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Understanding the Drivers of an ‘Entrepreneurial’ Economy: Lessons from Japan and the Netherlands

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Abstract:

Globalization and an increasing importance of knowledge in the production process cause many developed countries to move from a more ‘managed’ to a more ‘entrepreneurial’ economy in recent decades. In the former type of economy, large and incumbent firms play a dominant role, exploiting economies of scale in a relatively certain economic environment. In the latter type, small and new firms play an increasingly important role, introducing new products and services in highly uncertain economic environments while quickly adapting to rapidly changing consumer preferences. The speed of adjustment in this transition process from a managed to an entrepreneurial economy varies by country. In this paper we investigate the differences between a more ‘managed’ economy, Japan, characterized by relatively low levels of entrepreneurial activity, and a more ‘entrepreneurial’ economy, the Netherlands. Building on earlier work by Hartog *et al.* (2010), who explain cross-country differences in three measures of entrepreneurial activity using five broad groups of explanatory variables, we apply a decomposition analysis to better understand the differences in entrepreneurial activity between Japan and the Netherlands. We find that, in spite of higher levels of entrepreneurial activity in the Netherlands, the institutional framework in the Netherlands is considerably less favourable to entrepreneurship, compared to Japan. On the other hand, cultural differences between the Netherlands and Japan explain a substantial part of the difference in entrepreneurship rates between the two countries.

Keywords: entrepreneurship, cross-country comparison, Japan, the Netherlands, United States

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1. Introduction

Many developed economies have now experienced a transition from a more *managed* to a more *entrepreneurial* economy (Audretsch and Thurik, 2000, 2001 and 2010). An entrepreneurial-type economy is characterized by a high importance of entrepreneurship in terms of small and, in particular, new ventures for creating innovative activity and boosting macro-economic performance. The Anglo-Saxon countries, including the United States, Canada and Australia, were the first to show such a ‘regime’ switch. Already in the 1970s these countries experienced a considerable increase in the share of entrepreneurs in the labor force. Other developed countries in Western Europe later followed their example. In the Netherlands the rate of entrepreneurship has been increasing since the mid-1980s and has shown high growth especially in the last decade.

However, the Japanese economy seems to have switched rather from an entrepreneurial economy to a more managed economy in the late 1980s. In Japan, more than 99% of business firms in the non-primary sector have been SMEs with up to 300 employees that account for 70% of total labor force. During the 1970s and the 1980s, the gross start-up ratio in the non-primary sector was above 6% and much higher than the gross closure ratio that was mostly below 4%, so that the number of business establishments continuously increased until the late 1980s. However, the business ownership rate has been decreasing ever since the early 1980s. Moreover, the start-up ratio has been lower than the closure ratio since the early 1990s, indicating a declining number and share of entrepreneurs in the economy. In this respect, the Japanese economy shows a specific trend contrary to other developed economies. During “the lost decades” since the collapse of the *bubble economy* at the beginning of the 1990s, in order to maintain and to reactivate the entrepreneurial economy, various public policy measures have been introduced, without remarkable effects to date according to official statistics. However, there are also signals that such efforts might be rewarded: the number of new entrepreneurs (as measured by GEM’s TEA rate) in Japan in 2007 and 2008 was higher than in previous years. Moreover, in 2008 the Japanese TEA rate of 5.4 percent was even relatively high as compared to that in several other developed economies – including the Netherlands where this rate amounted to 5.2 percent.¹

In the present paper we aim to create more insight into the underlying factors of both the current level and the historical development of entrepreneurial activity in two developed, but otherwise dissimilar countries, where the Netherlands can be seen as an example of a more entrepreneurial economy, and Japan as a more managed economy that may be on the verge of a ‘regime’ switch. Indeed, there are some interesting contradictions in terms of entrepreneurial activity in the two countries that demand further investigation. For example, although the level of business ownership in Japan has been relatively high until the early 1990s, it has shown a continuous decrease since the early 1980s. In the Netherlands we see a reverse situation where the level of business ownership is relatively low until the early 1990s, but is increasing ever since (see Figure 5 in Section 2 of this paper). Examining the factors that drive the variation in the development and the level of entrepreneurial activity in the two countries provides general insight into the factors that should be stimulated to facilitate a transition to an entrepreneurial economy. In addition, we are able to derive specific policy recommendations for the two countries under study. Finally, by

¹ In 2009 the TEA rate in Japan declined again to 3.3, probably as a result of the financial and economic crisis. Still, the TEA rate is higher than in the years 2002-2006.

benchmarking the results for the Netherlands with those of Japan, an example of a more managed economy that is still able to compete with other highly developed economies in the world, we can also learn about certain valuable aspects of managed economies that are worthwhile to preserve in modern entrepreneurial economies.

We base our analysis on a comprehensive study by Hartog et al. (2010) who investigate a wide range of factors determining entrepreneurship in different stages (i.e., nascent entrepreneurship, young business entrepreneurship, established entrepreneurship), for 20 developed countries. Building on their empirical analysis, we apply a decomposition analysis to better understand the country differences in entrepreneurial activity and, more specifically, differences between Japan and the Netherlands. We will focus on five different groups of factors as derived from the Eclectic Framework as proposed by Verheul et al. (2002). These groups include: macro-economic conditions, technological factors, socio-demographics, the institutional environment, and cultural factors. On the basis of the outcomes and the underlying data of the study by Hartog et al. (2010) we analyze the fitted values for Japan and the Netherlands to find out which factors are most important for explaining the lower entrepreneurial activity rates witnessed in Japan, and the higher entrepreneurship rates witnessed in the Netherlands in the period 2002-2006. In our analysis we benchmark the results for Japan and the Netherlands against the results for the group of 20 developed countries used in Hartog et al. (2010).

A more general contribution of our analysis lies in the identification of factors that facilitate or hinder the transformation process from a managed to an entrepreneurial economy. This is helpful for decision makers designing and implementing government policies aimed at stimulating entrepreneurial activity. Moreover, since contributions of individual variables are expressed relative to a benchmark (i.e., the average for 20 developed countries), we can easily assess whether specific targets in terms of required changes in determining factors are realistic. For instance, when in a country a factor contributes negatively to entrepreneurship *relative to other countries*, it should be feasible to improve the performance of this factor since other countries apparently are able to do so as well.

The remainder of this paper is structured as follows. In the next section we will illustrate the level and developments in entrepreneurial activity in Japan and the Netherlands on the basis of data from different sources, including data from the Global Entrepreneurship Monitor, the Japanese Ministry of Economy, Trade and Industry (METI), the COMPENDIA data base (Van Stel, 2005, Van Stel et al., 2010), and the International Benchmark Entrepreneurship data base (see e.g. EIM, 2009, 2010). Subsequently, we discuss the five groups of determinants (i.e., socio-demographics, macro-economic conditions, institutions, culture and technology) and their expected impact on entrepreneurial activity in Section 3. In Section 4 we explain the decomposition method and provide a description of the variables included in the model of Hartog et al. (2010). We present and discuss the results in Section 5, and conclude with Section 6.

2. Historical Development and Current State: Japan and the Netherlands Compared

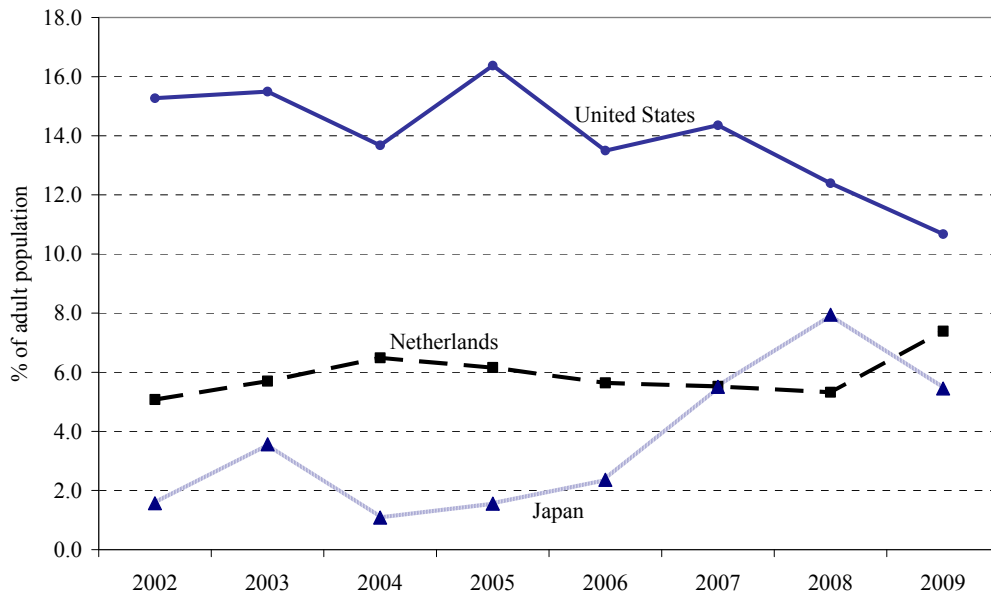
To be able to draw conclusions about factors that inhibit or promote entrepreneurial activity in Japan and the Netherlands, it is essential to develop an understanding of the current state and the historical

development of entrepreneurship in these two countries. In this section we will compare Japan and the Netherlands, with the United States as a benchmark country, on a wide range of indicators representing entrepreneurial activity in its different stages (i.e., future and nascent entrepreneurial and intrapreneurial activity, entry of firms, young business activity, established business owners, business growth, and exit activity), specific types of entrepreneurship (i.e., female versus male; opportunity versus necessity; ambitious versus non-ambitious entrepreneurship) and entrepreneurial climate indicators (i.e., opportunity perception, fear of failure, entrepreneurial self-efficacy, role models and informal investor rates).

2.1 Entrepreneurial activity in different stages

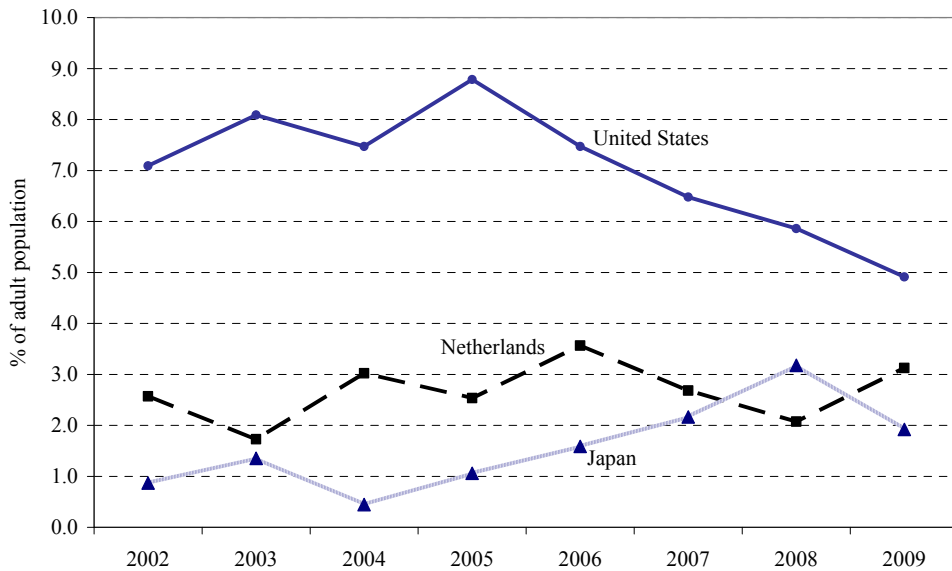
Starting with the plans to start a business in the near future, Figure 1 presents the development in the extent to which people expect to start a new business over the period 2002-2009 for the Netherlands, Japan and the United States. People in the United States have far higher entrepreneurial expectations than people in the Netherlands and Japan. Looking at the developments over time, we can see that the Netherlands is relatively stable, but with a small upsurge in 2009. Interestingly, Japan shows a decline in 2009, after four years of an increasing expectation. Note that a similar development can be seen in Figure 2, depicting nascent entrepreneurial activity. This represents people who are no longer just expecting to start up, but are actually taking steps to start a business. Thus, although entrepreneurial expectations are higher than nascent entrepreneurial activity in all three countries, they appear closely related phenomena. How can we explain the recent decline and rise in Japan and the Netherlands, respectively? Figures 1 and 2 suggest that people in Japan and the Netherlands react differently to the economic crisis that started in the second half of 2008. Whereas for the Japanese people we see a decrease in their entrepreneurial expectations and nascent activities in 2009 (that were increasing between 2004-2008, a period characterized by relatively high economic growth rates in Japan), the Dutch people report increasing expectations and nascent activity in 2009.

Figure 1: Future business start-up rate in Japan, Netherlands & US, 2002-2009



Source: Global Entrepreneurship Monitor. The variable indicates whether respondents have plans to start a business in the (near) future. The numbers in the graph express the percentage of the adult population answering yes to the question: “you are, alone or with others, expecting to start a new business, including any type of self-employment, within the next three years”.

Figure 2: Nascent entrepreneurial activity rate in Japan, Netherlands & US, 2002-2009



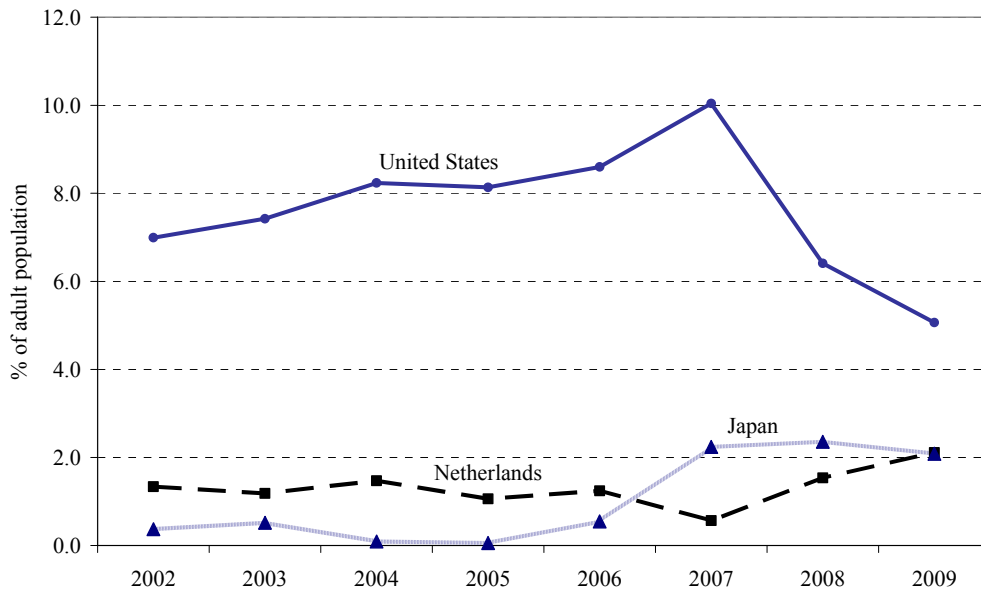
Source: Global Entrepreneurship Monitor. The nascent entrepreneurial activity rate represents the number of people that are actively involved in starting their own new venture, as a percentage of adult population.

New entrepreneurial activity can also take place within the context of established firms (i.e., intrapreneurship). Figure 3 shows the development in nascent intrapreneurial activity, i.e., whether people are trying to start up a business on behalf of their employer. This activity is lower than nascent entrepreneurship in Japan and the Netherlands (but not in the US). Remarkably, In Japan this activity has been close to zero in the period prior to 2006, after which there has been a slight increase. In the Netherlands we see a relatively stable development in intrapreneurial activity, with a slight upswing from 2007 onwards.

