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Explaining the entrepreneurial activity rate of women: *A macro-level perspective*

Preliminary version

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ABSTRACT

The present study aims at explaining female entrepreneurship from a country perspective. Explanatory variables are derived from three streams of literature, including the literature on the determinants of entrepreneurship in general, on female labor force participation, and on female entrepreneurship. To test hypotheses we make use of Global Entrepreneurship Monitor data, including total entrepreneurial activity rates (nascent entrepreneurs and owner/managers of new firms) for both women and men for 2002, as well as a range of other (economic, demographic, institutional and cultural) variables from standardized national statistics. We find that the factors determining female and male entrepreneurship at the macro-level are fairly similar.

INTRODUCTION

Increasingly, female entrepreneurs are important for economic development. Not only do they contribute to employment creation and economic growth through their increasing numbers, they also make a contribution to the diversity of entrepreneurship in the economic process (Verheul and Thurik, 2001). Female and male entrepreneurs differ with respect to their personal and business profile: they start and run businesses in different sectors, develop different products, pursue different goals and structure their businesses in a different fashion (e.g., Fischer et al., 1993; Brush, 1992; Chaganti and Parasuraman, 1996; Verheul and Thurik, 2001; Verheul, 2003; Carter et al., 1997). Diversity in terms of products, processes, forms of organization and targeted markets is input for a selection process where customers are at liberty to choose according to their preferences. This may lead to a higher quality of entrepreneurship.

Despite the economic importance of female entrepreneurs, their number still lags behind that of male entrepreneurs. According to Reynolds et al. (2002) men are about twice as likely involved in entrepreneurial activity than women. However, there is substantial variation between countries. Using Global Entrepreneurship Monitor (GEM) data, we observe that female entrepreneurship rates (in terms of nascent and young business prevalence rates) are high in countries, such as the United States, Australia, South Korea and Mexico, and low in countries, such as Ireland, Russia, France and Japan.

The question arises what determines the rate of female entrepreneurship in a country. In the present paper we will investigate the determinants of female entrepreneurial activity at the macro level, comparing the factors explaining entrepreneurial activity of women and men.

Entrepreneurial activity in the present study corresponds with the Total Entrepreneurial Activity (TEA) rate as proposed in the Global Entrepreneurship Monitor. TEA is defined as the share of adults in the population of 18 to 64 years old who are either actively involved in starting a new business or in managing a business less than 42 months old (Reynolds et al., 2002, p. 5). Hence, this definition incorporates both nascent entrepreneurs and owner/managers of new firms. An individual is considered a 'nascent entrepreneur' under three conditions. *First*, if an individual has taken action to create a new business in the past year. *Second*, if the individual expects to share ownership of the new firm and, *third*, if the firm has not yet paid salaries and wages for more than three months. A firm is considered a new firm in case salaries and wages are paid for more than three months but

less than 42 months (Reynolds et al., 2002, p.38). In this study entrepreneurial activity of women and men is represented by TEA for females and males, respectively. Entrepreneurial activity rates as well as macro-level determinants are derived from the GEM data set for 2002, which is comprised of entrepreneurship data for 37 countries. We aim to draw conclusions from the way in which macro-level factors explain female and male entrepreneurial behavior.

Relatively few studies have investigated female entrepreneurship at the macro level, not to mention the difference in determinants of female and male entrepreneurial activity. The present study builds upon Kovalainen et al. (2002), using GEM data for 2001 of 29 countries, and Reynolds et al. (2002, p. 25: *Women and Entrepreneurship*), using GEM data for 2002 of 37 countries. Although these studies provide some insights into the determinants of female and male entrepreneurial activity at the macro level, the present study develops a full model, explaining both female and male entrepreneurial activity rates, where the interplay of both economic and cultural variables is accounted for.

The explanatory variables are derived from three streams of literature. *First*, there is the literature on the determinants of entrepreneurship in general. A limitation of this literature (from the viewpoint of the present study) is that they only outline general determinants of entrepreneurship. As we have argued female entrepreneurship contributes to the diversity in entrepreneurship and this may imply that there are different factors explaining the share or number of female and male entrepreneurs within a country. Hence, because entrepreneurship of women and men is different, there may be different factors explaining their prevalence rates. This is acknowledged by Delmar and Davidsson (2000) who find that the factors explaining the nascent entrepreneurship rate of men have limited value in explaining the nascent entrepreneur status of women. Investigating differences in the reasons for firm start-up across country and gender, Shane et al. (1991) find that it is difficult to identify start-up reasons that equally apply to both genders and across countries. These studies indicate there is a need for research investigating the factors influencing female entrepreneurship in general, and female start-up rates in specific across countries.

