A 'deviant men' theory of business expectations in nascent entrepreneurs

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Keywords: Gender; Nascency; Growth Expectations; Risk.

Forthcoming in Small Business Economics

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ABSTRACT

In this article, we develop a gendered analysis of the expectations of venture growth by nascent entrepreneurs. Male entrepreneurs are notably over represented in the small cohort of firms that attain growth; to explore this phenomenon, we draw upon expectation theory during the nascency period to analyse the antecedents of growth outcomes. To refine this analysis, we factor in risk propensity measuring the impact of the 2008 financial crisis upon fundraising plans. Using UK data gathered between 2002-2020 from 5,490 nascent entrepreneurs to test our hypotheses, we found that those with the greatest levels of start-up capital and high levels of risk tolerance had the highest expectations of growth and were likely to be male. This small cohort of growth oriented entrepreneurs were termed ‘deviant men’ given their outlier status. Women became more cautious after the crisis so even those with similar access to start-up capital as the deviant men had lower expectations of growth. We conclude by noting that at the nascency stage, expectations of growth are a critical influence upon future outcomes; a small cohort of deviant men has the highest expectations of growth, with women disadvantaged by gendered risk adversity.

PLAIN ENGLISH SUMMARY

Male entrepreneurs are more likely to pursue, and achieve, business growth. We explore some of the early influences upon this difference, focusing upon future expectations of growth using a large sample of UK nascent entrepreneurs – those in the planning stage of setting up their own business. Those with access to high levels of start-up capital had the strongest expectations of growth; this small group was notably dominated by those we term ‘deviant men’ as they were outliers in the sample. We also explored the impact of risk on growth expectations by analysing how fundraising plans were affected by the 2008 financial crisis. Unlike the deviant men, women, even those with access to high levels of capital, became more cautious after this event. Thus, access to capital fuels

expectations of growth as does risk tolerance; women are disadvantaged by socialised risk avoidance. In addition to searching for ways of providing additional capital to women, policymakers could try to understand how women entrepreneurs define risk and minimise the effect on their fledgling business ambitions.

Keywords: Gender; Nascency; Growth Expectations; Risk

JEL Classifications: L26; L25; J16

INTRODUCTION

Evidence suggests that very few firms will ever achieve, or sustain, growth after the initial start-up period (Hart, Prashar, & Ri, 2020; Storey, 2011). Given the disproportionate contribution of growth oriented firms to innovation and socio-economic wealth creation however, much attention has been focused upon how to expand this cohort (Anyadike-Danes, Hart, & Du, 2015). A particular strand of this discussion pertains to the gendered disparity amongst the owners of such firms given they are dominated by men (Carter, Mwaura, Ram, Trehan, & Jones, 2015; Gupta, Wieland, & Turban, 2019). This has prompted much analysis of the influence of gender upon venture growth trajectories (Coleman, 2016; Conroy & Weiler, 2016; Martiarena, 2020); within this debate however, women are the visible embodiment of the gendered subject (Ahl & Marlow, 2012). Consequently, much attention has been focused upon the short-comings of women entrepreneurs whose businesses are deemed to be 'under-performing' in terms of realising their potential for growth (Justo, DeTienne, & Sieger, 2015; Yousafzai et al., 2018). Moreover, women entrepreneurs have been designated as risk averse in terms of pursuing and capitalising venture growth (Cowling, Marlow, & Liu, 2020; Rose, 2019). This has led to a focus upon how to 'fix' women so they might achieve the same level of attainment as their male peers (Marlow & Swail 2014; Swail & Marlow 2018). In this debate regarding gender and venture growth, differences amongst male entrepreneurs in terms of their business venturing and growth expectations remain underexplored. Thus, there is a normative assumption that ascriptions of masculinity homogenize experience; how men are gendered in terms of nuances and heterogeneity are lost as they become the default generic subject (Marlow, Greene, & Coad, 2018). With regard to how such assumptions shape analyses of venture growth, as Ahl (2006) pointed out many years ago, there are more within, than between, gender differences in entrepreneurial activity. This raises questions why men are

ignored in debates regarding aspects such as venture growth? More recent work by Aldrich and Ruef (2018) focusing upon the 'every day' nature of most entrepreneurship notes that most business owners (regardless of sex, gender, age, class etc.) have no growth ambitions nor are their ventures scalable. Indeed, the fact that few firms will ever grow is well established in academic debate (Hart et al., 2020; Storey, 2011). Thus, castigating women entrepreneurs as lacking ambitions for growth and under-performing makes little sense but still, male entrepreneurs as a cohort, benefit from the gender spill-over effect that celebrates and transposes the attainments of a few, to the many.

Accordingly, in this paper we adopt a more discerning approach to this puzzle. We do not seek to deny that within the very small population of growth firms, men dominate as founders and top managers (Carter et al., 2015). However, rather than analyse experiences of growth in established ventures, we focus upon the nascency phase during which future ambitions for growth are developing (Renko, Kroeck, & Bullough, 2012). Thus, we identify those entrepreneurs with high expectancies of growth at the earliest stages of venture development given the causative relationship between future growth expectations and realised business growth (Delmar & Wiklund, 2008; McKelvie, Brattström, & Wennberg, 2017). To frame our arguments, we draw upon expectancy theory (Vroom, 1964) to explore its impact upon the growth ambitions of male and female entrepreneurs and factor in risk propensity as a key moderator (Manolova, Brush, Edelman, & Shaver, 2012). In terms of risk, contemporary evidence suggests that women are socialised to adopt more risk averse behaviours (Fine, 2017) so this is not an essential female characteristic whilst more controversially, measuring risk tolerance is skewed towards male dominated activities and parameters exaggerating female deficits (Cowling et al., 2020; Fine, 2017). Whilst acknowledging the gendered nature of risk assessment, by focusing upon the nascency stage we

focus directly upon how the individual assesses risk on a cognitive basis prior to actually entering the market and engaging with external advisors, stakeholders or peers likely to sway assessments of potential risk.

Reframing the notion of venture growth in terms of 'expected business size', allows us to address some of the operational challenges related to the measurement and volatility of firm performance at the early stages after formation. By exploring the nascent entrepreneurship stage of firm development, we capture perhaps the purest association between perceived potential reward and perceived risk as the nascent stage is relatively uncontaminated by secured resources or established routines. Drawing upon notions of growth expectancy (Manolova, Carter, Manev, & Gyoshev, 2007; Vroom, 1964) and individual risk (Sitkin & Pablo, 1992), we propose a 'deviant men' theory of gender difference in behaviour within high risk settings pertaining to venture growth. As such, this group of male entrepreneurs is positioned at the top end of the expected performance distribution profile; and so, notably deviate from other entrepreneurs regarding expectations for their nascent ventures, and attitudes towards risk. By deviant behaviour, we mean that which is far from the mean, but not in the pejorative sense in common use where deviance is seen as sinister and societally threatening.

To explore these arguments, we conducted three tests of the deviant men effect in nascent entrepreneurial contexts: first, whether and how future business size expectations vary between men and women, second, whether they vary with the nascent entrepreneur's current estimate of the required resources to start their business, and finally, whether men react in the same way as women to environmental shocks. If deviant men behaviour exists, we would expect to see higher variance in expected business size per unit of start-up funding among nascent male entrepreneurs than among women. In other words, if the deviant men hypothesis alone was true, in less risky settings,

there would be no significant difference between the assumptions of men and women regarding resource needs, but as the risk level increased, a gap would become apparent in the relationship between expected outputs for a given unit of input between men and women. If the female under-performance hypothesis alone was true, we would expect to see a significant difference in means and a constant input-output difference across risk levels. Finally, we posit that the deviant men effect would strengthen if resources in the environment become scarce or uncertain; at the right-hand (higher risk) side of the risk distribution, women would be more likely than men to adjust appropriately to the riskier environment, increasing the difference in risk propensity between men and women. If the female under-performance thesis was valid, we would expect the difference to change across the whole risk distribution.