Figure 4 presents the development in young business entrepreneurial activity, i.e. entrepreneurs owning and managing firms that are younger than 3.5 years. This development shows some resemblance to that of nascent entrepreneurial activity, in particular for Japan: with the lowest point in 2004 and the peak in 2008, after which there is the decline. For the Netherlands there is less similarity between nascent and young business activity. We see that the young business rate is stable around 2.0 percent of the adult population until 2006, after which we see an upsurge, in the end reaching a rate of 4.0 percent in 2009. The picture suggests that, at least in 2009, entrepreneurial activity in the Netherlands is not significantly affected by the economic downturn, which started in 2008. In Japan and the U.S., on the contrary, young business rates decreased considerably in 2009, probably related to the global economic downturn.

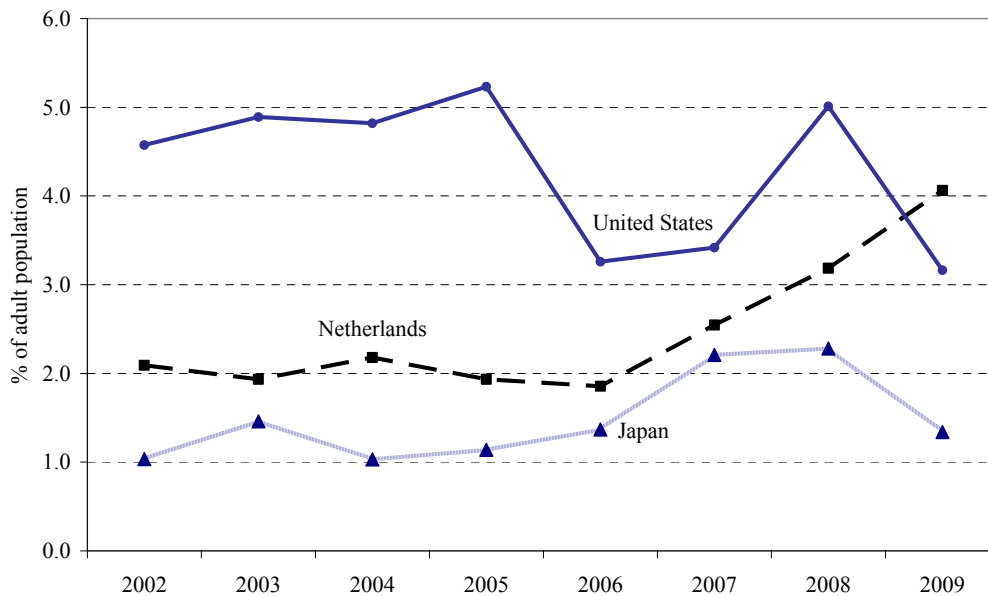
Data from EIM's International Benchmark Entrepreneurship data base up to and including 2008 are in conformity with Figure 4 in the sense that entry rates in the Netherlands and the U.S. are reported to be structurally higher than those in Japan. However, this data base also reports that the average firm size of new-firm entries at the time of start-up is structurally higher in Japan, compared to the other two countries (EIM, 2010).

Figure 3: Nascent intrapreneurship rate in Japan, Netherlands & US, 2002-2009



Source: Global Entrepreneurship Monitor. The variable “Business start-up for employer” (nascent intrapreneurship) indicates whether respondents are trying to start a new business on behalf of his or her employer. The numbers in the graph express the percentage of the adult population answering yes to the question: “you are, alone or with others, currently trying to start a new business or a new venture for your employer as part of your normal work”.

Figure 4: Young business entrepreneurial activity rate in Japan, Netherlands & US, 2002-2009

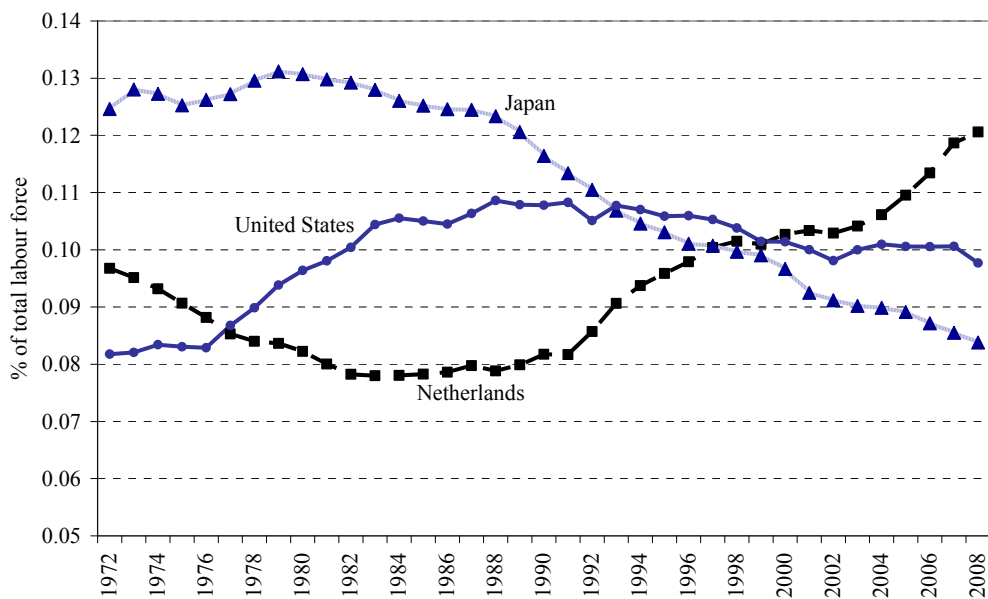


Source: Global Entrepreneurship Monitor. The young business entrepreneurial activity rate represents the percent of adult population that is the owner-manager of a business that is less than 42 months old.

Figure 5 shows the development in established entrepreneurial activity, as measured by the non-agricultural business ownership rate, for a longer period: 1972-2008. Here we see clear differences between Japan and the Netherlands. Whereas in Japan the business ownership rate has been constantly decreasing since the beginning of the 1980s, business ownership in the Netherlands shows a U-shaped development, with the lowest point in the mid-1980s. There are several reasons for the reemergence of self-employment in the Netherlands (and several other developed economies) including “the rapidly growing services sector with its smaller scale and lower entry barriers, an increasing differentiation of consumer preferences, declining transactions costs, and a trend in occupational preferences toward more autonomy and self-realization. Additionally, globalization in concert with the spread of ICT (information and communication technologies) enables solo entrepreneurs and small firms to reap the fruits of scale economies through loosely organized networks. And last but not least new technologies create opportunities for new technology-based business start-ups.” (Wennekers et al., 2010, p. 169).

One of the main reasons for the declining self-employment rate in Japan in the 1990s is the decline in real income of self-employed workers relative to employees, especially in the segment of workers older than 35 years (Genda and Kambayashi, 2002).

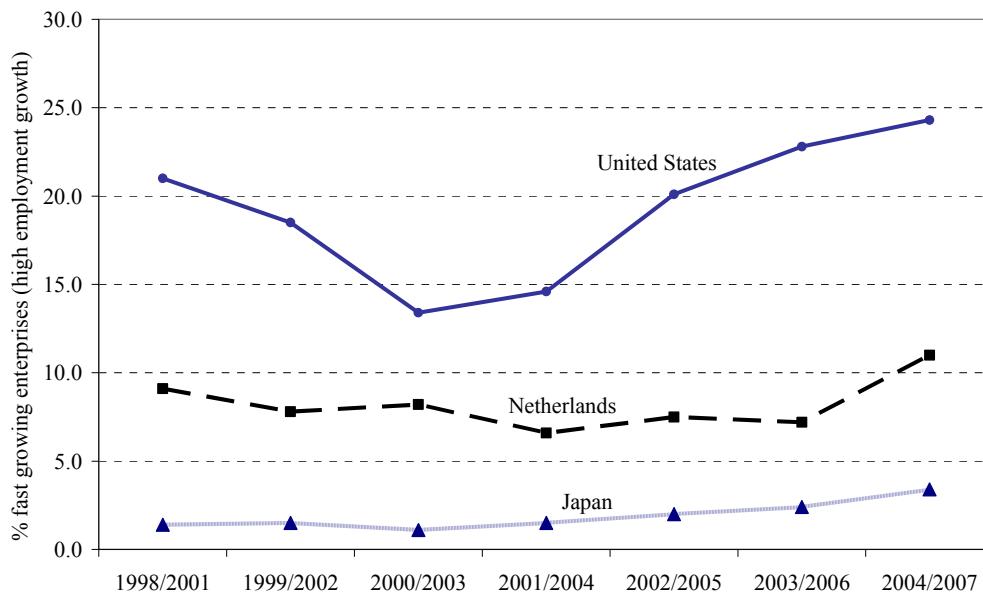
Figure 5: Business ownership rate (non-agriculture) in Japan, Netherlands & US, 1972-2008



Source: EIM’s COMPENDIA data base, version 2008.1. The non-agricultural business ownership rate is defined as the number of owner-managers of unincorporated and incorporated businesses (excluding businesses in agriculture, hunting, forestry and fishing), expressed as a fraction of the total labour force.

Figure 6 shows that there are structural country differences in the number of fast-growing enterprises. Possible reasons for the low number in Japan are bad economic conditions in the ‘lost decades’, making it difficult for firms to achieve high growth rates, and a relatively low prevalence of mergers and acquisitions (external growth). A further possible explanation is related to the process of noisy selection as proposed by Jovanovic (1982). In countries and industries with high levels of business churning (entry and exit), where many new firms try to commercialize new ideas, a selection process takes place where the efficient firms grow and survive and the inefficient firms decline and fail. When levels of entrepreneurial activity (i.e. more attempts to start new businesses) are higher, this selection process is more intense, so that the survivors are more likely to grow fast. Recent empirical evidence for the U.S. supporting these models of market selection and learning is provided by Haltiwanger et al. (2010). They find strong evidence for a rich “up or out” dynamic among start-ups and young firms. These firms have higher chances of failure (exit) than mature firms, but conditional on survival, the young firms grow faster. Since young business entrepreneurial activity is lower in Japan (see Figure 4), the market selection process as indicated above may be less intense, and hence result in fewer fast-growing companies.

Figure 6: Share of fast-growing enterprises (%) in Japan, Netherlands & US, 1995-2008



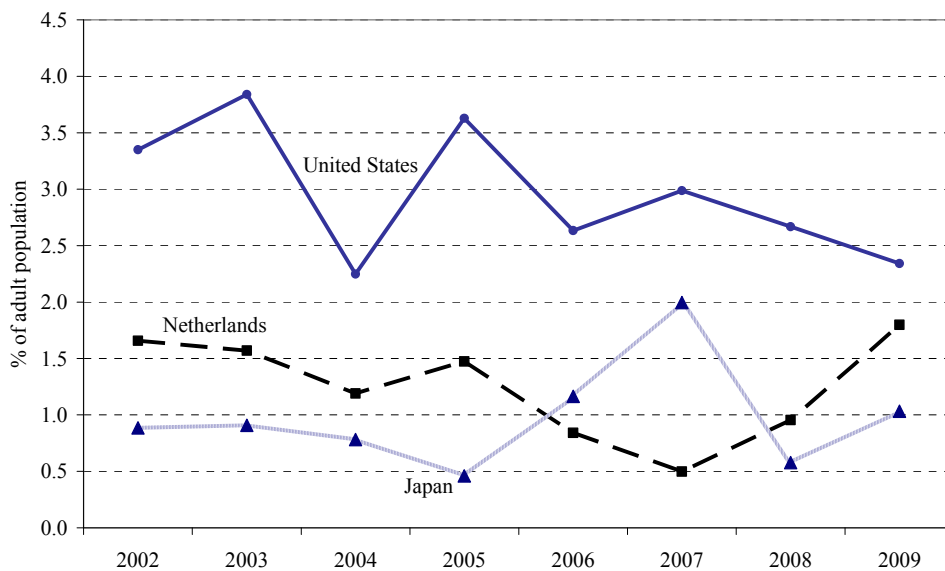
Source: EIM’s International Benchmark Entrepreneurship data base. The indicator measures the percentage of enterprises which grow 60% or more (in terms of employment) in a period of three years, within the population of enterprises with 50-1000 workers.

Figure 7 shows that the closure rate in the U.S. is structurally higher than in the other two countries. Since entry rates also tend to be higher in the U.S., this is not surprising. It is a well-known fact in industrial organization that entry and exit rates are strongly correlated (Geroski, 1995). The figure also shows an

increase in business shutdowns in 2009, both in Japan and the Netherlands, probably related to the global economic crisis.

Data on exit rates of firms from EIM’s International Benchmark Entrepreneurship data base up to and including 2008 (see EIM, 2010) confirm that exit rates are generally higher in the U.S. This data source also shows that the share of bankruptcies in the number of exits is extremely low in Japan (about 2 percent in 2006), and somewhat higher in the Netherlands (about 7 percent in 2008) and the U.S. (about 12 percent in 2008).

Figure 7: “Business shutdown” (closure) rate in Japan, Netherlands & US, 2002-2009



Source: Global Entrepreneurship Monitor. The variable indicates whether respondents have shut down their business in the past 12 months. The numbers in the graph express the percentage of the adult population answering yes to the question: “you have, in the past 12 months, sold, shut down, discontinued or quit a business you owned and managed, any form of self-employment, or goods or services to anyone”.

2.2 Types of entrepreneurship

In this section we describe the prevalence of different types of entrepreneurship in the three countries, based on GEM data.

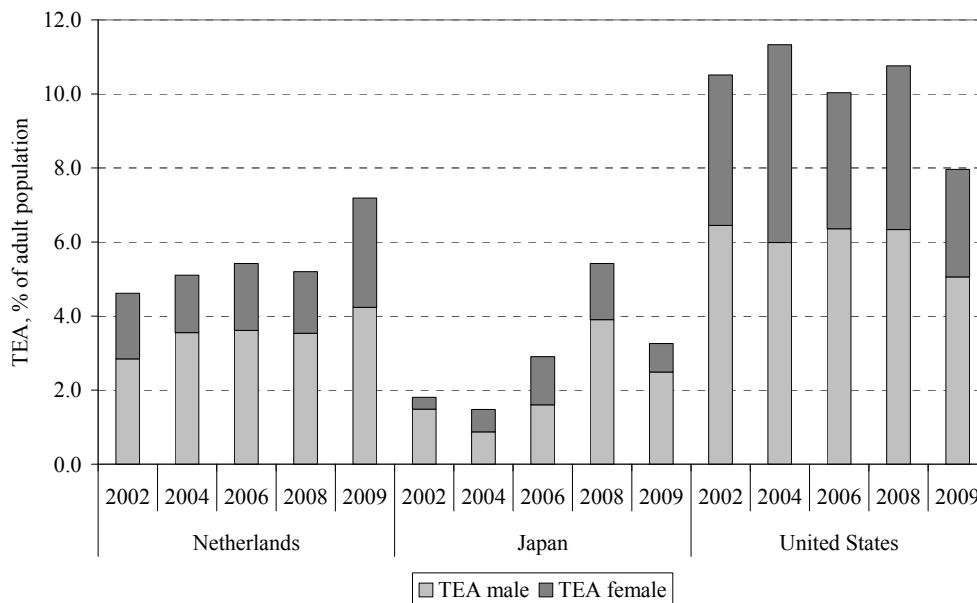
First, regarding gender, we see from Figure 8 that the share of women in entrepreneurship is below 50% in all three countries, but the share of female entrepreneurs is lowest for Japan.

Second, regarding start-up motives, Figure 9 shows that in all three countries, the majority of entrepreneurs start their business because they see a business opportunity. A minority share starts businesses because they have no other employment options. This share of ‘push’-entrepreneurs is particularly low in the Netherlands, even in 2009. This seems consistent with earlier evidence showing that even in 2009, i.e. during the economic downturn, several entrepreneurship indicators increased in the

Netherlands (see Figures 1, 2 and 4). Apparently, Dutch people relatively often see business opportunities, even during economic downturns.

