Universitat Autònoma de Barcelona

Documents de Treball

START-UP CONDITIONS AND THE PERFORMANCE OF WOMEN – AND MEN- CONTROLLED BUSINESSES IN MANUFACTURATING INDUSTRIES

Otilia Driga

Diego Prior

Document de Treball núm. 09/7

Departament d'Economia de l'Empresa

START-UP CONDITIONS AND THE PERFORMANCE OF WOMEN – AND MEN-CONTROLLED BUSINESSES IN MANUFACTURATING INDUSTRIES

Otilia Driga

Diego Prior

Document de Treball núm. 09/7

START-UP CONDITIONS AND THE PERFORMANCE OF WOMEN - AND MEN - CONTROLLED BUSINESSES IN MANUFACTURING INDUSTRIES

Otilia Driga

Otilia.Driga@uab.es

Diego Prior

Diego.Prior@uab.es

Department of Business Economics
Universitat Autònoma de Barcelona

Abstract:

Recent research on the economic performance of women-controlled firms suggests that their underperformance may not result from differences in the *managerial ability* of women as compared to men, but it can be the result of different levels of start-up resources. Using accounting data, this paper examines the effects that selected start-up conditions have on the economic performance observed in a sample of 4450 Spanish manufacturing firms. The results indicate significant differences regarding the initial conditions, showing lower levels of assets and number of employees what have implications on the economic performance of women-controlled firms.

START-UP CONDITIONS AND THE PERFORMANCE OF WOMEN - AND MEN - CONTROLLED BUSINESSES IN MANUFACTURING INDUSTRIES

1. INTRODUCTION

Over the last decades, policy makers and academics have generally come to consider entrepreneurship as beneficial for the socio-economic development of regions and nations mostly because new firms generate employment, bring innovation to market and increase industries' overall productivity through increased competition (van Stel, Carree and Thurik, 2007). Although they still represent a minority of all entrepreneurs, women around the globe are increasingly well represented among those who set-up and run their own businesses (Allen, Langowitz and Minitti, 2007). Women's entrepreneurship has been recently recognised an important *untapped* source of economic growth (*OECD*, 2004) and most governments are designing public initiatives to encourage women's involvement with entrepreneurship. The motivation behind it is quite straightforward: if new businesses started by men may produce positive outcomes for a country's economic and social well being, so too may do women's businesses. Consequently, if they are to achieve the desirable outcomes that make entrepreneurship beneficial for the society, women's venture should also pass the survival and growth test.

Yet, the study of women entrepreneurs and their ventures provides some evidence that indicate a certain position of disadvantage of women's venture as compared to those of men. Empirical research provides unequivocal evidence that women controlled firms (hereafter *WCBs*[1]) start with lower overall capitalization (Alsos, Isaksen and Ljunggren, 2006; Marlow and Patton, 2005; Watson, 2002), they establish smaller business-size (Cliff, 1998; Rosa, Carter and Hamilton, 1996; Singh, Reynolds and Muhammad, 2001) and they are overrepresented in retail and service, industries which are situated at the

---

[1] No explicitly stated definition for the concept of women-controlled business was found within previous literature. However, judging by the criteria chosen by different authors to consider a firm as women-controlled, two main trends can be identified. On one hand, some studies consider as *WCBs* those firms which have women as owner or main proprietor (Chell and Baines 1998; Fasci and Valdez 1998; Brush and Hirisch 2000; Collins – Dodd et al. 2004). Oh the other, *WCBs* are based on the sex of the first key decision maker – such as the *CEO* or the president of the board of directors - (Du Rietz and Henrekson, 2000; Watson 2001 and 2002; Watson and Robinson 2003). In this study we define as *WCBs* those firms for which the executive managers are women. We consider this definition as adequate given it reflects the real participation of women (as managers) in the day-to-day decision making processes within the firm and the business performance outcomes.

" 'end' of the value chain" (Brush and Chaganti, 1999: 233) where businesses are smaller in terms of employment and returns (Anna et al., 1999).

Intuitively, if *WCBs* and *MCBs* systematically differ in terms of chosen industries, business scale and funding, they might also show different levels of business performance. Previous research, however, has not provided conclusive evidence about performance differences between women- and men-controlled businesses. Some empirical evidence indicates that *WCBs* underperform *MCBs* in terms of sales and profitability (Cooper et al., 1994; Rosa et al., 1996; Fasci and Valdez, 1998; Watson, 2001; Bosma et al., 2004; Cron et al., 2006; Boohene et al., 2008), survival rates (Cooper et al., 1994; Carter et al., 1997; Robb, 2002; Bosma et al., 2004) or business growth (Cooper et al., 1994; Alsos et al., 2004;). Other studies do not find such differences (Chell and Baines, 1998; Watson and Robinson, 2003; Johnsen and McMahon, 2005; Coleman 2007) whereas a third group of studies provide evidence that supports the *female underperformance hypothesis* [2] only partially (DuRietz and Henrekson, 2000; Watson, 2002; Collins-Dodd et al., 2004)

Explanations of *WCBs'* disadvantage in terms of resources and the way in which they may spill over into *WCBs'* performance are related to the wider socio-economic and cultural context. Carter and Shaw (2006:41) indicate that "[a]s the resources (financial, social, human and cultural) required for business ownership are shaped and influenced by the wider socio-economic and cultural environment, the structural, societal and cultural roles and experiences of women provide a backdrop to, and permeate throughout women's enterprise activities and experiences. Put simply, women's role as business owners reflects their wider position in society. Moreover, as both employees and business owners, women's activities are constrained by a number of economic, structural and cultural barriers." Such barriers refer to gender pay gap, the occupational segregation and restricted opportunities for career advancement that women have available, and the work-life balance issues.

The persistent pay inequality between men and women – with women being paid lower wages than men in the labour market - affects women world around (Kunze, 2008). In

---

[2] "All else equal, female entrepreneurs tend to be less successful than their male counterparts in terms of convencional *economic* performance measures" (DuRietz and Henrekson, 2000:1)

the Spanish context, empirical evidence of the existence of the gender-pay gap is also available (de la Rica et al., 2008; García et al., 2001)[3]. Furthermore, the gender pay gap increases with the pay scale and the level of education (de la Rica et al., 2008). Garcia et al. (2001) provides evidence indicating that whereas the 50% of the best paid men earn about 12% more than the 50% best paid women, the wage floor for best paid 10% of men is 15% greater than the best paid 10% of women.

One direct consequence of lower wages for women is that they may have less opportunities to "accumulate financial capital to start or acquire businesses, other things equal" (Boden and Nucci, 2000: 352). There is ample empirical evidence indicating that women start their venture with lower levels of financial resources (Cooper et al., 1994; Carter et al., 1997; Boden and Nucci, 2000; Alsos et al., 2004). In addition, business under-capitalization has been often cited as a primary reason why emerging businesses underperform (Marlow and Patton, 2005) or even fail (Chandler and Hanks, 1998).

Traditionally, the gender pay gap was explained within the context of human capital theory (Becker, 1985) which argues that individual characteristics like education and work experience are accountable for differences in pay. However, the evidence suggests that these differences play a minor role in the persistence of the gender pay gap. It seems that the gender pay gap is more related to the level of occupational segregation and the wage structure (Plantega and Remery, 2006). Research has consistently shown that female employment is concentrated in a narrow range of lower-paying occupations (Carter and Shaw, 2006). This occupational segregation by sex is persistent in most industrialized countries including Spain (see *INE* (2008) and Polavieja (2008) for recent evidence on this matter) and affect women through both horizontal and vertical occupational segregation. Whereas horizontal segregation refers to overrepresentation of women in some sectors of the economy (such as retail and service), vertical segregation refers to the underrepresentation of women in "high-status occupations (such as managerial jobs) and their overrepresentation in low-status occupations (such as clerical jobs)" (Estévez-Abe, 2006:142).

---

[3] On the average, the wage of Spanish women represents about 70% of that of men (INE, 2008).

Horizontal segregation of paid employment explains at least partly women's choices regarding the industries they enter when they switch to entrepreneurship. Women's businesses tend to be concentrated in retail and service industries "where businesses are relatively smaller in terms of employment and revenue as opposed to high technology, construction and manufacturing." (Anna et al., 1999:279). Furthermore, having women concentrated in such narrow range of occupations (usually what is known as the five C's – caring, cashiering, catering, cleaning and clerical) ensures that women have both less work experience and less variety of work experience than men (Carter and Shaw, 2006), placing women at disadvantage with respect to their human capital. Vertical segregation refers to the "invisible artificial barriers, created by attitudinal and organizational prejudices which block women from senior executive positions" (Wirth, 2001:1). There is ample empirical evidence indicating vertical segregation in organizations around the world (Oakely, 2000; Terjesen and Singh, 2008). Starting a business of their own can be a way for women to come "out from under the glass ceiling" (Mattis, 2004) however, vertical segregation also restricts women's amount of management experience and, thus "implies diminished opportunities for women to acquire human capital relevant to both the production and managerial components of entrepreneurial activities" (Boden and Nucci, 2000:353).

Due to higher flexibility it may provide to women – who still undertake the largest share of domestic responsibilities and childcare[4] – business ownership has long been perceived as compatible with women's role in child-rearing (Winn, 2004). However, recent research provides evidence that the issue of balancing work and domestic responsibilities can have a negative impact on women's businesses (Bock, 2004). Based on relevant literature they review, Carter and Shaw (2006) point out several ways in which the work-life balance issues may affect *WCBs*. Firstly, more women than men choose to start their businesses at home in order to accommodate both domestic responsibilities and work. Operating a business from home may affect the legitimacy of the business in the eyes of stakeholders such as creditors, thus affecting women's access to finance. Second, the need to schedule business activities around childcare may limit the time women invest in their business and may create a role conflict for women,

---

[4] Studies on the Spanish context indicate that Spanish women are responsible for the most part of housework (Instituto de la Mujer, 2007; Polavieja, 2008). On the average, women living in partnership report doing more than three quarters of all the housework whereas nearly 70% of all employed married and cohabiting Spanish men admit doing less than one quarter of it (Polavieja, 2008: 208).

which can result stressful. Hence, such work-life balance issues may also limit the initial resources women can acquire and invest and negatively influence the consequent performance of their businesses.

It has been long acknowledged by research in entrepreneurship that initial endowments impact how firms evolve. As pointed out by Kimberly (1979:438) "just as for a child, the conditions under which an organization is born and the course of its development in infancy have nontrivial consequences for its later life". Cooper et al (1994:372) also indicate that initial resource endowments affect organizations' "strategies, which in turn bear upon the capabilities developed in the young firm. Later competitive positions may be path-dependent, with firms that were unable to pursue desirable early strategies, later finding themselves unable to match those that could". Hence, if women found businesses which are systematically smaller than those of men's and employ less financial capital; one might expect lower levels of financial performance of *WCBs* during the subsequent development of their firms.

