logit coefficients (average marginal effects) are given with two (four) decimals
Source: Immigrant Panel Data 2011, Longitudinal Internet Studies for the Social Sciences (LISS) Database 2014 (Scherpenzeel & Das, 2010), conducted in Stata (2002)

Model 1

The column **Model 1** shows the results for the independent variables marriage, divorce and entrepreneurship among immigrants. According to the results obtained with the Logit model, Model 1 shows no significant association between the independent variables *married* or *divorced* with entrepreneurship among immigrants. ***This means that there is no significant evidence for H1 and H2.1***.

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The control variables *age*, *age squared* and *high education* are statistically significant. The average marginal effects of the significant control variables that can be interpreted ceteris paribus, are the following:

- Positive association: *age* 1.6%, *high education* 5.1%
- Negative association: *age square* 0.02%

Model 2

The column **Model 2** shows the results for the association of the interaction between gender and divorce with entrepreneurship among immigrants. The column Model 2 shows the results for the estimated gender differences through an interaction. The column Model 2 shows no significant association of divorce with entrepreneurship among immigrant women. ***This means that there is no significant evidence for H2.2***.

The control variables *age*, *age squared* and *high education* are statistically significant. The average marginal effects of the significant control variables that can be interpreted ceteris paribus, are the following:

- Positive association: *age* 1.6%, *high education* 5.1%
- Negative association: *age square* 0.02%

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4.2 Results hypotheses H3.1, H3.2, H3.3 and H3.4 (generation differences)

The hypotheses concerning the determinants of marital status and entrepreneurship among first- versus versus second-generation immigrants are the following:

- *H3.1: Being married as compared to never having been married is positively associated with entrepreneurship among first-generation immigrants.*
- *H3.2: Being divorced as compared to never having been married is negatively associated with entrepreneurship among first-generation immigrants.*
- *H3.3: Being married as compared to never having been married is associated with entrepreneurship among second-generation immigrants.*
- *H3.4: Being divorced as compared to never having been married is negatively associated with entrepreneurship among second-generation immigrants.*

The dependent variable that measures the entrepreneurship rate among first-generation immigrants, has 860 observations .

The dependent variable that measures the entrepreneurship rate among first-generation immigrants, has 697 observations .

In Table 7, the column Model 3 shows the results for H3.1 and H3.2 and the column Model 4 shows the results for H3.3 and H3.4

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Table 7 **Marital status and entrepreneurship among first- and second-generation immigrants**
(Logit regression models and average marginal effects)

Variable	Model 3 (H3.1, H3.2) Marriage / divorce and entrepreneurship among first-generation immigrants	Model 3 Average marginal effect numbers	Model 4 (H3.3, H3.4) Marriage / divorce and entrepreneurship among second-generation immigrants	Model 4 Average marginal effect numbers
Marital status				
Married	-0.27	0.0183	0.57	0.0423
Divorced/Separated/Widowed	-0.65	0.0047	0.38	0.0268
Never married	(base)	(base)	(base)	(base)
Age	0.23**	0.0151	0.27***	0.0205
Age Square (age^2)	-0.00**	0.0002	-0.00***	0.0002
Gender	-0.45	0.0296	-0.23	0.0174
Urban	0.39	0.0256	0.12	0.0088
Higher Education	0.70**	0.0458	0.81**	0.0608
Country of origin				
Turkey	(base)	(base)	(base)	(base)
Morocco	-0.88	0.0375	(base)	(base)
Netherlands Antilles	-0.46	0.0233	0.42	0.0265
Suriname	0.05	0.0031	0.79	0.0570
Indonesia	-0.46	0.0232	0.26	0.0153
Other Western origin	0.66	0.0522	0.50	0.0325
Other non-Western origin	-0.24	0.0130	0.93	0.0712
Constant	-7.96***	-	-9.21***	-
Observations	860	860	697	697
Pseudo R^2	0.0839	-	0.0992	-

- * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
- Logit coefficients (average marginal effects) are given with two (four) decimals
Source: Immigrant Panel Data 2011, Longitudinal Internet Studies for the Social Sciences (LISS) Database 2014 (Scherpenzeel & Das, 2010), conducted in Stata (2002)

Model 3

The column **Model 3** shows the results for the independent variables marriage, divorce and entrepreneurship among first-generation immigrants. According to the results obtained with the Logit model, the column Model 3 shows no significant association between the independent variables *married* or *divorced* with entrepreneurship among first-generation immigrants. ***This means that there is no significant evidence for H3.1 or for H3.2.***

The control variables *age*, *age squared* and *high education* are statistically significant. The average marginal effects of the significant control variables that can be interpreted ceteris paribus, are the following:

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- Positive association: *age* 1.5%, high education 4.6%
- Negative association: *age square* 0.02%

Model 4

The column **Model 4** shows the results for the independent variables marriage, divorce and entrepreneurship among second-generation immigrants. According to the results obtained with the Logit model, the column Model 4 shows no significant association between the independent variables *married* or *divorced* with entrepreneurship among second-generation immigrants. ***This means that there is no significant evidence for H3.3 or for H3.4.***

The control variables *age*, *age squared* and *high education* are statistically significant. The average marginal effects of the significant control variables that can be interpreted ceteris paribus, are the following:

- Positive association: *age* 2.1%, *high education* 6.1%
- Negative association: *age square* 0.02%

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4.3 Results hypotheses H4.1 and H4.2 (children in the household)

The hypotheses concerning the determinant having a child living at home and its association with entrepreneurship among immigrants and the interaction with gender, are as following:

- *H4.1: Having a child in the household is positively associated with entrepreneurship among immigrants.*
- *H4.2: Having a child in the household is positively associated with entrepreneurship among immigrant women.*

In Table 8 below, the results of Hypothesis H4.1and H4.2 are respectively shown in the column Model 5 and the column Model 6.