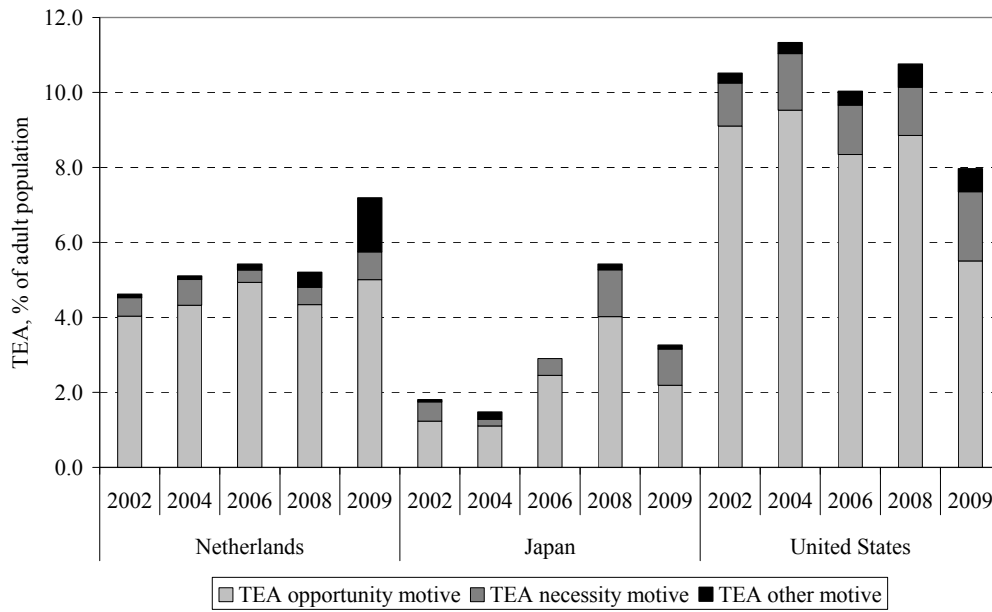
Third, regarding ambition levels, Figure 10 shows that the majority of entrepreneurs do not have ambitions to employ many workers in their business. However, importantly, we see that the number of ambitious entrepreneurs in the Netherlands is quite low, and even reached a lowpoint in 2008. This should be a cause for concern for policy makers in the Netherlands. On the contrary, while ambitious entrepreneurship is traditionally low in Japan, in 2008 there was a sudden jump in the number of ambitious entrepreneurs. Finally, we see that the United States has a structurally higher number of ambitious entrepreneurs in their economy.

Figure 8: Total Entrepreneurial Activity in Japan, Netherlands & US, 2002-2009, by gender



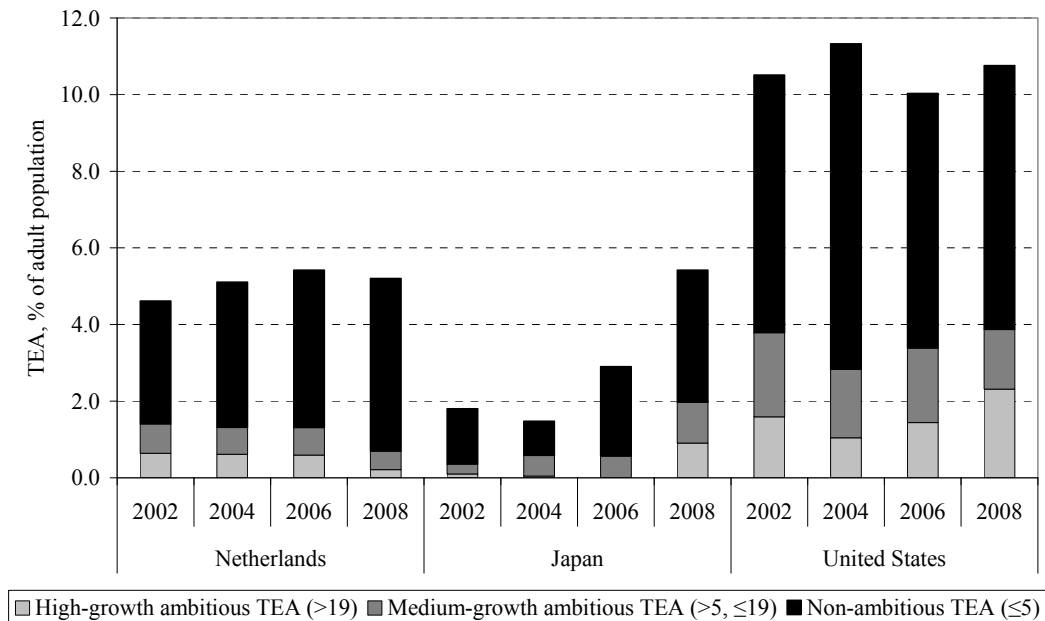
Source: Global Entrepreneurship Monitor. The TEA rate is the sum of the nascent rate and the young business rate, see Figures 2 and 4. The graph shows the distribution of the TEA rate over men and women.

Figure 9: Total Entrepreneurial Activity in Japan, Netherlands & US, 2002-2009, by start-up motive



Source: Global Entrepreneurship Monitor. The graph shows the distribution of the TEA rate over opportunity-driven entrepreneurs (indicating they start a business because they have perceived a business opportunity) and necessity-driven entrepreneurs (indicating they start a business because they see entrepreneurship as their last resort).

Figure 10: Total Entrepreneurial Activity in Japan, Netherlands & US, 2002-2008, by ambition level



Source: Global Entrepreneurship Monitor. The graph shows the distribution of the TEA rate over highly ambitious entrepreneurs (those expecting to create more than 19 jobs in five years time), medium ambitious entrepreneurs (expecting to create between 6 and 19 jobs) and non-ambitious entrepreneurs.

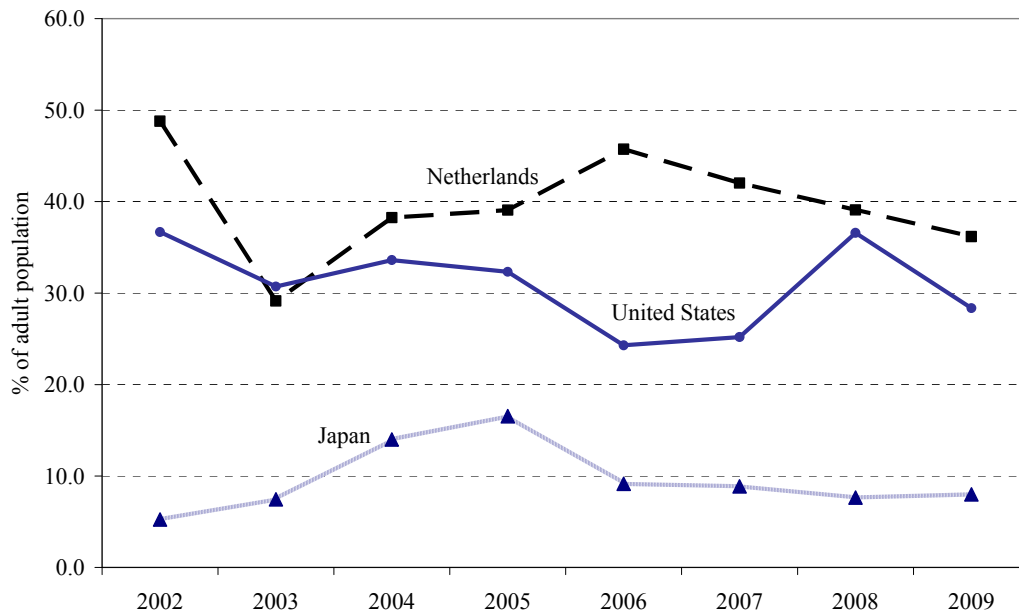
2.3 Entrepreneurial climate

In this section we present some indicators of the entrepreneurial climate for the three countries. These indicators do not directly describe entrepreneurial activity (ranging from actively running a business to having plans to start a business in the near future) but rather measures entrepreneurship potential, i.e. ‘entrepreneurial’ characteristics of individuals.

First, Figure 11 confirms that Dutch people relatively often perceive business opportunities. In Japan this indicator is relatively low. Second, Figure 12 shows that the fear of failing a new business is relatively high in Japan, particularly in recent years. Third, Figure 13 shows that in the United States, relatively many individuals believe they have the skills to set up their own business. Again, Japan scores low on this indicator. Fourth, regarding entrepreneurial role models, more people in the Netherlands and the U.S. know an entrepreneur, compared to Japan. Fifth and finally, regarding the informal investor rate, an important (potential) source of finance for entrepreneurs, this rate is much higher in the U.S., compared to Japan and the Netherlands.

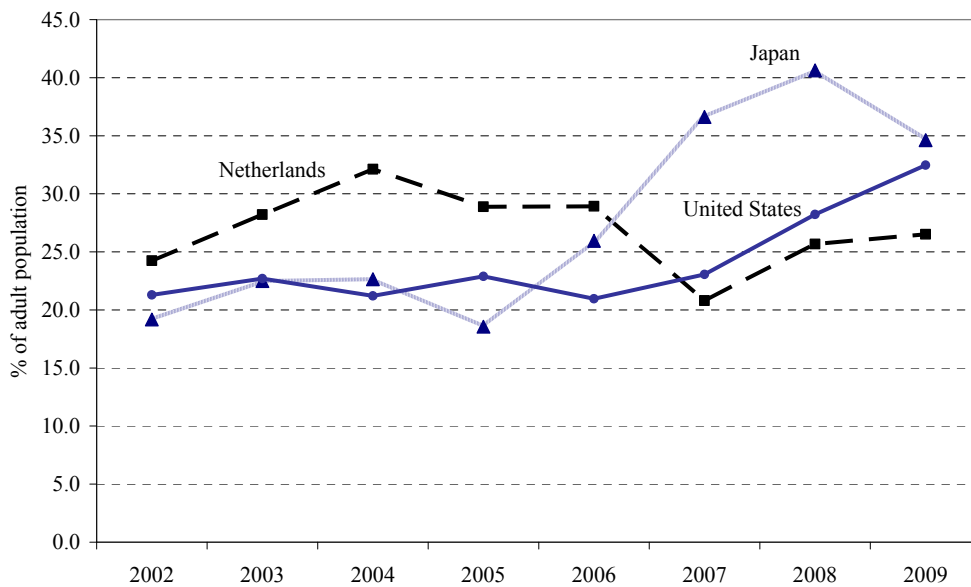
Together, these indicators seem to confirm that Japan may indeed still be characterized as a more ‘managed’ economy: Japan scores low on the indicators opportunity perception, fear of failure, entrepreneurial self-efficacy, role models, and the prevalence of informal investors. On the other hand, these indicators suggest that the U.S. and the Netherlands are more ‘entrepreneurial’-type of economies, even though the prevalence of informal investors in the Netherlands is quite low. In Section 4 we will make a more sophisticated analysis of which factors cause the three economies to be more ‘entrepreneurial’ or to be more ‘managed’.

Figure 11: “Perceive business opportunities” rate in Japan, Netherlands & US, 2002-2009



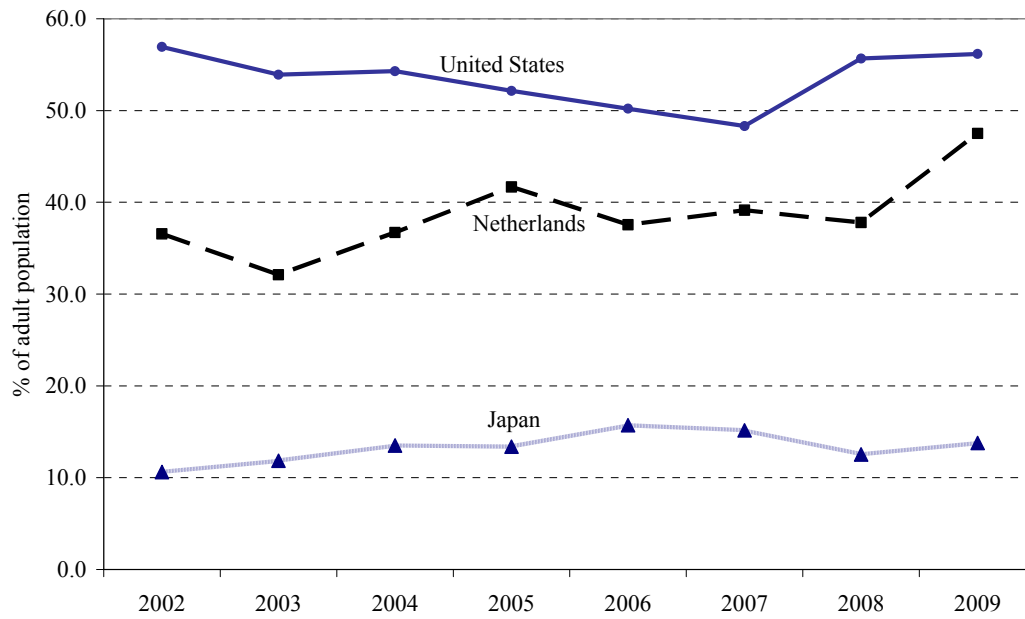
Source: Global Entrepreneurship Monitor. The variable indicates whether respondents perceive new business opportunities. The numbers in the graph express the percentage of the adult population answering yes to the question: “in the next six months there will be good opportunities for starting a business in the area where you live”.

Figure 12: “Fear of failure” rate in Japan, Netherlands & US, 2002-2009



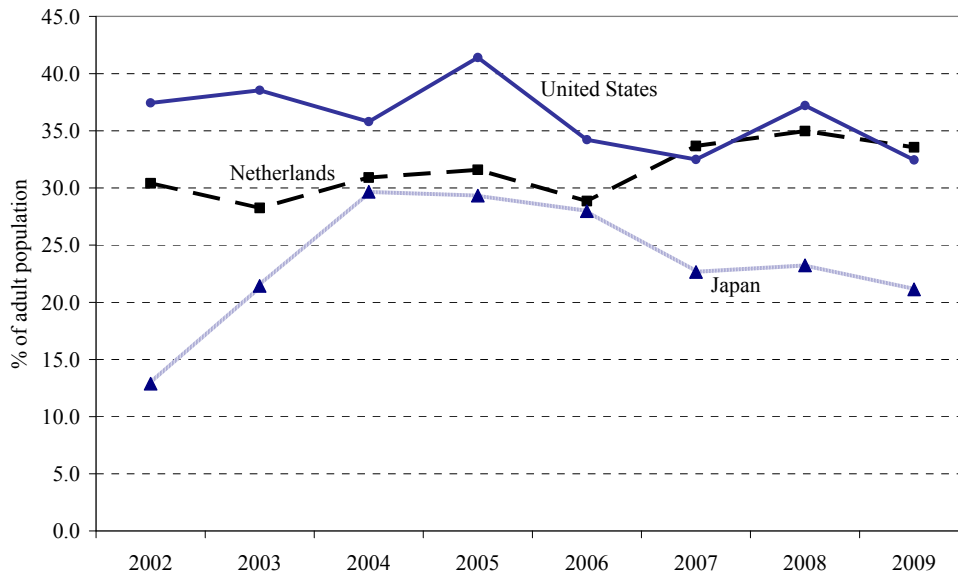
Source: Global Entrepreneurship Monitor. The variable is an indicator of risk averseness with respect to starting a new business. The numbers in the graph express the percentage of the adult population answering yes to the question: “fear of failure would prevent you from starting a new business”.

