



Does gender matter in driving active angel investment?

Investigating a women-only angel group

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1. Literature review

- Research on minority groups in general (Schmader et al., 2008; Steele & Aronson, 1995) and on women angels in particular (Becker-Blease & Sohl, 2011; Bellier & Idi Cheffou, 2019; Harrison, Botelho et al., 2020) suggests that such minorities are particularly exposed to stereotype threats.
- **Becker-Blease and Sohl (2011)** suggest that stereotype threat is present when women represent a minority in the group. Their research is one of the first attempts to explain differences in BA group investment activity from a gender perspective
- **Bellier and Idi Cheffou (2019)** find that compared with the male BA in the group, the female subgroup behaves in a significantly more risk-averse manner. They attribute this behavioral difference to stereotype threat
- **Harrison, Botelho et al., (2020)** make the first comparison of individual angels from mixed BA groups with exclusively female angel groups and build their model on the concept of stereotype threat,

One possible way of relieving stereotype threats may be to create women-only environments in which female investors do not feel exposed to the judgment of male investors, and in which women can create and become strongly involved in exclusively female BA groups.

However, there has been no study of the influence of the absence of stereotype threat on the behavior of female angel investors in stereotype-free environments.



2. hypotheses

When such pressures are mitigated by the creation of safe havens, and if stereotype threat is the prime cause of a low likelihood of investment for women in mixed networks (as suggested by Becker-Blease and Sohl 2011), **we expect to observe no less investment activity by female angels than by male:**

Hypothesis 1: Women in an exclusively women BA group invest, on average, as much (or even more, if they are more qualified in terms of human capital) than men in a mixed angel group.

If the stereotype threat is relieved - as we would expect in a women-only “safe space”- we would not expect to find significant differences in the main drivers of BA involvement related to specific professional qualifications when we compare male angel investors with female angel investors. Specifically, professional qualifications and human capital related to finance should be relevant for both men and women, in the absence of stereotype threat:

Hypothesis 2: In the absence of stereotype threat, men and women angel investors share similar human capital features related to finance, as significant drivers of active angel involvement in BA group activities.

3. Method - Empirical analysis - Data collection process

The questionnaire included 44 questions relating to individual characteristics of angels:

- *human capital features* (age, level of education, actual status, professional and investment experience)
- *involvement in group activities* (time spent, involvement in specific activities)
- *angels' characteristics* as members of an angel group (reasons for joining an angel group, satisfaction with its service)
- *decision-making style* (dimensions of predictive- and control-orientation).

SAMBA

SAMBA was created in 2007 by a group of local entrepreneurs and now counts approximately 200 members.

SAMBA is located in the Auvergne-Rhône-Alpes region in the south-east of France.

Questionnaire posted on October 2018

Number of respondents : 110

60 responses were incomplete, leading the final sample to 50 BA

We excluded the responses of the 3 women to obtain a sample of 47 responses of men

Response rate of approximately 25%.

FBA

Femmes Business angels (FBA) is a women-only angel group created in July 2003 by a small group of businesswomen,

and counts 160 members,

FBA is established in six French major cities

Questionnaire posted on July 2022

Number of respondents : 60

13 responses were incomplete, leading the final sample to 47 BA

Response rate of approximately 29%.

4. Results - Female and Male angels' characteristics

		FBA	SAMBA
	n = 47	% of total	% of total
AGE	Under 35	-	-
	35-44	8,5%	-
	45-54	25,5%	12,80%
	55-64	48,9%	23,40%
	65 above	17,0%	63,80%
Education	First cycle	2,1%	8,51%
	Bachelor level	4,3%	14,9%
	Master level	70,2%	46,8%
	Doctorate level	23,4%	29,8%
Professional activity	Entrepreneur		
	Employee	74,47%	59,57%
	Liberal		
Professional experience	Financials	36,17%	6,4%
	Software / Internet /	36,2%	
	Telecommunications / IT		8,5%
	Services / Transport	25,53%	40,4%
	Consumer goods	14,89%	17,0%
	Health / Biotechnology	14,89%	6,4%
	Industrials	6,38%	25,5%
	Others	12,77%	21,3%
Entrepreneurial experience	company creation	59,6%	
	CEO of SME	57,4%	
	Board member	44,7%	

