# A global review of female entrepreneurial finance

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**Abstract:** This study examines the external financing sources and decisions of small and medium-sized enterprises (SMEs) across 56 countries and shows how SMEs modify their funding channels in response to economic stage and owner's characteristics. We find that entrepreneurs' personal characteristics including owners' age, gender, and business skills are main determinants for the types of external investor funding available to SMEs. We show that access to external financing for female entrepreneurs is more difficult when they have new technology; moreover, the impact increases significantly in poorer economies. The paper displays at a global scale how SMEs modify their funding channels in response to owner's characteristics such as sex and age. Moreover, it contributes to the literature of female entrepreneurship the connections between gender, age, and economic conditions to the sources of external funding and the decisions female entrepreneurs take in accessing it.

**Keywords:** external finance; gender; investment type; economic status.

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# 1 Introduction

The challenges in becoming an entrepreneur as a woman is studied in many different contexts (Abouzeedan, 2003; Alakaleek and Cooper, 2018; Barragan et al., 2018; Brush et al., 2018; Erogul, 2014; Erogul and Quagrainie, 2017; Rajagopal, 2012; Wu et al.,

2008) to understand the impact discrimination, underrepresentation, and structural templates (Ahl and Nelson, 2010; Calás et al., 2009; De Bruin et al., 2007; Erogul and Quagrainie, 2018; Leitch et al., 2018) have in accessing finance, whether through formal or informal means (Colette et al., 2016). Recently, Leitch et al. (2018, p.103) pointed out that women's start-ups tend to be smaller, under-capitalised with less likelihood of taking on debt finance, more risk-averse; locally-based, young, and operating in sectors where growth may be limited. Accessing funding is a core activity for women entrepreneurs everywhere, requiring negotiating and finding ways to develop opportunities to obtain finance. From the perspective of financing to start-up a business and become an established business-owner, entrepreneurs can utilise various forms of funding for their entrepreneurial ventures. There are typically four key sources: personal savings, which includes money sourced from one's network, debt financing typically from a commercial bank, soft loans provided by a government body and equity funding via venture capital (V/C) and informal investment (Jarvis, 2000; Scherr et al., 1993; Ennew and Binks, 1998). A global understanding of the current situation in female entrepreneurship financing activities, financing sources and financing behaviour along the national level of economic growth is scant. A more global view on women entrepreneur's financing is needed to assist in developing better – more contextualised – theories and concepts' (Leitch et al., 2018). In response to these author's call for a more global view on female entrepreneur financing, we set out to explore financing activity of female entrepreneurs across 56 countries gathered from the Global Entrepreneurship Monitor (GEM). We employ the GEM model of economic stages and entrepreneurship characteristics to understand how small and medium-sized enterprises (SMEs) modify their funding channels in response to owner's characteristics such as sex and age. The three stages employed to group countries based on their level of economic development used by GEM (2015) are:

1    factor-driven stage economies

2    efficiency-driven stage economies

3    innovation-driven stage economies.

This relationship between entrepreneurship and economic development was first outlined in the 2002–2003 Global Competitive Index Report (Porter et al., 2002). The basis for the classification is a function of both a country's GDP per capita and the share of exports of primary goods in total exports. We connect the impact of economic stage to funding pursuits and investigate how these patterns impact gender on obtaining financing.

Accordingly at the global level, our aim is to contextualise the study by employing economic stages to better understand female SME growth and funding (Riding et al., 2007; Zecchini and Ventura, 2009; Audretsch et al., 2006; Audretsch, 2007) and the wider social, institutional, and societal context of the countries within these economies (see Welter, 2011). In addition, we examine from a firm level perspective the challenge of accessing capital impacted by ambitions of new technology utilisation and new product development in response to better understanding why technology-based women-owned businesses, possibly rely more on formal or informal contacts to access finance (Alakaleek and Cooper, 2018).

We acknowledge the importance of feminist theorising into the entrepreneurial field, where entrepreneurship is re-conceptualised from 'an economic activity' to a 'social activity', and therefore, 'social change' may take place [Calás et al., (2009), pp.553–554].

Therefore, we align our findings to conjecture how fear of failure impacts their financing activities (Cassar, 2004; Irwin and Scott, 2010; Levesque and Minniti, 2006; Allen et al., 2007). Here, we investigate how female entrepreneur's business characteristics such as new technology and new product have in diversifying and accessing both formal and informal external financing sources. Our global review of entrepreneurial activity and financing from the perspective of gender and economic status provides information in relation to factors that strengthen and weaken external financing access. These results provide the interplay and impact that age, fear of failure and business characteristics have on accessing funding within the market situation they are located, and provide contributions in response to Leitch et al.'s (2018) call to better global understanding of female funding activity and economic stage within the female entrepreneurship literature.

The implications of the study is broken down as follows: the global dataset suggests that informal external financing types such as family members, friends or neighbours, and employers or work colleagues regardless of economic indicators are a primary resource of funding, but business characteristics remain to be influential in investor's decision. Also, the current financing details of formal external financing types such as banks, venture capitalists, government, and online crowdfunding is not to be seen as a single unit with similar abilities to foster and/or inhibit female entrepreneurial financing. The study confirms that there is a wide range of variables that affect female entrepreneur's access to finance and it is necessary for future studies to contextualise these experiences. Plus, globally more research is needed in the demand side of financing to understand the gender gap and why these women receive a small portion of V/C funding (Brush et al., 2018; Leitch et al., 2018) in relation to structural barriers. To do so, requires overcoming the demand side's socio-cultural and institutional practices of funding, as well as the gendered assumptions investors draw upon.

The rest of the paper is organised as follows. Section 2 presents the theoretical framework and hypotheses. Section 3 details the data used in the empirical analysis and provides the summary statistics. Section 4 provides the main empirical results. Section 5 presents the empirical evidence of the types of external investors and economic classifications. Section 6 presents the empirical results of the gender difference and economic stages. Section 7 provides the conclusions.

## 2 Literature review and hypotheses development

Financing is one of the most important and difficult goals in establishing and maintaining an entrepreneurial identity. Obtaining financing is much more than a simple activity of raising capital from available resources, it provides important insights into the complex nature of social and structural templates (Welter, 2011). Moreover, while most entrepreneurs know the future opportunities, outside investors may have difficulties in understanding them. Thus, funding the business externally has two fundamental problems:

1 information asymmetry

2 the moral hazard problem (Denis, 2004).

In a global review of female entrepreneurship financing, it is necessary to contextualise entrepreneurship (Welter, 2011) to understand social, cultural, institutional, political and

societal influences. Therefore, national level economic growth is used to contextualise countries into economic stages as it has a critical role in ensuring SMEs growth (Riding et al., 2007; Zecchini and Ventura, 2009; Audretsch et al., 2006; Audretsch, 2007), as well as in determining gendered assumptions from the wider social context that society (i.e., lenders) draws from Stead (2017).