Figure 13: “Skills to start a new business” rate in Japan, Netherlands & US, 2002-2009



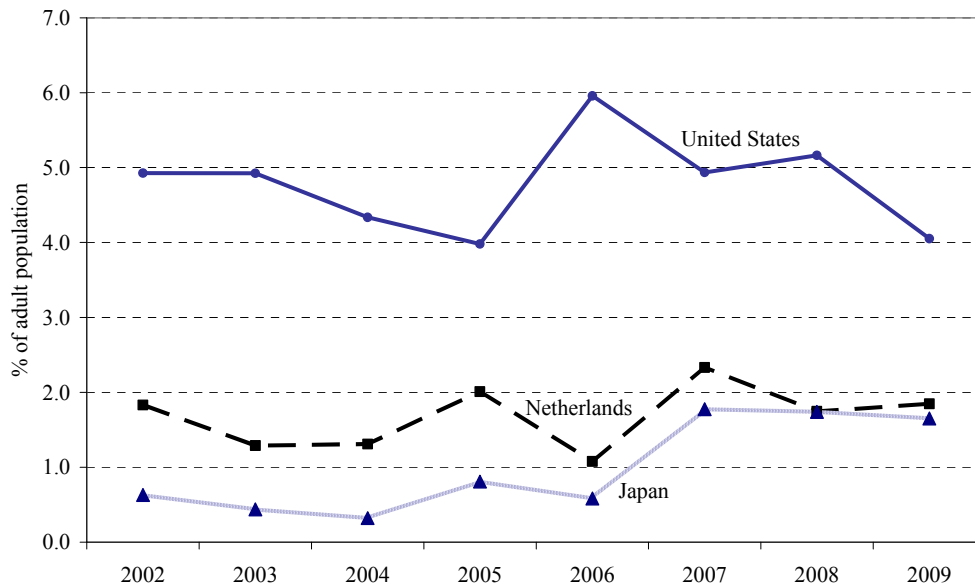
Source: Global Entrepreneurship Monitor. The variable indicates whether respondents think they have the capabilities for starting a business. The numbers in the graph express the percentage of the adult population answering yes to the question: “you have the knowledge, skills and experience required to start a new business”.

Figure 14: “Knows entrepreneurs” rate in Japan, Netherlands & US, 2002-2009



Source: Global Entrepreneurship Monitor. The variable indicates whether respondents personally know entrepreneurs. The numbers in the graph express the percentage of the adult population answering yes to the question: “you know someone personally who started a business in the past 2 years”.

Figure 15: Informal investor rate in Japan, Netherlands & US, 2002-2009



Source: Global Entrepreneurship Monitor. The variable indicates whether respondents are engaged in informal investment. The numbers in the graph express the percentage of the adult population answering yes to the question: “You have, in the past three years, personally provided funds for a new business started by someone else, excluding any purchases of stocks or mutual funds”.

3. Determinants of Entrepreneurship

A broad range of factors have been proposed to explain the level of entrepreneurship, including economic and social factors. Moreover, it is generally accepted that policy measures can influence the level of entrepreneurship (Storey, 1994 and 1999). Several models have now been developed to create insight into the origin of entrepreneurship and its consequences. Examples of such models include the GEM Conceptual Model by Reynolds et al. (1999 and 2000), the framework of entrepreneurship policy measures and policy typology as proposed by Stevenson and Lundström (2007), the country institutional profiles by Busenitz et al. (2000) and the Eclectic Framework as proposed by Verheul et al. (2002). Despite substantial differences, these models have in common that they integrate factors from different disciplines to create a more complete understanding of the complex phenomenon of entrepreneurship. Indeed, the study of entrepreneurship cannot be confined to one discipline; psychology studies have focused on motives and character traits of (potential) entrepreneurs, sociological studies have focused on the (collective) background of entrepreneurs (margination theory), economic studies have focused on the interaction of entrepreneurship with the economic climate, including scarcity and opportunity costs, and technological development. The demographic perspective focuses largely on the impact of the demographic composition on entrepreneurship. Finally, from a policy perspective, the government can influence entrepreneurship through direct assistance and through lowering the impediments for entrepreneurship, such as the administrative burden (Dennis, 2004).

To investigate the determinants of entrepreneurial activity in the Netherlands and Japan we will use five groups of determining factors as derived from the Eclectic Framework (Verheul et al., 2002). These factors include macro-economic conditions, technological factors, socio-demographics, the institutional environment, and cultural factors. In the Eclectic Framework these factors are captured by the demand side of entrepreneurship (creating opportunities for entrepreneurship), the supply side (generating potential individuals from the population who can perceive of, and seize these opportunities), and government policies, respectively. Below, we discuss the impact of these groups of factors in more detail, focusing in particular on those factors that are included in the Hartog et al. (2010) study.

3.1 Macro-economic conditions

The impact of macro-economic development on entrepreneurship is complex. On the one hand, economic development is accompanied by an increase in wages or an improved system of social security. Rising real wages raise the opportunity costs of self-employment making wage employment more attractive. In addition, as wages increase with economic development, fewer people are willing to leave 'secure' jobs (Iyigun and Owen, 1988) and marginal entrepreneurs may be induced to become employees, pushing up the average size of firms (Lucas, 1978). On the other hand, there may also be a positive effect of economic development on entrepreneurship, for example through an increase in consumer demand for new products and services, creating new business opportunities. Several studies suggest that the relationship between entrepreneurship and the level of economic development (as measured by *GDP per capita*) may be nonlinear. More specifically, evidence is found for a U-shaped relation between dynamic measures of entrepreneurship (e.g. nascent entrepreneurship) and GDP per capita and an L-shaped relation for static measures such as self-employment or business ownership (Wennekers et al., 2010).

Next to the impact of economic development (as measured by GDP per capita), the industrial structure in a country or region is likely to have an influence on new and small-scaled entrepreneurial activity. In particular, the *service sector* is generally characterized by low initial capital requirements, thereby minimizing barriers to entry and facilitating start-up. Most service sectors are characterized by a relatively small average firm size.

Unemployment can have consequences for both the valuation of different types of employment and the number of entrepreneurial opportunities created at the demand side. At the macro level a high rate of unemployment can negatively impact the level of entrepreneurship through a decrease in the number of available business opportunities, induced by a depressed economy (prosperity-pull effect). Moreover, the failure rate of established businesses rises because of low revenues. At the individual level, (the risk) of unemployment is likely to have a positive effect on the level of entrepreneurship through reducing the opportunity costs of self-employment (recession-push effect). As the relation between unemployment and entrepreneurship is obviously complex (Thurik et al., 2008), different studies tend to find different signs for the relationship, where Japanese studies tend to support the recession-push hypothesis.

3.2 Technology

Technological development favors small-scale production through cheaper capital goods, a decreasing minimum efficient scale and possibilities for flexible specialization (Piore and Sabel, 1984; Carlsson, 1989; Loveman and Sengenberger, 1991). The (marginal) costs of sending information across geographic space have dramatically decreased in the last decades. As a consequence, market-based coordination is cheaper relative to internal coordination, leading to a decline in firm size and diversification (Jovanovic, 1993). Technological advancements induce a reallocation of resources towards new products, leading again to a more intense demand for entrepreneurship (Casson, 1995). Several studies show that the number of firms tends to rise in the early stages of the product life cycle (Klepper, 1996; Carree and Thurik, 2000). Nevertheless, since formal R&D activity is mostly concentrated in large firms, the empirical relation between R&D intensity and entrepreneurship indicators is often found to be negative.

3.3 Socio-demographics

The *age structure* of the population influences entrepreneurship because the likelihood to become an entrepreneur varies with the age of the individual. Many entrepreneurs start a business between the age of 25 and 40 years old (Storey, 1994; Van Gelderen, 1999). Reynolds et al. (1999) show that countries with a higher share of individuals within the age class of 25 to 44 years old have more start-ups. Similarly, Evans and Leighton (1989) show that a declining age of the population has a negative effect on the level of self-employment. The age structure of the population may also indirectly affect entrepreneurship through, for example, the availability of financial resources, human capital and social networks (Peters et al., 1999). In Japan, the average age of individuals to start a business is somewhat higher than in other developed countries, around 45 years. Moreover, up to 55 years of age, the probability to be self-employed increases with age (Genda and Kambayashi, 2002).

The *female participation rate* has a positive impact on the self-employment rate of women.² Although the labor market participation of women increased in most developed countries in the last decades (OECD, 1998), the share of self-employed women still lags behind that of men in most developed economies, although there is important variation in female entrepreneurship rates and the gender gap in entrepreneurship between countries (Allen et al., 2007).

Entrepreneurship may be stimulated at different *educational stages*, including the primary, secondary and tertiary level. At the primary level, the development of entrepreneurial qualities, such as autonomy, independence and self-confidence can be stimulated (Van der Kuip and Verheul, 2003/4). At the secondary and tertiary level, attention can be paid to the diverse aspects of starting up and running a business such as marketing, finance, and human resource management. Finally, education can make individuals aware of alternative occupational choices. According to Reynolds et al. (1999) investments in tertiary education positively contribute to a country's rate of new firm formation. Several Japanese studies suggest that, different from other developed countries, people with higher education (university graduates) are less likely to be self-employed, possibly because of higher risk and opportunity cost.

3.4 Institutions & policy

Although it is not straightforward that government intervention is always successful (Parker, 2007; Storey, 2003), public policy and the institutional environment potentially play an important role in enhancing both the quantity and quality of entrepreneurship in a country. Driven by the increase in awareness of the economic importance of entrepreneurship, several studies have attempted to better understand and frame the effect of government policies and institutions on entrepreneurship (Verheul et al., 2002; Lundström and Stevenson, 2005). Examples of institutional variables are *taxation* which may negatively influence the relative rewards of entrepreneurship, *social security entitlements* which may affect the relative risks of entrepreneurship vis-à-vis other occupations (Hessels et al., 2007), and the strictness of labor market regulation which may negatively affect (the attractiveness of) entrepreneurship through, e.g., *employment protection* (Román Díaz, 2010).

3.5 Culture

Culture is said to play an important role when it comes to explaining entrepreneurship. At the individual level it is found that cultural values matter in the explanation of entrepreneurial behavior (Shane et al., 1991; McGrath & MacMillan 1992; Mitchell et al., 2000). To link national value systems to entrepreneurship, use is often made of Hofstede's (2001) indices: the Power Distance Index (PDI), the Uncertainty Avoidance Index (UAI), Individualism (IDV) and Masculinity (MAS)³. According to Shane (1992) cultures with a low PDI are less hierarchical and leave more space for individuals to pursue

² Whether an increase in female labor force participation leads to an increase or decrease in entrepreneurship depends on the specific measurement of the entrepreneurship variable. When focusing on the number of entrepreneurs relative to the labour force, a higher female participation is associated with lower (overall) entrepreneurship rates, simply because the lower female entrepreneurship rate (compared to men) gets a higher weight in determining the overall entrepreneurship rate. When focusing on the number of entrepreneurs relative to the (adult) population, a higher female participation is often associated with a higher size of the labour force, and hence a higher supply of potential entrepreneurs. Hence in this case the expected effect is positive.

³ For a detailed description of the Hofstede indices, see: www.geert-hofstede.com or Section 5.5 of this paper.

innovative ideas. Russell (2004) argues that low PDI societies are generally more positive towards entrepreneurial initiatives, and offer entrepreneurs better access to finance and training. In their study Mueller & Thomas (2000) find evidence that entrepreneurial orientation is more likely to occur in high IDV, low UAI countries than in collectivistic, uncertainty avoiding cultures. However, there appears to be a lack of consensus concerning the relationship between IDV and entrepreneurship. According to Tiessen (1997) micro level studies see entrepreneurs as individualists, whereas macro level studies associate both high and low levels of IDV with economic growth, entrepreneurship and innovation. A negative relationship with IDV may be explained by the fact that entrepreneurs often swim against the stream and are motivated to create their own destiny outside of the collectivistic organizational cultures. In terms of the Masculinity index (MAS), Hayton et al. (2002) concluded that there is no connection between MAS and innovation. Nevertheless, it could be expected that there is more support for entrepreneurship in high MAS countries because of the importance of achievement, recognition and wealth in such countries.

4. Methodology

We build on the empirical analysis by Hartog et al. (2010) who – on the basis of data for 20 developed countries over the period 2002-2006 – investigate a range of determining factors of three phases of entrepreneurship, including nascent, young business and established entrepreneurship.⁴ The estimation results of their study can be found in Appendix 1 to this paper. We apply a decomposition analysis to better understand the differences in entrepreneurial activity between Japan and the Netherlands. More specifically, the fitted (i.e. predicted) values of the levels of nascent, young business, and established entrepreneurship of Japan and the Netherlands (averaged over the period 2002-2006) are decomposed into individual contributions of explanatory variables by multiplying the estimated coefficient with the country value of the variable. Furthermore, by grouping similar explanatory variables, we are able to assess the contribution to entrepreneurial activity of five groups of explanatory factors: macro-economic conditions, technological factors, socio-demographics, the institutional environment, and cultural factors.

In our decomposition analysis we compute the contribution of each individual explanatory variable in deviation from the variable's overall sample average. In this way we can identify which variables contribute positively and negatively to entrepreneurship levels in Japan and the Netherlands, relative to the set of 20 developed countries in the data set used by Hartog et al. (2010). The 20 countries thus serve as a benchmark for assessing entrepreneurship determinants in Japan and the Netherlands. As a second benchmark, we also compare the results of the two countries under consideration with those of the United States.

Table 1 provides a description of both the dependent and independent variables in this study, based on Hartog et al. (2010). Data on nascent and young business entrepreneurship are taken from the Global Entrepreneurship Monitor while data on established entrepreneurship (non-agricultural business ownership) are taken from EIM's COMPENDIA data base (Van Stel, 2005; Van Stel et al. 2010).

⁴ The 20 countries are: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, The Netherlands, Portugal, Spain, Sweden, United Kingdom, Norway, Switzerland, USA, Japan, Canada, Australia and New Zealand.

Information on macro-economic, technological, socio-demographic and institutional factors is derived from several OECD and World Bank data sources, whereas the cultural indicators are taken from Hofstede (2001). Table 2 provides descriptive statistics for both the dependent and the independent variables for Japan, the Netherlands and the United States, while Appendix 3 also presents the entrepreneurship rates for the three countries in comparison with the other 17 countries included in Hartog et al. (2010).

INSERT TABLES 1-5 ABOUT HERE

Tables 3 through 5 present the results of the decomposition analysis for nascent, young business and established entrepreneurship, respectively. For each of these tables the first column provides the average contribution of the determining factor to entrepreneurship (i.e. the coefficient times the value of the variable), averaged over all sample observations (i.e. all countries and years in the Hartog et al. sample). The second column provides the contribution for Japan (average 2002-2006). For instance, in Table 3 we can see that, for the all-country sample, the contribution of the share of the service sector to the nascent rate is 2.33. For Japan this contribution is 2.50, i.e. higher than average. The third column indicates the deviation ($2.50-2.33=0.17$), expressed as a percentage of the overall sample average of the nascent rate (3.91). Hence, the deviation is $0.17/3.91=4.41\%$.⁵ In this way, the deviation of the Japanese nascent rate from the overall country average can be decomposed into contributions per variable. So, as can be seen from the last line of the table, the nascent rate for Japan (averaged over the period 2002-2006) is 0.99, while the overall country average is 3.91. Hence, the nascent rate for Japan is 74.64% lower than the overall average nascent rate. The 74.64% difference is composed of 69.68% for the explanatory variables in the Hartog et al. model, and 4.96% for the residual (i.e. the unexplained part). In turn, the 69.68% can be decomposed into contributions of individual variables, and contributions of groups of variables. For instance we can see that, as a group, the socio-demographic factors in Japan contribute particularly negatively to nascent entrepreneurship: Out of a 74.64% lower nascent rate (compared to the all country average), the socio-demographic factors are responsible for 67.95%. In turn, within this group, the relatively low female labour share in Japan (see Table 2) contributes strongly to the low nascent rate in Japan (this variable accounts for a 43.18% difference between Japan's nascent rate and the all-country average nascent rate).

While Tables 3-5 focus on the contributions of individual variables for three specific countries, in Appendix 2 we also show, at the level of the five groups of explanatory factors, the contributions of all countries in the Hartog et al. data base, in deviation from the overall average of the entrepreneurship variable under consideration. For instance, in Figure C1, we can see that the 67.95% negative deviation for the socio-demographic variables for Japan is indeed extreme: for this group of explanatory variables, Japan has the lowest contribution to the nascent rate of all countries.