We test our predictions on a large sample of nascent entrepreneurs in the UK surveyed as part of the Global Entrepreneurship Monitor (GEM) research program in the period 2002-2020. The results indicate that, in accordance with the deviant men theory, at the top end of the expected start-up capital distribution, male nascent entrepreneurs had a higher expected business size for their business per unit of start-up capital than their female peers, and women were more cautious after the financial crash in 2008 regarding their business size expectations relative to their start-up funding expectations. We also find empirical support for this finding using a European sample of nascent entrepreneurs from GEM, which improves our confidence that the findings can be generalised at least to other innovation-driven countries.

To explore these arguments, we commence by outlining our theoretical framing and hypotheses; we then describe the methodology and method followed by our empirical analysis before moving to discuss the implications of these arguments. Finally, we outline limitations of our work and draw conclusions on the role of deviant men in entrepreneurship.

THEORY AND HYPOTHESES

Expectancy, risk, and gender

Drawing upon expectancy theory (Vroom, 1964), we conceptualise business size expectations as the combination of an entrepreneur's preference for an ideal firm size and their perceptions regarding the degree to which their actions will lead to the desired outcome (Gatewood, Shaver, Powers, & Gartner, 2002; Manolova et al., 2007). Many related concepts are used to describe growth attitudes, such as growth aspiration (Delmar & Wiklund, 2008), growth ambition (Verheul & Van Mil, 2011), and growth preferences (Cassar, 2006, 2007; Manolova et al., 2012). However, these focus exclusively on what entrepreneurs desire, but do not encompass what they think is feasible given perceived opportunities and constraints (Hermans et al., 2015; McKelvie et al., 2017).

In estimating the expected future size of their business, we assume that a nascent entrepreneur takes into account market conditions and the quality and quantity of resources available to estimate the risk involved in possible alternative future sizes. This view is consistent with evidence showing that the relationship between growth expectations and achievements is moderated by market constraints and resources (Eshima & Anderson, 2017; Wiklund & Shepherd, 2003). These factors are also expected to determine expected business size as they shape the risk level of alternative strategies for the firm, and subsequently, an entrepreneur's perceived ability to materialize their efforts into actual growth.

We follow Sitkin and Pablo (1992) in conceptualising risky behaviour as that in which expected outcomes have high variance, so it may be difficult to match expectations, and/or the range of possible outcomes includes the potential for extreme consequences (good or bad). As Fine (2017) notes, defining risk is challenging as it is context specific; thus, one who relishes high risk sports

such as black run skiing, might be excessively cautious regarding financial investment. Drawing from a range of analyses, however, Marlow and Swail (2014, p. 84) suggest there is some consensus that generically, risk relates to "the calculation of losses and gains in circumstances of uncertainty". They note that in terms of both the perception of, and propensity for, risk young males are deemed to be most tolerant. Fine (2017) explores this phenomenon through socialisation processes and also socio-economic positioning whereby women's ascribed maternal caring roles and greater vulnerability to gender based violence generates greater caution and so, encourages risk avoidance. Of course, not all women are mothers, caring or fearful and indeed, as noted above, context is key (Marlow and Swail, 2014). Indeed, evidence regarding the risk attitudes of women investment bankers suggests they are just as risk tolerant in this context as their male peers; but of course, we know that gender still plays a role here as far fewer women select into such careers (Prügl, 2012). Thus, as a population, women are likely to be less risk tolerant across a range of behaviours due to a variety of socio-economic influences and gendered ascriptions.

In the context of the nascent entrepreneur, an example of a low risk option would be becoming self-employed with minimal outlay and need for external resources, versus the high risk option of creating a fast-growth organisation with the need for external resources and with more prospects of gains but also of losses should the business fail. Analyses of gender and risk within the entrepreneurial context largely concur that there are differences between men and women. For example, in their overview of firm performance, Kepler and Shane (2007, p. 48) concluded that the only notable disparity lay in attitudes to risk: "male entrepreneurs were less likely than female entrepreneurs to prefer a business with a low risk-to-return ratio and assessed higher odds that ventures founded today would still be in business in five years". This is not surprising given gendered analyses of risk tolerance and the uncertainty endemic within entrepreneurship; thus, we

would expect women entrepreneurs to be more risk averse (Cowling et al., 2020) with some exceptions.

In summary, the literature suggests that men appear more likely to engage in risky behaviours; that socialisation and social status play an important role in this, and that there are meaningful gender-based differences in the shape of the distribution of risky behaviour. We deduce from this that greater prevalence of what is termed 'skewness affection' (Hartog & Vijverberg, 2007) among men would increase the variance of expected business size among men nascent entrepreneurs compared to the expectations of women nascent entrepreneurs.

As has been noted, the majority of entrepreneurs have no ambitions to grow their ventures; most will remain as sole proprietors or micro firm owners (Aldrich & Ruef, 2018; Hart et al., 2020). This ensures that the downside distribution of growth expectations is similar regardless of gender. However, the greater prevalence of skewness affection amongst men, combined with biases in judgment regarding overconfidence, ensure that a small group of nascent entrepreneurs, mainly men, dominate at the top end of the expected business size distribution. The approach of these deviant men to decisions involving risk will be reflected in the distributional differences between how women and men nascent entrepreneurs form their vision about the future size of their business, which leads us to our first, twofold, hypothesis:

H1a. *Gender affects business size expectations, such that male nascent entrepreneurs, compared to female nascent entrepreneurs, have a more positive skew in business size expectations.*

H1b. *Gender affects business size expectations, such that male nascent entrepreneurs, compared to female nascent entrepreneurs, have a higher variance in business size expectations.*

The moderating effect of gender on the relationship between expected business size and expected start-up capital

Access to resources forms the second pillar in the understanding of growth expectations of entrepreneurs. Resource accrual determines the set of strategies available to entrepreneurs; if resources are plentiful, growth strategies will be more plausible to pursue; if they are scarce, more short-term and survival-oriented goals are likely to emerge (Bradley, Wiklund, & Shepherd, 2011; Coad, Frankish, Roberts, & Storey, 2013). Although assumed access to resources shapes the entrepreneur's pre-entry motivation to create the venture, the actual ability to accrue resources will influence growth expectations. In this respect, evidence suggests that gender influences women's access to and accrual of entrepreneurial resources (Marlow & McAdam, 2013). Consequently, women are likely to have lower levels of savings for investment purposes, smaller networks, and lower stocks of relevant social and human capital which coalesce into weaker entrepreneurial legitimacy (Cowling et al., 2020; Swail & Marlow, 2018; Westhead & Solesvik, 2016). Constrained access to resources also heightens risk. As has been noted, women are more likely to encounter gender related constraints regarding access to, and accrual of, entrepreneurial resources (Coleman & Robb, 2016) and also, are subject to negative signals and stereotyping when seeking resources (Alsos & Ljunggren, 2017).

Acknowledging the different types of resources relevant to entrepreneurs, such as human, social and financial capital (Davidsson & Honig, 2003), we focus on the latter as it is the most easily comparable and convertible form of resource. Nascent entrepreneurs must form a view as to what the appropriate level of starting financial resources is for a given expected business size. In this sense, greater amounts of capital will reflect higher perceived risk settings, especially if they are raised from external sources; entrepreneurs may perceive that equity financing is risky because of

the fear of losing control of the business, while they may perceive debt financing as risky due to the required collaterals (Yacus, Esposito, & Yang, 2019). If women nascent entrepreneurs are simply more risk averse than male nascent entrepreneurs on average but have similar variance in risk behaviour, then we would expect a parallel rising trend among men and women in the relationship between expected business size and required resources as entrepreneurs hedge against unforeseen events. However, if the variance of risk behaviour among men nascent entrepreneurs is higher and the distribution is positively skewed (as H1a and H1b suggest), we would expect more evidence of risky behaviour, expressed as higher expected business size per unit of resource, amongst male nascent entrepreneurs at the top end of start-up resource accumulation expectations. Thus:

H2. *The relationship between expected business size and expected start-up capital is moderated by gender, such that expected business size is higher per unit of resources for men nascent entrepreneurs than for women nascent entrepreneurs at the top end of the start-up capital distribution.*

The moderating effect of external resource munificence

Relatedly, we argue that the moderating effect of gender on the relationship between expected business size and expected start-up capital among nascent entrepreneurs will itself be influenced by environmental resource munificence, a construct which captures "the scarcity or abundance of critical resources needed by firms operating within an environment" (Castrogiovanni, 1991, p. 542). The resource munificence theory predicts that if resources in a specified environment are scarce, fewer resources will be available for entrepreneurs, regardless of gender, to experiment with growth oriented strategies (Castrogiovanni, 1991; Tushman & Anderson, 1986). Hence,

competition will intensify between firms operating within the same environment and facing the same shortages, which in turn, will exert more pressure on managers (Lumpkin & Dess, 2001).