This paper seeks to provide further empirical evidence regarding the performance of women-controlled businesses by examining the impact that initial resource endowments – such as initial size and financial capital – have upon the early performance of their firms as compared with the performance observed in men-controlled firms. The empirical application considers combinations of resources of a material nature, rather than education, work experience, entrepreneurial skills or managerial abilities of the women and men that started up the ventures included in the sample. This is due to reasoning found in previous research which suggests, as mentioned above, that women-controlled firms generally underperform men-controlled firms because women tend to establish ventures in less profitable industries and they start-up their firms on a smaller scale and with lower endowments of capital than men do. In other words, the paper starts from the assumption that women and men are equally able as entrepreneurs but differences in the amount of material resources employed at start-up affect the performance of their firms in the early years. The analysis of underlying factors – i.e. socio-cultural conditions - that produce such differences in the amount of resources that men and women entrepreneurs are able to rise and employ at start-up goes beyond the scope of the study and is not examined.

The reminder of this paper is organised as follows. In the following section we present a review of relevant literature and the hypotheses to be tested. In the third section, methodological issues such as data and the empirical model are presented followed by a presentation and discussion of empirical results in the forth section. In the final section, conclusions and limitations of the study are provided as well as implications for future research.

2. LITERATURE REVIEW AND HIPOTHESES

With some notable exceptions, the impact of initial endowments on the performance of *WCBs* has been understudied. Rather, we can observe a larger number of papers that examine and compare the performance of *WCBs* and *MCBs* at post start-up moments. Both types of research show two common features: firstly, they employ a variety of performance measures and, secondly, they provide mixed evidence regarding *WCBs'* performance.

A summary of the research examining the impact of start-up condition on the performance of *WCBs* and *MCBs* is presented in Table 1a.

[Insert Table 1a about here]

Some of the studies that examine the impact of initial endowments on performance (Cooper et al., 1994; Carter et al, 1997; Boden and Nucci, 2000 and Bosma et al., 2004) measure performance as the firm ability to survive. Cooper et al. (1994) finds *WCBs* just as likely to survive as *MCBs* but less likely to grow due to lower initial resource endowments. Carter et al. (1997) use the flip side of business survival as measure of performance and finds higher odds of failure for *WCBs*. However, although this study found certain resource deficiencies in the case of *WCB*s (smaller scale and less instrumental experience from working in retail) such resource deficiencies did not appeared as affecting the odds of *WCBs* to fail as much as they did *MCBs*. Bosma et al. (2004) use two performance measures additional to firm survival: the profit made by firms and the cumulated employment during the period of study. The study found significant positive relationship between founders' education; their previous experience as employer and their experience in business. However, as gender is used as control

measure, no additional discussion is provided on how the initial human and social capital affects the performance of *WCBs*.

Finally, Alsos et al. (2004) tackle the question of business growth in *WCBs* in relationship with the initial capital available for start-up. The study indicates that *WCBs* raise lower levels of capital both at start-up and 19 months after and reports a strong association between the amount of capital raised at start-up and the sales turnover 19 months after. However, after the amount of capital at start-up is controlled for, no significant differences between *WCBs* and *MCBs'* business growth was found.

Whereas the question of how initial endowments affect the performance is relatively understudied, there are a large number of papers that examine and compare the performance of *WCBs* with that of *MCBs* at post start-up moments. A brief review of studies that test the *female underperformance hypothesis* is presented in Table 1b. Whereas some studies provide evidence *WCBs* underperform *MCBs* (Rosa et al., 1996; Fasci and Valdez, 1998; Watson, 2001; Cron et al., 2007; Boohene et al., 2008) others do not report performance differentials based on entrepreneurs' gender (Chell and Baines, 1998; Watson and Robinson, 2003; Johnsen and McMahon, 2005; Coleman, 2007). In addition, some research papers find only partial support for the *female underperformance hypothesis*, which is supported for some but not all of the performance measures used (DuRietz and Henrekson, 2000; Watson, 2002; Collins-Dodd et al., 2004).

[Insert Table 1b about here]

The empirical evidence summarized in Table 1b indicate a consensus among the different research studies regarding the fact that *WCBs* are generally smaller than *MCBs* in term of their number of employees (Rosa et al., 1996; DuRietz and Henrekson, 2000; Watson and Robinson 2003; Coleman, 2007); total assets (Rosa et al., 1996; Coleman, 2007) or sales (Rosa et al., 1996; Collins-Dodd et al., 2004; Alsos et al., 2006; Coleman, 2007). Regarding the growth dimension of business performance, Johnsen and McMahon (2005) finds no differences between *WCBs* and *MCBs* pace of growth whereas Coleman (2007) finds *WCBs* as growing at a faster pace.

Some studies also indicate that firms controlled by women are less profitable than those controlled by men (Fasci and Valdez, 1998; Watson, 2001 and 2002; Collins-Dodd et al., 2004). Nonetheless, other studies find no significant differences with respect to all or some of the profitability measures employed (DuRietz and Henrekson, 2000; Johnsen and McMahon, 2005). It appears therefore that there are some conflicting results from previous research on differential performance between *WCBs* and *MCBs*. The relatively small samples they analyse[5] (cross-sectional data almost exclusively) and their limited geographic coverage (usually Anglo-Saxon countries) make it difficult to generalize from their findings. Furthermore, they are limited to sectors where women are overrepresented such as retail and services while little is known about the performance of *WCBs* in less *traditional* sectors such as manufacturing or construction. Precisely, the contribution of this study is that it is based on a large sample of Spanish firms, in the manufacturing industry, just the less explored situation of the existent empirical research in the field.

Overall, previous research indicates that women start their ventures with lower initial endowments. In this study we hypothesise that this *disadvantage* at start-up leads to lower levels of business performance during consequent development of their firms. Hence, we state the following two hypotheses:

> *H_1: There is a positive relationship between start up size and firm's future performance.*

> *H_2: There is a positive relationship between financial capital and firm's future performance.*

Concerning the size, there is evidence suggesting gender differences among women and men entrepreneurs regarding the *ideal-sized* firm they desire (Cliff, 1998). Accordingly women entrepreneurs tend to establish a maximum business-size threshold for their firms, usually smaller than that established by men, beyond which they prefer not to expand. Furthermore, women entrepreneurs tend to be more concerned than men about the risks associated with fast-paced business growth and "deliberately strive to expand in a controlled and manageable manner" (Cliff, 1998: 538). Hence, if business size at

---

[5] Exception to this are the Australian studies – Watson (2001, 2002, 2003) and Johnsen and McMahon (2005), all using the same data base; DuRietz and Henrekson's (2000) study of Swedish entrepreneurs, and Robb's (2002) study on US firms.

start-up positively influences firm's future performance this effect might be lower in the case of women-controlled firms as their size tends to be smaller as compared with men-controlled firms.

Other possible explanation of performance differences between *WCBs* and *MCBs* regards the relationship between business size and women's access to capital. Several studies provided evidence that women's businesses grow less than men's and assert that this difference is due to the "substantial funding gap that limits women's opportunities to grow their ventures" (Brush et. al, 2002:1, cited in Alsos et. al, 2006:680). Although this study does not explore directly the issue of whether women face more stringent requirements from banks to obtain loans, the results indicate that women startup with significantly lower levels of assets and long term debt which could also be an indication of less access to funding for *WCBs*. If the firm's financial capital is expected to positively affect its future performance and if women-controlled firms tend to invest less financial capital in their businesses, this might explain eventual performance differences between *WCBs* and *MCBs*. These considerations led us to define the following hypotheses subsequent to H1 and H2, respectivelly.

> H_{1a}: *The relationship between start up size and firm's future performance is stronger for MCBs than for WCBs.*

> H_{2a}: *The relationship between financial capital and firm's future performance is stronger for MCBs than for WCBs.*

3. DATA AND METHOD

3.1. Data

The dataset used in this study was collected from the *Sistema de Análisis de Balances Ibéricos* (*SABI*) database for the period 2000–2005. The *SABI* database contains financial information for more than 500,000 Spanish and Portuguese firms. Given the purpose of this study, we collected yearly information on Spanish firms from 12 manufacturing industries which started-up as small to medium-sized enterprises (*SMEs*) between years 2000 and 2004 and did not ceased their activity during the mentioned period. That is, the oldest firms included in the sample have five years of age whereas

the youngest are one year old. The application of these criteria yielded a final dataset of 4,450 firms of which 533 are women-controlled[6].

The industry configuration by gender for each sector considered in the sample is presented in Table 2. Five out of twelve sectors pertain to the food and beverages industry while the remaining belong to pharmaceutical industry; manufacture of electric and electronic equipment and machinery; manufacture of basic metals and structural metal products. Regarding the sex distribution of firms along these sectors, it can be observed that *WCBs'* presence predominates in manufacture of machinery and equipment; manufacture of electrical machinery and apparatus and, in all food and beverage industries excepting the manufacture of vegetable oil and fats. Conversely, *MCBs* prevail in pharmaceutical industry; office machinery and computers manufacture; manufacturing of radio, television and communication equipment and manufacturing of structural metal products.

[Insert Table 2 bout here]

Loscocco and Robinson (1991) categorize the manufacturing industries as *male-typed* whereas the retail and service industries are considered as *female-typed*. Given all firms in our sample belong to manufacturing industries; we use the *OECD's* industry classification according the degree of technological implementation (Hatzichronoglou, 1997) to check for the existence of possible patterns, if any, regarding women's preferences when launching new ventures in *male-typed* industries. For each industry the proportion of firms relative to the total number of firms for the period under analysis (2000-2005) was calculated. It can be observed that most of firms in the total sample belong to sectors of medium degree of technological implementation (79,58%). Regarding the gender distribution, more *MCBs* than *WCBs* are present in sectors of high degree of technological implementation (5,72% of all *MCBs* versus 4,24% of all *WCBs*). In the case of firms belonging to sectors with a lower degree of technological implementation, these are predominantly women-controlled (18,52% of all *WCBs*

---

versus 14,36% of all *MCBs*). Although these results suggest a certain pattern of behaviour for *WCBs* within manufacturing industries these results should be interpreted with caution and can be addressed by further research.

Table 3 presents yearly start-ups by the sex of the manager and aggregate descriptives of start-ups' characteristics. Information presented in the table is consistent with findings in previous research. It can be observed that the yearly number of start-ups is up to nine times bigger for *MCBs* as compared to *WCBs*. Furthermore, newly born firms controlled by women are established at a smaller scale (*WCBs* show up to 3 times less assets). No significant differences in size were found between *WCBs* and *MCBs*, when size is measured through the total number of employees.