⁵ Actually, $0.17/3.91$ equals 4.35%. However, the number in the table (4.41%) is computed based on more decimals for the contribution variables, and the overall average of nascent entrepreneurial activity.

5. Results

In this section we will describe the results of the decomposition analysis, as shown in Tables 3-5. The analysis focuses mainly on the sizes of the effects of (groups of) explanatory variables. However, if necessary, when discussing the results we will also take account of the significance level of the estimated coefficients of the variables in the underlying model (see Appendix 1). Also, it is important to mention that we will analyse the contributions of certain variables to entrepreneurship levels in the three countries, *relative* to the sample averages of the 20 countries in the Hartog et al. study, which thus serve as a benchmark. This means, for instance, that we will sometimes speak of a positive contribution for a certain variable for a certain country, even if the sign in the estimation, as shown in Appendix 1, is negative. A positive contribution then means that the negative effect is smaller than average, so that, *compared to the all-country average*, the contribution to entrepreneurship is positive.

5.1 Macro-economic conditions

The decomposition results show that, as a whole, the macro-economic climate does not have a large effect on the three types of entrepreneurship (i.e., nascent, young business and established entrepreneurial activity), both in Japan and the Netherlands (see Figures A1-A3 in Appendix 2). Nevertheless, looking at the influence of the separate factors (presented in Tables 3-5) there is one effect worthwhile mentioning. From Table 4 we see that the contribution of unemployment to young business entrepreneurial activity is positive (relative to the all-country average), both in Japan and in the Netherlands. This reflects a relatively low unemployment rate in both countries (see Table 2). Since the estimated effect of unemployment on young business entrepreneurial activity is negative (see Appendix 1), the low unemployment rates make that the prosperity-pull effect is relatively strong in the two countries. The low unemployment rates reflect favourable economic conditions, causing more people to try their luck as an entrepreneur.

5.2 Technology

Tables 3 and 4 show that the high R&D intensity in Japan (see Table 2) contributes relatively strongly to lower rates of nascent and young business entrepreneurship rates in Japan. *Ceteris paribus*, the high R&D intensity in Japan explains 19.36 and 18.28 percent points of the total gap between the Japanese entrepreneurship rates and the overall sample averages. This negative association reflects that formal R&D investments are dominated by large firms. Indeed, according to OECD (2008), the share of business R&D expenditure of SMEs is only 8% in Japan (27% in the Netherlands and 14% in the United States).

5.3 Socio-demographics

From the decomposition analysis (in Figure C1-C3 in Appendix 2) we can derive that socio-demographics in both Japan and the Netherlands negatively contribute to nascent and young business activity (relative to the all-country average), where the contribution for Japan is even extremely low (again, relative to the benchmark). For nascent entrepreneurship this can mainly be attributed to the relatively low female labor share in Japan over the period 2002-2006 (as compared to other countries). In

fact, with a relatively low share of women in the labor force, there are effectively fewer people to undertake steps to start a company and pursue an entrepreneurial career.

According to the Employment Status Survey by MIC (Ministry of Internal Affairs and Communications), the labor participation ratio of Japanese women increased between 1997 and 2007 especially for the age group between 25 and 34 years old, on which the burden of childcare of women concentrates. This ratio increased from 64.3% (1997) to 73.5% (2007) for the women of 25-29 years old and from 54.4% (1997) to 63.5% (2007) for the women of 30-34 years old, even though it is much lower than the ratio of men in the same age groups (89.7% and 92.9% in 2007). However, it is noteworthy that since the enactment of the Equal Employment Opportunity Law in 1986, the ratio of regular employees to the female workers remain unchanged both for small and large firms: Rather, this ratio slightly decreased from 25.1% (1987) to 21.7% (2007) for large firms and from 30.6% (1987) to 29.5% (2007) for SMEs (with less than 300 employees).⁶ This stability is empirically confirmed by Abe (2010).

Furthermore, both in Japan and the Netherlands, the relatively low enrollment rates in tertiary education (which is lower than that in the US and the country average), seem to contribute to lower nascent and young entrepreneurial activity rates. In fact, new entrepreneurship energy often comes from young and highly educated people.

5.4 Institutional environment

The decomposition analysis (in Figures D1-D3) shows that, whereas for Japan (and the United States) the institutional environment positively affects entrepreneurship compared to the all-country average (the overall negative effects are relatively weak for these countries), for the Netherlands the institutions are particularly harmful for, especially, young business and established entrepreneurial activity. Based on Tables 4 and 5 it appears that the largest part of the relatively strong negative effect for the Netherlands can be ascribed to the high levels of social security entitlements and employment protection that find their origin in the Dutch *Polder Model* which represents the consensus model in the Netherlands. This consensus thinking was introduced after the economic recessions of the 1970s and early 1980s. At that time there was a trilateral agreement between employers' and employees' organizations and the government (Thurik, 1999). Promises were made by each of the parties, including that of employers to refrain from massive lay-offs and that of employees' organization to develop a more sophisticated social security system. Obviously, high levels of social security discourage people to leave their secure wage jobs to start their own entrepreneurial career. Furthermore, stringent employment protection complicates hiring and firing, which could discourage potential entrepreneurs to start up new businesses. Although the Netherlands has recently reduced employment protection (for regular employment), it is still among the highest of all OECD countries (Ochel and Rohwer, 2009)⁷. In addition, social contributions still account for a large part of the Dutch government revenues (Auer, 2000).

The relative weakness of the negative effect (positive deviation) for Japan can be ascribed to a relatively low level of social security combined with relatively low taxes. In fact, in terms of taxes Japan seems to

⁶ This paragraph is based on information from the Employment Status Survey by MIC, cited in the *2009 White Paper on Small and Medium Enterprises in Japan* by the Small Business Agency.

⁷ Note that employment protection for temporary workers in the Netherlands is less strict as compared to other OECD countries.

be at par with the United States, a country that traditionally is characterized by low tax rates (see Table 2). Note that (as opposed to taxes as % of GDP) the corporate tax rate in Japan is relatively high (see Table 2), which has a negative contribution to the business ownership rate (see Table 5).

5.5 Culture

Investigating the decomposition results for the cultural factors we see again a striking difference for our two countries under investigation: Japan and the Netherlands. Whereas cultural factors have overall positive effects on young and established entrepreneurial activity, these effects are considerably weaker in Japan than in the Netherlands. More specifically, Tables 4 and 5 show that in Japan the high scores on Hofstede's (2001) Power Distance⁸ and Masculinity⁹ indices, and the low score on the Individualism¹⁰ index, strongly contribute to lower rates of young and established entrepreneurial activity in Japan, compared to the all-country average rates. As did Hofstede, Kashima et al. (1995) also find that the Japanese scored higher on their collectivism measure than Americans and Australians. This traditional collectivistic nature of the Japanese people is not in line with the essentially individualistic nature of entrepreneurial activity, which explains this negative deviation.

The relatively low score on the Masculinity Index for the Netherlands indicates that this country is extremely feminine. Apparently, this femininity (in combination with relatively high individualism) mitigates the overall negative effect of masculinity on young and established entrepreneurial activity. One possible explanation may lie in the high level of female labor participation in more feminine countries, where women are not confined to the traditional caretaking roles.

6. Conclusions

Globalization and an increasing importance of knowledge in the production process cause many developed countries to move from a more 'managed' to a more 'entrepreneurial' economy in recent decades. In the former type of economy, large and incumbent firms play a dominant role, exploiting economies of scale in a relatively certain economic environment. In the latter type, small and new firms play an increasingly important role, introducing new products and services in highly uncertain economic environments while quickly adapting to rapidly changing consumer preferences. The speed of adjustment in this transition process from a managed to an entrepreneurial economy varies by country. In this paper we investigated the differences between a more 'managed' economy, Japan, characterized by relatively low levels of entrepreneurial activity, and a more 'entrepreneurial' economy, the Netherlands.

⁸ The Power Distance Index refers to "the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally" (Hofstede, 2001, p. 98).

⁹ "Masculinity stands for a society in which social gender roles are clearly distinct: Men are supposed to be assertive, tough, and focused on material success; women are supposed to be modest, tender and concerned with the quality of life. Femininity stands for a society in which social gender roles overlap" (Hofstede, 2001, p. 297).

¹⁰ "Individualism stands for a society in which the ties between individuals are loose: Everyone is expected to look after him/herself and her/his immediate family only" (Hofstede, 2001, p. 225).

Over the period 2002-2006, for all three indicators considered in this paper, entrepreneurship is higher in the Netherlands than in Japan. The nascent entrepreneurship rate in the Netherlands amounts to 2.7% while it is 1.0% in Japan and 7.8% in the United States. The young business entrepreneurship rate amounts to 2.0%, 1.1% and 4.6% for the Netherlands, Japan and the U.S., respectively, while established entrepreneurship as measured by the number of non-agricultural business owners as a percentage of total labour force amounts to 10.8%, 9.0% and 10.0% in the Netherlands, Japan and the U.S., respectively. Furthermore, as we have seen in Section 2, not only indicators of entrepreneurial activity but also entrepreneurial climate indicators such as opportunity perception and entrepreneurial self-efficacy turned out to be considerably higher in the Netherlands compared to Japan. These statistics suggest that the Netherlands is indeed a more entrepreneurial type of economy whereas Japan is a more managed type of economy.

Building on earlier work by Hartog *et al.* (2010), who explain cross-country differences in three measures of entrepreneurial activity using five broad groups of explanatory variables, we applied a decomposition analysis to better understand the differences in entrepreneurial activity between Japan and the Netherlands. Our decomposition analysis offers a large array of interesting results. First, the contribution of individual explanatory factors varies across nascent, young business, and established entrepreneurship. This suggests that entrepreneurship in different stages of the entrepreneurial process is stimulated by different factors.

Second, when explaining entrepreneurship levels in Japan and the Netherlands, two striking opposite patterns emerge regarding the contributions of institutional and cultural factors. In the Netherlands, the institutional factors *negatively* contribute to the young and established entrepreneurship rates (relative to the all-country average), whereas in Japan these factors have a *positive* contribution in the sense that in Japan the negative effect of institutional variables is smaller than average (i.e. relative to the all-country average, the contribution is positive). In particular, our results suggest that the high levels of social security and employment protection in the Netherlands deters entry into self-employment, whereas in Japan the (lower) levels of social security do not act as a negative incentive for potential entrepreneurs to start their own business. Furthermore, the lower tax level in Japan mitigates the overall negative effect of this factor on nascent and young business entrepreneurship.

Third, with respect to the contribution of cultural factors, we see an opposite pattern: the (positive) effects of these factors on young business entrepreneurial activity and business ownership are relatively smaller in Japan (downward deviation from the all-country average) but larger in the Netherlands (upward deviation). Contrary to popular belief, it is not the relatively low level of risk taking (according to the World Value Survey, 2005-2008, Japan scores lowest of all countries as regards risk-taking behaviour) that explains the weak cultural contribution in Japan. Rather, it appears that Japan scores relatively high in terms of Masculinity, combined with a low level of Individualism, and a high level of Power Distance (according to the well-known Hofstede indices). On the contrary, the Netherlands scores relatively low on Masculinity and relatively high on Individualism, thus explaining the upward deviation from the country average regarding the positive contribution of cultural factors to the Dutch entrepreneurship rates.

Hence we find that, in spite of higher levels of young business entrepreneurial activity and business ownership in the Netherlands, the institutional framework in the Netherlands is considerably *less* favourable to entrepreneurship, compared to Japan. On the other hand, cultural differences between the

Netherlands and Japan explain a substantial part of the difference in entrepreneurship rates between the two countries.

Fourth, in terms of socio-demographics we see that in Japan, the relatively low female labour force participation rate negatively contributes to the level of nascent entrepreneurial activity (relative to the all-country average). The low participation by women implies the supply of potential (female) entrepreneurs is smaller than in other countries, resulting in smaller numbers of female entrepreneurs, confirming the evidence presented in Section 2.2 (Figure 8) in this paper.

Our findings have implications for policy in the two selected countries: government policy in the Netherlands may consider altering incentive structures for labour market participants in favour of self-employment (relative to wage-employment) while Japan may consider stimulating an enterprising culture focusing more on, for example, rewarding individual achievement. Furthermore, stimulating more women to enter the labour force may also increase (nascent) entrepreneurship rates in Japan. In terms of research implications, the method applied in this paper can also easily be applied to investigate and compare the entrepreneurial climate in other countries. Furthermore, it can also be used to study the conditions for particular types of entrepreneurship, such as high-growth, female and minority entrepreneurship.

Table 1: Measurement of dependent & independent variables in Hartog et al. (2010)

Variable	Measure	Source
Nascent entrepreneurship rate	Percentage of the adult population (18-64 years of age) actively involved in setting up a business	GEM (Reynolds et al., 2005)
Young business entrepreneurship rate	Percentage of adult population (18-64 years of age) currently owning and managing a young business that is less than 42 months old	GEM (Reynolds et al., 2005)
Business ownership rate	Total number of unincorporated and incorporated self-employed (excluding agriculture) as a share of the total labor force	Compendia (Van Stel, 2005)
Share service sector Unemployment rate Per capita income	Share of service sector in total (non-agricultural) employment ^a Number of unemployed as % of total labor force GDP p.c. in thousands of ppp per US dollar at 1990 prices	OECD Labour Force Statistics OECD Main Economic Indicators OECD National Accounts, OECD LFS
R&D expenditures	R&D expenditures as % of GDP	OECD Science & Technology (R&D), OECD Economic Outlook (GDP)
Enrollment secondary education Enrollment tertiary education Age composition	Gross enrollment rate in secondary education Gross enrollment rate in tertiary education Population aged 25-39 years as share of population aged 25-64 years	World Bank EdStats World Bank EdStats OECD Demographic and Labour Force Database, US Census Bureau International Database, and UNStats
Female labor share	Female labor force as a share of the total labor force	OECD LFS
Social security Taxes Corporate tax rate Employment protection 'Rule of Law'	Unemployment gross replacement rate Total tax revenue as % of GDP Tax rate of corporate and capital income ^b Strictness of employment protection (Nickell, 2006) ^c "Perceptions of the extent to which agents have confidence in and abide by the rules of society" (Kaufmann et al., 2009, p. 6) ^d	OECD Benefits and Wages Stats. OECD Revenue Stats. OECD Tax data base CEP-OECD Institutions Data Set World Bank Worldwide Governance Indicators
Power distance index Individualism Masculinity Uncertainty avoidance index	Power Distance Index (PDI) (Hofstede, 2001, p. 98) Individualism (IDV) – versus collectivism (Hofstede, 2001, p. 225) Masculinity (MAS) – versus femininity (Hofstede, 2001, p. 297) Uncertainty Avoidance Index (UAI) (Hofstede, 2001, p. 161)	Hofstede's cultural dimensions

^a Services include the 1-digit sectors Wholesale and retail trade, restaurants and hotels; Transport, storage and communication; Finance, insurance, real estate and business services; and Community, social and personal services.

^b This refers to basic (non-targeted) corporate income tax rates for the total central and sub-central governments (combined).

^c Higher values represent increasing strictness of employment protection.

^d The value of this indicator ranges from -2.5 to 2.5, with higher values corresponding to better governance outcomes.

Source: Hartog et al. (2010).