In this section, we review the importance of the market situation in relation to external financial factors and support (Wilken, 1979; Verheul et al., 2006). We provide critical interpretations to broaden the literature which in return may serve the purpose of empowering women in their financial and entrepreneurial activities (e.g., Ahl and Marlow, 2012; Ahl and Nelson, 2010; Calás et al., 2009; De Bruin et al., 2007).

## 2.1   *Business characteristics*

New technologies have the potential to lead to the development of new products and services, creating opportunities for the start-ups (Wennekers et al., 2002). Verheul et al. (2006) show that new information and communication technologies lead to diminished transaction costs and lower minimum efficient scales in many industries, enabling small firms to compete in both new and established industries. They also provide evidence that entrepreneurs of small firms benefit from technological development, either directly producing new products or indirectly making use of new production or communication techniques. However, another strand of research argues that women are less likely in comparison to men to operate businesses in high-technology sectors (Anna et al., 2000; Verheul et al., 2006). Furthermore, outside investors have to deal with information asymmetry problems since SMEs are typically private and the value of their business are not easy to understand when they have new technologies. Therefore, we hypothesise:

Hypothesis 1   Since new technology and new products have more uncertainty, SMEs with new technology or new products are less likely to have external financing.

Hypothesis 2   Female entrepreneurs with new technology are less likely to have external financing.

## 2.2   *Economic stages and access to financing*

The importance of financial factors in the start-up and growth phase of entrepreneurship has been emphasised as follows, at low levels of per capita GDP, the entrepreneurial sector provides job opportunities and potential for the creation of new markets (Audretsch et al., 2006; Audretsch, 2007). As per capita income increases, the emergence of new technologies and economies of scale allows larger and more established firms to satisfy the increasing demand of growing markets and increases their relative role in the economy while the role of smaller and newer firms decline (Acs and Szerb, 2007). Finally, in the third stage, the role played by the entrepreneurial sector in countries with higher GDP increases again, as more individuals have the resources to go into business in an economic environment that may present high-potential opportunities (Wennekers and Thurik, 1999; Wennekers et al., 2005). We employ the following three key classifications to group countries based on their level of economic development used by the World Economic Forum and consequently the Global Entrepreneurship Monitor (GEM) when calculating the widely referred to global competitiveness index:

- factor-driven stage economies

- efficiency-driven stage economies

- innovation-driven stage economies (referred to as wealthy nations).

These three-stages and their relationship to entrepreneurship and economic conditions are said to inhibit or foster women from utilising and developing external sources of funding to undertake some form of entrepreneurial activity (Calas and Smirich, 2006; Foss, 2010). External funders and support can provide financial capital, information, potential employees, or access to clients, but also the emotional understanding, encouragement, and support that family and friends are able to offer. The link between female entrepreneur's resources and the positive and negative support they experience has a significant impact on obtaining finance. This in itself depends on societal values regarding entrepreneurship, thereby emphasising links between social and societal contexts (Welter, 2011). Social ties are important for women entrepreneurs (e.g., Manolova et al., 2007). Some studies explore how opportunities are recognised and constructed through social contacts (de Carolis and Saparito, 2006; Fletcher, 2006). Such an opportunity enactment perspective emphasises the fact that not only does context influence entrepreneurship, but also that context is influenced by individual actions, indicating recursive links that exist among individual perceptions, actions and contexts (Welter, 2011).

Comparative studies conclude that women's access to capital is claimed to be limited, not just in whether capital is used but also the amount used (Marlow and Patton, 2005). The determining factors behind capital use have been difficult to isolate; however, Marlow and Patton (2005) state that negative myths and stereotypes associated with gender have a strong role. As a result, women accrue less social, cultural, human, and financial capital and so limit their ability to build personal savings, generate credit histories attractive to formal lenders, or engage the interest of venture capitalists.

This three-stage relationship between entrepreneurship and access to external funding is employed to hypothesise the last two predictions as follows:

Hypothesis 3    In less developed economies, female entrepreneurs are less likely to have external financing.

Hypothesis 4    In less developed economies, female entrepreneurs are more likely to face lack of external finance and new technologies.

## 3    Sample selection and main variables

The data comes from the Adult Population Surveys (APS) of the GEM. The surveys use prescribed, structured questionnaires provided by the GEM International Research Consortium to collect globally comparable data on nascent entrepreneurship within individual countries. Since the only 2015 survey data has full information of various funding channels for SMEs, we use 2015 database, which provides the annual global survey of entrepreneurial activity in 56 economies. Among 4,873 of total entrepreneurs, male entrepreneurs are 2,840 and female owners are 2,033 covering individuals between the ages of 18 and 64 years who are actively involved in setting up a business at one of

three levels: as a 'start-up' venture, 'a baby (or young) business', or an 'established business'.

We use two variables from the GEM survey data following Nofsinger and Wang (2011). The first variable, the external financing ratio, is defined by the total investment minus self-investment divided by total investment. The second variable, the external financing diversity, is the total sum of external financing channels including:

1   family members

2   friends or neighbours

3   employers or work colleagues

4   banks or other financial institutions

5   private investors or V/C

6   governments

7   online crowdfunding.

We provide a detailed construction of the variables in Appendix.

## 4   Empirical methodology and results

### 4.1   Technology and external financing behaviour

To assess how new technologies impact external finance selection for female owners' SMEs, we estimate the following baseline regression model using the Tobit regression model:

$$y_{i,k} = \alpha + \beta_1 Business\ skill_i + \beta_2 Ownership_i + \beta_3 Owner's\ age_i + \beta_4 Female_i$$
$$+ \beta_5 Female_i \times New\ technology_i + X_i \gamma + \beta_6 MacroVariables_k + \varepsilon_i \tag{1}$$

where $i$ indexes the entrepreneur and $k$ indexes a country in 2015. The dependent variable, $y_i$, captures the external financing ratio and external financing diversity. $X_i\gamma$ controls the firm characteristics by including size (total investment), firm years, growth firm dummy (0/1), and the brand new technology dummy (0/1). $MacroVariables_k$ includes industry competition, ease to start business, and economic positivity of country $k$ in 2015. Here, we report the Tobit regression results to control the distribution property of the dependent variables, which have lower and upper limits. The first dependent variable (external finance ratio) has a lower limit of 0 without external finance and an upper limit of 1 with external finance. Similarly, the second dependent variable (external finance diversity) ranges from 0 to 7 which is the highest level of diversity level.

Column (1) of Table 1 shows that the coefficient estimate of business skill dummy variable is 0.123 ($p$-value < 0.001), showing the positive association between owners' business skills and external financing preferences. This provides further evidence that owner-managers' decision making role plays an important role in SMEs' external financing decisions since keeping control over management is an important issue for entrepreneurs (Irwin and Scott, 2010; Cassar, 2004; Berggren et al., 2000; Vos et al., 2007).