[Insert Table 3 about here]

New firms controlled by men score higher on initial endowments of financial resources their initial debt (measured through the amount of contracted long-term debt) being significantly bigger (*MCBs* show up to 5 times larger long term debt than *WCBs*). Similarly, the financial cost (measured through the interest paid for the contracted long-term debt) is up to 4.4 times higher in the case of *MCBs*.

3.2. Performance variables

Two aspects of business performance are considered, namely business growth and risk-adjusted profitability. We could have chosen more 'subjective' indicators of performance such as, for instance, the extent to which the firm and/or the entrepreneur has achieved the objectives set (Reid and Smith, 2000). Some authors argue that men and women may perceive and measure business performance differently and therefore, a relativist approach to performance would fit better to this stream of research. It was argued within previous research that women may be less concerned with financial rewards than men are (Watson, 2001) and are more interested in pursuing *intrinsic* goals as, for example, independence or to balance work and family responsibilities (DeMartino and Barbato, 2003). Consequently, it was considered that women assess their success in business in relation to their achievement in attaining personal goals (e.g., goal attainment, self-fulfilment), while men are assumed to assess success using quantitative criteria (e.g., profit, growth) (Carter et al, 2001). Therefore, if women think

success and performance in different terms than men do, then they will also differ in the performance levels they seek and achieve. However, previous research on this matter provides "a generally conclusive [empirical evidence indicating] that men and women tend to use the same criteria for business performance, which is often a combination of firm-based criteria (sales turnover, profitability, etc) and personal criteria (fulfilment, ambition etc)" (Carter and Shaw, 2006: 69).

Some empirical comparisons of *WCBs* and *MCBs'* performance that found little or no differences in terms of profitability, found bigger differences in terms of growth related measures (Cooper et al., 1994; DuRietz and Henrekson, 2000). Such situation can be explained through findings of research on growth aspirations of women business owners which posits that "growth orientation is a complex phenomenon that may well be influenced by gender" (Morris et. al, 2006: 239), and provides empirical evidence that suggests a lower propensity toward growth among women (Rosa et. al, 1996 and Menzies et al., 2004) as well as a tendency of women to set lower business thresholds beyond which they prefer not to expand (Cliff, 1998). Business growth appears therefore as a differencing characteristic among *WCBs* and *MCBs*. Yet, very few studies examine business growth in particular (Johnsen and McMahon, 2005) probably due to the shortage of longitudinal data (DuRietz and Henrekson, 2000).

From an operational point of view, and similar to Watson and Robinson (2003), we first measure performance as the Sharpe's (1975) reward-to-variability ratio. This variable was originally developed to evaluate the performance of securities and investment portfolios, and it is defined as the ratio of a profit measure (reward) divided by the standard deviation observed for those profits (variability). The importance of controlling for risk when assessing the performance of male and female SMEs becomes more evident as it has been showed by empirical evidence that women tend to have higher levels of risk aversion as women are more reluctant both to assume the burden of business debt and engage in fast-paced business growth (Carter and Shaw, 2006: 63). This way, the Sharpe ratio not only provides an risk-adjusted picture of performance that could facilitate the evaluation of SME's performance, but its use is further justified given the potentially dissimilar objective functions of male and female business managers, where the attitude towards risk-taking behaviour seems to play a key role.

In our context, the Sharpe ratio is measured as the ratio of net profits divided by its standard deviation. At this point two important considerations are also in order. First, we consider net profits as a reward because it represents the monetary outcome earned by ventures, and for market-driven managers profit constitutes a major component of the performance construct (Taggard, 1996; Watson and Robinson, 2003). Second, our approach to the Sharpe ratio implies the calculation of annual values for this variable to control for time variations. Also, and given the need to control for differences at the industry level in what concerns the variability of risk, we estimated the Sharpe ratio for each sector in our sample in a separate fashion. From Table 4 it can be observed that, in our sample, risk-adjusted performance of *WCBs* is significantly lower (3.49%) relative to that shown by their male counterparts (8.38%).

[Insert Table 4 about here]

Regarding the second dimension of economic performance (business growth), this was measured using two variables namely the yearly variations in total sales and, the yearly variations in the number of employees. Sales and employment growth are considered as desirable outcomes of successful entrepreneurial firms and are frequently employed as valid indicators of firm growth in performance comparisons between *WCBs* and *MCBs*. Therefore, the growth measures used within this study are defined as the annual logarithmic change in sales volume and the number of employees. From the descriptives we observe that, between 2000 and 2005, the average annual rate of sales growth of *MCBs* (45.20%) is significantly higher than that reported for *WCBs* (39.70%). A similar pictures emerges when comparing the annual employment growth between *MCBs* (21.24%) and *WCBs* (19.25%), however, for this variables differences in employment growth are not statistically significant (Table 4).

3.3. Empirical method

Multivariate analysis was used to examine the differential effects that firm size and financial resources are having upon business performance. Concerning the econometric approach, panel data analysis is the most efficient tool when the sample is a mixture of time series and cross-sectional data, since this structure allows for taking into consideration the unobservable and constant heterogeneity, i.e., the specific characteristics of each firm. As a result, a fixed-effects model appears as the most

suitable methodological tool. To justify the use of the econometric approach chosen, we carried out the Hausman (1978) specification test. As we indicate below in section 4, results for this test further corroborate the appropriateness of the fixed-effects parameter estimates.

Business performance is assumed to be a function of a set of independent variables where the constraints faced by recently created firms (e.g. undercapitalization, smallness) play an important role. To test for the existence of the differential impact of such constraints on the performance of the firms in our sample we propose the following regression:

$$
\begin{aligned}
\text{Performance}_{i,t} = & \beta_0 + \beta_1 \text{Firm Age}_{i,t} + \beta_2 \text{Size}_{i,t-1} + \beta_3 \text{Size}^2_{i,t-1} + \beta_4 \text{Leverage}_{i,t-1} + \\
& + \beta_5 \text{Long Term Debt}_{i,t-1} + \beta_6 \text{Financial Cost}_{i,t-1} + \\
& + \beta_7 \text{Time}_{i,t} + \beta_8 \text{Time}_{i,t} \times \text{Industry}_{i,t} + \eta_i + \varepsilon_{i,t}
\end{aligned}
\qquad [1]
$$

Where $i = 1,...,N$ and $t = 1,...,T$ represent the cross-sectional units and the time periods, respectively, η_i is the unobserved fixed firm-specific effect, and $\varepsilon_{i,t}$ is the stochastic error term varying cross-time and cross-unit. Equation [1] was estimated for the sub-sample of *WCBs* and *MCBs* separately, and in terms of our hypotheses we expect that $\beta_2 > 0$ and $\beta_3 > 0$ (H[1]), being this effect greater for *MCBs* $\left(H_{1a} : \beta_2^{MCB} > \beta_2^{WCB} \text{ and } \beta_3^{MCB} > \beta_3^{WCB} \right)$. Also, we expect a positive relationship between financial resources and performance $\left(H_2 : \beta_4 > 0, \beta_5 > 0 \text{ and } \beta_6 > 0 \right)$, and finally we expect that $\beta_4^{MCB} > \beta_4^{WCB}, \beta_5^{MCB} > \beta_5^{WCB}$ and $\beta_6^{MCB} > \beta_6^{WCB}$, indicating that these financial variables have a greater impact on performance in the case of the group of *MCBs* (H[2a]).

However, we are aware that the mere comparison of parameter estimates obtained from the estimation of the model presented in equation [1] does not allow us confirming that size and access to finance exert a differential effect on *WCBs* and *MCBs* when it comes to future performance. In order to corroborate our hypotheses, it is necessary to test for the presence of parameter heterogeneity across the groups of firms under analysis, that is, *WCBs* and *MCBs*. Thus, we use the Chow test (1960). This procedure is especially

useful for the purposes of this paper, as it examines whether parameter estimates obtained for one group of the data equal those obtained for another group of the data (Greene, 2003). This test has been commonly used to validate data pooling in statistical analysis, however, in our case the Chow test represents the econometric test that best fits to our attempt of determining the extent to which size and access to financial resources affect performance, and whether size and access to finance exert a differential impact on performance between *WCBs* and *MCBs*. To ensure the robustness of the results, we run the Chow test for each of the variables related to size and financial resources.

Concerning the set of independent variables, we introduce the size of the firm, measured through total assets when the dependent variable is the Sharpe ratio, and the number of employees, when the dependent variable is employment growth; and sales volume, when the dependent variable is sales growth. The variables related to financial resources include the long term debt (used as proxy for financial capital), the financial costs (measured as interest paid for long-term debt), and the financial leverage ratio (measured as the ratio of debt to equity) to proxy the financial structure of the firm[7]. Two additional control variables are considered: time dummies; and an interaction term between time and industry to control for the differential effect that industry sectors may have on our performance measures.

Table 5 presents the descriptives for the independent variables used in this study. As expected, and consistent with previous research, *WCBs* show lower levels of resource endowments than *MCBs*. On average, *WCBs* are significantly smaller than *MCBs* being more than four times as large as women-controlled firms as determined by total assets. Regarding the second measure of size, it can be observed that, on the average, the number of employees in *MCBs* represents almost one and a half of the workforce employed by *WCBs*.

[Insert Table 5 about here]

---

[7] The size of the business and its financial capital are considered initial resources in the start-up year and inputs in the subsequent years and are expected to behave according to the hypotheses stated above.

Concerning the use of financial capital, *MCBs* show, on the average, nine times more long term debt than *WCBs* and, consequently they incur in significantly higher financial costs (the interests paid by *MCBs* for the long-term debt are nearly six times bigger than those paid by *WCBs*). In addition, the average values obtained for leverage ratio (debt-to-equity) indicate that *WCBs* show a more balanced capital structure as compared to *MCBs* (8.62 versus 11.10).

4. EMPIRICAL FINDINGS

This section presents the empirical findings. Regression results are presented in Tables 6 to 8 and are commented below. In all the Tables, specification 1 only considers firm age, size terms and leverage as independent variables. Model 2 takes in account the long term debt whereas Model 3 introduces the financial costs into the analysis.

As we mentioned in the previous section, we decided to use a fixed-effects approach for our estimations. However, this decision is critical in any analysis since the random and fixed effects models may produce different results (Greene, 2003). A fixed effects model produces consistent parameter estimates in the presence of random or fixed individual effects. To corroborate the consistency of our estimations, we estimated the Hausman specification test for all our models (Hausman, 1978). Results for this test are presented, for each model, in Tables 6 to 8, and in all cases the hypothesis of similarity of the coefficients in the fixed and random effects models can be rejected. This means that parameter estimates obtained from the fixed-effects model are more efficient (smaller asymptotic variance), and that the error terms are correlated with the explanatory variables, so therefore, the nature of the individual effect is fixed.