Table 8 **Having children in the household and entrepreneurship among immigrants** ***(Logit regression models and average marginal effects)***

Variable	Model 5 (H4.1) Children in the household and entrepreneurship among immigrants	Model 6 Average marginal effect numbers	Model 6 (H4.2) Interaction between gender (female) and children in the household on entrepreneurship among immigrants	Model 6 Average marginal effect numbers
Children in the household	-0.31	0.0216	-0.22	0.0152
Children in the household * Female	-	-	-0.18	0.0129
Age	0.25***	0.0177	0.25***	0.0178
Age Square (age^2)	-0.00***	0.0002	-0.00***	0.0002
Gender	-0.32	0.0228	-0.24	0.0170
Urban	0.19	0.0131	0.19	0.0137
Higher Education	0.71***	0.0504	0.71***	0.0500
Country of origin				
Turkey	(base)	(base)	(base)	(base)
Morocco	-1.20	0.0486	-1.19	0.0482
Netherlands Antilles	-0.28	0.0160	-0.27	0.0155
Suriname	0.08	0.0056	0.09	0.0060
Indonesia	0.09	0.0060	0.09	0.0062
Other Western origin	0.45	0.0346	0.45	0.0349
Other non-Western origin	-0.17	0.0102	-0.16	0.0099
Constant	-8.03***	-	-8.12***	-
Observations	1557	1557	1557	1557
Pseudo R^2	0.0797	-	0.0800	-

- * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
- Logit coefficients (average marginal effects) are given with two (four) decimals

Source: Immigrant Panel Data 2011, Longitudinal Internet Studies for the Social Sciences (LISS) Database 2014 (Scherpenzeel & Das, 2010), conducted in Stata (2002)

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Model 5

The column **Model 5** shows the results for the independent variable having children who are living in the participant's household and entrepreneurship among immigrants. According to the results obtained with the Logit model, the column Model 5 shows no significant association of having children living in the household with the dependent variable entrepreneurship among immigrants. ***This means that there is no significant evidence for H4.1***.

The control variables *age*, *age squared* and *high education* are statistically significant. The average marginal effects of the significant control variables that can be interpreted ceteris paribus, are the following:

- Positive association: *age* 1.8% , *high education* 5.0%
- Negative association: *age square* 0.02%

Model 6

The column **Model 6** is created to analyse the association of the observed individual being a women who has a child living in her household with the probability of being an entrepreneur among immigrants. The column Model 6 shows no significant association of being female and having children living in the household with entrepreneurship among immigrants. ***This means that there is no significant evidence for H4.2***.

The control variables *age*, *age squared* and *high education* are statistically significant. The average marginal effects of the significant control variables that can be interpreted ceteris paribus, are the following:

- Positive association: *age* 1.9%, *high education* 5.0%
- Negative association: *age square* 0.02%

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4.4 Results hypotheses H5.1, H5.2, H5.3 and H5.4 (child age category)

The hypotheses concerning the determinant s having a child who's age is in the youngest or oldest child age category (adult children) and its association with entrepreneurship among immigrants respectively on the entrepreneurship among immigrant women, are as following:

- *H5.1 Having young children (in the age 0-6 years) is negatively associated with entrepreneurship among immigrants.*
- *H5.2 Having children of the age 18 years and older is positively associated with entrepreneurship among immigrants.*
- *H5.3 Having young children (in the age 0-6 years) is negatively associated with entrepreneurship among immigrant women.*
- *H5.4 Having children of the age 18 years and older is positively associated with entrepreneurship among immigrant women.*

In Table 9, the results of Hypothesis H5.1and H5.2 are shown in the column Model 7 and the results of Hypothesis H5.3 and H5.4 are shown in the column Model 8.

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Table 9 **Age category youngest child and entrepreneurship among immigrants**
(Logit regression models and average marginal effects)

Variable	Model 7 (H5.1, H5.2) Child age category and entrepreneurship among immigrants	Model 7 Average marginal effect numbers	Model 8 (H5.3 and H5.4) Interaction between gender and child age category and entrepreneurship among immigrants	Model 8 Average marginal effect numbers
Age category youngest child				
No Child	(base)	(base)	(base)	(base)
0 – 6 years	-0.44	0.0323	-0.30	0.0225
7 – 12 years	-0.24	0.0191	-0.25	0.0189
13 – 18 years	-0.37	0.0277	-0.79	0.0495
> 18 years	-0.04	0.0032	-0.23	0.0208
Age category youngest child * Female				
No Child	-	-	(base)	(base)
0 – 6 years	-	-	-0.31	0.0221
7 – 12 years	-	-	-0.01	0.0006
13 – 18 years	-	-	0.57	0.0563
> 18 years		-	-0.50	0.0333
Age	0.20***	0.0158	0.21***	0.0162
Age Square (age^2)	-0.00***	0.0002	-0.00***	0.0002
Gender	-0.28	0.0218	-0.18	0.0142
Urban	0.35	0.0275	0.37	0.0289
Higher Education	0.79***	0.0614	0.79***	0.0612
Country of origin				
Turkey	(base)	(base)	(base)	(base)
Morocco	-0.80	0.0409	-0.82	0.0419
Netherlands Antilles	-0.49	0.0283	-0.53	0.0305
Suriname	0.21	0.0159	0.19	0.0145
Indonesia	-0.08	0.0052	-0.09	0.0060
Other Western origin	0.46	0.0319	0.44	0.0366
Other non-Western origin	-0.01	0.0009	0.01	0.0007
Constant	-7.06***	-	-7.22***	-
Observations	1169	1169	1169	1169
Pseudo R^2	0.0644	-	0.0666	-

- * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
- Logit coefficients (average marginal effects) are given with two (four) decimals
Source: Immigrant Panel Data 2011, Longitudinal Internet Studies for the Social Sciences (LISS) Database 2014 (Scherpenzeel & Das, 2010), conducted in Stata (2002)

Model 7

Based on a sample size of 1169 participants with children, the column **Model 7** shows the results for the association of the age of the youngest child being in one of the child-age categories with entrepreneurship among immigrants. The association of the youngest child having the age between 0 – 6 years with entrepreneurship among immigrants is negative, but this coefficient is

not statistically significant at 5% significance level. ***This means that there is no significant evidence for H5.1*** meaning that having children of the age of 0-6years is not statistically associated with entrepreneurship among immigrants in general.

The column **Model 7** shows further also no significant association of having a child in the oldest child-age category (the child being 18 years and older) with entrepreneurship among immigrants. ***This means that there is no significant evidence for H5.2***.

The control variables *age*, *age squared* and *high education* are statistically significant. The average marginal effects of the significant control variables that can be interpreted ceteris paribus, are the following:
- Positive association: *age* 1.6%, *high education* 6.1%
- Negative association: *age square* 0.02%

Model 8

The column **Model 8** is created to analyse the association of the observed individual being an immigrant women whose youngest child is in the age 0-6 years with entrepreneurship among immigrants. The column Model 8 also shows the association of the observed individual being an immigrant women whose youngest child is years and older with entrepreneurship among immigrants. Model 8 shows no significant associations of being female and the child age categories with entrepreneurship among immigrants. ***This means that there is no significant evidence for either H5.3 or H5.4***.

The control variables *age*, *age squared* and *high education* are statistically significant. The average marginal effects of the significant control variables that can be interpreted ceteris paribus, are the following:
- Positive association: *age* 1.6%, *high education* 6.1%
- Negative association: *age square* 0.02%

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4.5 Results hypotheses H6.1, H6.2, H6.3 and H7.1, H7.2, H7.3 (generation differences)

The hypotheses concerning the determinants of children and entrepreneurship among first- versus second-generation immigrants are the following:

- *H6.1: Having a child in the household is positively associated with entrepreneurship among first-generation immigrants.*
- *H6.2 Having young children of the age 0-6 years is negatively associated with entrepreneurship among first-generation immigrants.*
- *H6.3 Having older children of the age 18 years and older is positively associated with entrepreneurship among first-generation immigrants.*
- *H7.1: Having a child in the household is positively associated with entrepreneurship among second-generation immigrants.*
- *H7.2 Having young children of the age 0-6 years is negatively associated with entrepreneurship among second-generation immigrants.*
- *H7.3 Having older children of the age 18 years and older is positively associated with entrepreneurship among second-generation immigrants.*

In Table 10, the results of hypothesis H6.1 are shown in the column Model 9 and the results of hypotheses H6.2 and H6.3 in the column Model 10.

In Table 11, the results of hypothesis H7.1 are shown in the column Model 11 and the results of hypotheses H7.2 and H7.3 in the column Model 12.

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Table 10 **Having children in the household, the age category youngest child and entrepreneurship among first-generation immigrants**
(Logit regression models and average marginal effects)

Variable	Model 9 (H6.1) Children in the household and entrepreneurship among first-generation immigrants	Model 9 Average marginal effect numbers	Model 10 (H6.2 and H6.3) Child age category and entrepreneurship among first-generation immigrants	Model 10 Average marginal effect numbers
Children in the household	-0.14	0.0093	-	-
Age category youngest child				
No Child	-	-	(base)	(base)
0 – 6 years	-	-	-0.60	0.0372
7 – 12 years	-	-	-0.63	0.0389
13 – 18 years	-	-	0.14	0.0115
> 18 years	-	-	-0.23	0.0165
Age	0.23**	0.0150	0.17	0.0114
Age Square (age^2)	-0.00**	0.0002	-0.00*	0.0002
Gender	-0.45	0.0292	-0.44	0.0298
Urban	0.40	0.0265	0.58	0.0390
Higher Education	0.70**	0.0462	0.84**	0.0563
Country of origin				
Turkey	(base)	(base)	(base)	(base)
Morocco	-0.88	0.0367	0.15	0.0061
Netherlands Antilles	-0.38	0.0191	-0.77	0.0204
Suriname	0.12	0.0073	0.83	0.0442
Indonesia	-0.44	0.0219	0.33	0.0143
Other Western origin	0.67	0.0529	1.21	0.0772
Other non-Western origin	-0.21	0.0115	0.51	0.0235
Constant	-7.98***	-	-7.15***	-
Observations	860	860	650	650
Pseudo R^2	0.0827	-	0.0899	-

- * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
- Logit coefficients (average marginal effects) are given with two (four) decimals
Source: Immigrant Panel Data 2011, Longitudinal Internet Studies for the Social Sciences (LISS) Database 2014 (Scherpenzeel & Das, 2010), conducted in Stata (2002)

Model 9

The column **Model 9** shows the results for the independent variable having children who are living in the participant's household and entrepreneurship among first-generation immigrants. According to the results obtained with the Logit model, the column Model 9 shows no significant association of having children living in the household with the dependent variable entrepreneurship among first-generation immigrants. ***This means that there is no significant evidence for H6.1***.