Viewing these empirical findings through a deviant men lens, we suggest that gender differences in risk preferences in highly competitive contexts (i.e., high risk of not accessing resources that are allotted only to the winner) would lead to a higher likelihood of wins among men that, judged individually, are highly unlikely. This hypothesis also finds support from the insight that the impact of the environmental munificence will be subject to an individual's judgment of the support available in the environment (Alistair & Ullah, 2014). Accordingly, in such situations, men would be more likely to exhibit skewness affection as greater risk might not be perceived as a threat, but as a motivator to make choices with more skewed outcomes. We hypothesise therefore, that male nascent entrepreneurs are less likely, at the riskier end of the distribution of expected business size, to respond to signals of perceived environmental resource scarcity than women nascent entrepreneurs. One way of detecting this is the relationship between expected business size and the amount of money the nascent entrepreneur believes is required to create the business:

H3. *Environmental munificence strengthens the moderating effect of gender on the relationship between expected business size and expected start-up capital among nascent entrepreneurs, such that the less munificent the environment, the larger the gender difference in expected business size relative to expected start-up capital.*

DATA AND METHOD

Sample

For the empirical analysis, we used the Global Entrepreneurship Monitor (GEM) dataset from the UK covering the period 2002-2020. A distinctive feature of this survey is that it provides

information at both the business level and the individual entrepreneur level (Reynolds et al., 2005). Data were collected through an annual cross-sectional random telephone survey stratified by region to the whole UK adult population, which enabled control for selection bias (Levie, 2007). In this study, we focus on the subsample of nascent entrepreneurs, defined as individuals aged between 18 and 64 who were actively trying to start a business that they would manage and own, at least in part, and which had not paid wages for more than three months. So in our study, we consider actual entrepreneurs that are already developing their business idea and who have formed expectations about the growth of their venture, but who are still in the process of resource accumulation. The use of data from entrepreneurs in the same, and first stage of the start-up process, aims to avoid the positive selection bias that arises when studying the data available only from those with an established venture. (Erhardt, 2019).

Variables

Dependent variable

For the dependent variable regarding expected future business size, we used the expected level of employment based on the question which asks entrepreneurs: 'Approximately how many people will be working for this business, not counting the owners but including all exclusive subcontractors, when it is five years old?'. Earlier research used similar measures capturing future employment expectations over a five-year time horizon (Darnihamedani & Terjesen, 2020; Estrin, Korosteleva, & Mickiewicz, 2020; Martiarena, 2022). While some studies establish a specific threshold to operationalise high expectations or ambitions, which range from creating five jobs or more (Decker, Estrin, & Mickiewicz, 2020; Hessels, Van Gelderen, & Thurik, 2008; Thébaud, 2015) to 20 jobs or more (Autio & Acs, 2010; Levie & Autio, 2011), we employ the actual estimate to capture the variability of data. Since this variable is highly skewed, in order to control for

outliers, we followed the Winsor technique: we truncated the distribution at the 99.5 percentile value[1].

Explanatory variables

The first explanatory variable is a dummy variable representing the gender of the respondents (*man*). The GEM UK survey identified gender by asking respondents to indicate their current given name and if gender was ambiguous from the name, trained interviewers, from a reputable market research firm, asked how they would wish to be addressed (Ms., Mr., Mrs., etc.).

The second explanatory variable, *start-up capital,* refers to the total amount of money required to start the business as estimated by the entrepreneur, which includes money already raised and future funding. As in the case of the dependent variable, the highest start-up capital values were truncated, in this case at the 99.75 percentile value. The values were also normalised using natural logarithms.

Finally, for the assessment of the influence of environmental munificence, we compared the results arising from the pre- and post- periods of the financial crisis, which occurred midway through the period of study (i.e., 2002–07 vs. 2008–11)[2]. The freezing of the capital markets after 2007, which limited the access to finance for firms and particularly for start-ups, provides the basis for our identification strategy to test H3.

Control variables

[1] Despite the core of the argument being about 'deviant men' we take a conservative approach when truncating the dependent and explanatory variable to avoid few observations driving our findings. When this correction is not made, the results still hold.

[2] While the UK officially moved out of recession in 2010 we opted to take a conservative approach by extending the period until 2011, to allow a likely lag in entrepreneurs recognizing signals of improvement in the economy.

Following the empirical evidence regarding the individual characteristics of nascent entrepreneurs with relatively large future expected business size, we controlled for education and household income among the covariates (Autio, 2007). We included a dummy variable, *graduate*, to distinguish those with bachelor, masters or doctorate degrees and we controlled for the highest reported household income category (£100,000 or more), *high income*, as we expected stronger effects of wealth and possibly less risk aversion among the highest percentiles due to social status effects (Hurst & Lusardi, 2004). Other variables found to be associated with entry and/or expected business size, and which also have known social status effects, include age group (*age*), ethnic minority status (*white*) and location in the capital city and largest agglomeration of human and financial capital: London (*london*).

Four firm level variables were included in the analysis. First, we added two dummy variables to control for the founding team size, *solo-founder* and *two founders* (larger teams belong to the baseline omitted category), as founding team structures are expected to be associated with different growth ambitions and resource accumulation. Second, we included a variable capturing the extent to which potential customers will find the offered product or service new and unfamiliar, *new product*. This is designed to control for the effects of new products and services in the market, shifting the current demand and influencing entrepreneurs' growth expectations. Third, we controlled for the sector of the start-up based on 17 major ISIC industry sectors to account for the sectoral differences in capital-intensity, optimum size, and competition that may affect growth expectations (Estrin, Korosteleva, & Mickiewicz, 2013), and also for the observation that women and men entrepreneurs tend to work in different sectors of the economy (Budig, 2006). As prior research has shown, women entrepreneurs are more likely to be engaged in new venture creation in highly competitive industries, mainly retail and service industries (Jennings & Brush, 2013).

Additionally, we also distinguished high-tech sectors, *high-tech sector*, with a dummy variable based on the ISIC codes and OECD's scheme for technology intensity of sectors.

Method

As the dependent variable is an integer-valued count variable, and many entrepreneurs expect to employ none, or very few people, we estimated a series of negative binomial regressions (generalised Poisson) with expected business size as the dependent variable. We assessed the suitability of the negative binomial specification over the Poisson model by testing the likelihood ratio of the variance being equal to the mean (i.e., alpha being equal to zero), which suggested that due to the overdispersion of data, the former was the preferred specification (Cameron & Trivedi, 2013).

RESULTS

Table 1 presents the descriptive statistics for the variables used in the analysis (for correlation matrix, see Table AI in Appendix). In the sample of 5,490 nascent entrepreneurs, 37% were women and 63%, men. The mean differences in expected business size and the rest of the business level variables, including the amount of start-up capital, are suggestive of different distributions. The mean expected business size for men is around double that of women, while the expected business size at the median value and at the 99th percentile value (given that the maximum values are truncated on purpose) are two and a half times that of women.