However, as we ran two separate regressions for *WCBs* and *MCBs*, a critical question rising is to whether size and access to financial resources are equally affecting performance in *WCBs* and *MCBs*. To address this question we performed the Chow test and the results are presented in Table 10.

Regression results obtained for each dependent variable (sales and employment growth, as well as the Sharpe ratio), reveal interesting findings regarding the relationship between firm-size and economic performance. Arguably, the sign in the parameter estimates suggest that this relationship is U-Shaped for men-controlled businesses

(Specifications 1 to 3 for *MCBs* in Tables 6 to 8). To the contrary, our findings show that for women-controlled businesses the size-growth relationship is negative when business growth is the performance measure (Specifications 1 to 3 for *WCBs* in Tables 6 and 7).

[Insert Table 6 about here]

[Insert Table 7 about here]

This negative relationship between business size and growth, measured both in terms of number of employees and sales volume, indicates that smaller firms controlled by women tend to grow faster than larger ones. These results are in accordance with previous research findings reporting different growth orientations for *WCBs* (e.g. Cooper et. al, 1994; Cliff, 1998; Menzies et. al, 2004). This could indicate that women, as managers, are more concerned by the risk attached to fast-growing behaviour, which can be interpreted as a signal of their lower growth propensity (Cliff, 1998). Furthermore, the different shape of the relationship growth–business size between *WCBs* and *MCBs* signals that women-controlled businesses grow at a decreasing rate, whereas larger firms controlled by men may benefit from economies of scale and thus, exhibit positive variations in employment and sales.

Concerning the risk-adjusted profitability measure (Sharpe ratio in Table 8), our results show that women-controlled businesses' performance is not conditioned by size, whereas for men-controlled businesses we find the same U-shaped relationship pattern. These results indicate that smaller men-controlled firms show negative risk-adjusted performance rates, but beyond a crucial threshold, larger firms controlled by men exhibit an upward trend of performance.

[Insert Table 8 about here]

Regarding the effects that the selected finance-related variables – long term debt, financial costs and leverage – have on performance, the results show similar patterns when performance is measured as business growth (variations in sales and employment),

whereas the results obtained for the risk-adjusted profitability measure (Sharpe ratio), are slightly different.

Regression results in Tables 6 and 7 indicate that financial resources employed – measured as long-term debt – and, the financial cost associated to debt exert a positive and highly significant impact of firm growth for both *WCBs* and *MCBs*. In other words, both *WCBs* as *MCBs* use debt to expand their businesses. These findings contradict results provided by previous research suggesting that, rather than seeking immediate expansion, women use finance in start-up years to purposes more linked to survival and business consolidation (Coleman, 2007). However, when risk is accounted for when measuring performance (Sharpe ratio, Table 8), none of these two variables appear as affecting the profitability of *WCBs*. Nonetheless, our results reveal that financial costs linked to debt boost economic performance in the case of *MCBs*.

Regarding the results for the variable related to the debt-structure (leverage)[8], this has no impact on firm growth irrespective of the sex of the manager. However, when performance is defined as the Sharpe ratio (Table 8), we find that leverage (debt-structure) has a negative and statistically significant effect on women-businesses' performance. This could only indicate that women who decide to bias their sources of finance to long-term debt exhibit lower levels of performance, as compared to their male counterparts.

This latter result, together with those reported for the impact of long-term debt and financial cost on business growth, could indicate that men-controlled businesses benefit more from debt to grow and increase performance, relative to women-controlled businesses, because either suppliers of finance favour larger firms (Orser and Foster, 1994) or women are subject to different lending policies by borrowers (Coleman, 2000 and Orser, et al., 2006). Consequently, we test for potential differences in the mean interest rate (financial cost divided by debt) charged to women and men controlled businesses (Table 9). Nevertheless, we find no statistically significant differences in the mean interest rates of women and men businesses. Hence, we cannot support the lending-bias argument to explain both the negative effect that our leverage variable

---

[8] We gratefully thank one of the anonymous reviewers for clarifications given upon this issue.

exerts on women-controlled businesses' performance, and the highly significant positive effect that debt and financial cost have on growth and risk-adjusted performance showed by men-controlled firms.

[Insert Table 9 about here]

To summarize, our findings indicate that, in the manufacturing industries considered in the sample, women- and men-controlled firms show significant differences regarding their initial conditions. *WCBs* consistently show lower levels of assets and number of employees, contract lower amounts of long-term debt and therefore incur less financial costs. Also, at this point our results suggest that there exist differences in the impact of size and financial-related variables when comparing the performance of *WCBs* and *MCBs*. Therefore, now we proceed to corroborate how significant are these differences through the Chow test. As we indicated above, through this test we compare the parameter estimates of *WCBs* and *MCBs* for each of the variables of interest throughout the different model specifications presented in Tables 6 to 8, and results for the Chow test are presented in Table 10.

Regarding the effect of size on firm performance, our empirical findings provide partial support to the first set of hypotheses. Irrespective of the performance variable chosen, for our sample of Spanish manufacturing firms, business size has a non-linear effect on *MCBs*' performance both in terms of business growth (sales and employment) and in terms of profitability (Sharpe ratio). When comparing the parameter estimates for the size variables between *WCBs* and *MCBs* we observe that these coefficients are significantly different only when business growth (employment and sales) is the performance measure $\left(\beta_2^{MCB} < \beta_2^{WCB} \text{ and } \beta_3^{MCB} > \beta_3^{WCB} \right)$. However, we failed in finding differences in the parameters related to the size variables when the Sharpe ratio is the dependent variable (Table 10). These results could indicate that larger firms controlled by men may obtain important gains from economies of scale and show increasing rates of performance. This condition does not hold for women-controlled firms. The results are similar with those obtained by some previous research (e.g. Watson and Robinson, 2003) and indicate that although women-controlled firms are smaller (due probably to the amount of resources they employ at start-up) women are as

effective as men irrespective of the size of their firms and the risk they bear (provided performance is measured controlling for risk).

Consequently, we partially confirm hypothesis H_1 only for men-controlled firms, and we confirm hypothesis H_{1a} which proposed that the effect of size on performance is greater in *MCBs*.

[Insert Table 10 about here]

As for the financial structure of the firm, our results indicate that, irrespective of the sex of the manager, firms with a strong preference for debt as main source of financial recourses, as compared to equity, do not exhibit higher growth rates (employment and sales). To the contrary, we observe that the coefficient associated to leverage for the sub-sample of *WCBs* is significantly lower than that reported for the group of $MCBs\left(\beta_4^{MCB} > \beta_4^{WCB}\right)$ (Chow test: 5.64 and significant at the 5% level), confirming that a financial structure more biased towards equity exerts a negative impact on the performance of *WCBs* when the Sharpe ratio is the dependent variable.

Finally, we find that, for both *WCBs* and *MCBs*, financial capital (long-term debt and financial cost) is positively related to business growth. In this case, the coefficients obtained for the sub-samples of *WCBs* and *MCBs* are not significantly different, indicating that the positive effect that financial capital is having upon business expansion is homogenous in our sample (Table 10). Nevertheless, a different picture emerges when examining the results when performance is measured through the Sharpe ratio. In this case, we observe that the only statistically significant difference comes out when comparing the coefficients for financial cost$\left(\beta_6^{MCB} > \beta_6^{WCB}\right)$ (Chow test: 2.23 and significant at the 10% level). This result could reflect that, on the one hand, male managers have a greater incentive to financial outcomes to ensure the cost of their debt. On the other hand, and consistent to findings in Alsos et. al (2006) and Coleman (2007), these results could show that women are more likely to use financial capital for purposes more aligned to objectives other than financial performance (for instance, survival). Given these results, we confirm our hypotheses H_2 and H_{2b}, which proposed

that financial resources positively impact performance, and that this effect is greater for *MCBs*, respectively.

5. CONCLUSIONS

The purpose of this study was to examine how start-up conditions such as initial size and financial capital affect the business performance among women- and men-controlled firm. Firms were defined as women and men-controlled, considering the sex of their executive managers. In assessing performance, this study simultaneously considers firms' growth in terms of sales and employment (desirable outcomes of entrepreneurial firms) as well as their profitability (as source of future investments and therefore, of business growth).

This study improves upon previous research on the performance of *WCBs* in several ways. First, while much of the previous research on the performance of *WCBs* has been based on limited samples, usually from retail and service industries, and has been cross-sectional, this study employs a large data set of 4,450 Spanish firms from twelve manufacturing industries and examines their performance during up to five consecutive years after their birth. Second, this study provides empirical evidence for firms created in several manufacturing industries for which the existing evidence is scarce. Most previous studies are focused on retail and service firms, reflecting researchers' acknowledgement of women's overrepresentation in these industries (considered as *female-typed* industries). Yet, as argued previously within this paper, not all women start-up businesses in retail and service and recent empirical evidence indicate a tendency of increased implication of women in *male-typed* industries such as manufacturing, construction and high tech. Hence, performance comparisons of *WCBs* and *MCBs* in such economic sectors are relevant for a full understanding of the factors that might enhance or impede business survival and growth of *WCBs*.

This study tested two sets of hypotheses regarding some initial conditions that can affect *WCBs*' performance immediately after start-up. The first set of hypotheses suggested a positive relationship between initial size and business performance, but a weaker relationship in the case of *WCBs*. The empirical evidence previously presented in this study provides only partial support to this first set of hypothesis. For all firms in the

sample performance is negatively affected by business size. These results resemble those obtained in previous research on small business growth that shows growth rates are negatively related with the size and the age of the firms (e.g. Mata, 1994 and Hart and Oulton, 1996) and could indicate that small firms grow faster in order to ensure their survival (Audretsch, 1991 and Correa Rodriguez et al., 2003).

In addition, this study's findings indicate different shapes of the relationship between *WCBs* and *MCBs*. The relationship has a U-Shape for *MCBs*, that is men-controlled businesses grow initially at a decreasing rate but, when they expand beyond a certain threshold, their growth rates increase with size. As opposed to *MCBs*, the relationship between business size and growth is negative indicating that *WCBs* grow experience lower growth rates than *MCBs*. One possible explanation comes from results reported in previous research according to which gender differences exist among women and men entrepreneurs regarding the *ideal-sized* firm they desire (Cliff, 1998).