The control variables *age*, *age squared* and *high education* are statistically significant. The average marginal effects of the significant control variables that can be interpreted ceteris paribus, are the following:

- Positive association: *age* 1.5% , *high education* 4.6%
- Negative association: *age square* 0.02%

Model 10

Based on a sample size of 650 participants with children, the column **Model 10** shows the results for the association of the age of the youngest child being in one of the child-age categories with entrepreneurship among immigrants. The association of the youngest child having in the age 0 – 6 years with entrepreneurship among immigrants is negative, but this coefficient is not statistically significant at 5% significance level. ***This means that there is no significant evidence for H6.2***.

The column **Model 10** shows further also no significant association of having a child in the oldest child-age category (the child being 18 years and older) with entrepreneurship among immigrants. ***This means that there is no significant evidence for H6.3***.

The control variables *age*, *age squared* and *high education* are statistically significant. The average marginal effects of the significant control variables that can be interpreted ceteris paribus, are the following:

- Positive association: *high education* 5.6%
- Negative association: *age square* 0.02%

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Table 11 **Having children in the household, the age category youngest child and entrepreneurship among second-generation immigrants**
(Logit regression models and average marginal effects)

Variable	Model 11 (H7.1) Children in the household and entrepreneurship among second-generation immigrants	Model 11 Average marginal effect numbers	Model 12 (H7.2 and H7.3) Child age category and entrepreneurship among second-generation immigrants	Model 12 Average marginal effect numbers
Children in the household	-0.38	0.0291	-	-
Age category youngest child				
No Child	-	-	(base)	(base)
0 – 6 years	-	-	-0.35	0.0281
7 – 12 years	-	-	0.22	0.0218
13 – 18 years	-	-	-1.02	0.0643
> 18 years	-	-	0.31	0.0312
Age	0.31***	0.0232	0.29***	0.0255
Age Square (age^2)	-0.00***	0.0142	-0.00***	0.0002
Gender	-0.19	0.0137	-0.18	0.0158
Urban	0.01	0.0008	0.20	0.0177
Higher Education	0.76**	0.0576	0.81**	0.0712
Country of origin				
Turkey / Morocco	(base)	(base)	(base)	(base)
Netherlands Antilles	0.11	0.0074	-0.01	0.0010
Suriname	0.53	0.0403	0.43	0.0434
Indonesia	0.06	0.0040	-0.44	0.0326
Other Western origin	0.30	0.0206	0.12	0.0105
Other non-Western origin	0.67	0.0539	0.47	0.04887
Constant	-9.30***	-	-8.71***	-
Observations	697	697	519	519
Pseudo R^2	0.0962	-	0.0774	-

- * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
- Logit coefficients (average marginal effects) are given with two (four) decimals
Source: Immigrant Panel Data 2011, Longitudinal Internet Studies for the Social Sciences (LISS) Database 2014 (Scherpenzeel & Das, 2010), conducted in Stata (2002)

Model 11

The column **Model 11** shows the results for the independent variable having children in the household and entrepreneurship among second-generation immigrants. According to the results obtained with the Logit model, the column Model 11 shows no significant association of having children living in the household with the dependent variable entrepreneurship among second-generation immigrants. ***This means that there is no significant evidence for H7.1***.

The control variables *age*, *age squared* and *high education* are statistically significant. The average marginal effects of the significant control variables that can be interpreted ceteris

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paribus, are the following:

- Positive association: *age 2*.3% , *high education* 5.8%
- Negative association: *age square* 0.02%

Model 12

Based on a sample size of 508 participants with children, the column **Model 12** shows the results for the association of the age category of the youngest child being with entrepreneurship among second-generation immigrants. Having the youngest child in the age between 0 – 6 years or 18years and older shows no significant association with entrepreneurship among second-generation immigrants. ***This means that there is no significant evidence for H7.2 and H7.3***.

The control variables *age*, *age squared* and *high education* are statistically significant. The average marginal effects of the significant control variables that can be interpreted ceteris paribus, are the following:

- Positive association: *age 2*.6% , *high education* 7.1%
- Negative association: *age square* 0.03%

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4.6 Robustness check

A commonly accepted evidence of structural validity of a research, is the robustness check that tells weather the coefficients of the regressions that are performed for the analyses, are plausible and robust. The robustness check examines how certain coefficients behave when some variables are removed or new variable are added (White & Lu, 2010). To make sure that the performed analyses of this study are structural valid, first, all Logit regression in the analyses are done with the command robust in Stata.

As explained in the third section, the data has been adapted to create the dependent variable that stand for entrepreneurship among immigrants, the independent variables representing the family characteristics and the control variables. The conducted dataset is a merge of two datasets with different waves. The robustness check was performed using only the dataset from wave March 2011, so without the variable *country of origin.* The models for the determinants marital status and children are regressed again (Models 1, 2, 5, 6, 7 and 8) with the dependent variable *entrepreneurship*. The results can be found in tables C, D and E in the Appendix. The results of this study are confirmed to be robust because the results of the merged dataset and the dataset with the wave March 2011 show the same results with an exception of Model 2.

With a sample size of 1,557 participants, the Model 2 in the merged dataset does not show a statistical significant association of the interaction between female and divorce with entrepreneurship among immigrants. However, Model 2 of the robustness check (dataset without the variable *country of origin*) does show a statistical significant positive association of the interaction between female and divorce with entrepreneurship among immigrants.

The dataset of the robustness check has a bigger sample size of 2,416 participants because the control variable *country of origin* is not included in the analyses. This can cause the data to be biased and for this reason to be showing the significant result.