Insert Table 1 around here

Table 2 reports the results of the negative binomial regression controlling for the individual and business level variables specified above. The gender coefficient in model 1, based on the sample covering the whole period 2002–2020, shows that men nascent entrepreneurs had significantly

higher business size expectations compared to women nascent entrepreneurs. We tested the homogeneity of variances using Levene's test, given the non-normality and skewness of our dependent variable (Gastwirth, Gel, & Miao, 2009). The results ($F=43.70$; $p<.001$) of comparing the deviations from the group means indicate that the variance in expected business size of men nascent entrepreneurs (SD=50.07) was positively skewed and significantly larger than that of women nascent entrepreneurs (SD=31.57) as suggested by H1b. We also ran the median centered test, the Brown-Forsythe test, to increase the robustness of the Levene's test given the skewness of the variable. The results confirmed that the variances were unequal and higher for the subsample of men entrepreneurs ($F=20.38$; $p<.001$). On introducing the start-up capital variable in the regression (model 2), the coefficient of gender (*male*) was still positive, although weaker, and statistically significant.

Insert Table 2 around here

Insert Figures 1 and 2 around here

On including an interaction term of gender and start-up capital in model 3, the coefficient of the direct effect of *male* became negative as a predictor of expected business size, while the interaction term was positive and significant. This last result supports H2, that male nascent entrepreneurs are less cautious than women nascent entrepreneurs in their estimates of expected business size in relation to the financial capital resources they expect to need to start the business.

Given the nonlinearity of the regression function, we plot in Figure 1 the means of the simulated predictive marginal effects of gender for different levels of start-up capital for an easier interpretation, as recommended by Hoetker (2007). This allows an understanding of the overall impact of gender through direct and indirect channels, which is otherwise inconclusive when only looking at coefficients that are not additive, as in a continuous linear function. Figure 1 graphs the

predicted probabilities and their 95% confidence intervals in order to draw valid statistical conclusions (Zelner, 2009). The line corresponding to male nascent entrepreneur growth expectations clearly becomes steeper at the right-hand side of the start-up capital distribution, implying that their business size expectations are 'out of line' with the amount of capital when the levels of the latter are higher. We plot the gender difference as the difference between men and women's marginal effects for each level of start-up capital in Figure 2, where again, we find that the gender gap increases as we move from left to right along the start-up capital distribution. The gender difference becomes statistically significant only half-way along the plotted distribution of (logged) start-up capital (i.e., £800), when the 95% confidence interval does not overlap with the zero reference line, which means the results are consistent with H2 and not with an 'underperforming women' hypothesis.

Insert Table 3 around here

Finally, H3 proposes that the gender difference in terms of business size expectations relative to start-up capital is intensified in less resource abundant environments. In Table 3 we report the results by distinguishing between periods 2002–2007 (models 1 and 2) and 2008–2011 (models 3 and 4), as explained in the previous section, to test whether the results vary before and after the financial crisis of 2008 as a measure of a change in the resource munificence in the environment. As expected, the magnitude of the coefficient of the interaction term becomes larger in the post-crisis period (0.067 vs. 0.183). We plot, as before, the marginal effect of gender in Figure 3 to facilitate the interpretation of the overall effect. Again, as the figures show, gender difference becomes larger and more significant as we move along the distribution of start-up capital. Gender difference in business size expectations is also bigger in the post-crisis period (2008–2011) than in the pre-crisis period (2002–2007). That is, at the top end of the expected business size

distribution, male nascent entrepreneurs are found to be less cautious after the recession relative to their female counterparts regarding their business size plans relative to the funding they deem necessary to start the business.

If male nascent entrepreneurs believe they require significant amounts of capital at start-up, then their expansion plans are less sensitive to changes in environmental munificence than those of women with similar expected funding needs. As a strategy to statistically test the significance of the difference of coefficients across the two periods, we estimated a pooled saturated model with the full set of predictive variables interacted with a dummy indicating the years 2008–2011 (results available upon request). The resulting coefficient of the interaction between gender, start-up capital, and the recession period was, as expected, positive (b= 0.113) and statistically significant (with SE = 0. 065). These results lend sufficient confidence that the hypothesis on the impact of environmental munificence, H3, is supported.

Insert Figure 3 here

Tables 2 and 3 also provide information about how the control variables exert influence on expected business size. Most of them performed as expected and consistently across the models: belonging to a ethnic minority group was positively and significantly associated with higher expected business size, as was coming from a high income household. Among the business level covariates, bigger start-up founding teams were related to higher business size expectations, as were entrepreneurs entering high-tech industries or offering new products to the market.

Additional analyses

Although the results, so far, support our hypotheses, we conducted additional analyses to test the robustness of our results. First, we explored whether the results are unique to the UK. To do so,

we used GEM data from 16 European innovation-driven countries (as defined by the World Bank) in 2015, when the special topic was entrepreneurial financing[3]. Again, we analysed the expected business size of nascent entrepreneurs, controlling by a similar set of covariates. In this case, we estimated the negative binomial models taking into consideration the multi-level structure of the dataset, because the outcomes were expected to be the result of individual-level and country-level influences. In Table 4, we provide the results of the random-effect (RE) specification (models 1 and 2) and country fixed-effects (FE) specification (models 3 and 4), for comparison purposes. As opposed to the FE approach, the RE approach considers that unobserved country characteristics can be generated by common mechanisms. Hence, it corrects for the potential inconsistencies that could otherwise arise (Bryan & Jenkins, 2015). The coefficients of both direct and indirect influence of gender are very similar to the ones observed within the UK data in Table 2. First, male nascent entrepreneurs are found to have a higher expected future business size, although the difference is no longer statistically significant, (models 1 and 3) and second, the higher expectations of men are intensified per additional resources added to the firm (models 2 and 4). As in the UK, the gender difference becomes significant at the top end of the start-up capital distribution, as shown in Figure 4, which further supports H2.

Insert Table 4 and Figure 4 around here

Second, we assessed the sensitivity of the findings to the inclusion of entrepreneur judgment about the adequacy of external start-up funding in their region (*AdeqSources*). As expected, perceiving sufficient sources of funding was positively associated with expected business size (Table AII,

[3] During the data collection period, GEM dedicated a few questions each year to a special topic in addition to the standard survey questions used every year in all participating countries. The start-up funding cost question asked every year in GEM UK was only asked in every country when finance was the special topic.

model 1), and the interaction between gender and start-up capital remains statistically significant and positive once this variable was included (model 2). These results suggest that the original interaction term might be partially capturing gender differences on the perception of the adequacy of funding resources in the environment, such that female nascent entrepreneurs were being more prudent by amassing more funding in higher risk scenarios partly because of their perceptions on resource availability. However, the fact that the interaction term remains significant indicates that this effect is not entirely mediated by perceptions of available resources.

Another econometric concern could be the large number of zeroes in our dependent variable. Hence, as a robustness check, we estimated the zero-inflated negative binomial regression, also known as the hurdle model (Greene, 2011), which would imply that those nascent entrepreneurs that do not plan to hire any employees behave differently from the group of entrepreneurs planning to hire at least one employee. We commenced by running a negative binomial regression, similar to the one in Table 2 (model 3), but including only the observations which have non-zero values of expected size (Table AIII, model 2). The coefficients remain similar to the original model that considered the entire sample, which for comparison purposes, we copy in the first column. Model 3 shows the results of the zero-inflated negative binomial regression. A logit model first determines the probability of the zero outcome whilst a (truncated) negative-binomial distribution describes the non-zero subsample (we only report the results of the latter). For the logit regression we included all covariates except 'New product' and 'High-tech sector' and industry dummies, which we excluded to enable convergence. The results of our variables of interest still remain substantially similar compared to the basic model, which suggests that even after decomposing the decisions about employing people and intensity of employment the main conclusions are supported. Finally, an additional concern could be the possibility that, since the sample of male

entrepreneurs is substantially larger than that of female entrepreneurs, the probability of having large outliers may also be higher. We carried out random sampling of male entrepreneurs upon 10 occasions to reflect the sample size of female entrepreneurs. The main results, in all cases, were almost identical.