The second set of the hypotheses tested in this study concerned the impact of finance (measured through initial long-term debt and annual financial costs) on business growth and profitability and suggest that while financial capital has a positive impact on subsequent business performance, this effect is weaker in the case of *WCBs*. Results in this case indicate that both the amount of long-term debt and the annual amount of interests paid for the long-term debt (financial costs) enhance business growth for both *WCBs* and *MCBs*. However when firm profitability is employed and performance is measured controlling for risk, financial costs appear as boosting the performance of *MCBs* This result could reflect that, on the hand, male managers have a greater incentive to financial outcomes to ensure the cost of their debt. On the other hand, consistent to findings in Alsos et. al (2006) and Coleman (2007), this results could show that women are more likely to use financial capital to purposes more aligned to firm survival rather than financial performance.

The study, however, is subject to a number of limitations which give place to future improvements and extensions. First, departing from the assumption that eventual differences between *WCBs* and *MCBs'* economic performance is rather a result of differences in starting conditions (Carter and Shaw, 2006) this study only considered the impact of initial firm features such as business size at start-up and initial debt of the

economic performance of firms in the sample. However, initial start-up conditions are not limited to firm specific features but also extend to issues like human capital (attributes, skills, education and experience); social capital (relationships and networks) or organizational capital (organizational relationships, structures, routines, culture and knowledge) (Firkin, 2003). As indicated in Cooper et. al (1994) such non-financial capital influence firm performance as entrepreneurs' formal education, previous experience and access to general networks influence their decision-making processes and the extent to which they perceive and exploit business opportunities.

Although research on human and social capital in women-controlled business is at an early stage (Carter and Shaw, 2006), some studies indicate that *WCBs* and *MCBs* differ with respect to the amount and quality of this non-financial capital they posses (Boden and Nucci, 2000). This suggests that, at least partly, some of *WCBs'* underperformance could be explained by variations in non-financial capital with respect to *MCBs*. Unfortunately, this study did not had access to data reflecting non-financial resources employed at start-up. Further research however, should consider *WCBs'* performance taking into account a wider palette of factors reflecting firm's entrepreneurial capital.

A second set of limitations stems from the measurement of business outcome within this study. Performance was measured through *traditional* indicators usually employed by entrepreneurship research such as sales, employment and profitability and therefore only the pecuniary component of output was considered. Whereas growth and profitability can be crucial ingredients for business success, they might not be the only outcomes pursued by entrepreneurs. Furthermore, as indicated in Brush and Hisrich (2000), for comparisons between *WCBs* and *MCBs* performance should be considered in broader terms than pure economic performance and it should also refer to outcomes other than financial measures such as personal economic performance (the entrepreneur's salary) and social performance (employee satisfaction, social contributions), goal achievement and effectiveness. The consideration by future research, of such complementary measures of business performance could therefore better identify and explain the factors underlying *WCBs* survival and growth.

Finally, we should also note that this study focused on the performance immediately after start-up and for some of the firms included in the sample the available information

was limited to the first two years of firms' life. However, even for the case of those firms founded in 2000, the information used to assess firm performance is limited to the first five years after start-up. Two to five years can be a too short period for firms to demonstrate their possibilities, especially in the case of high-tech firms (Cooper et. al, 1994) for which a longer period is required to catch-up the skills and competitive capabilities required for business success. Therefore, longitudinal information comprising more than five years could be of more use to disentangle the factors underlying business performance of *WCBs* in *male-typed* industries.

REFERENCES

Anna, A.L.; Chandler, G.N.; Jansen, E.; Mero, N.P. (1999) "Women Business Owners in Traditional and Non-Traditional Industries", *Journal of Business Venturing*, 15(3): 279 – 303.

Allen, I.E.; Langowitz, N.; Minitti, M. (2007) *Global Entrepreneurship Monitor, 2006 Report on Women and Entrepreneurship,* Center for Women's Leadership, Babson College and London School of Economics.

Alsos,G.A.; Isaksen, E.J.; Ljunggren, E. (2006) "New Venture Financing and Subsequent Business Growth in Men- and Women-Led Businesses", *Entrepreneurship Theory and Practice,* 30(5): 667-686.

Audretsch, D. (1991) "New-Firm Survival and the Technological Regime", *Review of Economics and Statistics*, 73: 441 – 450.

Becker, G.S. (1985) "Human Capital, Effort and the Sexual Division of Labor.", *Journal of Labor Economics*, 3(1): S33 – S57.

Bock, B.B. (2004) "Fitting in and Multi-tasking: Dutch Farm Women's Strategies in Rural Entrepreneurship", *Sociologia Ruralis,* 44(3):245-260.

Boden Jr., J.R.; Nucci, A.R. (2000) "On the Survival Prospects of Men's and Women's New Business Ventures", *Journal of Business Venturing*, 15(4): 347 – 362.

Boohene, R.; Sheridan, A.; Kotey, B. (2008) "Gender, personal values, strategies and small business performance", *Equal Opportunities International*, 27(3): 237-257.

Bosma, N.; van Praag, M.; Thurik, R.; de Wit, G. (2004) "The Value of Human and Social Capital Investments for the Business Performance of Startups", *Small Business Economics,* 23(3):227-236

Brush, C.G; Chaganti,R. (1999) "Businesses without Glamour? An Analysis of Resource on Performance by Size and Age in Small Service and Retail Firms", *Journal of Business Venturing,* 14(3): 233-257.

Carter, N.M.; Williams, M.; Reynolds, P.D.(1997) "Discontinuance Among New Firms in Retail: The Influence of Initial Resources, Strategy and Gender", *Journal of Business Venturing,* 12(2): 125-145

Carter, S.; Shaw, E. (2006) *Women's Business Ownership: Recent Research and Policy Development,* Report to the Small Business Service, November 2006, Available online at: http://www.berr.gov.uk/files/file38330.pdf .

Carter, S; Anderson, S; Shaw, E. (2001) *Women's Business Ownership: A Review of the Academic, Popular and Internet Literature.* Report to the Small Business Service, RR 002/01.

Chandler, G.N.; Hanks, S.H. (1998) "An Examination of the Substitutability of Founders Human and Financial Capital in Emerging Business Ventures", *Journal of Business Venturing*, 13(5): 353-369.

Chell, E.; Baines, S. (1998) "Does Gender Affects Business "Performance"? A Study of Microbusinesses in Business Services in the UK", *Entrepreneurship and Regional Development*, 10(1): 117 – 135.

Chow, G. (1960). "Tests of Equality Between Sets of Coefficients in Two Linear Regressions", *Econometrica*, 28 (3): 591–605.

Cliff, J.E. (1998) "Does One Size Fit All? Exploring the Relationship between Attitudes Towards Growth, Gender, and Business Size", *Journal of Business Venturing*, 13(6): 523 – 542.

Coleman, S. (2007) "The Role of Human and Financial Capital in the Profitability and Growth of Women-Owned Small Firms", *Journal of Small Business Management*, 45(3): 303 – 319.

Coleman, S. (2000) "Access to Capital and Terms of Credit: A Comparison of Men and-Women- Owned Businesses", *Journal of Small Business Management*, 38(3): 37 – 52.

Collins- Dodd, C.; Gordon, I. M.; Smart, C. (2004) "Further Evidence on the Role of Gender in Financial Performance", *Journal of Small Business Management*, 42(2): 395-417.

Cooper, A.C.; Gimeno-Gascon, F.J.; Woo, C.Y. (1994) "Initial Human and Financial Capital as Predictors of New Venture Performance", *Journal of Business Venturing*, 9(5): 371 – 395.

Correa Rodríguez, A.; Acosta Molina, M.; González Pérez, A. (2003) "Size, Age and Activity Sector on the Growth of the Small and Medium Firm Size", *Small Business Economics*, 21: 289 – 307.

Cron, W.; Bruton, G.; Slocum, J.(2006) "Professional Service Ventures, Performance and the Gender Effect" *Journal of Leadership and Organizational Studies,* 12(3): 53-67.

de la Rica, S.; Dolado, J.J.; Llorens, V. (2008) "Ceilings or Floors? Gender Wage Gaps by Education in Spain", *Journal of Population Economics*, 21:751-776.

DeMartino, R.; Barbato, R. (2003) "Differences between Women and Men MBA Entrepreneurs: Exploring family flexibility and wealth creation as career motivators", *Journal of Business Venturing,* 18(6): 815-832.

DuRietz, A.; Henrekson, M. (2000) "Testing the Female Underperformance Hypothesis", *Small Business Economics*, 14(1): 1 – 10.

Estevéz-Abe, M. (2006) "Gendering the Varieties of Capitalism. A Study of Occupational Segregation by Sex in Advanced Industrial Societies", *World Politics,* 59(1):142 - 175

Fasci, M.A.; Valdez, J. (1998) "A Performance Contrast of Male- and Female- Owned Small Accounting Practices", *Journal of Small Business Management*, 36(3):1–7.

Firkin, P. (2003) "Entrepreneurial Capital" in deBruin, A. and Dupuis, A. (eds) *Entrepreneurship: New Perspectives in a Golbal Age*, Aldershot, Hampshire: Ashgate.

García, J.; Hernández, P.J.; López-Nicolás, A. (2001) "How wide is the gap? An investigation of gender wage differences using quantile regression", *Empirical Economics*, 26: 149-167.

Greene, W. (2003) *Econometric Analysis*, 5th Ed. Prentice-Hall, Upper Saddler River, NJ.

Hart, P.; Oulton, N. (1996) "Growth and size of the firms", *Economic Journal*, 106: 1242 – 1252.

Hatzichronoglou, T. (1997) "Revision of the High-Technology Sector and Product Classification", *OECD STI Working Papers* 1997/2, Paris.

Hausman, J. (1978) "Specification tests in econometrics", *Econometrica*, 46: 1251–1271

Hurley, A.E. (1999) "Incorporating feminist theories into sociological theories of entrepreneurship", *Women in Management Review*, 14(2):54-62.

INE (2008) *Mujeres y Hombres en España. 2008*, Instituto Nacional de Estadística (Spanish National Statistical Institute), Madrid.

Johnsen, G.J.; McMahon, R.G.P. (2005) "Owner-Manager Gender, Financial Performance and Business Growth Amongst SMEs from Australia's Business Longitudinal Survey", *International Small Business Journal* 23(2): 115 – 142.

Kimberly, J.R. (1979) "Issues in the Creation of Organizations: Initiation, Innovation and Institutionalization", *Academy of Management Journal,* 22(3): 437-457.

Kunze, A.(2008) "Gender Wage Gap Studies: Consistency and Decomposition", *Empirical Economics,* 35: 63 – 76

Loscocco, K.A.; Robinson, J. (1991) "Barriers to women's small-business success in the United States", *Gender and Society* 5(4):511–532.

Marlow, S.; Patton, D. (2005) "All Credit to Men? Entrepreneurship, Finance, and Gender", *Entrepreneurship Theory and Practice*, 29(6): 717 – 735.

Mata, J. (1994) "Firm growth during infancy", *Small Business Economics*, 6(1): 27 – 39.