**Table 1** New technology and external finance ratio, external financial diversity

| Variables | External finance ratio | | | External finance diversity | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Business skill (1/0) | 0.123*** | 0.098** | 0.098** | –0.024 | –0.044 | –0.045 |
| | (0.043) | (0.049) | (0.049) | (0.060) | (0.068) | (0.068) |
| Ownership | –0.497*** | –0.497*** | –0.494*** | –0.115** | –0.086 | –0.085 |
| | (0.028) | (0.032) | (0.032) | (0.051) | (0.058) | (0.058) |
| Owners' age | –0.006*** | –0.005*** | –0.005*** | –0.013*** | –0.012*** | –0.012*** |
| | (0.001) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| Female (1/0) | –0.046 | –0.104*** | –0.075** | –0.008 | –0.038 | –0.018 |
| | (0.029) | (0.034) | (0.036) | (0.044) | (0.051) | (0.055) |
| New technology | –0.092** | –0.128** | –0.033 | –0.031 | –0.064 | 0.004 |
| | (0.044) | (0.052) | (0.067) | (0.066) | (0.078) | (0.107) |
| Total investment | 0.039*** | 0.020*** | 0.019*** | 0.115*** | 0.102*** | 0.102*** |
| | (0.005) | (0.006) | (0.006) | (0.008) | (0.009) | (0.009) |
| Firm years | 0.008*** | 0.012*** | 0.012*** | 0.012*** | 0.007** | 0.007** |
| | (0.002) | (0.003) | (0.003) | (0.003) | (0.004) | (0.004) |
| Growth firm (0/1) | –0.034 | –0.043 | –0.041 | 0.024 | 0.019 | 0.021 |
| | (0.035) | (0.041) | (0.041) | (0.056) | (0.065) | (0.065) |
| Female × new technology | | | –0.216** | | | –0.144 |
| | | | (0.104) | | | (0.151) |
| Industry competition | | –0.135** | –0.139** | | –0.166 | –0.168 |
| | | (0.066) | (0.066) | | (0.102) | (0.102) |
| Easy to start business | | 0.021 | 0.020 | | –0.115** | –0.115** |
| | | (0.033) | (0.033) | | (0.050) | (0.050) |
| Positive economy | | 0.009 | 0.007 | | 0.038 | 0.037 |
| | | (0.035) | (0.035) | | (0.052) | (0.052) |
| Constant | 0.282*** | 0.624*** | 0.618*** | 0.097 | 0.374* | 0.367* |
| | (0.100) | (0.129) | (0.129) | (0.158) | (0.204) | (0.204) |
| $N$ | 3,560 | 2,562 | 2,562 | 3,458 | 2,709 | 2,709 |
| Pseudo $R^2$ | 0.070 | 0.069 | 0.070 | 0.029 | 0.023 | 0.023 |

Notes: Standard errors in parentheses. *$p < 0.10$, **$p < 0.05$ and ***$p < 0.01$.

However, the brand new technology dummy variable indicates that SMEs with brand new technologies are less likely to have external finance, suggesting that outside investors tend to consider SMEs with brand new technology as a risky investment opportunity. This confirms our first hypothesis. The results of column (2) suggest that the impact of age, fear of failure, and business characteristics on financial decision-making is consistent with column (1) after controlling macro conditions. The relationship between female entrepreneurs and external finance ratio is still negative and becomes significant at 1% level. This confirms that the magnitude of negative impact on external finance ratio increases when an entrepreneur is female. In column (3), we add the interaction term

between female and new technology dummy to capture how external finance ratio changes when female entrepreneurs have new technologies to the market. The coefficient of interaction term shows that female entrepreneurs with new technology have less external financing compared to male entrepreneurs without new technology. This is consistent with the second hypothesis that female entrepreneurs with new technology are less likely to have external financing. Columns (4) through (6) provide evidence that age, fear of failure, and businesses characteristics have an impact on external financing diversity of SMEs. Thus, SMEs depend less on diverse sources of external finance as entrepreneurs' share increase and owners become older. Total investment and firms' age are positive and significantly associated with degree of diversity of external finance. This is still consistent when we control macro effects variables in columns (5) and (6). The regression results suggest that the larger and older firms have more reliant on diverse sources of external financing.

## 5   Types of external investors and economy classifications

### 5.1   Institutional investors

Table 2 shows how SMEs choose institutional investors according to business characteristics, owners' gender, and country-level market situations. First, we define the institutional investors as bank, venture capitalists, government and crowd funding. In this setting, we divide each country into three different economic categories based on the definition of GEM database:

1   factor-driven

2   efficiency-driven

3   innovation-driven economies.

The factor-driven economies indicate that countries' economies are dominated by agriculture and extraction businesses with a heavy reliance on unskilled labour and natural resources. In the efficiency-driven economies, market becomes more competitive with more efficient production processes and production quality. Finally, the economies become the innovation-driven phase when businesses are more knowledge-intensive and the service sector expands.

In Table 2, the dependent variables are dummy variables, which are equal to 1 if SMEs have one type of institutional investment and 0 otherwise. Equation (2) provides the details of model:

$$
\begin{aligned}
y_{i,k} = \alpha &+ \beta_1 \textit{New technology } (1/0)_i + \beta_2 \textit{New product } (1/0)_i + \beta_3 \textit{Female}_i \\
&+ \beta_4 \textit{New product}_i \times \textit{New technology}_i + X_i\gamma + \beta_5 \textit{MacroVariables}_k + \varepsilon_i
\end{aligned}
\tag{2}
$$

where $y_{i,k}$ is a dummy variable that indicates the type of institutional investments. $X_i\gamma$ includes firm years, growth firm dummy (1/0) and macro variables include driven points and investor protection.

**Table 2** Types of institutional investors

| Variables | Bank | V/C | Government | Crowdfunding |
|---|---|---|---|---|
| New technology (1/0) | 0.346** | –0.155 | –0.042 | 1.028 |
| | (0.160) | (0.424) | (0.279) | (0.650) |
| New product (1/0) | 0.539 | 1.113* | 0.845* | 1.856 |
| | (0.347) | (0.644) | (0.512) | (1.315) |
| New tech × New product | –0.493** | 0.307 | –0.076 | –2.519** |
| | (0.245) | (0.521) | (0.384) | (1.211) |
| Firm years | 0.040* | 0.024 | 0.033 | –0.135 |
| | (0.022) | (0.043) | (0.024) | (0.137) |
| Growth firm | –0.132 | 0.060 | 1.120*** | 1.417 |
| | (0.282) | (0.523) | (0.386) | (0.994) |
| Driven points | 0.428*** | –0.089 | 0.297* | 0.633* |
| | (0.103) | (0.190) | (0.154) | (0.350) |
| Driven points × New product | –0.170 | –0.277 | –0.089 | –0.324 |
| | (0.144) | (0.277) | (0.201) | (0.508) |
| Investor protection | –0.004** | 0.005* | 0.005** | 0.001 |
| | (0.002) | (0.003) | (0.002) | (0.006) |
| Investor protection × Growth | 0.001 | 0.006 | –0.006* | –0.010 |
| | (0.003) | (0.004) | (0.003) | (0.009) |
| Female (1/0) | –0.236* | –0.603** | 0.136 | –0.841 |
| | (0.126) | (0.295) | (0.200) | (0.677) |
| Female (1/0) × New product (1/0) | –0.030 | 0.264 | –0.455 | 0.571 |
| | (0.196) | (0.396) | (0.286) | (0.815) |
| Constant | –1.811*** | –3.599*** | –3.967*** | –6.057*** |
| | (0.228) | (0.463) | (0.372) | (1.107) |
| *N* | 2,675 | 2,669 | 2,669 | 2,094 |
| Pseudo $R^2$ | 0.014 | 0.039 | 0.029 | 0.055 |

Notes: Standard errors in parentheses. *$p < 0.10$, **$p < 0.05$ and ***$p < 0.01$.