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5. Discussion

Based on the existing literature, a couple of hypotheses have been made about the association between family characteristics and entrepreneurship among immigrants in the Netherlands. Study on this topic is rather scarce or does not even exist concerning specifically the entrepreneurship among immigrant generation differences. According to Dagevos and Gesthuizen, 2005, second-generation immigrants are more likely to enter entrepreneurship than first-generation immigrants. In this study, the percentage of entrepreneurs among the second-generation immigrants is higher than among the first-generation. While only 7.44 percent (64 of the 860) first-generation immigrants is entrpreneur, this percentage is 8.75 (61 of 697).

However, based on a sample size of 1,557 immigrant participants in the Netherlands, this study does not find statistical significant evidence for any of its nineteen hypotheses. This study shows that there is no significant association between the family characteristics marriage, divorce and children with entrepreneurship among the immigrant population and among the first- and second-generation immigrants in the Netherlands. Table F in the Appendix shows an overview of the hypotheses and their results.

5.1 Evidence for marriage and entrepreneurship among immigrants

Existing literature finds evidence for marriage providing utility for spouses to turn to entrepreneurship. Beside financial support as a safety net, emotional support and cheap or unpaid labour resource, spouses also support each other with knowledge spillover (Porter & Zhou, 1998; Parker, 2009; Sanders & Nee, 1996; Brüderl & Preisendörfer, 1998; Bosma, Praag, Thurik, & Wit, 2004; Bogan & Darity Jr, 2008). According to these literatures, the determinant married of the family composition has a positive significant association with entrepreneurship among immigrants in general (H1). This study does not find such an association.

Besides the listed benefits of marriage, the immigrants face barriers such as lack in skills, language and knowledge and are not accustomed to the native social or labour market customs. (Jansen, Spronsen, & Willemsen, 2003; Dagevos & Gesthuizen, 2005; Rusinovic, 2006; Baycan-Levent & Nijkamp, 2009; Lucassen & Lucassen, 2011). For this reason first-generation immigrants turn to the family as a resource to start their own business (H3.1). For second-generation immigrants, these barriers do not exist anymore as they can be compared with the

natives. Based on the existing literature about entrepreneurship among second-generation immigrants and the occupational choice model with grown utility from a spouse, it can be concluded that marriage is also associated with entrepreneurship among second-generation immigrants (H3.3) (Jansen, Spronsen, & Willemsen, 2003; Dagevos & Gesthuizen, 2005; Rusinovic, 2006; Essers, 2007; Baycan-Levent & Nijkamp, 2009; Lucassen & Lucassen, 2011).. This study does not find such an association.

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5.2 Evidence for divorce and entrepreneurship among immigrants

According to the existing literature, divorce has a negative association with entrepreneurship among immigrants (H2.1). After a divorce, separation and widowhood, it is hard for both sexes to cope with the break up and the pressure is even bigger if there are also children present form that marriage. Beside the difficultness to cope with the consequences, the divorced can also deliberately destroy the business of their ex-husband or –wife (Essers, 2007; Saridakis, Marlow &Storey, 20013; Galbraith, 2003). An example given by Essers (2007) explains that first-generation immigrant women usually turn to entrepreneurship after a divorce because their family founds them to start their own business. This way they will be able to survive in the unfamiliar environment that they have been brought to by their ex-husbands. Since females in general are stronger effected by the consequence of a break up, it is assumed that females who get divorced are even less likely to turn to entrepreneurship (H2.2). This study does not show significant evidence for divorce being associated with entrepreneurship among immigrants nor with entrepreneurship among immigrant women specifically.

Based on existing literature about divorce in general, this determinant is assumed to be negatively associated with also entrepreneurship among first- and second-generation immigrants (Aldrich & Cliff, 2003) (H3.2 and H3.4). This study does not show significant evidence for divorce being associated with entrepreneurship among first- and second-generation immigrants.

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5.3 Evidence for children in the household and entrepreneurship among immigrants

Taking care of the children and the household takes a lot of time. To combine house chores, child caring and work together, parents can choose to work at home. This can be combined with entrepreneurship where individuals can choose their own working hours. In the literature about immigrants, family is important in the sense that the family members can provide cheap or unpaid labour, and this also increases the probability of entrepreneurship among immigrants (H4.1). Because in immigrant literature the wife has the greatest responsibility for the household and taking care of the children, a positive association is expected for having a child in the household and entrepreneurship among immigrants (H4.2). This study however, did not find significant evidence for an association of having children living in the household with the dependent variable entrepreneurship among immigrants and entrepreneurship among immigrant women.

Children are expected to keep parents at home or help out in the family business. Children of age can either providing cheap or unpaid labour or help the parents with their growing knowledge of the native regulations as they grow to be more educated and accustomed with the native customs and rules than their parents (H6.1). This study however, did not find significant evidence for an association of having children living in the household with the dependent variable entrepreneurship among first-generation immigrants. This association is also not supported with entrepreneurship among second-generation immigrants (H7.1).

Literature so far has also assumed the second-generation immigrants to be too young to perform studies on and as this study shows, from the 1,557 individuals of the total sample only 650 are second-generation immigrants. The second-generation immigrants might be not of age as for already having as much children as the first-generation immigrant in the sample. For this reason, future study is needed for the determinant children and entrepreneurship among second-generation immigrants (Sanders & Nee, 1996; Jansen, Spronsen, & Willemsen, 2003; Light, 1984; Rusinovic, 2006; Edwards & Field-Hendrey, 2002).

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5.4 Evidence for child age category and entrepreneurship among immigrants

As explained before, young children are expected to be keeping parents from their work and not giving them time to start with an own business. As children get older, the time needed for child caring becomes less. For parents to then still have enough time for taking care of their children and also to be able to work entrepreneurship is the preferred occupational choice. While staying home to take care of young children who need more attention can be negatively associated with entrepreneurship among immigrants in general (H5.1) having older children in an immigrant family can also increase the probability of becoming an entrepreneur (H5.2). These older children, to be exact, can help out in the family business. These findings are not statistically supported by this study.