Table 2: Descriptive statistics, average values 2002-2006

	All-country average	Japan	Netherlands	United States
Entrepreneurship variables				
Nascent entrepreneurship rate	3.91	0.99	2.68	7.78
Young business entr. rate	2.97	1.14	2.00	4.55
Business ownership rate	10.85	9.03	10.80	10.02
Macro-economic conditions				
Share service sector	56.27	60.45	67.17	78.53
Unemployment rate	6.37	4.65	3.98	5.40
Per capita income	21.22	20.85	20.82	28.16
Technological factors				
R&D expenditures (% of GDP)	2.12	3.27	1.74	2.62
Socio-demographics				
Enrollment secondary education	113.62	101.76	119.78	94.43
Enrollment tertiary education	67.31	54.22	59.48	82.86
Age composition	40.25	38.28	39.80	40.70
Female labor share	44.86	41.20	44.16	46.16
Institutional environment				
Social security	29.73	7.78	43.50	13.64
Taxes (% of GDP)	37.75	26.83	38.08	26.77
Corporate tax rate	31.60	39.87	32.92	39.30
Employment protection	1.94	2.44	3.05	0.17
'Rule of Law'	1.61	1.35	1.73	1.54
Cultural factors				
Power distance	39.77	54.00	38.00	40.00
Individualism	72.40	46.00	80.00	91.00
Masculinity	47.69	95.00	14.00	62.00
Uncertainty avoidance	57.81	92.00	53.00	46.00

Table 3: Contribution of individual determinants to explanation of nascent entrepreneurial activity rate, average values 2002-2006

	All-country average contribution	Japan		Netherlands		United States	
		Contribution	% Deviation (relative to nascent rate)	Contribution	% Deviation (relative to nascent rate)	Contribution	% Deviation (relative to nascent rate)
Share service sector	2.33	2.50	4.41	2.78	11.52	3.25	23.52
Unemployment rate	1.00	0.73	-6.90	0.63	-9.59	0.85	-3.88
Per capita income	1.40	1.38	-0.62	1.38	-0.67	1.86	11.74
Macro-economic conditions	4.73	4.61	-3.11	4.78	1.26	5.96	31.37
R&D expenditures (% of GDP)	-1.39	-2.15	-19.36	-1.15	6.33	-1.72	-8.46
Technological factors	-1.39	-2.15	-19.36	-1.15	6.33	-1.72	-8.46
Enrollment secondary education	0.57	0.51	-1.52	0.60	0.79	0.47	-2.47
Enrollment tertiary education	2.77	2.23	-13.77	2.45	-8.23	3.41	16.34
Age composition	7.53	7.16	-9.47	7.45	-2.17	7.62	2.13
Female labor share	20.68	18.99	-43.18	20.36	-8.29	21.28	15.28
Socio-demographics	31.55	28.90	-67.95	30.85	-17.91	32.78	31.29
Social security	0.60	0.16	-11.30	0.88	7.08	0.27	-8.28
Taxes (% of GDP)	-3.79	-2.70	28.07	-3.83	-0.84	-2.69	28.21
Corporate tax rate	0.80	1.00	5.32	0.83	0.85	0.99	4.96
Employment protection	-0.63	-0.79	-4.17	-0.99	-9.24	-0.06	14.70
‘Rule of Law’	-0.89	-0.74	3.76	-0.95	-1.67	-0.84	1.04
Institutional environment	-3.92	-3.07	21.68	-4.06	-3.82	-2.33	40.62
Power distance	-3.45	-4.68	-31.53	-3.29	3.93	-3.47	-0.50
Individualism	1.71	1.09	-15.98	1.89	4.60	2.15	11.26
Masculinity	0.23	0.46	5.84	0.07	-4.16	0.30	1.77
Uncertainty avoidance	2.65	4.22	40.14	2.43	-5.64	2.11	-13.86
Cultural factors	1.15	1.09	-1.53	1.10	-1.27	1.10	-1.34
Constant term plus year dummies	-28.21	-28.19	0.58	-28.22	-0.04	-28.22	-0.04
Fitted value	3.91	1.19	-69.68	3.31	-15.45	7.57	93.44
Residual	0.00	-0.19	-4.96	-0.62	-15.91	0.22	5.54
Nascent entrepreneurial activity rate	3.91	0.99	-74.64	2.68	-31.36	7.78	98.98

Note: The contributions of the individual variables (including the constant term and the year dummies) add up to the fitted value. The fitted value and the residual add up to the dependent variable (i.e., the nascent entrepreneurial activity rate).

Table 4: Contribution of individual determinants to explanation of young business entrepreneurial activity rate, average values 2002-2006

	All-country average contribution	Japan		Netherlands		United States	
		Contribution	% Deviation (relative to nascent rate)	Contribution	% Deviation (relative to nascent rate)	Contribution	% Deviation (relative to nascent rate)
Share service sector	-1.09	-1.17	-2.71	-1.30	-7.09	-1.52	-14.47
Unemployment rate	-1.31	-0.96	11.88	-0.82	16.52	-1.11	6.69
Per capita income	-4.03	-3.96	2.35	-3.96	2.53	-5.35	-44.38
Macro-economic conditions	-6.43	-6.09	11.52	-6.07	11.96	-7.98	-52.17
R&D expenditures (% of GDP)	-1.00	-1.54	-18.28	-0.82	5.98	-1.24	-7.99
Technological factors	-1.00	-1.54	-18.28	-0.82	5.98	-1.24	-7.99
Enrollment secondary education	0.58	0.52	-2.03	0.61	1.05	0.48	-3.28
Enrollment tertiary education	2.68	2.16	-17.55	2.37	-10.49	3.30	20.83
Age composition	9.83	9.35	-16.27	9.72	-3.74	9.94	3.66
Female labor share	2.29	2.11	-6.30	2.26	-1.21	2.36	2.23
Socio-demographics	15.39	14.13	-42.15	14.96	-14.38	16.08	23.45
Social security	-1.34	-0.35	33.22	-1.96	-20.84	-0.61	24.35
Taxes (% of GDP)	-2.64	-1.87	25.68	-2.66	-0.77	-1.87	25.82
Corporate tax rate	-0.46	-0.58	-4.01	-0.47	-0.64	-0.57	-3.74
Employment protection	-1.40	-1.76	-12.19	-2.20	-27.02	-0.12	42.99
'Rule of Law'	1.49	1.24	-8.31	1.60	3.71	1.42	-2.30
Institutional environment	-4.34	-3.32	34.39	-5.70	-45.55	-1.75	87.12
Power distance	-1.84	-2.50	-22.19	-1.76	2.76	-1.85	-0.35
Individualism	2.86	1.82	-35.10	3.16	10.11	3.60	24.74
Masculinity	-0.80	-1.59	-26.57	-0.23	18.93	-1.04	-8.04
Uncertainty avoidance	1.87	2.98	37.31	1.72	-5.24	1.49	-12.88
Cultural factors	2.10	0.71	-46.56	2.89	26.56	2.20	3.46
Constant term plus year dummies	-2.74	-2.64	3.42	-2.75	-0.29	-2.75	-0.29
Fitted value	2.97	1.26	-57.66	2.50	-15.73	4.56	53.58
Residual	0.00	-0.11	-3.86	-0.51	-17.00	-0.01	-0.34
Young business entr. activity rate	2.97	1.14	-61.53	2.00	-32.73	4.55	53.24

Note: The contributions of the individual variables (including the constant term and the year dummies) add up to the fitted value. The fitted value and the residual add up to the dependent variable (i.e., the young business entrepreneurial activity rate).

Table 5: Contribution of individual determinants to explanation of business ownership rate, average values 2002-2006

	All-country average contribution	Japan		Netherlands		United States	
		Contribution	% Deviation (relative to nascent rate)	Contribution	% Deviation (relative to nascent rate)	Contribution	% Deviation (relative to nascent rate)
Share service sector	4.39	4.72	3.00	5.24	7.84	6.13	16.01
Unemployment rate	1.99	1.46	-4.95	1.25	-6.88	1.69	-2.79
Per capita income	-8.26	-8.12	1.32	-8.11	1.42	-10.97	-24.91
Macro-economic conditions	-1.88	-1.95	-0.63	-1.62	2.38	-3.15	-11.69
R&D expenditures (% of GDP)	-1.19	-1.84	-5.98	-0.98	1.95	-1.48	-2.61
Technological factors	-1.19	-1.84	-5.98	-0.98	1.95	-1.48	-2.61
Enrollment secondary education	3.68	3.30	-3.54	3.88	1.84	3.06	-5.73
Enrollment tertiary education	0.77	0.62	-1.38	0.68	-0.82	0.95	1.64
Age composition	-8.20	-7.80	3.72	-8.11	0.85	-8.29	-0.84
Female labor share	-11.09	-10.19	8.35	-10.92	1.60	-11.41	-2.95
Socio-demographics	-14.84	-14.07	7.15	-14.47	3.47	-15.70	-7.88
Social security	-3.53	-0.92	24.02	-5.17	-15.07	-1.62	17.60
Taxes (% of GDP)	-0.54	-0.38	1.43	-0.54	-0.04	-0.38	1.44
Corporate tax rate	-5.92	-7.46	-14.26	-6.16	-2.27	-7.36	-13.28
Employment protection	-0.18	-0.22	-0.42	-0.28	-0.93	-0.02	1.48
‘Rule of Law’	-13.17	-10.99	20.13	-14.15	-8.97	-12.57	5.57
Institutional environment	-23.34	-19.98	30.91	-26.30	-27.28	-21.95	12.81
Power distance	-7.30	-9.91	-24.06	-6.97	3.00	-7.34	-0.38
Individualism	10.45	6.64	-35.11	11.55	10.11	13.14	24.74
Masculinity	-2.44	-4.86	-22.28	-0.72	15.87	-3.17	-6.74
Uncertainty avoidance	6.72	10.70	36.64	6.16	-5.15	5.35	-12.65
Cultural factors	7.44	2.58	-44.81	10.02	23.83	7.98	4.97
Constant term plus year dummies	44.67	44.67	0.04	44.68	0.08	44.68	0.08
Fitted value	10.85	9.41	-13.32	11.33	4.43	10.38	-4.32
Residual	0.00	-0.38	-3.53	-0.53	-4.92	-0.36	-3.35
Business ownership rate	10.85	9.03	-16.85	10.80	-0.49	10.02	-7.68

Note: The contributions of the individual variables (including the constant term and the year dummies) add up to the fitted value. The fitted value and the residual add up to the dependent variable (i.e., the business ownership rate).

References

- Abe, Yukiko, 2010, The Equal Employment Opportunity Law and Labor Force Behavior of Women in Japan, *Journal of the Japanese and International Economies*, forthcoming.
- Allen, I.E., Elam, A., Langowitz, N. and M. Dean, 2007, *Global Entrepreneurship Monitor 2007 Report on Women and Entrepreneurship*, Babson College, Center for Women's Leadership, Lawrence Field Center for Entrepreneurship of Baruch College and Zicklin School of Business.
- Audretsch, D.B. and A.R. Thurik, 2001, What's new about the new economy? Sources of growth in managed and entrepreneurial economies, *Industrial and Corporate Change* 10 (1), 267-315.
- Audretsch, D.B. and A.R. Thurik, 2000, Capitalism and democracy in the 21st century: from the managed to the entrepreneurial economy, *Journal of Evolutionary Economics* 10 (1-2), 17-34.
- Audretsch, D.B. and A.R. Thurik, 2001, What's new about the new economy? Sources of growth in managed and entrepreneurial economies, *Industrial and Corporate Change* 10 (1), 267-315.
- Audretsch, D.B. and A.R. Thurik, 2010, Unraveling the Shift to the Entrepreneurial Economy, Tinbergen Institute Discussion Paper TI 2010-080/3, Rotterdam: Tinbergen Institute.
- Auer, Peter, (2000), *Employment revival in Europe - Labour market success in Austria, Denmark, Ireland and the Netherlands*, 2000 ed., International Labour Office, Employment Analysis and Research Unit.
- Busenitz, L.W., Gomez, C. and J.W. Spencer, 2000, Country institutional profiles: Unlocking entrepreneurial phenomena, *Academy of Management Journal* 43 (5), 994-1003.
- Carlsson, B., 1989, The evolution of manufacturing technology and its impact on industrial structure: an international study, *Small Business Economics* 1 (1), 21-38.
- Carree, M.A. and A.R. Thurik, 2000, The life cycle of the U.S. tire industry, *Southern Economic Journal* 67 (2), 254-278.
- Casson, M., 1995, *Entrepreneurship and Business Culture; Studies in the Economics of Trust*, vol.1, Cheltenham (U.K.): Edward Elgar Publishing.
- Dennis, W.J., Jr., 2004, Creating and sustaining a viable small business sector, Paper presented at School of Continuing Education, University of Oklahoma, 27th October 2004.
- EIM, 2009, Internationale Benchmark Ondernemerschap 2009 (in Dutch). EIM Report A200913, Zoetermeer, NL: EIM.
- EIM, 2010, Internationale Benchmark Ondernemerschap 2009 (in Dutch). EIM Report A201006, Zoetermeer, NL: EIM.
- Genda, Yuji, and Kambayashi, Ryo, 2002, Declining Self-employment in Japan, *Journal of the Japanese and International Economies* 16 (1), 73-91.
- Geroski, P.A. (1995), What Do We Know about Entry?, *International Journal of Industrial Organization* 13, 421-441.
- Haltiwanger, J., Jarmin, R.S. and J. Miranda, 2010, Who Creates Jobs? Small vs. Large vs. Young, CES Research Paper 10-17, August 2010, Washington, DC: U.S. Census Bureau, Center for Economic Studies (CES).
- Hartog, C., Van Stel, A.J. and D.J. Storey, 2010, Institutions and entrepreneurship: The role of the rule of law, EIM Scales paper H201003, Zoetermeer: EIM Business and Policy Research.
- Hayton, J.C., Gerard, G. and S.A. Zahra, 2002, National culture and entrepreneurship: a review of behavioral research, *Entrepreneurship Theory and Practice* 26 (4), 33-52.
- Hessels, J., Van Stel, A., Brouwer, P., and S. Wennekers (2007), Social Security Arrangements and Early-Stage Entrepreneurial Activity, *Comparative Labor Law & Policy Journal* 28 (4), 743-774.

- Hessels, J., Hartog, C. and S. Wennekers, 2009, Global Entrepreneurship Monitor 2008 The Netherlands, The hidden entrepreneurial forces of the Dutch economy, Zoetermeer: EIM Business and Policy Research.
- Hofstede, G., Noorderhaven, N.G., Thurik, A.R., Uhlaner, L.M., Wennekers, A.R.M. and R.E. Wildeman, 2004, Culture's role in entrepreneurship: Self-employment out of dissatisfaction, in: Ulijn, J. and T.E. Brown (eds.), *Innovation, Entrepreneurship and Culture, The Interaction Between Technology, Progress and Economic Growth*, Cheltenham: Edward Elgar.
- Hofstede, G., 2001, *Culture's Consequences: Comparing Values, Behaviors, Institutions and Organizations Across Nations*, 1st edition in 1980, Thousand Oaks CA: Sage Publications, USA.
- Iyigun, M.F. and A.L. Owen, 1988, Risk, entrepreneurship, and human-capital accumulation, *AEA Papers and Proceedings* 88 (2), 454-457.
- Jovanovic, B. (1982), Selection and Evolution in Industry, *Econometrica* **50**, 649-670.
- Jovanovic, B., 1993, The diversification of production, *Brookings Papers on Economic Activity: Microeconomics* 1, 197-235.
- Kaufmann, D., Kraay, A. and M. Mastruzzi, 2009, Governance Matters VIII: Aggregate and Individual Governance Indicators 1996-2008, World Bank Policy Research, Working Paper No. 4978, Washington, DC: World Bank.
- Kashima, Y., Yamaguchi, S., Kim, U., Choi, S. C., Gelfand, M., & Yuki, M. (1995). Culture, gender, and self: A perspective from individualism-collectivism research, *Journal of Personality and Social Psychology* 69 (5), 925-937.
- Klepper, S., 1996, Entry, exit, growth, and innovation over the product life cycle, *American Economic Review* 86 (3), 562-583.
- Loveman, G. and W. Sengenberger, 1991, The re-emergence of small-scale production: an international comparison, *Small Business Economics* 3 (1), 1-37.
- Lundström, A. and L. Stevenson (eds.), 2005, *Entrepreneurship Policy: Theory and Practice*, International Studies in Entrepreneurship (ISEN), New York: Springer.
- Lucas, R.E., Jr., 1978, On the size distribution of business firms, *Bell Journal of Economics* 9 (2), 508-523.
- McGrath, R. G., MacMillan, I.C., 1992, More like each other than anyone else? A cross-cultural study of entrepreneurial perceptions, *Journal of Business Venturing* 7, 419-429.
- Mitchell, R.K., Smith, B., Seawright, K.W., Morse, E.A., 2000, Cross-cultural cognitions and the venture creation decision, *Academy of Management Journal*, 43, 974-993.
- Mueller, S.L., Thomas, A.S., 2001, Culture and entrepreneurial potential: a nine-country study on locus of control and innovativeness, *Journal of Business Venturing* 16, 51-75.
- Nickell, W., 2006, The CEP-OECD Institutions Data Set (1960-2004), CEP Discussion Paper No 759, London: Centre for Economic Performance.
- Ochel, W. and A. Rohwer, 2009, Reduction of employment protection in Europe: A comparative fuzzy-set analysis, CESinfo working paper No. 2828.
- OECD, 1998, *Women Entrepreneurs in Small and Medium Enterprises*, OECD Conference Paris 1997, Paris: OECD.
- OECD, 2008, *Science, Technology and Industry Scoreboard 2007*, Paris: OECD.
- Parker, S.C., 2007, Policymakers beware!, In: D.B. Audretsch, I. Grilo and A.R. Thurik (eds.), *Handbook of Research on Entrepreneurship Policy*, Cheltenham UK: Edward Elgar Publishing, 54-63.
- Peters, M., R.C. Cressy and D.J. Storey, 1999, *The Economic Impact of Ageing on Entrepreneurship and SMEs*, Warwick/Zoetermeer: Warwick Business School/EIM.