A *second* stream of literature investigates female participation in the labor force. Female participation in employment has increased considerably in the last decades, reflecting both changes in the labor supply behavior of women and the demand for female workers. Although the gender gap in employment is narrowing, employment rates (either in number of jobs or in number of hours worked) are still lower for women than for men in most OECD countries (OECD, 2002). Studies on female labor force participation create insight into the characteristics of women in the labor market. What determines the decision of women to (re)enter the labor market? And to what extent do characteristics of the labor market, or the economic structure of a country, accommodate, i.e., offer opportunities for, female workers?

Since the share of female entrepreneurs in total entrepreneurial activity still lags behind the labor force participation rate of women, it is important also to pay attention to the specific literature on female entrepreneurship. There may be specific gender-related barriers to starting and running a business; and/or women may prefer to be wage-employed rather than self-employed. Hence, women may have specific entrepreneurial capabilities and preferences as compared to their male counterparts.

The *third* literature on female entrepreneurship mainly consists of studies at the micro level, focusing on the distinctive characteristics of the female entrepreneur (e.g., motivations, personality traits, experience) or the features of the business (e.g., size, goals and strategy, management, performance). Other studies included environmental characteristics, such as financial constraints or other challenges women face in the start-up or development of their businesses. With the exception of Reynolds et al. (2002) and Kovalainen et al. (2002), few studies have investigated the influence of factors at the macro-level on female entrepreneurship. The present study aims at extending this stream of literature.

DETERMINANTS OF FEMALE ENTREPRENEURSHIP

From the three streams of literature we derive a list of determinants of female entrepreneurship, making a distinction between technological development, economic factors, demographic factors, institutional and cultural factors. These factors influence either the demand for (female) entrepreneurship, through the number and type of entrepreneurial opportunities available, or the supply of (female) entrepreneurship, through preferences and capabilities of women to become self-employed (see Verheul et al., 2002). The influence of these factors on entrepreneurship in general will be discussed. Furthermore, we will give our a priori idea whether the influence of such factors may be different for female and male entrepreneurship.

In the present paper we will only discuss determinants that are included in our current empirical analysis (i.e., for which data are available). For a detailed discussion of all factors influencing (female) entrepreneurship, also including income disparity and labor market segregation (economic factors), education level, age structure, immigration and family situation (demographic factors), social security, taxation, flexible work arrangements, child care facilities and parental leave, business licensing, availability of capital and policy targeted at female entrepreneurs (institutional factors), we refer to an extensive version of the present paper, available at the following website: www.few.eur.nl/few/people/verheul.

Technological development

New technologies have the potential to develop new products and services, creating opportunities for the start-ups of new firms (Casson, 1995; Wennekers et al., 2002). In addition, new information and communication technologies lead to diminished transaction costs and lower minimum efficient scales in many industries, enabling small firms to compete in both new and 'old' industries. Because women are less likely than men to operate businesses in high-technology sectors (Loscocco and Robinson, 1991; Anna et al., 1999), it may be expected that technological development is of less influence on female entrepreneurship than it is on male entrepreneurship.

Economic Factors

Per capita income

The influence of per capita income on entrepreneurship is complex. For instance, an increase in wealth is often accompanied by technological development and an increase in the service sector, developments that in turn influence entrepreneurship. At the micro level rising real wages raise the opportunity costs of self-employment making wage employment more attractive (EIM/ENSR, 1996). Several studies show a negative effect of economic development on self-employment (Kuznetz, 1966; Schultz, 1990; Bregger, 1996). At the macro level there appears to be a U-shaped relationship between per capita income (economic development) and entrepreneurship (Carree et al., 2002). In most developed countries per capita income has been observed to positively impact self-employment since the 1970s (Storey, 1999; Carree et al., 2002). Both female and male entrepreneurial activity are expected to show a U-shaped relationship with per capita income. However, there may be a difference in the point in time when the bottom of the U-shape is reached. Women may arrive at the bottom of the U-shape at a later point in time than men do. This would be a reflection of men responding earlier to the regime change, away from a managed economy towards an entrepreneurial economy (Audretsch and Thurik, 2001; 2000). This switch in economic regime is innovation-driven, and men are more likely than women to be involved in innovative or high-tech activities (i.e., have more innovative capabilities).