Mattis, M.C. (2004) "Women Entrepreneurs: Out from Under the Glass Ceiling", *Women in Management Review,* 19(3): 154-163 OECD (2004) *Women's Entrepreneurship: Issues and policies*. Prepared by Delmar, F. and Holmquist, C. for the 2nd OECD conference of ministers responsible for SMEs, Promoting Entrepreneurship and Innovative SMEs in a Global Economy. Istanbul, 3-5 June.

Menzies, T.; Diochon, M.; Gasse, Y. (2004) "Examining Venture – Related Myths Concerning Women Entrepreneurs", *Journal of Developmental Entrepreneurship*, 9(2): 89 – 97.

Morris, M.H.; Miyasaki, N.N.; Watters, C.E.; Coombes, S.M. (2006) "The Dilemma of Growth: Understanding Venture Size Choices of Women Entrepreneurs", *Journal of Small Business Management*, 44(2): 221 – 244.

Oakley, J.G. (2000) "Gender-based Barriers to Senior Management Positions: Understanding the Scarcity of Female CEOs", *Journal of Business Ethics*, 27 (4): 321-334.

Orser, B.J.; Riding, A.L.; Manley, K. (2006) "Women Entrepreneurs and Financial Capital", *Entrepreneurship Theory and Practice*, 30(5): 643 – 665.

Orser, B.J.; Foster, M.K. (1994) "Lending Practices and Canadian Women in Micro-based Businesses", *Women in Management Review*, 9(5): 11 – 19.

Plantega, J.; Remery, C. (2005) *Reconciliation of Work and Private Life: A Comparative Review of 30 European Countries*, (Luxembourg, Office for Official Publications of the European Communities.

Polavieja, J.G. (2008) "The Effect of Occupational Sex-Composition on Earnings: Job-Specialization, Sex-Role Attitudes and the Division of Domestic Labour in Spain" *European Sociological Review*, 24(2): 199-213.

Reid, G.C.; Smith, J.A. (2000) "What Makes a New Business Start-up Successful?", *Small Business Economics,* 14(3):165-182

Robb, A. (2002) "Entrepreneurial Performance by Women and Minorities: the case of new firms", *Journal of Developmental Entrepreneurship*, 7(4): 383-397.

Rosa, P.; Carter, S.; Hamilton, D. (1996) "Gender as Determinant of Small Business Performance: Insights from a British Study", *Small Business Economics*, 8(6): 463 – 478.

Sharpe, W.F. (1975) "Adjusting for Risk in Portfolio Performance Measurement", *Journal of Portfolio Management*, 1975(Winter): 29 – 34.

Singh, S.P.; Reynolds, R.G; Muhammad, S. (2001) "A Gender – Based Performance Analysis of Micro and Small Enterprises in Java, Indonesia", *Journal of Small Business Management*, 39(2): 174 – 182.

Taggart, R. (1996). *Quantitative Analysis for Investment Management*, Prentice Hall, Upper Saddle River, NJ.

Terjensen, S.; Singh, V. (2008) "Female Presence on Corporate Boards: A multy-country study of environmental context", *Journal of Business Ethics,* 83(1): 55-63.

Van Stel, A.; Caree, M.; Thurik, R. (2005) "The Effect of Entrepreneurial Activity on National Economic Growth", *Small Business Economics*, 24(3): 311-321

Watson, J. (2002) "Comparing the Performance of Male- and Female-Controlled Businesses: Relating Outputs to Inputs", *Entrepreneurship Theory and Practice*, 26(3): 91 – 100.

Watson, J. (2001) "Examining the Impact on Performance of Demographic Differences Between Male and Female Controlled SMEs", *Small Enterprise Research*, 9(2): 55 – 70.

Watson, J.; Robinson, S. (2003) "Adjusting for Risk in Comparing the Performance of Male- and Female- controlled SMEs", *Journal of Business Venturing,* 18(6): 773 – 788.

Winn, J. (2004) "Entrepreneurship: not an easy path to top management for women", *Women in Management Review*, 19(3): 143-153.

Wirth, L. (2001) "Women in Management: Closer to Breaking through the Glass Ceiling?" in Fetherolf-Loutfi, M. (ed.) Women, Gender and Work. What is equality and how do we get there?, International Labour Office, Geneva.

Table 1a. Empirical research on the effect of start-up conditions on the performance of women-controlled businesses

Author(s)/ Sample	Evidence of *WCBs* under - performance	Initial resources considered	Performance measures	Summary of results
Cooper et al. (1994) 1053 newly created US firms (385 failed and 668 surviving firms	YES	**1) human capital** - entrepreneur's level of education - management know-how - industry know-how **2) financial capital** - total amount of capital invested by the time of first sale	Probabilities for: Business failure Survival with some growth Growth (in employees): Firms with growth levels of at least 50% and which added at least two new employees	A strong positive relationship was found between the human and financial capital employed at start-up and firms' probability of survival and growth. Factors as venture size, financial capital base or lack of prior experience in business organizations were found as working "to the disadvantage of female and minority entrepreneurs". Results indicate that although WCBs were just as likely to survive as MCBs, they were less likely to grow.
Carter et al (1997) 203 (59 *WCBs*) US firms in the retail industry	YES	**1) tangible resources** - business size at start-up - access to financial capital **2) intangible resources** - the level of prior experience in launching new venture - the extent to which business founders have experience working in the same industry as that of the new venture **3) strategy**	Business failure	*WCBs* show higher odds of discontinuing than *MCBs* and that the lack of initial human and financial resources significantly increases the odds of business discontinuance. Data analysis also indicates certain resource deficiency for *WCBs* (men were found as having more industry experience and they started the businesses at a larger scale). However, this resource deficiency did not appeared to differentially affect the survival of *WCBs* relative with *MCBs*. Regarding the effect of strategy upon business survival the results indicate that, through strategic choice *WCBs* can decrease their odds of discontinuance, that is strategy was found as being more important for the success of *WCBs*.
Bodden and Nucci (2000) 2256 male and 2625 white non-hispanic sole proprietors in the retail trade and service industries that have started their businesses in 1980 and 1985	YES	**Owner attributes:** marital status; education; prior paid employment experience; age; howers worked per week in business **Business attributes:** start-up or buy-out; home based business; capital used at start-up; years of ownership tenure; industry.	Business survival: dichotomous variables (1 if owners claim they still own their business and 0 otherwise)	Education and prior experience in employment enhance the survival prospects of both *WCBs* and *MCBs*. Women were found as using much less financial capital to start or acquire their businesses. However, a positive relationship between survival prospects and initial capitalization has been established partially, only for businesses which started in 1980.

Table 1a (continued). Empirical research on the effect of start-up conditions on the performance of women-controlled businesses

Author(s)/ Sample	Evidence of *WCBs* under - performance	Initial resources considered	Performance measures	Summary of results
Bosma et al. (2004) Over 1100 Dutch entrepreneurs (number of women not specified)	YES	**1) human capital** - experience in business ownership - experience in activities relevant to business ownership - industry experience **2) social capital** -contact with entrepreneurs in networks -ways of information gathering - emotional support from spouse - presence of spouse **3) financial capital** - other income available - experienced problems getting started	Survival Profit Employment	Male business founders outperformed women on all performance measures. Results indicate that specific investments of firm founders in human or social capital enhance business performance. In addition, initial capital constraints have a negative impact on survival time and earnings. The study does not indicate if these resources influence differently the performance of *WCBs* and *MCBs*.
Alsos et al. (2004) 360 newly founded Norwegian firms (21.9% WCBs)	YES	**Financial capital**: the amount of capital invested at start-up (debt+equity)	Early sales growth (19 months after start-up)	The results indicate that *WCBs* grow less than *MCBs*, and that there is funding gap between men and women entrepreneurs at start-up, with women raising smaller amounts of capital. In addition the amount of capital obtained at start-up was found to be strongly associated with sales turnover 19 months later. However, after controlling for the amount of financial capital invested in the new ventures, no statistical significant difference was found between *WCBs* and *MCBs* with respect to the early growth in terms of sales turnover.

Table 1b. Empirical research on the performance of women-controlled businesses at post start-up moments

Author(s)/Sample	Evidence of *WCBs* under-performance	Performance measures	Summary of results

Rosa et al. (1996)
600 (300 women) *UK* small business owners in textile and clothing, business services and hotel and catering industries
	YES	Primary measures:
		  Number of employees
		  Growth in employees
		  Sales turnover
		  Value of capital assets
			MCBs outperformed for each of the primary performance measure. Women employed less core staff and they show less growth in employment. *MCBs* have higher sales turnover and more physical assets. After controlling for a series of demographic factors, sex still appears as a significant determinant of performance differences.

Chell and Baines (1998) 104 microbusinesses in the *UK* business services sector 40 *MCBs*, 39 *WCBs* and 25 mixed	NO	Business turnover Growth orientation: composite measure based on changes in number of employees, business turnover and floor space	After controlling for industry and size, no significant differences in business turnover or growth orientation were found. Women were found to be just as likely to keep their business and domestic lives separate as they were to want to integrate business and family.
Fasci and Valdez (1998) 604 (682 women) *US* owners of small accounting practices	YES	Ratio of annual net profit to annual gross revenue of the firm	Data showed a difference of +6% in the profit ratio of *WCBs*. When controlled for a series of business and personal characteristics, *MCBs* are expected a higher ratio of profits to gross revenue. Businesses established to attain flexibility and home-based businesses had significantly lower profit ratios (95% of women established their practices to attain flexibility). Business size and age and work experience of the owner were found as strongly related to the profit ratio of the business.

DuRietz and Henrekson (2000)
4200 Swedish firms (10% *WCBs*) from multiple sectors
	PARTIAL	Self-reported variables of growth in:
		  Sales
		  Profitability
		  Employment
		  Orders
			WCBs underperformed when data was examined at the most aggregate level. After controlling for a series of business and industry characteristics, *MCBs* outperformed only with respect to sales growth.

Robb (2002) Nearly 45000 firms (30642 WCBs) from a wide range of sectors	YES	Business survival (conditional probability that the business closes at one moment, given that it has survived up until that moment)	Smaller firms and single unit firms were more likely to close than larger and multiple units firms, respectively. After controlling for firm size, industry, legal and organizational form and location, there were significant differences in the survival prospects of businesses by owner race and gender. Women-owned businesses were 5% more likely to close than businesses owned by men.