- Piore, M.J. and C.F. Sabel, 1984, *The Second Industrial Divide Possibilities for Prosperity*, New York: Basic Books.
- Reynolds, P.D., Hay, M., Bygrave, W.D., Camp, S.M. and E. Autio, 2000, *Global Entrepreneurship Monitor 2000 Executive Report*, Babson College, Kauffman Center for entrepreneurial leadership, and London Business School.
- Reynolds, P.D., Hay, M. and S.M. Camp, 1999, *Global Entrepreneurship Monitor 1999 Executive Report*, Babson College, Kauffman Center for entrepreneurial leadership and London Business School.
- Román Díaz, C., 2010, *Self-employment and labour market regulation*, PhD thesis, University of Huelva, Spain.
- Russell, R.D., 2004, Cultural influences on entrepreneurship: implications for the emergence of new ventures in Latin America, *Journal of Transnational Management* 10 (1), 37-59.
- Shane, S., 1992, Why do some societies invent more than others?, *Journal of Business Venturing*, 7, 29-46.
- Shane, S., Kolvereid, L., Westhead, P., 1991, An exploratory examination of the reasons leading to new firm formation across country and gender, *Journal of Business Venturing*, 6, 431-446.
- Stevenson, L. and A. Lundström, 2007, Dressing the emperor: the fabric of entrepreneurship policy, in: D.B. Audretsch, I. Grilo and A.R. Thurik (eds.), *Handbook of Research on Entrepreneurship Policy*, Cheltenham UK: Edward Elgar Publishing, 94-129.
- Storey, D.J., 1994, *Understanding the Small Business Sector*, London/New York: Routledge.
- Storey, D.J., 1999, Six steps to heaven: evaluating the impact of public policies to support small business in developed economies, in: D.L. Sexton and H. Landström (eds.), *Handbook of Entrepreneurship*, Oxford: Blackwell, 176-194.
- Storey, D.J., 2003, Entrepreneurship, Small and Medium Sized Enterprises and Public Policies, In: Z.J. Acs and D.B. Audretsch (eds.), *Handbook of Entrepreneurship Research*, Kluwer Academic Publishers, Boston/Dordrecht, USA/NL, 473-514.
- Thurik, A.R., 1999, The Dutch Polder Model: shifting from the managed economy to the entrepreneurial economy, Annual Meeting of the American Economic Association, New York, January 3-5, 1999.
- Thurik, A.R., Carree, M.A., Van Stel, A.J. and D.B. Audretsch, 2008, Does self-employment reduce unemployment? *Journal of Business Venturing* 23(6), 673-686.
- Tiessen, J.H., 1997, A framework for international comparative research, *Journal of Business Venturing*, 12, 367-384.
- Van der Kuip, I. and I. Verheul, 2003/2004, Early development of entrepreneurial qualities: the role of initial education, *International Journal of Entrepreneurship Education* 2 (2), 203-226.
- Van Stel, A.J., 2005, COMPENDIA: Harmonizing business ownership data across countries and over time, *International Entrepreneurship and Management Journal* 1 (1), 105-123.
- Van Stel, A.J., J. Cieslik and C.M. Hartog, 2010, Measuring Business Ownership Across Countries and Over Time: Extending the COMPENDIA Data Base, EIM Research Report H201019, Zoetermeer, NL: EIM.
- Verheul, I., Wennekers, S., Audretsch, D. and R. Thurik, 2002, An Eclectic Theory of Entrepreneurship: Policies, Institutions and Culture, in: Audretsch, D.B., Thurik, A.R., Verheul, I. and A.R.M. Wennekers (eds.), *Entrepreneurship: Determinants and Policy in a European-US Comparison*, Boston/Dordrecht: Kluwer Academic Publishers, 11-81.
- Wennekers, A.R.M., Van Stel, A.J., Carree, M.A. and A.R. Thurik, 2010, The Relationship Between Entrepreneurship and Economic Development: Is It U-shaped?, *Foundations and Trends in Entrepreneurship* 6 (3), 167-237.

Appendix 1: Estimation results Hartog, van Stel and Storey (2010)

Table A1 present the estimation results of the Hartog et al. (2010) study, which form the basis for our empirical analysis.

Table A1. Explaining entrepreneurial activity across countries

	Nascent entrepreneurship rate		Young business entrepreneurship rate		Business ownership rate	
Constant	-28.122***	(-3.75)	-2.609	(-0.49)	44.796***	(6.55)
Demography						
Enrollment in secondary education	0.0050	(0.51)	0.0051	(0.73)	0.032***	(3.61)
Enrollment in tertiary education	0.041**	(2.20)	0.040***	(3.02)	0.011	(0.67)
Age composition	0.187**	(2.06)	0.244***	(3.82)	-0.204**	(-2.46)
Female labour share	0.461***	(4.32)	0.051	(0.68)	-0.247**	(-2.54)
Macro-economic conditions						
Service share	0.041	(1.32)	-0.019	(-0.88)	0.078***	(2.73)
Unemployment rate	0.157	(1.41)	-0.206***	(-2.62)	0.313***	(3.07)
Per capita income	0.066	(0.88)	-0.190***	(-3.59)	-0.390***	(-5.68)
Institutions						
Social security	0.020	(0.77)	-0.045**	(-2.44)	-0.119***	(-4.97)
Taxes as % GDP	-0.100**	(-2.34)	-0.070**	(-2.31)	-0.014	(-0.36)
Corporate tax rate	0.025	(0.79)	-0.014	(-0.65)	-0.187***	(-6.47)
Employment protection	-0.325	(-0.96)	-0.722***	(-3.03)	-0.091	(-0.29)
Rule of Law	-0.549	(-0.65)	0.923	(1.54)	-8.162***	(-10.53)
Attitudes/Culture						
Power distance index	-0.087***	(-3.03)	-0.046**	(-2.30)	-0.184***	(-7.04)
Individualism	0.024	(0.79)	0.040*	(1.87)	0.144***	(5.28)
Masculinity	0.0048	(0.29)	-0.017	(-1.41)	-0.051***	(-3.33)
Uncertainty avoidance index	0.046**	(2.04)	0.032**	(2.05)	0.116***	(5.68)
Innovation						
R&D	-0.659**	(-2.34)	-0.473**	(-2.39)	-0.564**	(-2.20)
<i>Log-likelihood</i>		-128.260		-97.426		-120.189
<i>R²</i>		0.752		0.806		0.925
<i>Adjusted R²</i>		0.674		0.744		0.901
<i>Periods included</i>		5 (2002-2006)		5 (2002-2006)		5 (2002-2006)
<i>Countries included</i>		20		20		20
<i>N</i>		88		88		88

Note: * Significant at 10% level; ** Significant at 5% level; *** Significant at 1% level; t-values are between brackets; year dummies are included but not reported. Results obtained through SUR estimation (seemingly unrelated regression)

Source: Hartog et al. (2010).

Appendix 2: Results of decomposition analysis by country and broad group of explanatory factors

In this appendix we show the results of our decomposition analysis by broad group of explanatory factors and by country. Results are shown for each of our three entrepreneurship measures. The numbers in the graphs express deviations from the (overall sample) average contribution of the group of explanatory variables under consideration, expressed as a percentage of the overall sample average of the entrepreneurship variable under consideration. In other words, they express the deviations for the group totals shown (for Japan, Netherlands and the US) in Tables 3, 4 and 5. All numbers relate to averages over the period 2002-2006.

A. Decomposition results for macro-economic conditions

Fig. A1: Contribution of macro-economic conditions to *nascent* rates in 20 countries, 2002-2006

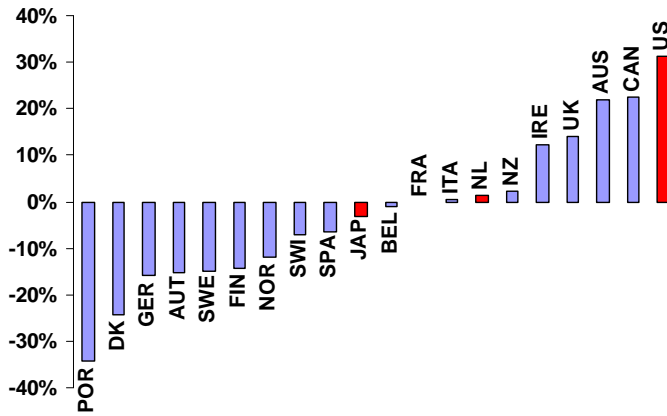


Figure A2: Contribution of macro-economic conditions to *young business* rates in 20 countries, 2002-2006

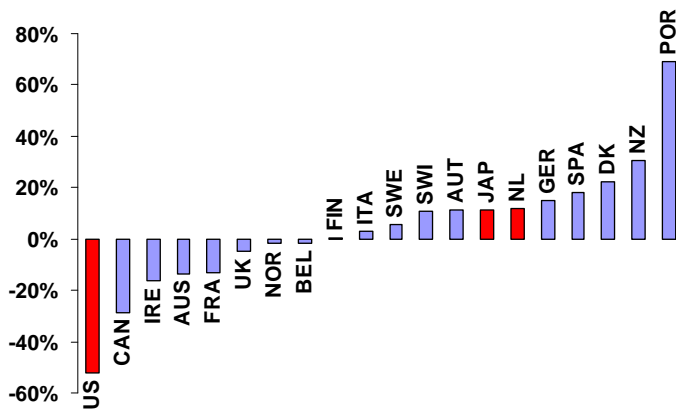
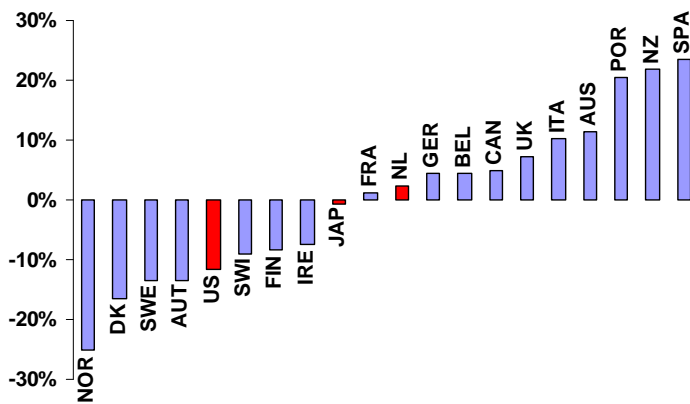


Figure A3: Contribution of macro-economic conditions to *bus. ownership* rates in 20 countries, 2002-2006



B. Decomposition results for technological factors

Figure B1: Contribution of technological factors to *nascent* rates in 20 countries, 2002-2006

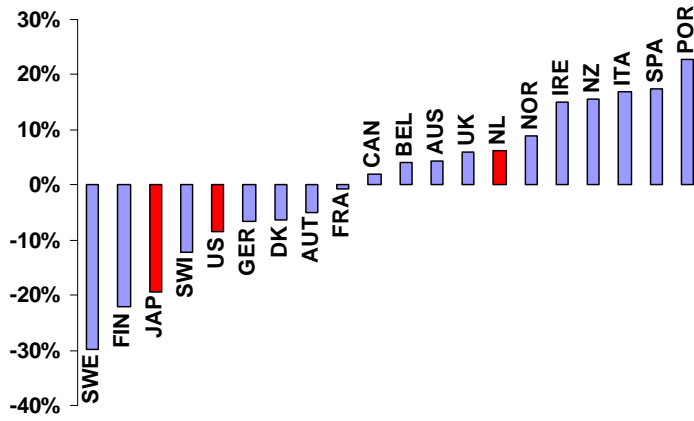


Figure B2: Contribution of technological factors to *young business* rates in 20 countries, 2002-2006

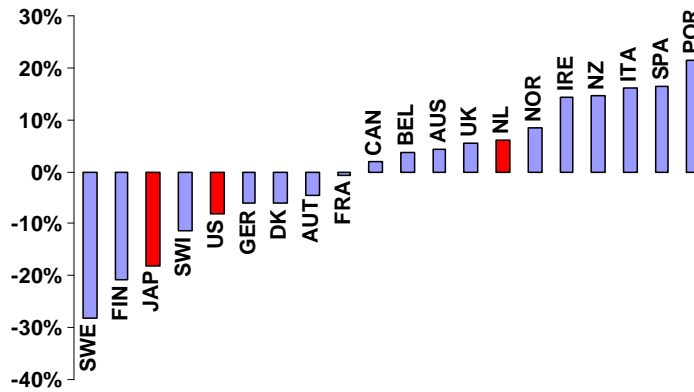
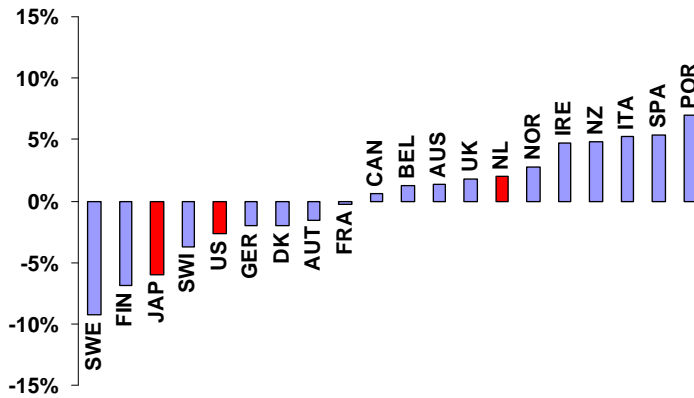


Figure B3: Contribution of technological factors to *bus. ownership* rates in 20 countries, 2002-2006



C. Decomposition results for socio-demographics

Figure C1: Contribution of socio-demographics to *nascent* rates in 20 countries, 2002-2006