The first column reports a positive impact of new technology and economic phase on bank financing. Including macroeconomic characteristics, we find that the coefficient estimate of new technology on bank financing is positive and significant at the 1% level. However, the coefficient of interaction term with new product dummy turns negative shows that entrepreneurs are less likely to depend on bank financing when they have brand new products with new technology, since bank debt financing is more conservative. The coefficient estimates of economic stage status [columns (1), (3) and (4)] indicate that SMEs in the higher level of economic phases are more likely to fund their businesses from the institutional investment. As economic situation improves, entrepreneurs are more likely to increase funds from banks, government, and crowdfunding. From an investors' perspective, the better status of investor protection is one of the key factors. Investor protection is an important factor for entrepreneurs since better investor protective environments can induce more financing from external

investors (La Porta et al., 1997; Nofsinger and Wang, 2011). We also find that the regression results of V/C and government spending are positive and significant, suggesting that SMEs in countries with better property protection, independent judiciary, and free from corruption tend to finance their businesses from the equity or government subsidies. Finally, we show that the women-owned businesses face more difficulties than male-owned businesses when financing their SMEs from banks. This negative association between female owners and bank financing is still relevant for V/C, and consistent with literature showing the differences of gender with respect to access to external finance (Verheul and Thurik, 2001; Coleman, 2007; Harrison and Mason, 2007; Abdulsaleh and Worthington, 2013).

## 5.2   *Informal investors*

Unlike large and public firms, the financing sources by SMEs can vary from owner-manager's personal savings, retained profits, and family or friends' funds to V/C and angel financiers (Wu et al., 2008; Abouzeedan, 2003; He and Baker, 2007). Informal investors are ultimately different from institutional investors since they use their own money, suggesting that informal investors depend more on their personal judgment (Nofsinger and Wang, 2011). Defining informal investments as financing from family members, employees, or friends, we examine how technology and a country's investment environment impact the types of informal investors. Table 3 presents the logit regression results of SMEs' characteristics including age, fear of failure, and country level investment environment on informal investment.

The main independent variables in Table 3 include new technology, new product, country level economic driven points, investor protection, female, and interaction between female and owners' age. Column (1) shows that SMEs with new technology are more likely to depend on informal investors (0.378). This is consistent when we control country level economic factors (driven points and investor protection). The positive association between the new technology dummy and informal investors suggests that informal investors are a primary choice for SMEs with new technology. We also find that a new product dummy is both positive and significant. The interaction term between female and owner's age shows that as female owners become older, SMEs are more likely to use informal investments, which is consistent of our third prediction.

In column (6) of Table 3, the coefficient result on new technology dummy is positive and significant for employees financing cases. However, the coefficient of interaction term between new technology dummy and new product dummy suggests that even though informal investors interpret new technology as innovation, they are likely to reduce investment when a SME has new products with new technology. This is also consistent in cases with family and friends. Informal investments from family and friends increase with new technology. The impacts of an owner's personal characteristics on informal investor types are similar to the usage of informal investors. The interaction term of female and age shows that SMEs increase funds from family and friends when an owner is female and older. The negative and significant association between driven points and new product dummy suggests that as economic situation improves, SMEs with new products tend to find external financing source compared to counterparts in lower country level economic status without new products. Finally, the investor protection coefficient shows that SMEs are more likely to depend on other forms of financing sources as economic situation improves.

**Table 3**    Informal investors and types

| Variables | Informal investors | | | Informal investor types | | |
|---|---|---|---|---|---|---|
| | *(1)* | *(2)* | *(3)* | *(4)* *Family* | *(5)* *Friends* | *(6)* *Employees* |
| New technology (1/0) | 0.263* | 0.280** | 0.323** | 0.206 | 0.145 | 0.630* |
| | (0.138) | (0.138) | (0.147) | (0.146) | (0.252) | (0.343) |
| New product (1/0) | −0.010 | 0.749*** | 0.634** | 0.511 | 0.935* | 0.483 |
| | (0.103) | (0.269) | (0.302) | (0.325) | (0.540) | (0.806) |
| New tech × New product | 0.124 | 0.076 | −0.100 | −0.067 | −0.152 | −1.294** |
| | (0.208) | (0.209) | (0.219) | (0.219) | (0.349) | (0.592) |
| Total investment | 0.059*** | 0.055*** | 0.034** | 0.053*** | 0.004 | 0.019 |
| | (0.013) | (0.013) | (0.014) | (0.015) | (0.022) | (0.033) |
| Firm years | 0.314*** | 0.314*** | 0.358*** | −0.027 | −0.015 | 0.023 |
| | (0.023) | (0.023) | (0.026) | (0.026) | (0.046) | (0.059) |
| Growth firm | 0.088 | 0.104 | −0.083 | −0.251 | 0.143 | 0.534 |
| | (0.086) | (0.086) | (0.236) | (0.250) | (0.420) | (0.582) |
| Female (1/0) | −0.335 | −0.300 | −0.264 | −0.379 | −1.937*** | −0.782 |
| | (0.264) | (0.265) | (0.292) | (0.315) | (0.527) | (0.775) |
| Female × New product | −0.051 | −0.086 | −0.104 | −0.063 | −0.120 | −0.001 |
| | (0.152) | (0.153) | (0.161) | (0.176) | (0.302) | (0.465) |
| Owners' age | −0.025*** | −0.024*** | −0.024*** | −0.032*** | −0.020** | −0.006 |
| | (0.004) | (0.004) | (0.005) | (0.005) | (0.008) | (0.013) |
| Female × Owners' age | 0.016** | 0.015** | 0.013* | 0.020** | 0.040*** | 0.010 |
| | (0.006) | (0.006) | (0.007) | (0.008) | (0.013) | (0.020) |
| Driven points | | 0.045 | 0.238*** | 0.019 | −0.320** | −0.132 |
| | | (0.062) | (0.085) | (0.092) | (0.160) | (0.233) |
| Driven points × New product | | −0.344*** | −0.283** | −0.165 | −0.275 | −0.019 |
| | | (0.110) | (0.123) | (0.143) | (0.268) | (0.359) |
| Investor protection | | | −0.009*** | −0.010*** | −0.008*** | −0.003 |
| | | | (0.001) | (0.001) | (0.002) | (0.003) |
| Investor protection × Growth | | | 0.001 | 0.002 | 0.001 | −0.000 |
| | | | (0.002) | (0.003) | (0.005) | (0.006) |
| Constant | −0.663*** | −0.749*** | −0.053 | 0.688** | −0.318 | −3.027*** |
| | (0.225) | (0.255) | (0.293) | (0.319) | (0.477) | (0.723) |
| *N* | 4,130 | 4,130 | 3,748 | 2,666 | 2,666 | 2,666 |
| Pseudo $R^2$ | 0.200 | 0.202 | 0.228 | 0.070 | 0.054 | 0.025 |

Notes: Standard errors in parentheses. *$p < 0.10$, **$p < 0.05$ and ***$p < 0.01$.