DISCUSSION

We have sought to widen the debate on growth firms by exploring issues of gender, resources, and expected business size; we suggest that from a gendered perspective, rather than employing a lens of under-performing women, we should think in terms of deviant men. Using theories of growth expectancy, risk and resource munificence, we developed a core proposition that a small cohort of men stands out as being less cautious than the overall cohort of both male and female entrepreneurs. This is reflected in estimates of the perceived resources required to achieve their goals; given their overconfidence and skewness affection, a very small minority of men are less likely than entrepreneurs in general, to recognise signals of resource scarcity in the environment, and do not adjust to these higher risk environments as most would. As such, we contribute to the body of studies suggesting that many of the gender differences in prior work might be due to the prevalence in the use of measures that position men as the default norm, or the potential omission of confounding effects that account for business heterogeneity (Jayawarna, Marlow, & Swail, 2020; Jennings & Brush, 2013; Justo et al., 2015).

In a broader sense, our findings contribute to the recent call for a closer attention to the factors that explain the mechanisms shaping the distribution of critical variables, when these are characterized by a positive skew (Crawford, Aguinis, Lichtenstein, Davidsson, & McKelvey, 2015; Makino & Chan, 2017). Our findings reveal that the deviant behaviour under risk settings of a small group of entrepreneurs, who are disproportionately men, produces nonlinear responses at the top end of the

distribution, which in turn has a disproportionate influence on the statistical properties of the group, such as the mean. Given evidence that entrepreneur growth expectations appear to have a significant, albeit small to medium effect on realised growth outcomes (Delmar & Wiklund, 2008; Hermans et al., 2015; McKelvie et al., 2017), deviance in entrepreneurial behavior may be an important, if failure-strewn, source of high-growth ventures.

Deviant behaviour, in our case represented by extreme departure from the mean, can lead to a positive outcome for society as a whole and hence, it is not necessarily negative, nor should it be socially disapproved as classic anomie theorists suggest (Cohen, 1965; Cullen, Johnson, & Parboteeah, 2014; Mainemelis, 2010). While entrepreneurship as an occupational choice could be considered a deviant choice per se (Cullen et al., 2014), the deviance of some entrepreneurs, particularly those who appear to be risk tolerant and have high expectations of their ventures, could be important drivers of economic growth and value creation.

In 1929, George Bernard Shaw published a set of 'Maxims For Revolutionists', including one that speaks to our topic: "The reasonable man adapts himself to the world; the unreasonable one persists in trying to adapt the world to himself. Therefore, all progress depends on the unreasonable man" (p.238). Our findings, therefore, suggest that behind George Bernard Shaw's provocative hyperbole that "all progress depends on the unreasonable man", there is a shrewd observation: 'unreasonable men', by which he meant contrarians and creatives, create different solutions to problems than those that 'normal' individuals might come up with, and these often fall outside the bounds of accepted norms. In doing so they sometimes produce highly influential breakthroughs in addressing these problems. In this respect, we disagree with Aldrich and Ruef (2018) that 'attention on the extreme' is misplaced and that the mundane is neglected. There is a thriving academic debate on issues faced by small and medium-sized firms; a thriving debate is also needed

for the issues related to the extremely ambitious end of the entrepreneurship spectrum. Though few in number, these may turn out to be 'star performers' (Aguinis & O'Boyle, 2014) who create and destroy whole industries and change the nature of society and the environment. A contemporary example would be Elon Musk, who has created exceptional value across many different sectors, making breakthroughs that more established organisations were unable to, and despite continuous predictions of doom from industry analysts (Higgins, 2021).

Society may need to trade-off the downsides of 'unreasonable' (i.e., not perceived as following behavioural norms) deviant men entrepreneurs, such as a higher probability of generating unintended adverse impacts on stakeholders, for the breakthroughs that such behaviours might foster. Policymakers have the difficult role of ensuring that such 'unreasonable men' have the freedom to make breakthroughs and to gain rewards commensurate with value creation without creating hell on earth for the rest of us. This requires a balance of certain entrepreneurial ecosystem elements (Stam, 2015).

First, capital markets that can cope with extreme right-skewed returns, and human capital pools that can cope with rapid rises and falls in individual organizational sizes, are essential resources for deviant male entrepreneurs. This is why we see strong associations between the location of unicorns, the location of venture capital for entrepreneurial 'moonshots', and liquid public capital markets for those moonshots that make the scaling journey (McNeill, 2016). Second, policymakers need to couple transparent, enabling regulations with strong rule of law (Levie & Autio, 2011) in ways that do not stifle high stakes innovation but facilitate rapid growth but also rapid failure and re-entry (Simmons, Wiklund, Levie, Bradley, & Sunny, 2019). Policy and programme makers could facilitate business model experimentation in ways that limit risk to the wider society while enabling extreme entrepreneurs to test their hypotheses and find product-market fit with real

customer data. An example of this would be fintech ‘sandboxes’ (Ringe & Ruof, 2020) that provide entrepreneurs with real-time financial data but in protected spaces that do not risk the operation of global financial markets.

Our results, therefore, point to a need for deep understanding among policymakers of the skewed nature of entrepreneurial expectations and returns and the benefits and risks to society of both extreme and mundane ventures.

The other striking element to Shaw’s fanous quote is that it is highly gendered: the assumption is that contrarians and creatives are men, and that this is the natural order of things. This assumption has a chilling effect on women’s contributions in many fields, not least in entrepreneurship.The literature on gender and entrepreneurship offers clues to policymakers on what the phenomenon of ‘deviant male entrepreneurs means for women in entrepreneurship . The overwhelming proportion of males at the extreme end of the expected growth distribution could influence the nature of resource provision for high potential entrepreneurs in a way that discriminates against female entrepreneurs. Indeed, we know this to be the case for risk capital (Kanze, Huang, Conley, & Higgins, 2018). There is a role for policymakers to work with resource providers to remove such barriers to resources, either by providing dedicated channels for female high potential entrepreneurs or by making selection processes less prone to gender-related biases (Hernandez, Raveendhran, Weingarten, & Barnett, 2019).

Limitations and directions for future research

Our work is not without limitations, which reveal opportunities for future research. First, given that the data are cross-sectional, we limit the analysis to the nascent stage of start-ups without tracking entrepreneurs over time. Thus, we cannot infer any causal relationship, nor assess how expectations and firm performance measures evolve. A very valuable extension would be to track

nascent entrepreneurs and test the extent to which expectations are realized at the top end of the distribution. Indeed, understanding the reasons for failure to meet expectations at the top end of the distribution could have significant implications for policy. Second, we found this phenomenon to hold for one type of resource: the amount of financial capital. Future work could investigate interaction terms between the type of funding and gender, and hours worked on the venture and gender, for example. The latter could provide an interesting test of Erikson's (2002) original concept of entrepreneurial capital as a multiplicative function of entrepreneurial competence and entrepreneurial commitment, as well as inform more recent perspectives on entrepreneurial capital (Fletschner & Carter, 2008; Shaw, Marlow, Lam, & Carter, 2009). Related to the previous point, by considering the financial crisis of 2008 as a period of constrained financial resources, we could be neglecting other implications of the crisis that could have affected people's decision to engage in any form of self-employed activities, including founding new ventures. The UK did not experience a significant drop in entrepreneurial activities in the aftermath of the crisis; in fact, our data suggest that entry rates into self-employment increased somewhat. It is true, though, that the crisis could have pushed the least able workers more strongly into self-employment with motivations more focused on necessity than opportunities (Martiarena, 2020). While we opted to capture these differences via control variables, exploring detailed insights about these dynamics would in itself be an interesting continuation of our study. Third, despite our efforts in extending the empirical analysis to other European countries, we recognise that our results may still be context-specific. It would be, thus, important to replicate this research within a different culture and institutional settings. Finally, while asking nascent entrepreneurs about their expectations, the answers might have been influenced by the masculine gendered view of growth-oriented entrepreneurs, in that men respondents may have felt the pressure to demonstrate ambition through

growth expectation in their responses to demonstrate consistency with societal expectations (Gupta et al., 2019).