Unemployment

Unemployment has 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. At the micro 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. When there is little chance of finding paid employment, unemployed people are 'pushed' into self-employment (EIM/ENSR, 1996). Audretsch et al. (2001) refer to a 'Schumpeter' and 'refugee' effect. Kovalainen et al. (2002) find a negative association between female unemployment and business start-ups by women. We expect that the negative effect of limited opportunities will dominate the positive 'push' effect of unemployment. The general unemployment level may be more likely to (negatively) affect female than male employment as women are often involved in service-type and part-time jobs and, accordingly, may be particularly vulnerable to the effects of unemployment.

Share of service sector

An expansion of the service sector positively influences entrepreneurship. The service sector is characterized by low initial capital requirements, minimizing barriers to entry and facilitating start-up. Most services are characterized by a relatively small average firm size (EIM/ENSR, 1997). The growth of service industries has also been a major factor in increasing female labor force participation (Oppenheimer, 1970; Ward and Pampel, 1985). Because women are overrepresented in the service sector, a higher share of services may be more likely to influence female than male entrepreneurship. On the other hand, as women already occupy more than half of the employment in services, and men increasingly enter service jobs, the differential effect of growth in the number of service jobs on female and male entrepreneurship may be diminishing.

Informal sector or shadow economy

The informal sector, i.e., shadow or underground economy, represents business activity that takes place without knowledge of the government. The size of the informal sector may negatively influence entrepreneurial activity as people operating in the informal sector absorb (entrepreneurial) opportunities otherwise available for individuals starting a business in the formal sector. As the present study attempts to explain entrepreneurial activity in the formal sector, it may be argued that the size of the informal sector negatively impacts entrepreneurial activity. We do not have an a priori idea whether the informal sector differentially impacts female and male entrepreneurship.

Female labor force participation

A higher participation rate of women in the labor market (as measured by the share of women in the labor force) is likely to be accompanied by a decrease in self-employment, as women are less likely than men to become self-employed. Delmar and Davidsson (2000) find that gender is a strong predictor of nascent entrepreneurship at the micro-level, with men being more likely to have the intention to start a business than women. Uhlaner et al. (2002) find that countries with a higher female labor force participation are characterized by a lower level of self-employment. Female labor force participation negatively affects entrepreneurship. However, because the female labor participation rate is made up of both wage- and self-employed women, an increase in female participation in the labor market automatically implies an increase in female entrepreneurship, even though women tend to be wage-employed rather than self-employed. We do not have an a priori idea whether female labor force participation influences male entrepreneurship.

Cultural Factors

Cultural values play a role in shaping the institutions in a country. Values and beliefs shape behavior and, accordingly, may be assumed also to influence the decision to become self-employed (Mueller and Thomas, 2000)¹.

Entrepreneurial culture

Entrepreneurial culture is a complex concept, comprising many aspects, including – for instance – how entrepreneurship is perceived in a country, the recognition that is given to entrepreneurs and the prevailing attitudes towards success and failure. Particularly important for the level of entrepreneurial activity is the extent to which people in a country consider the pursuit of opportunities as socially legitimate (Reynolds et al., 1999). An entrepreneurial culture may be expressed through stories about successful entrepreneurs in the media, respect for those who start a business and the absence of stigma attached to those whose entrepreneurial activities fail. Entrepreneurial culture is expected to positively influence entrepreneurship.

Cultural indicators: Hofstede

More deeply rooted cultural values can also be linked to entrepreneurship. Hofstede (1980, 2001) distinguishes between several cultural indicators, including power distance, individualism, masculinity, uncertainty avoidance and long-term versus short-term orientation. Of these dimensions, in particular power distance, individualism and uncertainty avoidance have been studied in relationship to entrepreneurship (Wennekers et al., 2002). Hypotheses on the relationship between these cultural indicators and entrepreneurship are dependent upon whether you choose to view the relationship from the *aggregate psychological traits* perspective or the *social legitimation* (or *dissatisfaction*) perspective (Davidsson, 1995; Wennekers et al., 2002; Hofstede et al., 2003).