## 6    Gender and economic stages differences in financing behaviour

Literature points out that since female entrepreneurs face disadvantages in accessing external finance, they start their businesses with less capital compared to their male

counterparts (Verheul and Thurik, 2001). For instance, female entrepreneurs attract fewer early stage financing from both equity investments and institutional loans (Becker-Blease and Sohl, 2007; Coleman, 2007). In this section, we examine how gender difference impacts choosing external financing level and types. Deniz et al. (2011) state that fear of failure can hamper progress toward entrepreneurial activities. However, at the same time, fear of failure can act as a motive to avoid disappointment (Carsrud and Brännback, 2011). In any case, it is an important variable influencing an individual's start-up and financial decisions (Welpe et al., 2012) as well as their attitude and beliefs in the entrepreneurial process (Cacciotti and Hayton, 2014). There is some evidence supporting the idea that women are more risk averse than men when making financial decisions (Jianakoplos and Bernasek, 1998) and similar evidence has been used to explain alleged lower growth rates in female-owned companies (Rad et al., 2014). Overall, although there is some agreement that individuals with lower risk tolerance (i.e., higher fear of failure) are less likely to be involved in entrepreneurial activity, no final evidence has yet been found with respect to gender differences.

Table 4 shows the differences of gender in accessing to external finance and presents the logit regression results. The dependent variable of Panel A is the fear failure dummy which equals 1 if an entrepreneur believes that fear to failure prevents an owner from starting a business and 0 otherwise. To understand the gender differences toward market situation, we categorise a country's economic status into three economic phases. The result shows that while fear to failure is a less important issue in starting business in factor-driven economies, female owners in innovation-driven economies are more likely to accept the fear to failure as a main factor. However, when entrepreneurs have business skills, they are less likely to fear failure, which shows a negative and significant association [columns (1) through (3)]. The coefficients on investor protection are negative for all economic stages but they are statistically significant for factor-driven economies. This shows that strong investor protection can lead to increase of external financing.

Panel B of Table 4 presents evidence that financing sources for female entrepreneurs vary as the country level economy improves. While external financing decreases for factor and efficiency-driven economies, female owners are more likely to use external finance in innovation-driven countries. Panel B shows that female owners with business skills in efficiency-driven economies are less likely to face the limitation to external finance and the result is statistically significant and positive. Finally, when SMEs are growth firms and owners are female, the external financing ratio varies as economic stages improve. In factor and efficiency-driven economies, growing SMEs with female owners face limitations of an external financing market. This is consistent with literature, showing that on average, female entrepreneurs face a limitation to external finance since they have different networks than their male counterparts and may not be as connected to financial networks (Aldrich et al., 1989; Ruef et al., 2003). This negative association between female entrepreneurs of growing SMEs in less developed economies and external financing ratio confirms our Hypothesis 3.

We further provide the details of funding differences in different economic status.

**Table 4** Fear failure and external financing ratio

*Panel A: fear failure*

| Variables | Fear failure (1/0) | | |
| --- | --- | --- | --- |
| | Factor-driven | Efficiency-driven | Innovation-driven |
| Female (1/0) | −0.895 | 0.162 | 0.574* |
| | (0.686) | (0.243) | (0.315) |
| Business skill (1/0) | −0.921** | −0.492*** | −0.669*** |
| | (0.463) | (0.186) | (0.210) |
| Female × Business skill | 0.650 | −0.043 | −0.487 |
| | (0.696) | (0.259) | (0.335) |
| Ownership | −0.127 | 0.191 | 0.064 |
| | (0.234) | (0.129) | (0.127) |
| Owners' age | −0.014 | 0.008* | −0.002 |
| | (0.009) | (0.005) | (0.006) |
| New technology (1/0) | −1.062*** | 0.089 | 0.210 |
| | (0.393) | (0.133) | (0.238) |
| Total investment | 0.001 | 0.007 | −0.035 |
| | (0.042) | (0.017) | (0.036) |
| Growth firm | −0.186 | 0.294 | −1.321 |
| | (0.651) | (0.417) | (1.096) |
| Female × Growth firm | 0.143 | 0.110 | 0.240 |
| | (0.433) | (0.246) | (0.341) |
| Investor protection | −0.005 | −0.001 | −0.006** |
| | (0.004) | (0.002) | (0.003) |
| Investor protection × Growth | 0.004 | −0.005 | 0.008 |
| | (0.007) | (0.005) | (0.007) |
| Constant | 0.815 | −1.170*** | 0.631 |
| | (1.085) | (0.403) | (0.669) |
| *N* | 647 | 1687 | 1686 |
| Pseudo $R^2$ | 0.033 | 0.013 | 0.023 |

*Panel B: external financing ratio*

| Variables | External financing ratio | | |
| --- | --- | --- | --- |
| | Factor-driven | Efficiency-driven | Innovation-driven |
| Female (1/0) | −0.053 | −0.314** | 0.036 |
| | (0.226) | (0.123) | (0.157) |
| Business skill (1/0) | −0.014 | −0.010 | 0.092 |
| | (0.150) | (0.085) | (0.100) |
| Female × Business skill | 0.027 | 0.265** | −0.052 |
| | (0.232) | (0.131) | (0.165) |
| Owners' age | −0.003 | −0.007*** | −0.004 |
| | (0.003) | (0.002) | (0.003) |

Notes: Standard errors in parentheses. *$p < 0.10$, **$p < 0.05$ and ***$p < 0.01$.

**Table 4**     Fear failure and external financing ratio (continued)

*Panel B: external financing ratio*

| Variables | External financing ratio | | |
| --- | --- | --- | --- |
| | Factor-driven | Efficiency-driven | Innovation-driven |
| Total investment | 0.109*** | –0.013 | 0.173*** |
| | (0.013) | (0.009) | (0.015) |
| Growth firm | 0.082 | 0.045 | –0.052 |
| | (0.119) | (0.071) | (0.093) |
| Female × Growth firm | –0.023 | –0.231** | 0.254 |
| | (0.168) | (0.111) | (0.173) |
| New technology (1/0) | 0.068 | –0.080 | –0.094 |
| | (0.109) | (0.064) | (0.115) |
| Industry competition | –0.250** | –0.023 | –0.097 |
| | (0.120) | (0.097) | (0.105) |
| Easy start business | 0.239*** | 0.025 | –0.092* |
| | (0.062) | (0.047) | (0.055) |
| Economic positive | 0.142** | 0.082 | –0.008 |
| | (0.070) | (0.051) | (0.057) |
| Government spending | –0.017*** | –0.001 | 0.002 |
| | (0.004) | (0.002) | (0.002) |
| Constant | 0.051 | 0.197 | –1.691*** |
| | (0.352) | (0.191) | (0.264) |
| N | 727 | 1270 | 743 |
| Pseudo $R^2$ | 0.077 | 0.028 | 0.098 |

Notes: Standard errors in parentheses. *$p < 0.10$, **$p < 0.05$ and ***$p < 0.01$.