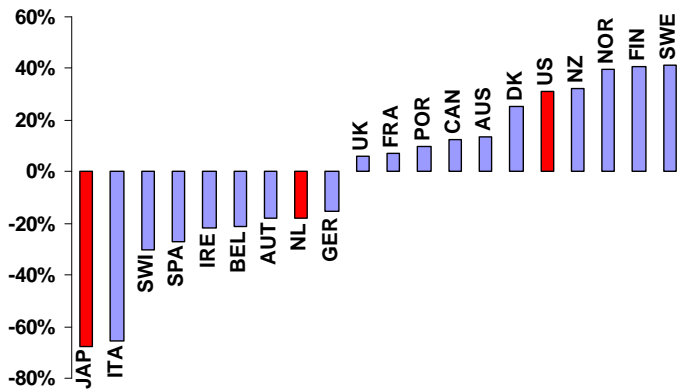


Figure C2: Contribution of socio-demographics to *young business* rates in 20 countries, 2002-2006

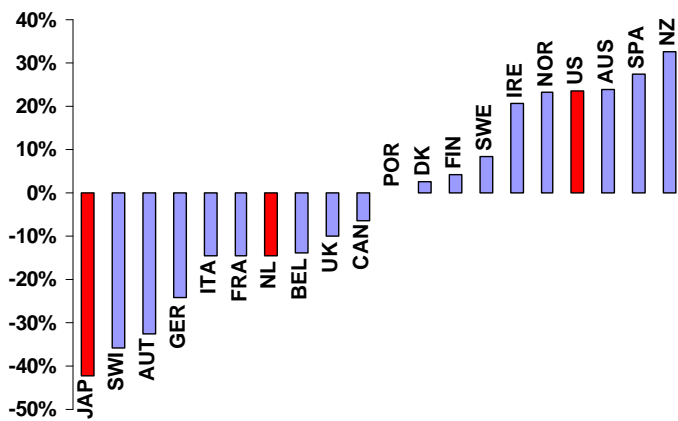
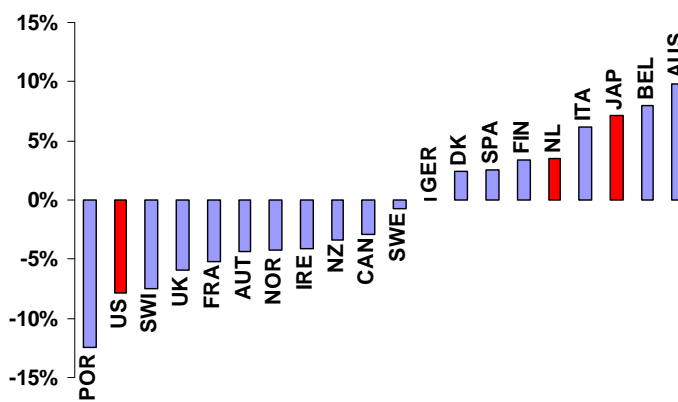


Figure C3: Contribution of socio-demographics to *business ownership* rates in 20 countries, 2002-2006



D. Decomposition results for institutional environment

Figure D1: Contribution of institutional environment to *nascent* rates in 20 countries, 2002-2006

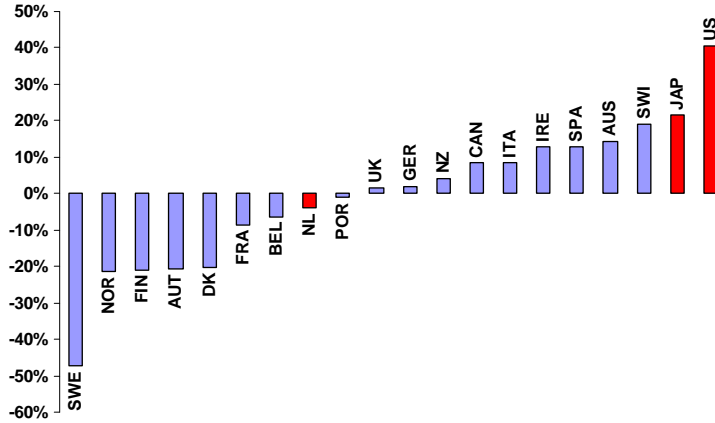


Figure D2: Contribution of institutional environment to *young business* rates in 20 countries, 2002-2006

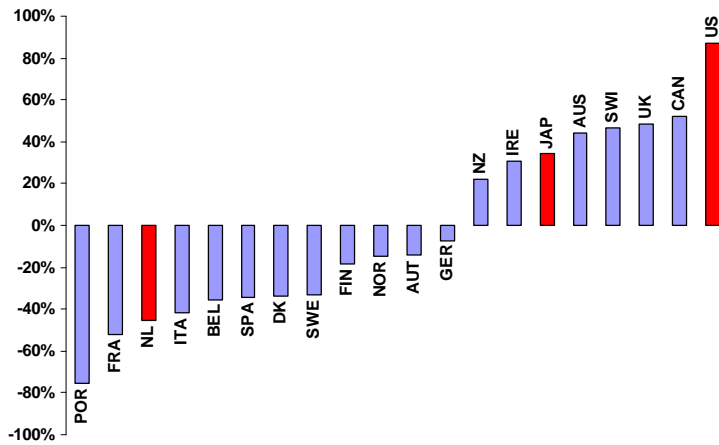
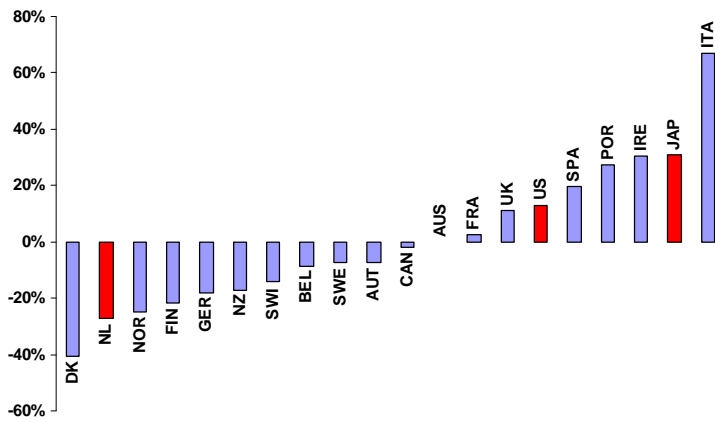


Figure D3: Contribution of institutional environment to *bus. ownership* rates in 20 countries, 2002-2006



E. Decomposition results for cultural factors

Figure E1: Contribution of cultural factors to *nascent* rates in 20 countries, 2002-2006

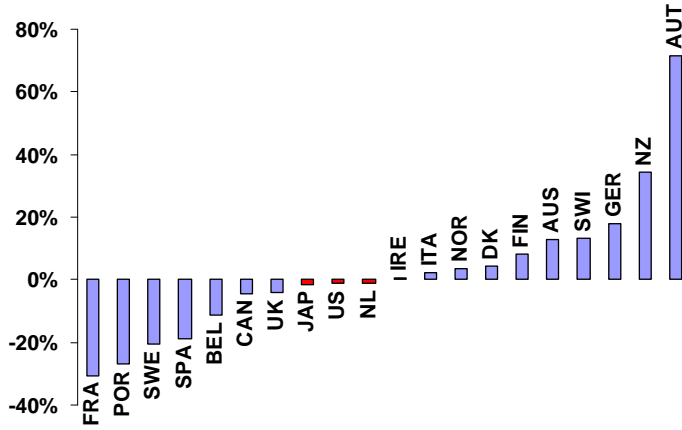


Figure E2: Contribution of cultural factors to *young business* rates in 20 countries, 2002-2006

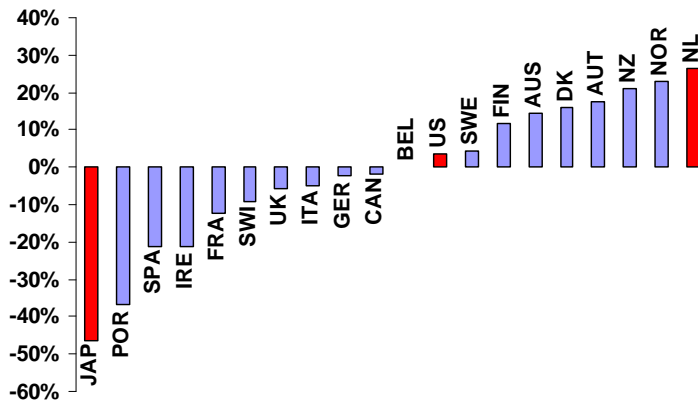
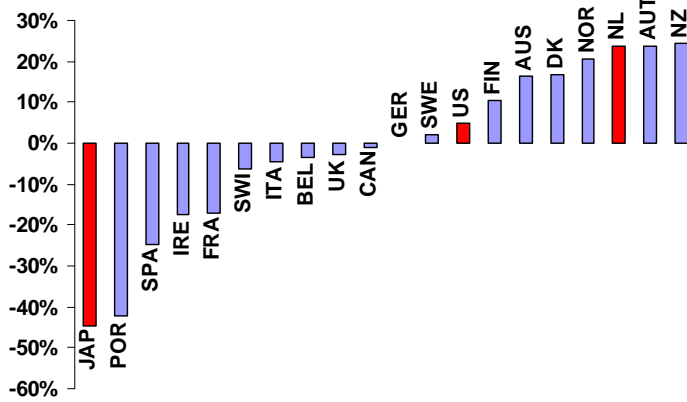


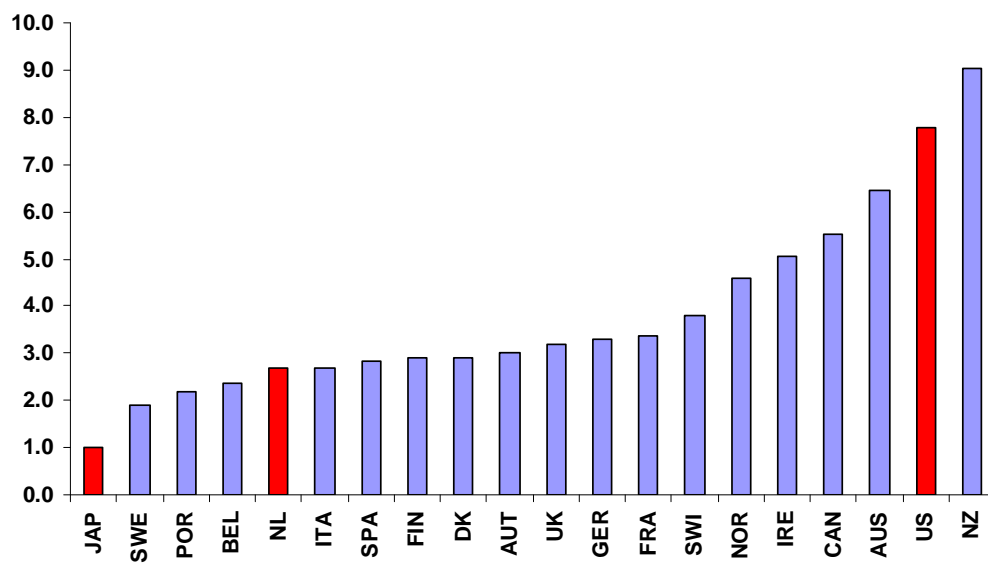
Figure E3: Contribution of cultural factors to business ownership rates in 20 countries, 2002-2006



Appendix 3: Nascent, young business & established entrepreneurship rates in 20 countries, average 2002-2006

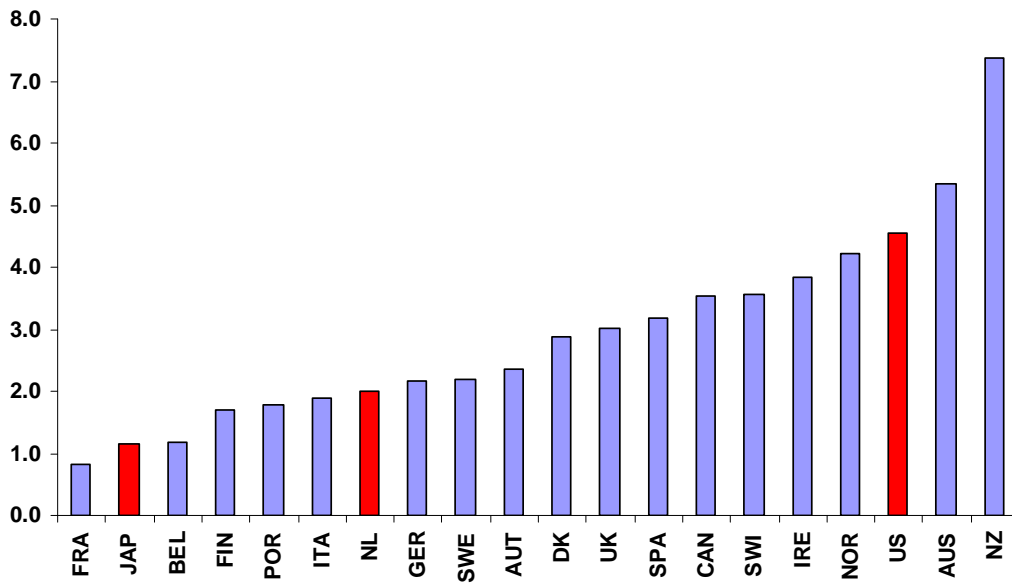
In this appendix we present the entrepreneurship rates for the three entrepreneurship measures considered in this paper, for the 20 countries included in the Hartog et al. (2010) study. The levels for Japan, the Netherlands and the United States are highlighted in red.

Figure A3.1: Nascent entrepreneurial activity rates in twenty countries, 2002-2006



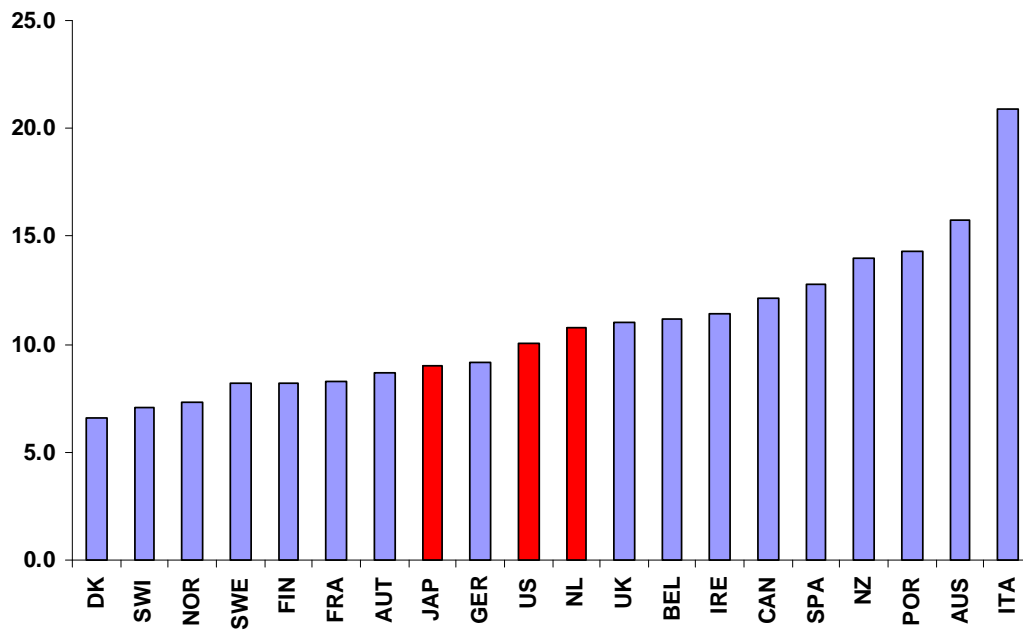
Source: Global Entrepreneurship Monitor.

Figure A3.2: Young business entrepreneurial activity rates in twenty countries, 2002-2006



Source: Global Entrepreneurship Monitor.

Figure A3.3: (Non-agricultural) business ownership rates in twenty countries, 2002-2006



Source: EIM's COMPENDIA data base, version 2008.1 (see www.entrepreneurship-sme.eu).