The *aggregate psychological trait* explanation of entrepreneurship is based on the view that if there are more people with entrepreneurial values in a country, there are also more entrepreneurs. In this view we may expect that low power distance, low uncertainty avoidance, high masculinity and high individualism stimulate entrepreneurship (see Shane, 1992, 1993).

According to the *social legitimation* perspective entrepreneurship is determined by the difference in values and beliefs between the population as a whole and potential entrepreneurs. When entrepreneurial individuals are dissatisfied with existing structures (which do not offer them entrepreneurial opportunities), they leave the mainstream organizations and start their own business. Based on the dissatisfaction hypothesis, the assumed relationship between the cultural indicators and entrepreneurship is reverse: countries with high power distance, high uncertainty avoidance, low masculinity and low individualism may be characterized by more entrepreneurship (see Baum et al., 1993; Etzioni, 1987; Noorderhaven et al., 2003).

Hence, research is inconclusive as to which relationship(s) between the cultural indicators and entrepreneurship will prevail. Moreover, different relationships may exist between the cultural indicators and female and male entrepreneurship. From an aggregate psychological traits perspective it may be argued that women are less likely to possess entrepreneurial traits. Women tend to be more risk-averse than men, and, accordingly, may be more likely to avoid uncertainty. Women are also less likely to have male values, often associated with entrepreneurship, such as assertiveness, risk taking, perseverance and decisiveness. Masculinity may be more important for male entrepreneurship than for female entrepreneurship. Because women usually are more caring and are emotionally more dependent, they tend to be less individualistic than men. However, the emancipation process has contributed to the fact that women increasingly feel the need to be economically independent. We have no a priori idea whether individualism differentially affects female and male entrepreneurship. Also, we have no a priori idea whether the influence of power distance is different for female and male entrepreneurship.

From a social legitimation perspective, both women and men are confronted with social and organizational structures that do (not) offer entrepreneurial opportunities. However, since women are likely to experience gender-related barriers in their market careers, it may be argued that dissatisfaction is a more important factor influencing female entrepreneurship than male entrepreneurship.

HYPOTHESES

Combining insights from the three different streams of literature on the determinants of entrepreneurship, female labor force participation and the characteristics of female entrepreneurship at the micro and macro level, in the present section we will formulate hypotheses on macro level determinants of female entrepreneurship. The range of explanatory variables in the empirical study is based on the availability of information in the Global Entrepreneurship Monitor data set. The following hypotheses on the determinants of entrepreneurship, and more specifically female and male entrepreneurship, will be tested empirically:

H1: Technological development has a positive influence on entrepreneurial activity.

H1a: Technological development has a larger influence on male entrepreneurship than on female entrepreneurship.

H2: Income level has a U-shaped relationship with entrepreneurial activity.

H2a: Female entrepreneurs arrive at the turning point of the U-shaped relationship at a later point in time as compared to male entrepreneurs.

H3: Unemployment has a negative influence on entrepreneurial activity (at the macro level).

H3a: Unemployment has a larger influence on female entrepreneurship than on male entrepreneurship.

H4: The share of service sector employment has a positive influence on entrepreneurial activity.

H4a: The share of service sector employment has a larger influence on female entrepreneurship than on male entrepreneurship.

H5: The size of the informal sector has a negative influence on entrepreneurial activity.

H5a: No a priori assumption.

H6: Female labor force participation has a negative influence on entrepreneurship.

H6a: Female labor force participation has a positive influence on female entrepreneurship.

H7: Uncertainty avoidance (from an aggregate psychological traits perspective) has a negative influence on entrepreneurship.

H7a: Uncertainty avoidance has a larger influence on female entrepreneurship than on male entrepreneurship.

H8: Masculinity (from an aggregate psychological traits perspective) has a positive influence on entrepreneurship.

H8a: Masculinity is less likely to influence female entrepreneurship than male entrepreneurship.

H9: Power distance (from an aggregate psychological traits perspective) has a negative influence on entrepreneurship.

H9a: No a priori assumption.

H10: Individualism (from an aggregate psychological traits perspective) has a positive influence on entrepreneurship.

H10a: No a priori assumption.

EMPIRICAL ANALYSIS

Hypotheses are tested using regression analyses. The variables included are presented in Table 1. For a correlation table and a discussion of correlations between dependent and independent variables, we refer to an extensive version of the paper, published at the following website: www.few.eur.nl/few/people/verheul.