Table 5 summarises the average characteristics of entrepreneurs in 56 sample countries. The first two columns illustrate both the averages of individual and firm-level characteristics including female and male fund, number of owners, and firm sizes in different economic status. The main variable of interest is female fund, which means the average amount funding needed by female entrepreneurs and male fund for male entrepreneurs. In Table 5, there exists a clear gender difference of average amount of funding needed between male and female entrepreneurs. Regardless of economic phases, male entrepreneurs have more funding to start their businesses, suggesting that male owners are less likely to face disadvantages of borrowing external investments than female counterparts. This gender gap in external financing to start business increases as economic situation improves. While the average differences in factor-driven and economy-driven economy are $2,078.98 and $34,791.08 respectively, this gap becomes $84,059.81 in innovation-driven countries. The summary reports that the total number of owners is less than two entrepreneurs. The latest technology availability, company R&D level, and the university and industry R&D level show that economic environments improve as economic phases change to higher level of innovation-driven economy. The positive association between the joint R&D between universities and industries suggests that there are more opportunities for entrepreneurs in developed economies to start their own businesses with business skills and knowledge.

**Table 5**   Owner-manager and fund characteristics

| Country | Female fund | Male fund | Owners | Size | Investor protection | Latest tech availability | Tech adoption | Company R&D | University industry R&D |
|---|---|---|---|---|---|---|---|---|---|
| *Panel A: factor-driven countries* | | | | | | | | | |
| Philippines | 295.824 | 990.631 | 1.294 | 9.257 | 69.735 | 4.601 | 4.818 | 3.750 | 3.794 |
| India | 21,979.762 | 1,932.325 | 1.308 | 11.216 | 95.021 | 4.025 | 4.093 | 3.914 | 3.871 |
| Iran | 6,008.167 | 7,958.437 | 1.559 | 18.587 | 38.609 | 4.002 | 3.912 | 2.861 | 3.181 |
| Senegal | 456.041 | 2,598.760 | 2.144 | 11.863 | 84.759 | 4.613 | 4.572 | 3.569 | 3.637 |
| Cameroon | 1,357.425 | 4,208.897 | 1.271 | 12.279 | 53.058 | 3.819 | 4.072 | 3.210 | 3.374 |
| Botswana | 1,531.798 | 5,175.723 | 1.458 | 9.120 | 138.836 | 4.247 | 4.202 | 2.761 | 3.145 |
| Kazakhstan | 5,536.083 | 8,572.000 | 1.200 | 13.391 | 54.772 | 4.409 | 4.253 | 3.364 | 3.294 |
| Total | 1,448.623 | 3,527.603 | 1.473 | 11.513 | 82.421 | 4.215 | 4.279 | 3.304 | 3.467 |
| *Panel B: economy-driven countries* | | | | | | | | | |
| Egypt | 10,672.855 | 49,904.109 | 2.178 | 10.584 | 56.547 | 3.876 | 4.030 | 2.369 | 2.427 |
| South Africa | 5,166.828 | 15,861.707 | 1.526 | 9.758 | 97.444 | 5.341 | 5.093 | 3.846 | 4.487 |
| Hungary | 4,139.778 | 28,276.161 | 1.545 | 14.384 | 112.609 | 5.147 | 4.902 | 2.909 | 4.274 |
| Romania | 66,238.738 | 82,666.500 | 2.074 | 10.366 | 86.957 | 4.649 | 4.612 | 2.947 | 3.590 |
| Poland | 10,563.633 | 11,458.282 | 1.103 | 10.089 | 124.191 | 4.645 | 4.452 | 3.094 | 3.504 |
| Peru | 1,261.340 | 3,941.688 | 1.500 | 8.925 | 80.799 | 4.473 | 4.605 | 2.705 | 3.098 |
| Mexico | 2,176.318 | 2,925.596 | 1.238 | 10.111 | 87.174 | 4.954 | 4.878 | 3.163 | 3.971 |
| Argentina | 3,584.160 | 62,414.688 | 1.564 | 10.393 | 51.438 | 3.728 | 3.584 | 2.886 | 3.635 |
| Brazil | 1,406.135 | 7,053.340 | 1.194 | 8.458 | 95.380 | 4.469 | 4.611 | 3.286 | 3.799 |
| Chile | 5,567.478 | 46,965.533 | 1.381 | 14.857 | 166.032 | 5.594 | 5.340 | 2.979 | 4.199 |
| Colombia | 5,982.195 | 19,041.100 | 1.702 | 16.033 | 88.691 | 4.487 | 4.482 | 2.936 | 3.926 |
| Malaysia | 7,628.585 | 5,422.327 | 1.083 | 9.411 | 109.956 | 5.713 | 5.604 | 5.264 | 5.326 |
| Indonesia | 537.384 | 1,325.251 | 1.225 | 15.397 | 66.032 | 4.808 | 4.836 | 4.188 | 4.547 |
| Thailand | 11,871.415 | 63,179.646 | 1.193 | 10.599 | 79.082 | 4.734 | 4.835 | 3.520 | 3.954 |
| China | 46,930.011 | 317,102.830 | 2.746 | 11.765 | 63.888 | 4.301 | 4.459 | 4.213 | 4.401 |
| Morocco | 16,304.116 | 26,800.360 | 1.625 | 11.411 | 80.542 | 5.051 | 4.735 | 2.804 | 3.232 |
| Tunisia | 2,074,547.774 | 1,633,034.397 | 1.732 | 11.511 | 84.775 | 4.481 | 4.378 | 2.768 | 2.921 |
| Bulgaria | 7,095.063 | 2,412.321 | 1.500 | 8.511 | 73.686 | 4.640 | 4.479 | 3.136 | 3.000 |
| Latvia | 8,388.386 | 9,457.120 | 1.355 | 8.516 | 107.156 | 5.772 | 5.186 | 3.121 | 3.673 |
| Croatia | 3,704.017 | 32,174.829 | 1.100 | 10.275 | 91.221 | 4.965 | 4.430 | 3.086 | 3.391 |