4. Results - Descriptive statistics: Angels' individual characteristics

Business angel group	FBA-Women-only angel group					SAMBA (only men)					Diff <i>p</i> -value	
Statistic	Mean	SE	Min	Max	N	Mean	SE	Min	Max	N		
Age	56.51	8.80	38	80	47	66.81	8.99	48	83	47	-10.30	0.000***
Education Level	3.15	0.59	1	4	47	2.98	0.897	1	4	47	0.17	0.28
Status												
Retirement Status	0.15	0.36	0	1	47	0.40	0.50	0	1	47	-0.26	0.005***
Entrepreneur	0.28	0.45	0	1	47	0.26	0.44	0	1	47	0.02	0.818
Employee	0.30	0.46	0	1	47	0.17	0.38	0	1	47	0.13	0.147
Liberal	0.17	0.38	0	1	47	0.17	0.38	0	1	47	0.00	1.000
Professional Experience												
CEO	0.49	0.51	0	1	47	0.74	0.44	0	1	47	-0.26	0.011**
R&D	0.11	0.31	0	1	47	0.11	0.31	0	1	47	0.00	1.000
Strategy	0.17	0.38	0	1	47	0.21	0.41	0	1	47	-0.04	0.605
Marketing	0.45	0.50	0	1	47	0.28	0.45	0	1	47	0.17	0.088*
Finance	0.51	0.51	0	1	47	0.40	0.50	0	1	47	0.11	0.306
Legal	0.11	0.31	0	1	47	0.17	0.38	0	1	47	-0.06	0.375
Production	0.04	0.20	0	1	47	0.21	0.41	0	1	47	-0.17	0.013**
HR-Organization	0.13	0.34	0	1	47	0.15	0.36	0	1	47	-0.02	0.768
Investment experience												
Years since first investment	6.32	4.43	1	20	47	5.79	3.18	1	17	39	0.52	0.526
Cumulative amount invested	2.89	0.961	1	5	47	2.77	1.06	1	5	39	0.12	0.570
Return on angels' investments	2.09	0.717	1	3	47	1.74	0.72	1	3	38	0.35	0.029**

4. Results - Female and Male as angel investors

Network	FBA- Women-only angel group					SAMBA (only men)							
Statistic	Mean	Sd	Min	Max	N	Mean	Sd	Min	Max	N	Diff.	p-value	
Time spent	4.02	1.24	1	5	47	3.47	1.18	1	5	47	0.55	0.029	**
Investment activities	2.38	1.38	0	4	47	1.70	1.41	0	4	47	0.68	0.020	**
Deal flow	0.64	0.49	0	1	47	0.28	0.45	0	1	47	0.36	0.000	***
Pre-selection	0.62	0.49	0	1	47	0.45	0.50	0	1	47	0.17	0.100	*
Due diligence	0.79	0.41	0	1	47	0.47	0.50	0	1	47	0.32	0.001	***
Post-investment	0.34	0.48	0	1	47	0.51	0.51	0	1	47	-0.17	0.097	*
Group management activities	1.47	1.16	0	4	47	1.23	1.05	0	3	47	0.23	0.307	
Attend training	0.66	0.48	0	1	47	0.62	0.49	0	1	47	0.04	0.672	
Lead training	0.23	0.43	0	1	47	0.06	0.25	0	1	47	0.17	0.020	**
Board member	0.34	0.48	0	1	47	0.30	0.46	0	1	47	0.04	0.662	
Investment committee	0.23	0.43	0	1	47	0.26	0.44	0	1	47	-0.02	0.813	

H1: Women in an exclusively women BA group invest, on average, as much (or even more, if they are more qualified in terms of human capital) than men in a mixed angel group.

Female and male as angel investors

- They dedicate on average 6 to 12 days per year to angel group activities, compared with only 2 to 6 days per year for SAMBA members

Female angels from FBA are on average more active investors than male

- They are more involved in deal flows and due diligence than male on average.
- And are more involved in angel group management activities than men in terms of lead training.

FBA members are on average younger (56 vs. 67 years), 40% of men are retired vs. 15% of women.

In terms of investment activity, we find that FBA members,

- have on average, more investment experience (6.32 vs. 5.79, non-significant),
- have made more investments in terms of cumulative amount invested (2.89 vs. 2.77),
- and even have performed better in terms of returns on their angel investments (2.19 vs. 1.74) (significant at 5%).

These results are **consistent with H1:**

➡ These results confirm the evolution of the profile of women within women-only angel groups.

➡ And reinforce the idea that women-only groups can provide a supportive environment for women angels.

Empirical analysis: Model

H 2: In the absence of stereotype threat, men and women angel investors share similar human capital features related to finance, as significant drivers of active angel involvement in BA group activities.

Our empirical analysis is based on ordered probit regressions,

$$Involvement = \alpha ProfessionalExperience + \beta InvestmentExperience + \gamma Controls + \varepsilon$$

where: ***Involvement*** is the **dependent variable**.

- (i) an ordinal variable indicating the number of days per year a BA dedicates to FBA activities (*Time Spent*),
- (ii) the number of investment-related activities practiced by the surveyed BAs at least once a year (*Investment Activities*),
- (iii) the number of group management activities practiced by the surveyed BAs at least once a year (*Group Management Activities*).

Explanatory variables include BA individual characteristics:

ProfessionalExperience is a vector of the dummy independent variable type equal to 1 if a respondent had at least one prior professional experience in finance, 0 if not

InvestmentExperience is a vector of two variables:

- *Cumulative amount invested (ordinal)*: Cumulative investment since a woman/man started to invest as an angel investor
- *Return on angels' investments (ordinal)*: Investment performance coded: Positive, you have got back more than the amount invested, Neutral, you have got back approximately the amount invested, and Negative, you have got back less than the amount invested.