Table 1b(continued). Empirical research on the performance of women-controlled businesses at post start-up moments

Author(s)/Sample	Evidence of *WCBs* under-performance	Performance measures	Summary of results
Watson (2001) 14426 Australian SMEs (875 *WCBs*) from a wide range of sectors	YES	Total income Profit /Loss	Finds significant demographic differences which are also associated with the under-performance of *WCBs*. After controlling for these demographic factors, *WCBs* still under-perform *MCBs*.
Watson (2002) 14426 Australian SMEs (875 *WCBs*) from a wide range of sectors	PARTIAL	Return on assets (ROA) Return on equity (ROE) Ratio of total income to total assets	Although *MCBs* generate more outputs and uses higher levels of inputs profitable *WCBs* outperformed profitable *MCBs* whereas no significant differences were found for unprofitable firms. For profitable firms, all the independent variables were significant in explaining differences in ROA whereas for ROE the number of days the business operated was not significant.
Watson (2003) 4939 Australian SMEs from a wide range of sectors (331 *WCBs*)	PARTIAL	Discontinuance of business (failure rates)	Prior to controlling for industry effects the failure rates of *WCBs* appeared to be higher than for *MCBs*. However, after controlling for industry, no significant differences were found in failure rates of *WCBs* as compared to *MCBs*. *WCBs* show higher failure rates in industries where they are overrepresented (i.e., retail trade and service) as compared to industries where *MCBs* are overrepresented (i.e. manufacturing, constructions, mining and wholesale trade).
Watson and Robinson (2003) 2367 (131 *WCBs*) Australian SMEs from a wide range of sectors	NO	Reward - to - variability ratio based on average annual profit – as reward measure – and standard deviation in profits as variability (risk) measure.	*WCBs* have significantly lower profits and less variation in profits. However, after controlling for risk, no significant difference in the performance was found.

Collins-Dodd et al (2004)
160 (86 women) Canadian owners of small accounting practices
	PARTIAL	Gross revenue
		Net profit
		Satisfaction with:
		  Gross revenue
		  Net profit
		  Growth
			Significant differences were found for quantitative measures of performance (gross revenue and net profit). No significant differences were found in the satisfaction with practice's performance. After controlling for personal and business characteristics, no significant differences were found. The following independent variables were found as significant in explaining financial performance: number of employees, location of the business, years in practice, education, number of dependent children and the desire to make more money.

32

Table 1b(continued). Empirical research on the performance of women-controlled businesses at post start-up moments

Author(s)/Sample	Evidence of *WCBs* under-performance	Performance measures	Summary of results
Johnsen and McMahon (2005) Longitudinal data Australian *SMEs* from a wide range of sectors: 1996: 2102 (177 WCBs) 1997: 2087 (164 WCBs) 1998: 2082 (192 WCBs)	NO	Financial performance: Return on owner's equity Return on total assets Business growth: Growth in employees Growth in sales Growth in assets	The sex of the owner – manager did not emerge as statistically significant neither for the differences in the financial performance nor for those in the growth of the businesses, in any model or year.
Cron et al (2006) 572 owners (178 women) of small veterinarian practices in US	YES	Personal income of the entrepreneur	Owner income was significantly lower for women Male service providers started their practice to make a financial success. While female owners are found to work the same number of hours as male owners, they have less experience, operate fewer locations and work with more associates.
Coleman (2007) 2795 US firms (of which 605 *WCBs*) owned by white women and men in service and retail industries	NO	Return on sales Sales growth	*WCBs* in the sample appeared as more profitable and demonstrated a significantly higher year to year growth in sales. For *WCBs* the measures of human capital had a higher impact on profitability, whereas the measures of financial capital had a higher impact on the performance of *MCBs*.
Boohene et al (2008) 600 general merchants in the retail industry in Ghana (296 women)	YES	Self reported measures of business success	The study found gender differences in entrepreneurs' personal values, which lead to different business strategies adopted by women and men, which in turn affect performance. However, the results indicate a weak direct influence of gender on performance.

Table 2. Industry Configuration of the sample

Industry sectors	Degree of technological implementation[§]	% Women controlled firms	% Men controlled firms	% Overall
Production, processing and preserving of meat and meat products (151)	Low	7.92 **	6.59	6.76
Processing and preserving of fish and fish products (152)	Low	1.77 **	1.16	1.23
Processing and preserving of fruit and vegetables (153)	Low	4.44 ***	3.03	3.20
Manufacture of vegetable and animal oils and fats (154)	Low	1.16 *	1.64	1.58
Manufacture of dairy products (155)	Low	3.23 ***	1.94	2.10
Manufacture of pharmaceuticals, medicinal chemicals and botanical products (244)	High	0.76 **	1.26	1.20
Manufacture of basic metals (27)	Medium	8.93	9.82	9.71
Manufacture of structural metal products (281)	Medium	40.36 ***	45.88	45.19
Manufacture of machinery and equipment (29)	Medium	14.63	14.44	14.46
Manufacture of office machinery and computers (30)	High	1.26	1.70	1.64
Manufacture of electrical machinery and apparatus (31)	Medium	13.32 ***	9.73	10.10
Manufacture of radio, television and communication equipment and apparatus (32)	High	2.22	2.80	2.73
High-technology implementation		4.24 ***	5.72	5.54
Medium-technology implementation		77.25 **	79.92	79.58
Low-technology implementation		18.52 ***	14.36	14.88

[§] According to *OECD's* classification. Total number of observations: 15,826 corresponding to time period 2000–2005. Standard deviation is presented in brackets. *, **, *** indicates significance at the 0.10, 0.05 and 0.01, respectively (two-tailed).

Table 3. Characteristics of Start-ups by starting year (mean values)

	2000	2001	2002	2003	2004
Firms	**914**	**404**	**1,091**	**1,033**	**1,008**
WCB	104	40	124	132	133
MCB	813	365	968	905	875
Initial total assets	**728.64**	**1,041.51**	**618.84**	**404.52**	**350.72**
WCB	242.03 ***	1,680.94	310.12 **	243.54 **	235.29 **
MCB	742.05	1,009.22	690.47	439.35	368.19
Initial employees	**7.28**	**10.92**	**5.52**	**5.11**	**5.38**
WCB	6.27	15.95	4.39	4.26	5.57
MCB	7.42	10.50	5.68	5.35	5.34
Initial debt (long term)	**154.48**	**129.50**	**188.10**	**148.63**	**63.29**
WCB	70.05 *	28.90 **	36.51 **	33.38 *	46.57
MCB	165.39	148.73	222.14	173.08	67.67
Initial financial cost	**10.36**	**9.42**	**11.24**	**4.01**	**3.44**
WCB	2.95 **	7.54 *	2.95 **	1.95 ***	2.77
MCB	11.40	10.17	13.08	4.37	3.54

Firms are considered as woman-controlled if a woman serves as CEO. Financial cost is measured through the interest paid for long term debt. Total number of firms 4,450: 533 *WCB*: 533 firms and 1,982 observations. *MCB*: 3,917 firms and 13,844 observations. Monetary values are expressed in thousand of euros. *, **, *** indicates significance at the 0.10, 0.05 and 0.01, respectively (two-tailed).

Table 4. Performance measures – mean values (Firms born between 2000 – 2004)

	Women controlled firms	N	Men controlled firms	N	Overall	N
Performance						
Sharpe Ratio	0.0349 [**] (0.6819)	1,268	0.0838 (1.1693)	9,091	0.0778 (1.1211)	10,359
Sales growth	0.3970 [**] (0.8710)	1,175	0.4520 (0.8634)	8,371	0.4452 (0.8645)	9,546
Labour growth	0.1925 (0.5603)	983	0.2124 (0.5680)	6,883	0.2099 (0.5670)	7,866

N refers to the number of observations for the corresponding variable and category. The number of observations changes due to the presence of some missing values. Standard deviation is presented in brackets. *, **, *** indicates significance at the 0.10, 0.05 and 0.01, respectively (two-tailed). Sharpe Ratio is defined as the ratio of a profit measure (reward) divided by the standard deviation observed for those profits (variability). Sales and labour growth measures were computed as yearly variations in sales and in the number of employees, respectively.

Table 5. Descriptive statistics. Mean values for 2000 – 2005
(Firms born between 2000 – 2004)

	Women controlled firms	N	Men controlled firms	N	Overall	N
Performance						
Sales growth	0.3970 ** (0.8710)	1,175	0.4520 (0.8634)	8,371	0.4452 (0.8645)	9,546
Labour growth	0.1925 (0.5603)	983	0.2124 (0.5680)	6,883	0.2099 (0.5670)	7,866
Sharpe's Ratio	0.0349 ** (0.6819)	1,268	0.0838 (1.1693)	9,091	0.0778 (1.1211)	10,359
Firm features						
Total assets *(t-1)*	556.81 *** (2,631.84)	1,303	2,190.88 (44,167.52)	9,286	1,989.80 (41,374.40)	10,589
Total sales *(t-1)*	770.78 *** (3,473.54)	1,198	1,679.24 (12,678.92)	8,514	1,567.18 (11,937.33)	9,712
Employees *(t-1)*	8.16 *** (14,73)	1,024	11.40 (40.98)	7,159	10.99 (38.70)	8,183
Firm age (years)	3.23 (1.24)	1,449	3.25 (1.24)	10,194	3.25 (1.24)	11,643
Long term debt *(t-1)*	93.46 *** (297.70)	1,168	881.13 (27,399.74)	8,358	784.56 (25,666.38)	9,526
Financial costs *(t-1)*	8.03 *** (17.58)	1,185	47.65 (1,008.45)	8,458	42.78 (944.56)	9,643
Leverage *(t-1)* (debt / equity)	8.62 * (37.21)	1,289	11.10 (81.24)	9,183	10.80 (77.19)	10,472

Firms are considered as woman-controlled if a woman serves as CEO. Monetary values are expressed in thousand of euros. N refers to the number of observations for the corresponding variable and category. The number of observations changes due to the presence of some missing values. Standard deviation is presented in brackets. *, **, *** indicates significance at the 0.10, 0.05 and 0.01, respectively (two-tailed). Firm age is measured in years, financial cost is the interest paid for the contracted long-term debt, and leverage is calculated as the ratio of debt to equity.