**Table 5**     Owner-manager and fund characteristics (continued)

| Country | Female fund | Male fund | Owners | Size | Investor protection | Latest tech availability | Tech adoption | Company R&D | University industry R&D |
|---|---|---|---|---|---|---|---|---|---|
| *Panel B: economy-driven countries* | | | | | | | | | |
| Macedonia | 12,646.418 | 379,352.107 | 1.304 | 13.408 | 82.270 | 5.045 | 4.527 | 3.275 | 3.711 |
| Guatemala | 1,335.936 | 3,583.898 | 1.230 | 9.030 | 51.982 | 5.334 | 5.021 | 3.220 | 3.618 |
| Panama | 5,080.000 | 7,290.000 | 1.169 | 8.607 | 67.650 | 5.515 | 5.454 | 3.498 | 4.038 |
| Ecuador | 3,413.793 | 6,597.727 | 1.110 | 8.275 | 52.105 | 4.517 | 4.229 | 2.862 | 3.943 |
| Uruguay | 219.908 | 855.196 | 1.750 | 9.583 | 148.694 | 4.776 | 4.704 | 2.968 | 3.593 |
| Lebanon | 15,676.145 | 30,751.843 | 1.257 | 16.509 | 50.700 | 4.385 | 4.073 | 2.867 | 2.883 |
| Total | 50,109.310 | 84,900.384 | 1.371 | 11.958 | 79.259 | 4.851 | 4.741 | 3.383 | 3.900 |
| *Panel C: innovation-driven countries* | | | | | | | | | |
| USA | 112,111.111 | 53,875.000 | 1.480 | 9.845 | 158.153 | 6.544 | 5.823 | 5.585 | 5.850 |
| Greece | 63,727.059 | 222,814.119 | 1.565 | 10.541 | 83.806 | 4.986 | 4.525 | 2.751 | 3.061 |
| Netherlands | 39,413.076 | 320,979.106 | 1.462 | 9.747 | 179.270 | 6.300 | 5.701 | 4.849 | 5.380 |
| Belgium | 163,203.443 | 12,397.540 | 1.375 | 9.151 | 160.816 | 6.193 | 5.630 | 5.082 | 5.577 |
| Spain | 70,579.305 | 44,731.013 | 1.534 | 9.950 | 132.539 | 5.520 | 5.075 | 3.296 | 3.772 |
| Switzerland | 35,618.063 | 218,084.974 | 1.800 | 10.980 | 181.276 | 6.417 | 5.920 | 6.023 | 5.790 |
| UK | 20,709.561 | 264,199.270 | 1.593 | 9.061 | 172.208 | 6.477 | 5.790 | 4.872 | 5.666 |
| Sweden | 31,267.731 | 512,335.816 | 1.778 | 11.620 | 184.931 | 6.482 | 5.718 | 5.434 | 5.327 |
| Norway | 74,234.224 | 51,377.073 | 2.416 | 12.013 | 182.503 | 6.512 | 5.789 | 4.679 | 5.019 |
| Germany | 21,847.691 | 89,531.918 | 1.246 | 9.711 | 173.779 | 6.223 | 5.644 | 5.472 | 5.335 |
| Australia | 44,964.472 | 603,692.228 | 1.405 | 10.204 | 177.150 | 5.909 | 5.433 | 4.067 | 4.844 |
| South Korea | 42.021 | 18.522 | 1.288 | 9.051 | 133.844 | 5.641 | 5.194 | 4.583 | 4.616 |
| Canada | 145,825.057 | 88,558.936 | 1.450 | 9.724 | 177.201 | 6.244 | 5.531 | 4.087 | 4.901 |
| Portugal | 42,119.256 | 27,670.285 | 1.381 | 9.229 | 136.642 | 6.104 | 5.645 | 3.663 | 4.683 |
| Luxembourg | 11,194.794 | 32,973.757 | 1.455 | 9.278 | 176.222 | 6.197 | 5.882 | 5.017 | 4.903 |
| Ireland | 7,771.593 | 32,566.673 | 1.667 | 9.180 | 163.259 | 6.105 | 5.994 | 4.750 | 5.243 |
| Finland | 26,576.071 | 52,447.969 | 2.914 | 9.287 | 185.595 | 6.601 | 5.611 | 5.549 | 5.968 |
| Estonia | 1,404.855 | 416.749 | 1.667 | 8.353 | 163.682 | 5.774 | 5.336 | 3.827 | 4.355 |
| Slovenia | 23,129.740 | 199,248.829 | 1.333 | 9.812 | 120.500 | 5.466 | 4.828 | 3.665 | 3.956 |
| Israel | 39,719.604 | 476,333.072 | 1.737 | 11.625 | 141.750 | 6.358 | 5.948 | 5.526 | 5.505 |
| Total | 54,303.380 | 138,363.190 | 1.583 | 10.003 | 147.395 | 5.816 | 5.302 | 3.986 | 4.366 |

**Table 6**     External financing characteristics

| | Factor-driven countries | | | Efficiency-driven countries | | | Innovation-driven countries | | |
|---|---|---|---|---|---|---|---|---|---|
| | *Female* | *Male* | *Difference* | *Female* | *Male* | *Difference* | *Female* | *Male* | *Difference* |
| New products | 0.240 | 0.298 | −0.057* | 0.455 | 0.442 | 0.013 | 0.329 | 0.308 | 0.021 |
| | (0.428) | (0.458) | (0.034) | (0.498) | (0.497) | (0.028) | (0.470) | (0.462) | (0.029) |
| External finance ratio | 0.234 | 0.294 | −0.060** | 0.155 | 0.201 | −0.046*** | 0.217 | 0.238 | −0.022 |
| | (0.316) | (0.346) | (0.025) | (0.268) | (0.292) | (0.016) | (0.317) | (0.324) | (0.020) |
| External finance diversity | 0.985 | 1.152 | −0.166** | 0.965 | 1.087 | −0.123** | 0.754 | 0.785 | −0.031 |
| | (0.835) | (0.932) | (0.068) | (0.886) | (0.980) | (0.052) | (0.892) | (0.901) | (0.056) |
| Brand new technology | 0.111 | 0.116 | −0.005 | 0.260 | 0.220 | 0.040* | 0.080 | 0.059 | 0.021 |
| | (0.315) | (0.321) | (0.024) | (0.439) | (0.414) | (0.024) | (0.272) | (0.236) | (0.016) |
| Total investments | 10.963 | 12.347 | −1.384*** | 11.964 | 12.080 | −0.116 | 9.743 | 10.079 | −0.337*** |
| | (2.626) | (3.244) | (0.227) | (3.181) | (3.392) | (0.183) | (1.688) | (1.808) | (0.111) |

Finally, to understand how gender and economic situation have statistically significant impact on financing behaviours, we provide pairwise comparisons of external financing ratio, external financing diversity, new technology and total investments in different economies in Table 6. We first divide each entrepreneur into his or her country's economic phase and then compare female with male counterparts in terms of business and financing characteristics. The first evidence [columns (1) through (3)] shows that in factor-driven economies, male entrepreneurs have significantly higher rates of producing new products to market and the result is statistically significant at 10% level. In terms of external financing, male entrepreneurs fund their businesses from external investors significantly higher than female counterparts.

## 7    Conclusions

We have contextualised economic stages to female SME growth and funding across 56 countries gathered from GEM and displayed their challenge of accessing capital. Moreover, the paper presented evidence that the business characteristics of the firm and that of the entrepreneur's along with the market situation impact female entrepreneurs' external financing behaviours. Our findings show:

1    Female SMEs with new technology has less external financing.

2    Female entrepreneurs have difficulties in raising external financing and this negative relation increases when they have new technology or products.