4. Results - Drivers of active angel involvement - Female angels (FBA): Ordered probit regression

	Time Spent	Investment activities	Management activities
Professional experience			
Finance	1.3140994*	.95945669*	-.05732015
Investment experience			
Cumulative amount invested	1.747467***	-.02029897	1.0823621***
Return on angels' investments	1.1243806**	.24034949	.15815789
Controls			
BAs' individual characteristics			
Age	.16974173**	.0426734	.06653834*
Level of education	.81789285	.17752578	.10999844
Years since first investment	-.15377761*	.08063377	.0495388
Reasons to join an angel group			
Benefit from investment training	-.40323333	-.18631849	-.19939968
Personal contacts	.23420201	.11054926	.2480506
Local development	1.1930466**	-.02882961	.79840406**
Benefit from experience of other members	.38859203	-.03923754	-.24709174
Improve the profitability of investments	.94454794**	.20134978	.8724076**
Level of Satisfaction	.93982916	.09903482	.3467487
Decision making			
Predictive style	-4.6459323	-1.3892545	-3.3488975
Control-oriented style	.65870307	1.040061	.66257407
Others professional experience			
Liberal status	-1.8967838**	.51551138	.28928727
Entrepreneur status	2.0940766*	1.484633**	1.5318401*
CEO	-2.017933*	-1.3027149*	-2.223726**
R&D	1.0476206	.39477054	1.0118785
Marketing	-.89622796	.49399814	-.54232064
Production	4.3464955	.9055288	2.0274975
HR-Organization	2.4121726*	.44142138	2.3053099**
Observations	47	47	47
R ² (or pseudo-)	0.43	0.1566	0.3242
Model Degrees of freedom	21	21	21

4. Results - Drivers of active angel involvement - Male angels (SAMBA) : Ordered probit regression

	Time Spent	Investment activities	Management activities
Professional experience			
Finance	4.6364775*	1.455149	2.9760791***
Investment experience			
Cumulative amount invested	-.81050011	-1.3569475**	-.4205368
Return on angels' investments	-.23308761	.22726177	.53363257
Controls			
BAs' individual characteristics			
Age	.17533247	-.0808118	.04241021
Level of education	-4.1760105*	-.44650335	-1.9367476**
Years since first investment	-.01430528	.27050775	.23316122
Reasons to join an angel group			
Benefit from investment training	.0690732	.71893965*	-.22814831
Personal contacts	2.5825618*	-.28418597	1.512225***
Local development	-2.5508824*	-1.105408**	-1.9126307**
Benefit from experience of other members	-1.364587*	.33167935	-1.0125552**
Improve the profitability of investments	-.07131813	-.00315838	-.07063975
Level of Satisfaction	5.124169*	-.41162649	2.6241329*
Decision making			
Predictive style	2.7257719	-5.6038846	3.6401367
Control-oriented style	-4.7321824	5.0797608**	-4.3145147*
Others professional experience			
Liberal Status	.08745038	-1.0593814	-.41158981
Entrepreneur Status	1.7762489	-2.1498259	-.84478782
CEO	.99988029	2.5985559**	1.595563
R&D	1.2758034	.94847657	.70254569
Marketing	4.521458**	2.4995221**	4.2845853***
Production	-4.1928984	-1.6011249	-1.6621645
HR-Organization	3.8380175	-2.9592777*	.32464288
Observations	38	38	38
R ² (or pseudo-)	0.6083	0.4905	0.5213
Model Degrees of freedom	21	21	21

4. Results - Drivers of active angel involvement

H 2: In the absence of stereotype threat, men and women angel investors share similar human capital features related to finance, as significant drivers of active angel involvement in BA group activities.

This hypothesis receives mixed support and our results are nuanced.

Drivers of active angel involvement - **Female angels** (FBA): Ordered probit regression

	Time Spent	Investment activities	Management activities
Professional experience			
Finance	1.3140994*	.95945669*	-.05732015
Investment experience			
Cumulative amount invested	1.747467***	-.02029897	1.0823621***
Return on angels' investments	1.1243806**	.24034949	.15815789

Drivers of active angel involvement - **Male angels** (SAMBA): Ordered probit regression

	Time Spent	Investment activities	Management activities
Professional experience			
Finance	4.6364775*	1.455149	2.9760791***
Investment experience			
Cumulative amount invested	-.81050011	-1.3569475**	-.4205368
Return on angels' investments	-.23308761	.22726177	.53363257



5. Discussion

We contribute to the debate over the nature and status of female angel investors by suggesting that :

- women continue to gain professional parity and education, as well as professional experience, reflecting the key components of the equity funding of entrepreneurial ventures.
- female angels who join stereotype threat–free environments do not differ from their male counterparts in terms of their backgrounds and demographic features.
- on average, compared with their male counterparts, female are more actively involved in angel group activities; they invest more often and, on average, higher amounts; and they perform better in their investments.
- experience in finance, which is a domain in which women typically are more stigmatized, is an equally significant driver of angel involvement for women without stereotype threat and for men angel investors

The difference with men BA fades when women BA are protected from stereotype threat.

So consistent with our hypotheses, it is not the nature of women that affects their investment behavior as angels but the social context in which they act (the composition of angel groups: mixed or exclusively women).



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