Conclusion

In conclusion, we propose a deviant men theory of business expectations in nascent entrepreneurs, building on the stylized fact that a significant minority of men have higher expectations for their nascent ventures and are less cautious in contexts of uncertainty and risk than entrepreneurs per se. In so doing, we bring specific focus upon the distributional differences in how male and female nascent entrepreneurs form growth expectations, and also how they form them given the availability of financial capital. The results provide support for our theory, in that they show that at the right-hand side of the expected start-up capital distribution, men expect their ventures to be larger per unit of start-up capital than do their female counterparts. The tails of the distribution make disproportionate contributions to the performance averages, and this underlines the need to give closer attention to the entire distribution of performance measures to generate more nuanced explanations of gender differences and their causes. The results also reveal that distributional differences are accentuated when resources are scarce in the environment. These results have important implications for entrepreneurs, investors, policymakers, academics and society at large, and should provide much food for reflection beyond average differences between men and women to a greater awareness of how differences in variance of behaviours, including an assessment of risk, can spark economic development and renewal, and maybe even how humanity will solve the grand challenges we have generated for ourselves.

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Table 1. Descriptive statistics

	All		Men					Women				
	Mean	SD	Mean	SD	Min	Median	99%ile	Mean	SD	Min	Median	99%ile
Exp. size in 5 years	12.39	44.34	15.22	50.07	0	5	250	7.52	31.57	0	2	100
Man	0.63	0.48										
Start-up capital (ln)	9.06	2.27	9.40	2.18	0	9.43	13.53	8.47	2.30	0	8.52	13.12
Control variables												
Age 18–24	0.10	0.30	0.11	0.32				0.08	0.27			
Age 25–34	0.25	0.43	0.24	0.43				0.27	0.45			
Age 35–44	0.30	0.46	0.29	0.45				0.32	0.47			
Age 45–54	0.23	0.42	0.23	0.42				0.22	0.41			
Age 55–64	0.12	0.33	0.13	0.33				0.11	0.31			
Graduate	0.47	0.50	0.44	0.50				0.51	0.50			
White	0.89	0.31	0.89	0.31				0.89	0.31			
High income	0.07	0.26	0.09	0.28				0.04	0.21			
London	0.07	0.25	0.06	0.25				0.07	0.25			
Solo-founder	0.60	0.49	0.58	0.49				0.64	0.48			
Two founders	0.24	0.42	0.23	0.42				0.24	0.43			
New product	0.47	0.50	0.47	0.50				0.46	0.50			
High-tech sector	0.06	0.24	0.08	0.28				0.03	0.16			
Agriculture, hunting & forestry	0.03	0.16	0.03	0.17				0.03	0.16			
Fishing	0.00	0.05	0.00	0.05				0.00	0.05			
Mining & quarrying	0.00	0.07	0.00	0.07				0.01	0.08			
Manufacturing	0.07	0.26	0.08	0.27				0.07	0.25			
Electricity, gas & water supply	0.01	0.08	0.01	0.09				0.00	0.05			
Construction	0.06	0.24	0.09	0.28				0.02	0.14			
Wholesale & retail	0.19	0.40	0.20	0.40				0.18	0.38			
Hotels & restaurants	0.08	0.27	0.07	0.26				0.10	0.30			
Transport, storage & comm.	0.03	0.18	0.04	0.20				0.02	0.14			
Financial intermediation	0.02	0.12	0.02	0.14				0.01	0.08			
Real estate, renting & business activities	0.24	0.43	0.26	0.44				0.20	0.40			
Public administration & defence	0.00	0.06	0.00	0.06				0.01	0.07			
Education	0.04	0.19	0.03	0.18				0.05	0.21			
Health & social work	0.06	0.24	0.03	0.17				0.12	0.32			
Other community, social & personal service act.	0.13	0.33	0.10	0.30				0.18	0.38			
Activities of private households as employers	0.00	0.06	0.00	0.05				0.00	0.06			
Extra-territorial org.	0.02	0.15	0.03	0.16				0.02	0.15			

Notes: The reported statistics are based on the set of observations actually used in estimations.

Table 2. Negative binomial regression results for expected number of jobs in 5 years

	2002–2020 sample					
	(1)		(2)		(3)	
	Coef.	SE	Coef.	SE	Coef.	SE
Man	0.649***	(0.05)	0.375***	(0.06)	-0.541**	(0.20)
Age 25–34	-0.273**	(0.09)	-0.436***	(0.10)	-0.436***	(0.10)
Age 35–44	-0.221*	(0.09)	-0.431***	(0.10)	-0.450***	(0.10)
Age 45–54	-0.135	(0.09)	-0.241*	(0.10)	-0.234*	(0.10)
Age 55–64	-0.250*	(0.10)	-0.459***	(0.11)	-0.488***	(0.11)
Graduate	0.052	(0.05)	0.084	(0.05)	0.088+	(0.05)
White	-0.687***	(0.08)	-0.643***	(0.09)	-0.641***	(0.09)
High income	0.774***	(0.09)	0.380***	(0.10)	0.359***	(0.10)
London	0.122	(0.10)	0.123	(0.11)	0.130	(0.11)
Solo-founder	-1.269***	(0.06)	-1.023***	(0.07)	-0.983***	(0.07)
Two founders	-0.901***	(0.07)	-0.732***	(0.08)	-0.688***	(0.08)
New product	0.379***	(0.05)	0.368***	(0.05)	0.376***	(0.05)
High-tech sector	0.351***	(0.10)	0.425***	(0.11)	0.426***	(0.11)
Start-up capital (ln)			0.109***	(0.01)	0.044*	(0.02)
Man*Start-up capital (ln)					0.103***	(0.02)
Industry dummies	Yes		Yes		Yes	
Year dummies	Yes		Yes		Yes	
Observations	5490		3813		3813	
Pseudo R^2	0.040		0.041		0.042	

Notes: $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3. Negative binomial regression results for expected number of jobs in 5 years, divided into periods

	2002–2007 sample				2008–2011 sample			
	(1)		(2)		(3)		(4)	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Man	0.499***	(0.08)	-0.093	(0.25)	0.368**	(0.12)	-1.320*	(0.52)
Age 25–34	0.073***	(0.01)	0.036+	(0.02)	0.233***	(0.03)	0.125**	(0.04)
Age 35–44	-0.504***	(0.15)	-0.495***	(0.15)	-0.050	(0.22)	-0.110	(0.22)
Age 45–54	-0.510***	(0.14)	-0.516***	(0.14)	-0.399+	(0.21)	-0.428*	(0.21)
Age 55–64	-0.374*	(0.15)	-0.362*	(0.15)	-0.196	(0.22)	-0.231	(0.22)
Graduate	-0.619***	(0.17)	-0.626***	(0.17)	0.140	(0.24)	0.006	(0.24)
White	0.186*	(0.07)	0.187*	(0.07)	-0.078	(0.11)	-0.071	(0.11)
High income	-0.659***	(0.13)	-0.655***	(0.13)	-0.319	(0.20)	-0.317	(0.20)
London	0.394*	(0.17)	0.358*	(0.17)	0.453*	(0.21)	0.453*	(0.21)
Solo-founder	0.107	(0.15)	0.112	(0.15)	0.529*	(0.25)	0.599*	(0.25)
Two founders	-1.017***	(0.10)	-0.997***	(0.10)	-1.039***	(0.15)	-0.949***	(0.15)
New product	-0.782***	(0.11)	-0.757***	(0.11)	-0.454*	(0.18)	-0.393*	(0.18)
High-tech sector	0.368***	(0.07)	0.366***	(0.07)	0.514***	(0.11)	0.524***	(0.11)
Start-up capital (ln)	0.772***	(0.15)	0.746***	(0.15)	0.149	(0.24)	0.189	(0.24)
Man*Start-up capital (ln)			0.067*	(0.03)			0.183***	(0.06)
Industry dummies	Yes		Yes		Yes		Yes	
Year dummies	Yes		Yes		Yes		Yes	
Observations	1922		1922		709		709	
Pseudo R^2	0.040		0.040		0.064		0.066	