Since existing literature so far has been mostly performed on population samples with the biggest group immigrants being of the first-generation, the same associations of the different child age categories should apply to them (H6.2 and H6.3) (Wellington, 2006). According to existing literature, the second-generation immigrants can be compared with the natives and the same associations of the different child age categories should apply also to them (H7.2 and H7.3). These findings are not statistically supported by the analyses of this research. For a first- or second-generation immigrant, having either really young children of the age 0-6 years or older children of 18 years and older, is significantly not associated with his choice of becoming an entrepreneur or not.

In immigrant families, the women are the caretakers of children in the household. For this reason, the assumption is made that having children of the age in either the youngest or oldest age category, is negatively respectively positively associated with entrepreneurship among immigrant women (H5.3 and H5.4). However, this study does not show significant evidence for these assumptions.

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6. Conclusion

Based on the existing scarce literature, a couple of assumptions have been made about the determinants of family composition and their associations either with entrepreneurship among immigrants in general or entrepreneurship among first- and second-generation immigrants separately. The hypotheses formulated in this study based on the existing literature, have not found statistically significant evidence. However this study can be used as a base for future research that can be performed to fill the existing literature gap on the topic family composition and entrepreneurship among immigrants.

The analyses of this study show that marriage and divorce do not have a significant association with entrepreneurship among immigrants in general. The analyses of this study also show no gender differences for marriage or divorce being negatively associated with entrepreneurship among immigrant women. Marriage and divorce are also not significantly associated with entrepreneurship among first- and second- generation immigrants separately.

This study further shows no significant evidence for having a child in the age 0-6 years or 18 years and older having an association with the dependent variable entrepreneurship among immigrants in general, immigrant women or first- and second-generation immigrants.

By generating these results, this study tries to fill the existing literature gap on the topic family characteristics and entrepreneurship among immigrants in the general population and among first- and second-generation immigrants separately. These findings can be used for future study that is to be performed. Policy makers may want to develop customized rules for taxation and integration for their immigrant inhabitants, as entrepreneurship is a driver of economic growth.

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7 Limitations and future research

As mentioned before, a great limitation for this study is the lack of existing literature on the considered topic "family characteristics and entrepreneurship among immigrants". The empirical analyses of this study provides no significant evidence for the association of the characteristics marriage, divorce and children with entrepreneurship among immigrants and with entrepreneurship among first- and second-generation immigrants. Future study is needed on family composition and entrepreneurship among immigrants in general and separately among first- and second-generation immigrants.

The absence of a significant association can be because the strength of the associations are too weak. On the other hand, although the proportion of self employed in this study is approximately the same as the actual rate of entrepreneurship in the Netherlands in 2011, the fact that the sample size is only 1,557 immigrant individuals compared to 3,594,744 immigrant population in the Netherlands, lowers the external validity of this research. For future research a much bigger sample size of immigrant population should be considered.

For testing the characteristics of family composition, in future research one should also consider to have a sample size with a high age average where the chance of being married, divorced and having children will also be higher.

Literature so far has also assumed the second-generation immigrants to be too young to perform studies on and as this study shows, from the 1,557 individuals of the total sample only 650 are second-generation immigrants. The second-generation immigrants might be not of age as for already having as much children as the first-generation immigrants in the sample. For this reason, future study is needed for the determinant children and entrepreneurship among second-generation immigrants (Sanders & Nee, 1996; Jansen, Spronsen, & Willemsen, 2003; Light, 1984; Rusinovic, 2006; Edwards & Field-Hendrey, 2002).

There is also the possibility of a selection bias that might have occurred during the collection of the questionnaire. For each completed questionnaire, the panel members got a financial compensation of 15 euros per hour and all members of the households of the age 16 years or older, were asked to participate in the panel. This fact might have attracted participants who were in the need of the money and have participated in the questionnaire while not taking it seriously.

On the other hand, a selection bias might have occurred from the fact that completing the questionnaire takes 15 till 30 minutes. This might have attracted participants who had a lot of free time and were not occupied elsewhere, did not have wage-employment or were simply at home taking care of the children.

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9. Appendix

Table A ***Countries in western and non-western categories by official Dutch Statistics 2014***

Western countries (100)	Albania	Denmark	Italy	New-Zeeland	Soviet-Union
	American Virgin islands	Estonia	Japan	Niue	Spain
	Americans Samoa	Faeroe	Kazakhstan	Norfolk	Sweden
	Andorra	Federal Republic Yugoslavia	Kirgizia	North Mariana Islands	Switzerland
	Antarctica	Fiji	Kiribati	Norway	Tadzhikistan
	Armenia	Finland	Kosovo	Palau	Tokelau-islands
	Australia	Formal Czechoslovakia	Latvia	Papua-New-Guinea	Tonga
	Austria	Formal Yugoslavia:	Liechtenstein	Pitcairn Islands	Turkmenistan
	Azerbaijan	France	Lithuania	Poland	Tuvalu
	Belgium	French Polynesia	Luxemburg	Portugal	Ukraine
	Bosnia-Herzegovina	Georgia	Macedonia	Romania	United Kingdom
	British Virgin islands	Germany	Malta	Russia	United States of America
	Bulgaria	Gibraltar	Man	Russia (old)	USA - Far islands
	Canada	Greece	Marshall islands	Salomon's islands	Uzbekistan
	Channel Islands	Greenland	Micronesia	Samoa	Vanuatu
	Cook Islands	Guam	Moldavia	San Marino	Vatican city
	Croatia	Hungary	Monaco	Serbia	Wallis en Futuna
	Cyprus	Indonesia	Montenegro	Serbia en Montenegro	White-Russia
	Czech	Ireland	Nauru	Slovakia	Yugoslavia
	Czechoslovakia	Island	New-Caledonia	Slovenia	
Non-western countries (147)	Afghanistan	Chile	Iran	Myanmar	Singapore
	Algeria	China	Iraq	Namibia	Somalia
	Angola	Colombia	Israel	Nepal	South Africa
	Anguilla	Congo (Republic)	Ivory Coast	Netherlands Antilles	South Korea
	Antigua en Barbuda	Costa Rica	Jamaica	Netherlands Antilles (old)	South Sudan
	Argentina	Cuba	Jordan	Netherlands Antilles and Aruba	Sri Lanka
	Aruba	Curacao	Kadar	Nicaragua	Sudan
	Bahama's	Djibouti	Kenia	Niger	Suriname
	Bahrein	Dominica	Kongo	Nigeria	Swaziland
	Bangladesh	Dominican Republic	Kuwait	North Korea	Syria