Countries in the Global Entrepreneurship Monitor data set for which these variables are available include (in alphabetical order): Australia, Belgium, Brazil, Canada, Chile, Finland, France,

Germany, Hong Kong, India, Ireland, Israel, Italy, Japan, Korea, Mexico, New Zealand, Netherlands, Norway, Singapore, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, United Kingdom and United States. Data for these 29 countries are available for 2000, 2001 or 2002, depending upon the variable used.

Regression analyses are performed explaining total entrepreneurial activity (i.e., nascent and new firms), entrepreneurial activity of women and of men; and the share of women in total entrepreneurial activity (i.e., the ratio of entrepreneurial activity of women and total entrepreneurial activity). Results are presented in Table 2.

From Table 2 we see that several variables influence total entrepreneurial activity in a country, including R&D investments, per capita income (squared), unemployment, informal sector and power distance. Total entrepreneurial activity is negatively influenced by R&D investments. This is in contradiction with H1. In conformity with H2, we find that the relationship between income level and entrepreneurship is U-shaped: per capita income negatively influences entrepreneurship and per capita squared positively influences entrepreneurship, indicating a downward and upward slope of the relationship, respectively. The level of unemployment has a negative influence on entrepreneurship, supporting H3. This is probably due to reverse causality: unemployment drops due to the economic growth consequences of entrepreneurial activity (i.e., Schumpeter effect). We do not find evidence of an effect of the size of the service sector on entrepreneurship. Hence, H4 is not supported. The size of the informal sector negatively influences entrepreneurship: H5 is supported. As opposed to what is predicted in H6 female labor force participation does not appear to influence entrepreneurship. Of the cultural indices, only power distance influences entrepreneurship. In conformity with the aggregate traits perspective, higher power distance is accompanied by less entrepreneurship. H9 is supported and H7, H8 and H10 are not supported.

Surprisingly, the determinants of female and male entrepreneurial activity are not significantly different from the factors determining total entrepreneurial activity, although it seems that female labor share influences female activity more than male as well as total entrepreneurial activity, and that size of the informal sector contributes less to female activity than it does to male and total entrepreneurial activity. Furthermore, there appear to be no statistically significant differences in the variables mutually explaining female and male entrepreneurship, although it comes as no surprise that male entrepreneurship ($\beta=48.42$) is characterized by a higher constant value (autonomous effect) than female entrepreneurship ($\beta=22.65$). After all, the level of male entrepreneurial activity is higher than that of female entrepreneurial activity in the selected countries. No statistical support has been found for the sub-hypotheses H1a through H10a. Ignoring t -values, the negative effect of informal sector seems to be larger for male entrepreneurship than for female entrepreneurship, indicating that male entrepreneurs may be affected more by unregistered activities than are female entrepreneurs. In addition, female labor force participation seems to have a larger impact on female entrepreneurship than on male entrepreneurship. Again, this is a straightforward, nearly tautologous, finding. With respect to the influence of per capita income on female and male entrepreneurship, it seems that the lowest point of the U-shaped relationship is reached at a different point in time by women and men. Women seem to arrive at the turning point of the U-shaped relationship earlier than men do: the economic development point (i.e., $-\beta(Y_{cap}) / 2\beta((Y_{cap})^2)$) for women is 47 and that for men is 53. This gender difference in arrival at the turning point is also not significant.

As a last test of differences in factors determining female and male entrepreneurial activity, regression analysis is performed on the share of female activity in total activity. Results are presented in the last column of Table 2. Results of this additional analysis are in line with those of the separate regression analyses on female and male entrepreneurial activity, indicating that there are no statistically significant differences in the factors explaining female and male entrepreneurial activity.

DISCUSSION AND CONCLUSION

The aim of the present paper is to create insight into the difference in factors influencing female and male entrepreneurial activity rates. The variation in female entrepreneurship rates between countries has given rise to the question what determines female entrepreneurial activity in a country. Using Global Entrepreneurship Monitor data for 29 countries the present study finds that, although research in the field of entrepreneurship has identified several gender differences at the firm level (e.g., goals, management and finance), by and large there is no evidence of a difference in factors determining female and male entrepreneurial activity at the macro-level.