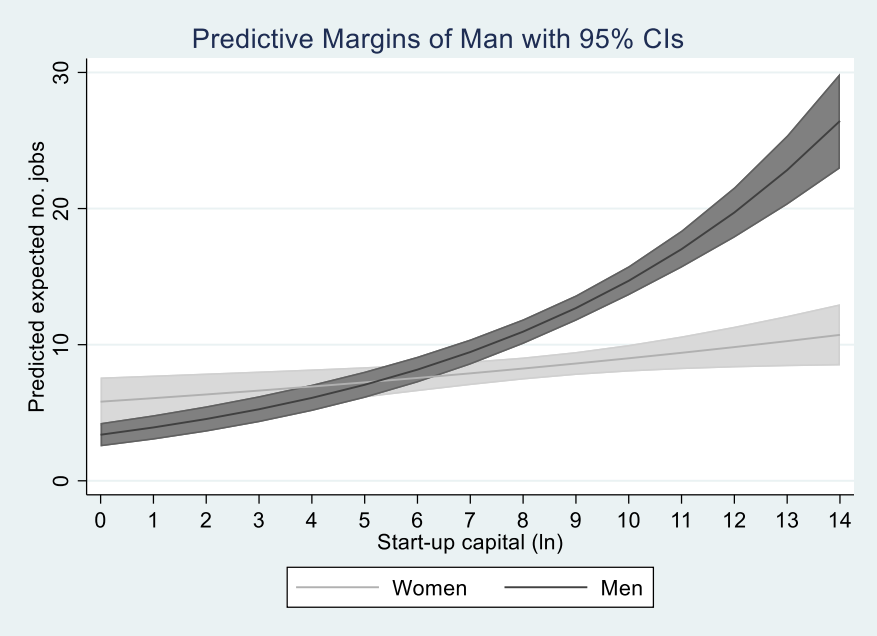
Notes: Due to sample limitations in the period 2008-2011, four groups of industry categories have been used. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4. Multilevel regression results for expected number of jobs in 5 years in European innovation-driven countries

	Country Random Effects & robust SE				Country Fixed Effects & robust SE			
	(1)		(2)		(3)		(4)	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Man	0.109	(0.17)	-0.867	(0.56)	0.101	(0.12)	-0.918^{+}	(0.52)
Start-up capital (ln)	0.208***	(0.06)	0.139*	(0.07)	0.219***	(0.03)	0.147**	(0.05)
Age 25–34	-0.515***	(0.15)	-0.520***	(0.14)	-0.505**	(0.16)	-0.509**	(0.17)
Age 35–44	-0.404	(0.26)	-0.438^{+}	(0.25)	-0.414*	(0.18)	-0.450**	(0.17)
Age 45–54	-0.315	(0.21)	-0.362^{+}	(0.21)	-0.302	(0.19)	-0.352^{+}	(0.19)
Age 55–64	-0.224	(0.24)	-0.234	(0.24)	-0.233	(0.22)	-0.241	(0.22)
Graduate	-0.034	(0.16)	-0.074	(0.15)	-0.034	(0.14)	-0.074	(0.13)
High income	0.050	(0.13)	0.038	(0.12)	0.044	(0.11)	0.031	(0.10)
Solo-founder	-0.898***	(0.21)	-0.840***	(0.20)	-0.875***	(0.14)	-0.814***	(0.13)
Two founders	-0.526***	(0.15)	-0.458***	(0.13)	-0.516**	(0.16)	-0.445**	(0.15)
New product	0.336**	(0.12)	0.329**	(0.12)	0.339**	(0.11)	0.331**	(0.11)
High-tech sector	0.140	(0.24)	0.148	(0.23)	0.160	(0.20)	0.166	(0.20)
Man*Start-up capital (ln)			0.101^{+}	(0.05)			0.106*	(0.05)
Industry dummies	Yes		Yes		Yes		Yes	
Year dummies	No		No		Yes		Yes	
Observations	845		845		845		845	
Pseudo R^2					0.070		0.072	

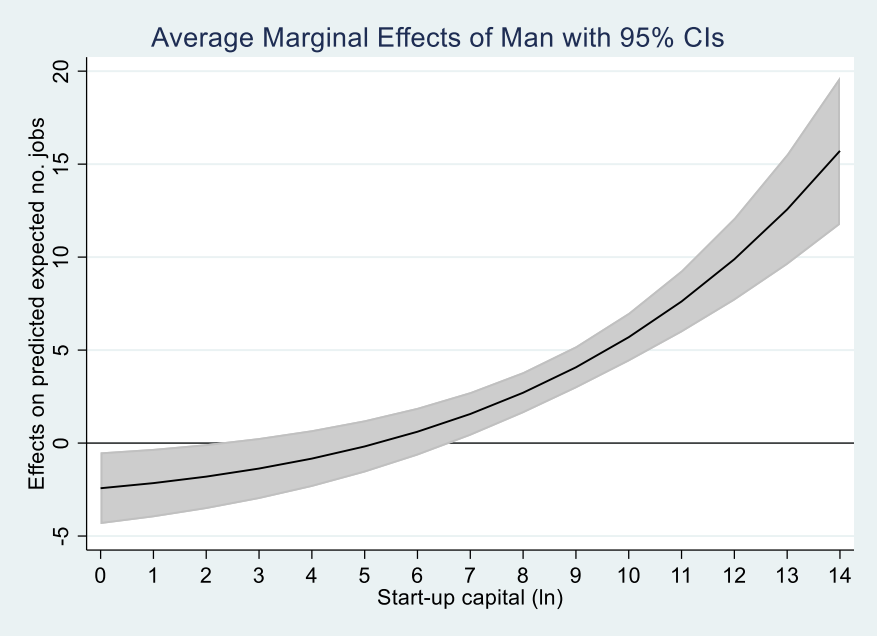
Notes: The sample includes nascent entrepreneurs from: Belgium, Estonia, Finland, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Norway, Portugal, Slovakia, Slovenia, Spain, Sweden, and Switzerland. Due to sample limitations, 4 groups of industry categories have been used. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 1. Predictive marginal effect of gender on expected business size



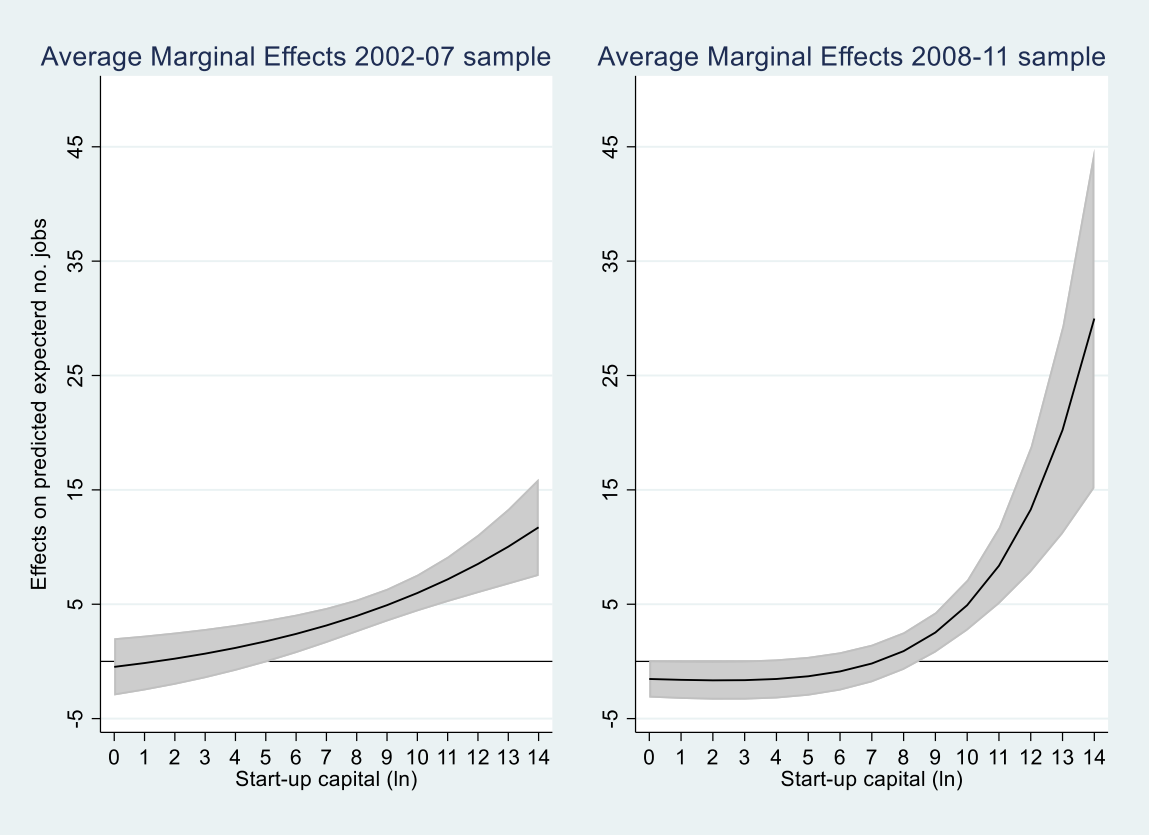
Notes: Calculated based on the results of the negative binomial regression, Table 2 column 3. CI stands for confidence interval.