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Barbados	Ecuador	Laos	Oman	Taiwan
Belize	Egypt	Lebanon	Pakistan	Tanzania
Benin	El Salvador	Lesotho	Panama	Thailand
Bermuda	Equatorial Guinea	Liberia	Paraguay	Timor Lester
Bhutan	Eritrea	Libya	Peru	Togo
Birma	Ethiopia	Macau	Philippines	Trinidad en Tobago
Bolivia	Falkland Islands	Madagascar	Puerto Rico	Tunisia
Botswana	French Guiana	Malawi	Reunion	Turkey
Brazil	Gabon	Malaysia	Rwanda	Turks and Caicos Islands
British territory in the Indian Ocean	Gambia	Maldives	Saint Helena	Uganda
Brunei	Ghana	Mali	Saint Kitts and Nevis	United Arab Emirates
Burkina Faso	Grenada	Martinique	Saint Lucia	Uruguay
Burundi	Guadeloupe	Mauritania	Saint Martin	Venezuela
Cambodia	Guinea	Mauritius	Saint Pierre and Miquelon	Vietnam
Cameroon	Guinea-Bissau	Mayotte	Saint Vincent and the Grenadines	Yemen
Cape Verde	Guyana	Mexico	São Tomé and Príncipe	Zambia
Caribbean Netherlands	Haiti	Mongolia	Saudi Arabia	Zimbabwe
Cayman Islands	Honduras	Montserrat	Senegal	
Central African Republic	Hong Kong	Morocco	Seychelles	
Chad	India	Mozambique	Sierra Leone	

Source: Based on CBS/Statline Bevolking Kerncijfers (2014)

Table B Correlation matrix of the variables used in this study for the general analyses

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) entrepreneurship among immigrants (1=yes, 0=no)	1.0000										
(2) marital status: married	0.0370	1.0000									
(3) marital status: divorced	0.0010	-0.4094***	1.0000								
(4) marital status: never married	-0.0385	-0.7017***	-0.3628***	1.0000							
(5) Children living in the household (1=yes, 0=no)	-0.0311	0.1684***	-0.1082***	-0.0874***	1.0000						
(6) child age category (0= no children, 1= 0–6 years, 2= 7–12 years, 3= 13-18 years, 4= > 18 years)	-0.0249	0.1835***	0.2901***	-0.4353***	0.2468***	1.0000					
(7) age	0.0439	0.2331***	0.3546	-0.5150***	-0.3106***	0.5393***	1.0000				
(8) gender (1=female, 0=male)	-0.0418	-0.0356	0.1268***	-0.0627*	0.0590*	0.0789**	-0.0652**	1.0000			
(9) urban (1=yes, 0=no)	0.0059	-0.1257***	-0.0089	0.1353***	-0.0004	-0.0906**	-0.1127***	-0.0119***	1.0000		
(10) high education (1= yes, 0= no)	0.1293***	0.0630*	-0.0598*	-0.0176	-0.0941***	-0.0301	0.1013***	-0.0190	0.0121	1.0000	
(11) origin, 1st generation immigrant (1=yes, 0=no)	-0.0240	0.1742***	0.1114***	-0.2560***	0.0655**	0.1018***	0.1593***	0.0198	0.0466	0.0465	1.0000

- * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
- The correlation coefficients are given with 4 decimals

Source: Immigrant Panel Data 2011, Longitudinal Internet Studies for the Social Sciences (LISS) Database 2014 (Scherpenzeel & Das, 2010), conducted in Stata (2002)

Table C **Marital status and entrepreneurship among immigrants**
(Logit regression models and average marginal effects; dataset without the variable "country of origin")

Variable	Model 1 (H1, H2.1) Marriage / divorce and entrepreneurship among immigrants	Model 1 Average marginal effect numbers	Model 2 (H2.2) Interaction between gender and divorce on entrepreneurship among immigrants	Model 2 Average marginal effect numbers
Marital status				
Married	0.19	0.0138	0.27	0.0192
Divorced/Separated/Widowed	0.35	0.0277	0.71*	0.0610
Never married	(base)	(base)	(base)	(base)
Marital status * Female				
Married	-	-	-0.49*	0.0393
Divorced/Separated/Widowed	-	-	-1.02 *	0.0677
Never Married	-	-	(base)	(base)
Age	0.22***	0.0169	0.22***	0.0171
Age Square (age^2)	-0.00***	0.0001	-0.00***	0.0002
Gender	-0.52***	0.0411	-	-
Urban	-0.22	0.0172	-0.22	0.0173
Higher Education	0.69***	0.0542	0.69***	0.0639
Constant	-7.03***	-	-7.16***	-
Observations	2416	2416	2416	2416
Pseudo R^2	0.0680	-	0.0698	-

- * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
- Logit coefficients (average marginal effects) are given with two (four) decimals
Source: Immigrant Panel Data 2011, Longitudinal Internet Studies for the Social Sciences (LISS) Database 2014 (Scherpenzeel & Das, 2010), conducted in Stata (2002)

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Table D **Having children in the household and entrepreneurship among immigrants**
(Logit regression models and average marginal effects; dataset without the variable "country of origin")

Variable	Model 5 (H4.1) Children in the household and entrepreneurship among immigrants	Model 5 Average marginal effect numbers	Model 6 (H4.2) Interaction between gender (female) and children in the household on entrepreneurship among immigrants	Model 6 Average marginal effect numbers
Children in the household	-0.14	0.0106	-0.01	0.0007
Children in the household * Female	-	-	-0.30	0.0239
Age	0.24***	0.0186	0.24***	0.0188
Age Square (age^2)	-0.00***	0.0002	-0.00***	0.0002
Gender	-0.49***	0.0385	-0.33	0.0255
Urban	-0.24	0.0189	-0.24	0.0184
Higher Education	0.66***	0.0520	0.66***	0.0515
Constant	-7.30***	-	-7.41***	-
Observations	2416	2416	2416	2416
Pseudo R^2	0.0672	-	0.0679	-

- * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
- Logit coefficients (average marginal effects) are given with two (four) decimals
Source: Immigrant Panel Data 2011, Longitudinal Internet Studies for the Social Sciences (LISS) Database 2014 (Scherpenzeel & Das, 2010), conducted in Stata (2002)

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Table E **Age category youngest child and entrepreneurship among immigrants**
(Logit regression models and average marginal effects; dataset without the variable "country of origin")

Variable	Model 7 (H5.1, H5.2) Child age category and entrepreneurship among immigrants	Model 7 Average marginal effect numbers	Model 8 (H5.3 and H5.4) Interaction between gender and child age category and entrepreneurship among immigrants	Model 8 Average marginal effect numbers
Age category youngest child				
No Child	(base)	(base)	(base)	(base)
0 – 6 years	-0.58	0.0428	-0.52	0.0394
7 – 12 years	-0.29	0.0239	-0.42	0.0331
13 – 18 years	-0.42	0.0327	-0.66	0.0476
> 18 years	-0.35	0.0280	-0.22	0.0185
Age category youngest child * Female				
No Child	-	-	-0.12	(base)
0 – 6 years	-	-	0.26	0.0092
7 – 12 years	-	-	0.38	0.0234
13 – 18 years	-	-	-0.26	0.0353
> 18 years		-		0.0184
Age	0.17***	0.0139	0.18***	0.0140
Age Square (age^2)	-0.00***	0.0001	-0.00***	0.0001
Gender	-0.32	0.0256	-0.32	0.0251
Urban	0.10	0.0082	-0.10	0.0076
Higher Education	0.79***	0.06338	0.80***	0.0638
Constant	-6.06***	-	-6.11***	-
Observations	1481	1481	1481	1481
Pseudo R^2	0.0502	-	0.0511	-

- * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
- Logit coefficients (average marginal effects) are given with two (four) decimals
Source: Immigrant Panel Data 2011, Longitudinal Internet Studies for the Social Sciences (LISS) Database 2014 (Scherpenzeel & Das, 2010), conducted in Stata (2002)

Table F Overview of the researched hypotheses in this study and their outcomes

Hypotheses	**Significant evidence**
H1: Being married as compared to never having been married is positively associated with entrepreneurship among immigrants.	*no*
H2.1: Being divorced as compared to never having been married is negatively associated with entrepreneurship among immigrants.	*no*
H2.2: Being divorced as compared to never having been married is negatively associated with entrepreneurship among immigrant women.	*no*
H3.1: Being married as compared to never having been married is positively associated with entrepreneurship among first-generation immigrants.	*no*
H3.2: Being divorced as compared to never having been married is negatively associated with entrepreneurship among first-generation immigrants.	*no*
H3.3: Being married as compared to never having been married is associated with entrepreneurship among second-generation immigrants.	*no*
H3.4: Being divorced as compared to never having been married is negatively associated with entrepreneurship among second-generation immigrants.	*no*
H4.1: Having a child in the household is positively associated with entrepreneurship among immigrants.	*no*
H4.2: Having a child in the household is positively associated with entrepreneurship among immigrant women.	*no*
H5.1 Having young children (in the age 0-6 years) is negatively associated with entrepreneurship among immigrants.	*no*
H5.2 Having children of the age 18 years and older is positively associated with entrepreneurship among immigrants.	*no*
H5.3 Having young children (in the age 0-6 years) is negatively associated with entrepreneurship among immigrant women.	*no*
H5.4 Having children of the age 18 years and older is positively associated with entrepreneurship among immigrant women.	*no*
H6.1: Having a child in the household is positively associated with entrepreneurship among first-generation immigrants.	*no*
H6.2 Having young children (in the age 0-6 years) is negatively associated with entrepreneurship among first-generation immigrants.	*no*
H6.3 Having children of the age 18 years and older is positively associated with entrepreneurship among first-generation immigrants.	*no*
H7.1: Having a child in the household is positively associated with entrepreneurship among second-generation immigrants.	*no*
H7.2 Having young children (in the age 0-6 years) is negatively associated with entrepreneurship among second-generation immigrants.	*no*
H7.3 Having children of the age 18 years and older is positively associated with entrepreneurship among second-generation immigrants.	*no*