Total entrepreneurial activity as well as female and male entrepreneurial activity in a country are negatively influenced by investments in R&D, the level of unemployment and power distance. Moreover, the relationship between entrepreneurial activity and per capita income is U-shaped. The negative effect of R&D investments is counterintuitive as it is expected that small firms benefit from technological development, either directly (producing new products) or indirectly (making use of new production or communication techniques). A possible explanation for the negative effect found in the present study is that (high) investments in R&D may be an indicator of the presence of large firms, which usually invest more in R&D than small businesses. Moreover, large businesses tend to be characterized by a higher awareness as well as a higher willingness to report their investments in R&D. Finally, R&D investments may be considered an input variable, which does not guarantee innovation (as an output variable). In future analyses other technological development or innovation variables should be included.

Unemployment has a negative effect on entrepreneurial activity, outweighing the positive 'refugee' effect of unemployment. Unemployment does not appear to differentially effect female and male entrepreneurial activity: entrepreneurial opportunities are limited for both women and men in a situation of economic recession. In accordance with the psychological traits perspective, high power distance is accompanied by less entrepreneurial activity in a country. Hence, when a country is characterized by high inequality in the relationships between people (in organizations), people are less likely to be characterized as independent thinkers, and are not stimulated to be creative. Accordingly, stimulation of entrepreneurial spirit is hampered. The results indicate a U-shaped relationship between entrepreneurial activity and per capita income. Hence, from a certain level of economic development the negative impact of per capita income turns into a positive effect. Both female and male entrepreneurial activity is characterized by this U-shaped relationship with per capita income. Although women seem to arrive at the turning point (i.e., bottom) of the U-shaped relationship at an earlier point in time than men do, this difference is not statistically significant. A possible earlier female 'arrival' at the turning point might have to do with the notion that (on average) women are motivated to start a business at a lower income level than men do, i.e., the opportunity cost of entrepreneurship are lower for women than for men.

Two factors that seem to differentially impact female and male entrepreneurial activity (although not statistically supported) are the share of the informal sector and female labor market participation. Whereas the former seems to have a larger influence on male entrepreneurship, the latter seems to have more impact on female entrepreneurial activity. Informal sector growth comes at the expense of less entrepreneurial activity, where entrepreneurial activity of men would be more affected than that of women. Unregistered or unofficial activities may be more likely to involve activities usually performed by men, such as construction and plumbing activities. Female labor force participation would logically impact female entrepreneurial activity and not male entrepreneurial activity. However, the present study does not provide evidence of such a differential effect.

To sum up, the factors determining total, female and male entrepreneurial activity are similar rather than different. Surprisingly, there is no difference in the factors explaining female and male

entrepreneurial activity at the macro-level. The factors included in the present study do not adequately explain the existing variation in the share of female entrepreneurial activity in total activity between countries. The share of female entrepreneurial activity in total activity varies from 17.5 and 21.9 percent in Japan and Israel to 44.4 and 48.9 percent in India and Thailand. Even factors that intuitively are important to explain the variation in female share of entrepreneurship between countries, such as female labor force participation and cultural indices, do not provide an explanation. The question remains what determines the female share in total entrepreneurial activity. Future research should include institutional factors, more directly related to female labor force participation or entrepreneurship, such as government policy targeted at women (e.g., fiscal stimulation or childcare facilities) and accessibility of finance, which is usually considered a more important barrier to female than to male entrepreneurship. At this level it is difficult to draw policy implications.