Figure 2. Predictive gender difference on expected business size



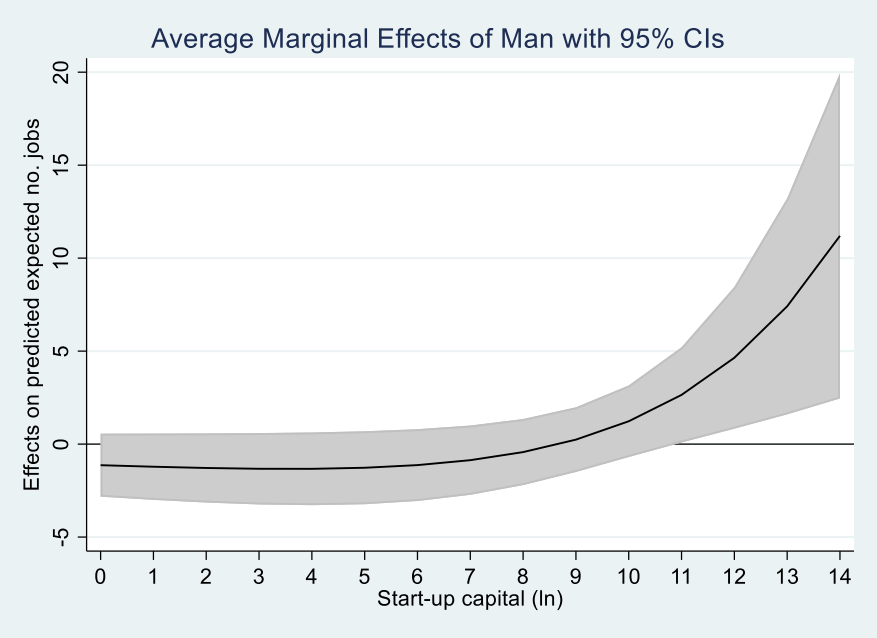
Notes: Calculated based on the results of the negative binomial regression, Table 2 column 3. Gender differences calculated as the difference between the predictive business size expectations of men vs. women nascent entrepreneurs for each level of start-up capital. CI stands for confidence interval.

Figure 3. Comparison of predictive gender difference on expected business size. Period: 2002-2007 vs. 2008-2011



Notes: Calculated based on the results of the negative binomial regression, Table 3 column 2 and column 4. Gender differences calculated as the difference between the predictive business size expectations of men vs. women nascent entrepreneurs for each level of start-up capital. 95% confidence interval.

Figure 4. Comparison of predictive gender difference in expected business size in European innovation-driven countries



Notes: Calculated based on the results of the negative binomial regression, Table 4 column 4. The sample includes nascent entrepreneurs from: Belgium, Estonia, Finland, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Norway, Portugal, Slovakia, Slovenia, Spain, Sweden, and Switzerland. Gender differences calculated as the difference between the predictive size expectations of men vs. women for each level of start-up capital. CI stands for confidence interval.

APPENDIX

Table AI. Correlation matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Exp. size 5 years															
2	Man	0.08***														
3	Start-up capital	0.1***	0.2***													
4	Age 18–24	0.03*	0.05***	-0.05**												
5	Age 25–34	-0.02	-0.04*	-0.02	-0.2***											
6	Age 35–44	-0.02	-0.04*	-0.006	-0.2***	-0.4***										
7	Age 45–54	0.02	0.02	0.05***	-0.2***	-0.3***	-0.4***									
8	Age 55–64	0.002	0.03	0.009	-0.1***	-0.2***	-0.2***	-0.2***								
9	Graduate	0.03	-0.07***	0.02	-0.07***	0.008	-0.004	-0.003	0.07***							
10	White	-0.09***	-0.002	-0.04*	-0.10***	-0.1***	0.03	0.09***	0.09***	-0.07***						
11	High income	0.07***	0.08***	0.1***	0.02	-0.04*	-0.01	0.05**	-0.01	0.1***	0.02					
12	London	0.05***	-0.006	0.03	0.03	0.06***	-0.01	-0.06***	-0.02	0.06***	-0.3***	0.06***				
13	Solo-founder	-0.1***	-0.06***	-0.3***	-0.02	0.003	-0.0007	-0.007	0.03	-0.05**	0.02	-0.10***	-0.02			
14	Two founders	-0.01	-0.01	0.1***	-0.01	0.03	0.006	0.004	-0.04*	0.01	0.006	0.03	-0.01	-0.7***		
15	New product	0.07***	0.009	0.0008	-0.006	-0.05**	0.01	0.02	0.02	0.07***	-0.003	0.003	-0.003	-0.04**	0.010	
16	High-tech sector	0.07***	0.1***	0.02	0.01	0.005	0.010	-0.02	-0.008	0.06***	-0.03*	0.02	0.03	-0.05**	-0.010	0.06***

Notes: The correlation matrix is constructed based on the observations used in estimations.

Table AII. Negative binomial regression results for expected number of jobs in 5 years, including the effect of perceptions about the adequacy of sources of start-up capital funding

	2002–2020 sample			
	(1)		(2)	
	Coef.	SE	Coef.	SE
Man	0.080	(0.09)	-1.177**	(0.38)
Start-up capital (ln)	0.175***	(0.02)	0.076*	(0.04)
AdeqSources	0.411***	(0.09)	0.415***	(0.09)
Man*Start-up capital (ln)			0.139***	(0.04)
Observations	1548		1548	
Pseudo R^2	0.044		0.045	

Notes: All models include the set of control variables included in Table 2 and Table 3, coefficients not presented for clarity. Due to sample limitations 4 groups of industry categories have been used. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table AIII. Negative binomial regression results for expected number of jobs in 5 years, robustness to model specification

	2002–2020 sample					
	(1) Negative binomial		(2) Negative binomial non-zero subsample		(3) Zero-inflated model	
	Coef.	SE	Coef.	SE	Coef.	SE
Man	-0.541**	(0.20)	-1.059***	(0.19)	-1.121***	(0.22)
Start-up capital (ln)	0.044*	(0.02)	-0.027	(0.02)	-0.029	(0.02)
Man*Start-up capital (ln)	0.103***	(0.02)	0.144***	(0.02)	0.164***	(0.02)
Observations	3813		2969		844	
Nonzero observations					2969	
Pseudo R^2	0.042		0.043			
Log likelihood	-11843.84		-10535.52		-11923.77	

Note: All models include the set of control variables included in Table 2 and Table 3, coefficients not presented for clarity. The first model refers to the regression in Table 2, model 3, copied for comparison purposes. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$