3    Since female entrepreneurs have more disadvantages related to raising external finance, they depend more on informal investments

4    The gender gap effect in business and financing characteristics decreases as economic situation increases.

5    Older entrepreneurs are less dependent on various external financing sources. As women entrepreneurs are older, they depend more on the informal investors.

6    Women entrepreneurs are less dependent on bank and V/C financing; however, when they have 'new product' the negative dependence decreases.

7    Women entrepreneurs in innovation-driven economies are more risk-averse. However, an increase in the perception of business skill reduces their fear of failure.

8    In efficiency-driven countries, women owners use more brand new technologies, yet gender difference in financing their business continues in comparison to innovation-countries, the gender difference disappear.

We conjecture that women entrepreneurs navigate the expectations of complying with the 'arrangements' of entering the field in which their personal characteristics and agency challenge those arrangements to have innovative entrepreneurship (i.e., stand out)

(De Clercq and Voronov, 2009). These women faced difficulties in financing from both institutional and informal investments and in terms of types of external financing. This not only makes becoming an entrepreneur difficult, but as women entrepreneurs being more innovative is not financially welcomed by funders. For instance, in Table 2. we found that older female entrepreneurs are less dependent on various external financing sources, and they depend more on informal investors (see Table 4). Female entrepreneurs have difficulty in funding their businesses through conservative banks and venture capitalist funding relations is a strong indicator of the impact of social, cultural, political, institutional and societal impact on networking (Welter, 2011), where people create social ties based on similarity between them (McPherson et al., 2001). We presented evidence that female entrepreneurs with 'new product' are less likely to face difficulty in bank financing. Although improved business skills and decreased fear-of-failure regardless of economic stage conjectures higher level of female entrepreneurs ready for growth, the complexity of external financing behaviour and psychological views of investors according to the owners' gender and economic stage continues. In addition, we found that an increase in the perception of business skills reduced the fear-of-failure.

Along the same lines, we found that male entrepreneurs are more likely to use higher amounts of funding to start their businesses, regardless of economic phase. Male owners are less likely to come across challenges in accessing external investments in comparison to their female counterparts. We interpret that investors still keep using detailed screening processes, making use of restrictive covenants and financial contracts and having a seat on the board and other related practices. This results in creating rules, beliefs, and practices that are predominately male gendered (Kaplan and Strömberg, 2003; Becker-Blease and Sohl, 2007).

To understand the significant impact of gender on external financing characteristics, we provided pairwise comparisons of external financing ratio, external financing diversity, firm size, and business characteristics. In these pairwise comparisons, we discovered that SMEs' access to external financing sources are more heavily impacted by external investors' views on new technology and that the impact increases for female owners' SMEs compared to male owned-managed SMEs. Furthermore, these gender differences have an impact on the business' characteristics, such as technology and new products. For instance, in Table 6, we saw that efficiency-driven countries, female entrepreneurs tend to utilise more brand new technologies but remain stigmatised when it comes to financing their businesses. However, as the economic stage developed, the gender difference in financing became insignificant. In support, Harrison and Mason's (2007) found that gender differences are small and only rarely significant from investors' perspective. The differences of external financing and business characteristics not only exist and are statistically significant in less developed economies, the gender gap in financing behaviour decreases as economic situation improves. Concluding that the gender differences in financing of SMEs are not a single function of investors' views on SMEs but a complex country-level economic situation aligned with business characteristics. In other words, more contextualised studies of female entrepreneurship are necessary to better understand women's financing in relation to their pursuit to realise entrepreneurship as a social activity that improves lives and communities both materially and affectively.

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# Appendix

## *Definition of variables*

| Variables | Definition |
|---|---|
| External finance ratio | Total investment minus self-investment divided by total investment. It is from *the 2015 Global Entrepreneurship Monitor (GEM) database*. |
| External finance diversity | Sum of the number of external financing channels including:<br>1 family funding<br>2 friends<br>3 employers<br>4 banks<br>5 private venture capital (V/C)<br>6 government funding<br>7 crowdfunding. |
| Own money | Percentage of owners' own money provided. |
| Education | Entrepreneurs' education level. It equals 1 for secondary level degree, 2 for post-secondary level, 3 for graduate level, and 0 for none degree or missing information. |
| Total investment | Log of 1 plus total investment. |
| Industry competition | Dummy variable equals 1 if many competitors are offering the same product and 0 otherwise. |
| Investor protection | The sum of property rights, contract enforcement, and freedom from corruption. This variable captures the quality of investor protection (Nofsinger and Wang, 2011). The property rights variable is from The Global Competitive Report 2014–2015 and it varies from 1 (financial assets and wealth are poorly delineated and not protected by law) to 7 (clearly delineated and protected by law). Contract enforcement ranges from 1 (lowest level) to 7 (highest level, judiciary is completely independent from government). This variable is from The Global Competitive Report 2014–2015. Freedom from corruption ranges from 0 to 100. One hundred values indicate a country is completely free from corruption (Miller and Kim, 2015). |
| Latest technology | Availability of latest technologies, 1–7 (best) from the *2015 Global Entrepreneurship Monitor (GEM) database*. |
| Technology adoption | Technological adoption. |
| Business skill (1/0) | Dummy variable equals 1 if entrepreneurs have previous business skill and 0 otherwise. |

*Definition of variables (continued)*

| Variables | Definition |
|---|---|
| Ownership | It captures ownership status. It equals 2 if an entrepreneur has 100% ownership, 1 for part ownership and 0 for missing information. |
| New technology | Dummy variable equals 1 if a business uses technology which is less than five years in the market and 0 otherwise. |
| Growth firm | Dummy variable equals 1 if the expected employment in five years is greater than 20 and 0 otherwise. |
| Easy to start business | Dummy variable equals 1 if an entrepreneur thinks that it is easy to start a business and 0 otherwise. |
| Positive economy | Dummy variable equals 1 if an entrepreneur thinks that there will be good opportunities for starting a business in the next six months and 0 otherwise. This captures opportunities to start business. |
| New product | Dummy variable equals 1 if a product is new to the market and 0 otherwise. |
| Driven points | Three different economic categories based on the definition of the *Global Entrepreneurship Monitor (GEM) database*: <br> 1   factor-driven <br> 2   efficiency-driven <br> 3   innovation-driven economies. <br><br> The factor-driven economies indicate that countries' economies are dominated by agriculture and extraction businesses with a heavy reliance on unskilled labour and natural resources. In the efficiency-driven economies, market becomes more competitive with more efficient production processes and production quality. Finally, the economies become the innovation-driven phase when businesses are more knowledge-intensive and the service sector expands. |
| Fear failure | Dummy variable equal 1 if fear prevents owner from starting business and 0 otherwise. |
| Female (male) fund | The average amount funding needed by female (male) entrepreneurs. |