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Appendix

Table 1: Description of variables

| Variable name | Variable description |
|--|---|
| total entrepreneurial activity | Share of people in age group of 18 to 64 years who are actively engaged in the start-up process or managing a business less than 42 months old in 2002 |
| female entrepreneurial activity | Share of women in age group of 18 to 64 years who are actively engaged in the start-up process or managing a business less than 42 months old in 2002 |
| male entrepreneurial activity | Share of men in age group of 18 to 64 years who are actively engaged in the start-up process or managing a business less than 42 months old in 2002 |
| female share in total entrepreneurial activity | Share of female entrepreneurial activity in total entrepreneurial activity in 2002 |
| R&D investments | Total R&D expenditure per capita in 2000, World Competitiveness Yearbook |
| per capita income | Gross national income per capita in 2001 in purchasing power parities per 1000 US Dollars, 2002 World Development Indicators database of the World Bank |
| unemployment | Unemployment rate for 2001, World Competitiveness Yearbook 2002 |
| service sector | Employment in the service sector as percentage of total employment in 2000, World Competitiveness Yearbook |
| informal sector | What percentage of businesses in your country would you guess are unofficial or not registered?, Global Competitiveness Report 2001-2002 (1=less than 5%; 2=6-10%; 3=11-20%; 4=21-30%;; 8=61-70%; 9=more than 70%) |
| female labor share | Female employment as a percentage of the total labor force in 2001, World Competitiveness Yearbook 2002 |
| uncertainty avoidance | Uncertainty avoidance index Hofstede (2001, p. 151). Consisting of 3 elements: (1) rule orientation, (2) employment stability and (3) stress. Country scores on a scale of 1 (weak) to 100 (strong). For computation details, see Hofstede (2001, p. 150). |
| masculinity | Masculinity/femininity index Hofstede (2001, p. 286). Dominant gender role patterns in a country: male assertiveness versus female nurturance. Country scores on a scale of 1 (weak) to 100 (strong). For computation details, see Hofstede (2001, p. 284). |
| individualism | Individualism/collectivism index Hofstede (2001, p. 215). The contrast between people's independence from an organization, and dependency (i.e., what the organization does for its people). Country scores on a scale of 1 (weak) to 100 (strong). For computation details, see Hofstede (2001, p. 214). |
| power distance | Power distance index Hofstede (2001, p. 87). Consisting of 3 elements: (1) fear of employees to disagree with superiors, (2) autocratic decision-making and (3) absence of employee preference for consultative management style. Country scores on a scale of 1 (weak) to 100 (strong). For computation details, see Hofstede (2001, p. 86). |

Table 2: Regression analysis explaining entrepreneurial activity

| | Entrepreneurial activity | | | | | | Female share in entrepreneurial activity | |
|------------------------|--------------------------|-----------------|---------|-----------------|---------|-----------------|--|-----------------|
| | Total | | Female | | Male | | | |
| | β | <i>t</i> -value | β | <i>t</i> -value | β | <i>t</i> -value | β | <i>t</i> -value |
| Constant | 36.00 | 5.00 | 22.65 | 4.03 | 48.42 | 4.72 | 26.03 | 1.44 |
| R&D investments | -0.01 | -3.32 | -0.01 | -3.14 | -0.01 | -2.91 | -0.01 | -0.91 |
| income per capita | -2.27 | -5.80 | -1.87 | -6.12 | -2.69 | -4.83 | -1.23 | -1.25 |
| income per capita (sq) | 0.05 | 5.08 | 0.04 | 5.34 | 0.06 | 4.22 | 0.03 | 1.13 |
| unemployment | -0.41 | -3.48 | -0.35 | -3.81 | -0.47 | -2.82 | -0.15 | -0.50 |
| service sector | 0.01 | 0.12 | -0.03 | -0.64 | 0.05 | 0.59 | -0.05 | -0.31 |
| informal sector | -2.02 | -2.30 | -1.00 | -1.45 | -3.07 | -2.45 | 2.60 | 1.18 |
| female labor share | 0.22 | 1.24 | 0.31 | 2.29 | 0.13 | 0.54 | 0.51 | 1.17 |
| uncertainty avoidance | 0.03 | 1.30 | 0.02 | 0.88 | 0.04 | 1.35 | -0.04 | -0.77 |
| masculinity | 0.02 | 0.92 | 0.02 | 1.19 | 0.02 | 0.67 | -0.02 | -0.42 |
| individualism | -0.01 | -0.37 | 0.003 | 0.13 | -0.03 | -0.59 | 0.06 | 0.78 |
| power distance | -0.11 | -2.81 | -0.07 | -2.48 | -0.14 | -2.51 | -0.02 | -0.26 |
| <i>R</i> -square | 0.846 | | 0.878 | | 0.779 | | 0.550 | |
| N | 29 | | 29 | | 29 | | 29 | |

¹ Several studies have focused upon explaining entrepreneurship from a cultural perspective (McGrath and MacMillan, 1992; McGrath et al., 1992; Davidsson, 1995; Mueller and Thomas, 2000; Busenitz et al., 2000; Hofstede et al., 2003; Uhlaner et al., 2003, Noorderhaven et al., 2003).