Table 6. Regression results: Firm Sales Growth

	Women controlled firms			Men controlled firms		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
Firm age (years)	-0.0497	-0.0008	0.0005	-0.0080	-0.0219	-0.0106
	(0.0554)	(0.0340)	(0.0347)	(0.0409)	(0.0531)	(0.0611)
Size (ln sales) *(t-1)*	-0.7339 ***	-0.5807 ***	-0.7961 ***	-0.9752 ***	-0.9769 ***	-0.9458 ***
	(0.1222)	(0.1126)	(0.1274)	(0.0419)	(0.0456)	(0.0390)
Size squared *(t-1)*	-0.0158 *	-0.0304 ***	-0.0148 *	0.0145 ***	0.0144 ***	0.0091 ***
	(0.0092)	(0.0110)	(0.0088)	(0.0038)	(0.0022)	(0.0035)
Leverage *(t-1)*	0.0006			0.0001		
	(0.0004)			(0.0001)		
Long term debt *(t-1)*		0.0438 ***			0.0389 ***	
		(0.0123)			(0.0069)	
Financial cost *(t-1)*			0.2267 ***			0.1924 ***
			(0.0517)			(0.0167)
Time (dummies)	Yes	Yes	Yes	Yes	Yes	Yes
Time $\times$ Industry	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	5.2296 ***	4.5450 ***	4.9435 ***	5.6394 ***	5.6074 ***	5.3698 ***
	(0.3282)	(0.2770)	(0.2908)	(0.2538)	(0.3080)	(0.3284)
R-square (within)	0.7848	0.8004	0.8052	0.7497	0.7536	0.7757
R-square (overall)	0.2539	0.2534	0.3232	0.2374	0.2509	0.3090
F – Test	46.91 ***	45.39 ***	50.91 ***	293.34 ***	271.83 ***	324.57 ***
Hausman test	697 ***	678 ***	517 ***	4,812 ***	3,739 ***	3,668 ***
Number of firms	471	461	460	3,231	3,156	3,154
Number of observations	1,164	1,077	1,126	8,277	7,740	7,992

Firms are considered as woman-controlled if a woman serves as CEO. Firm age is measured in years, firm size is the log value of sales, leverage is calculated as the ratio of debt to equity, and financial cost is the interest paid for the contracted long-term debt. Standard errors adjusted by heteroskedasticity are presented in brackets. *, **, *** indicates significance at the 0.10, 0.05 and 0.01, respectively.

Table 7. Regression results: Firm Employment Growth

	Women controlled firms			Men controlled firms		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
Firm age (years)	-0.1844 **	-0.1823 **	-0.1776 **	0.0190	-0.0232	-0.0145
	(0.0805)	(0.0842)	(0.0740)	(0.0542)	(0.0559)	(0.0551)
Size (ln labour) *(t-1)*	-0.7235 ***	-0.6660 ***	-0.7844 ***	-0.9243 ***	-0.9402 ***	-0.9401 ***
	(0.0891)	(0.0789)	(0.0782)	(0.0479)	(0.0440)	(0.0485)
Size squared *(t-1)*	-0.0357 *	-0.0510 **	-0.0296 **	0.0140 **	0.0238 **	0.0161 **
	(0.0214)	(0.0242)	(0.0152)	(0.0069)	(0.0121)	(0.0089)
Leverage *(t-1)*	0.0008			0.0001		
	(0.0006)			(0.0001)		
Long term debt *(t-1)*		0.0382 ***			0.0422 ***	
		(0.0135)			(0.0065)	
Financial cost *(t-1)*			0.1612 ***			0.1251 ***
			(0.0275)			(0.0140)
Time (dummies)	Yes	Yes	Yes	Yes	Yes	Yes
Time × Industry	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	2.3121 ***	2.1553 ***	2.1358 ***	1.6479 ***	1.6946 ***	1.6115 ***
	(0.3645)	(0.3807)	(0.3364)	(0.2490)	(0.2561)	(0.2521)
R-square (within)	0.7279	0.7330	0.7458	0.6050	0.5983	0.6117
R-square (overall)	0.1484	0.1529	0.1979	0.0954	0.1115	0.1352
F – Test	28.11 ***	25.97 ***	31.82 ***	118.20 ***	104.73 ***	116.59 ***
Hausman test	510 ***	450 ***	557 ***	3,617 ***	2,769 ***	2,741 ***
Number of firms	409	400	399	2,830	2,757	2,753
Number of observations	973	902	944	6,817	6,394	6,579

Firms are considered as woman-controlled if a woman serves as CEO. Firm age is measured in years, firm size is the log value of number of employees, leverage is calculated as the ratio of debt to equity, and financial cost is the interest paid for the contracted long-term debt. Standard errors adjusted by heteroskedasticity are presented in brackets. *, **, *** indicates significance at the 0.10, 0.05 and 0.01, respectively.

Table 8. Regression results: Sharpe ratio

	Women controlled firms			Men controlled firms		
	(1)	(2)	(3)	(1)	(2)	(3)
Firm age (years)	-0.3631 ***	0.4004 ***	-0.3460 ***	0.2152 ***	0.1987 **	0.2029 **
	(0.0422)	(0.0049)	(0.0410)	(0.0785)	(0.0795)	(0.0832)
Size (ln assets) *(t-1)*	-0.3710	-0.3292	-0.4148	-0.2115 **	-0.1998 **	-0.2089 **
	(0.2453)	(0.2567)	(0.2902)	(0.1209)	(0.1013)	(0.1060)
Size squared *(t-1)*	0.0339	0.0262	0.0294	0.0351 ***	0.0338 **	0.0323 **
	(0.0248)	(0.0251)	(0.0279)	(0.0176)	(0.0170)	(0.0162)
Leverage *(t-1)*	-0.0056 **			-0.0001		
	(0.0025)			(0.0002)		
Long term debt *(t-1)*		0.0622			0.0145	
		(0.0420)			(0.0178)	
Financial cost *(t-1)*			0.0947			0.0972 ***
			(0.0856)			(0.0381)
Time (dummies)	Yes	Yes	Yes	Yes	Yes	Yes
Time × Industry	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	-1.0430 *	-4.6907 ***	-0.8830	-4.3088 ***	-4.3039 ***	-4.3385 ***
	(0.6352)	(0.6781)	(0.7598)	(0.5065)	(0.5153)	(0.5190)
R-square (within)	0.3571	0.3537	0.3420	0.2649	0.2653	0.2717
R-square (overall)	0.0100	0.0100	0.0100	0.1120	0.1151	0.1210
F – Test	5.28 ***	4.55 ***	4.67 ***	24.85 ***	22.52 ***	24.86 ***
Hausman test	530 ***	211 ***	483 ***	1,934 ***	1,776 ***	1,862 ***
Number of firms	405	391	398	2,747	2,671	2,685
Number of observations	867	801	847	6,314	5,902	6,134

Firms are considered as woman-controlled if a woman serves as CEO. Firm age is measured in years, firm size is the log value of assets, leverage is calculated as the ratio of debt to equity, and financial cost is the interest paid for the contracted long-term debt. Standard errors adjusted by heteroskedasticity are presented in brackets. *, **, *** indicates significance at the 0.10, 0.05 and 0.01, respectively.

Table 9: Mean interest rate [a] applied to women and men controlled businesses

Year	Women controlled firms	Men controlled firms	Full sample
2001	0.0155 (0.0235)	0.0180 (0.0372)	0.0173 (0.0348)
2002	0.0286 (0.0306)	0.0268 (0.0328)	0.0271 (0.0323)
2003	0.0320 (0.0841)	0.0252 (0.0357)	0.0258 (0.0434)
2004	0.0285 (0.0556)	0.0258 (0.0511)	0.0260 (0.0508)
2005	0.0248 (0.0337)	0.0268 (0.1396)	0.0264 (0.1284)
Overall	**0.0270 (0.0518)**	**0.0257 (0.0920)**	**0.0258 (0.0857)**

Note: (a) Mean interest rate is calculated as financial cost divided to debt. Standard deviation is presented in brackets. No statistically significant differences were found between mean interest rates of women and men controlled businesses.

Table 10. Results for the Chow Test: Differences in the impact of size and initial financial conditions between WCB and MCB firms

	Size (*t-1*)	Size squared (*t-1*)	Leverage	Long-term debt	Financial cost
Panel A: Sales Growth					
Model 1 (Leverage)	5.06 **	7.66 ***	2.14		
Model 2 (Long-term debt)	11.54 ***	14.19 ***		0.18	
Model 3 (Financial cost)	2.21 *	5.37 **			0.02
Panel B: Employment Growth					
Model 1 (Leverage)	2.86 *	3.28 *	1.91		
Model 2 (Long-term debt)	7.66 ***	6.84 ***		1.10	
Model 3 (Financial cost)	2.39 *	2.72 *			1.29
Panel C: Sharpe ratio					
Model 1 (Leverage)	0.02	0.18	5.64 **		
Model 2 (Long-term debt)	0.00	0.50		0.87	
Model 3 (Financial cost)	0.01	0.28			2.23 *

*, **, *** indicates significance at the 0.10, 0.05 and 0.01, respectively.

Edicions / Issues:

01/5   *Enfoque estructural vs. recursos y capacidades: un estudio empírico de los factores clave de éxito de las agencias de viajes en España.*
Fabiola López-Marín, José M.ª Veciana

01/6   *Opción de Responsabilidad Limitada y Opción de Abandonar: Una Integración para el Análisis del Coste de Capita.*
Neus Orgaz

01/7   *Un Modelo de Predicción de la Insolvencia Empresarial Aplicado al Sector Textil y Confección de Barcelona (1994-1997).*
Antonio Somoza López

01/8   *La Gestión del Conocimiento en Pequeñas Empresas de Tecnología de la Información: Una Investigación Exploratoria.*
Laura E. Zapata Cantú

01/9   *Marco Institucional Formal de Creación de Empresas en Catalunya: Oferta y Demanda de Servicios de Apoyo*
David Urbano y José María Veciana.

02/1   *Access as a Motivational Device: Implications for Human Resource Management.*
Pablo Arocena, Mikel Villanueva

02/2   *Efficiency and Quality in Local Government. The Case of Spanish Local Authorities*
M.T. Balaguer, D. Prior, J.M. Vela

02/3   *Single Period Markowitz Portfolio Selection, Performance Gauging and Duality: A variation on Luenberger's Shortage Function*
Walter Briec, Kristiaan Kerstens, Jean Baptiste Lesourd

02/4   *Innovación tecnológica y resultado exportador: un análisis empírico aplicado al sector textil-confección español*
Rossano Eusebio, Àlex Rialp Criado

02/5   *Caracterización de las empresas que colaboran con centros tecnológicos*
Lluís Santamaria, Miguel Ángel García Cestona, Josep Rialp

02/6   *Restricción de crédito bancario en economías emergentes: el caso de la PYME en México*
Esteban van Hemmen Almazor

02/7   *La revelación de información obligatoria y voluntaria (activos intangibles) en las entidades de crédito. Factores determinantes.*
Gonzalo Rodríguez Pérez

02/8   *Measuring Sustained Superior Performance at the Firm Level*
Emili Grifell - Tatjé, Pilar Marquès - Gou

02/9   *Governance Mechanisms in Spanish Financial Intermediaries*
Rafel Crespi, Miguel A. García-Cestona, Vicente Salas

02/10   *Endeudamiento y ciclos políticos presupuestarios: el caso de los ayuntamientos catalanes*
Pedro Escudero Fernández, Diego Prior Jiménez