

# What Explains the Gender Gap in Entrepreneurship? A New Decomposition Approach based on Personality

Marco Caliendo (University of Potsdam), Frank Fossen (FU Berlin),  
Alexander Kritikos (DIW Berlin), Miriam Reuschel (University of Potsdam)

## 1 Motivation

- Female self-employment rate is still significantly lower than male rate for most developed countries
  - Out of all self-employed in Germany only 32% are female
- Previous studies on Gender Gap in Entrepreneurship and personality/preferences:
  - Fossen (2012)
  - Verheul, Thurik, Grilo, and van der Zwan (2011)
  - Bönte and Piegler (2011)
- Our contribution:**
  - Large sample of almost 60,000 observations
  - Detailed information on socio-demographics, education, employment history, employment status, intergenerational background and capital
  - Large set of personality traits
- Research question:**
  - Do personality traits influence the gender gap in entrepreneurial choices?
  - Non-linear decomposition of the entry decision into self-employment by gender

## 2 Data

- German Socio Economic Panel (SOEP)
  - Years 2000-2009
  - Age 20-58
- Observations:
  - Not entering self-employment: **58,797** person-years
  - Entering self-employment: **656** person-years
- Variables we control for:
  - Year and region dummies
  - Socio-demographic variables
  - Employment history and duration in current employment status
  - Big Five** and **8 other personality traits**

## 3 Descriptives

	Full Sample		Entry Sample	
	Men	Women	Men	Women
<i>Big Five</i>				
Conscientiousness	5.93	6.03 ***	5.92	5.98
Extraversion	4.68	4.98 ***	5.03	5.18 *
Agreeableness	5.24	5.57 ***	5.38	5.54 **
Neuroticism	3.64	4.14 ***	3.48	3.98 ***
Openness	4.39	4.57 ***	4.79	5.13 ***
<i>Locus of Control</i>				
Internal	5.46	5.45	5.64	5.45 ***
External	3.33	3.42 ***	3.14	3.31 **
<i>Reciprocity</i>				
Positive	5.89	5.91 ***	5.99	5.91
Negative	3.33	2.97 ***	3.35	2.93 ***
Willingness to take Risk	5.05	4.20 ***	6.08	5.07 ***
Trust	2.33	2.33	2.42	2.45
Impulsiveness	4.97	5.30 ***	5.09	5.57 ***
Patience	6.04	6.04	6.21	5.95
Number of observations	27,137	32,316	346	310

Note: \*\*\*/\*\*/\* indicates a significant difference on the 1/5/10% level.

## 4 Estimation Results

- Holding everything else constant, women are 47% less likely to enter self-employment
  - Two different effects of including personality traits into estimation of becoming an entrepreneur:
    - Big Five:** Gender Gap becomes larger
    - Other Personality traits:** Gender Gap becomes smaller
  - Personality traits have differing influences on entry probability by gender:
    - Highly significant influence for men
    - Only small influence on probability for women
  - Influences of other controls vary highly by gender

## 5 Decomposition

- Non-linear decomposition approach
- Fairlie (1999, 2005) applied Oaxaca-Blinder decomposition to a non-linear model:
 
$$\bar{Y}^M - \bar{Y}^W = \left[ \sum_{i=1}^{N^M} \frac{F(X_i^M \hat{\beta}^M)}{N^M} - \sum_{i=1}^{N^W} \frac{F(X_i^W \hat{\beta}^M)}{N^W} \right] + \left[ \sum_{i=1}^{N^W} \frac{F(X_i^W \hat{\beta}^M)}{N^W} - \sum_{i=1}^{N^W} \frac{F(X_i^W \hat{\beta}^W)}{N^W} \right]$$
- Raw Gender Gap=**
  - First term: **Explained** gender gap due to different distribution of characteristics
  - Second term: **Unexplained** gender gap due to different coefficients

## 6 Decomposition Results

- Explained gap is negative
  - Given their characteristics women should be more likely to enter self-employment
- The distributions of human capital characteristics and other socio-demographic factors increase the size of the unexplained gender gap
- Personality traits point in two directions:
  - The specific personality traits partly explain the gender gap
  - Big Five and duration in current employment status would suggest a higher probability for women to become entrepreneurs than for men

	Decomposition Results	
	Differential	%
Raw Differential	0.0032	100.00
Explained Gap	- 0.0055	-172.53
<i>Big Five</i>	- 0.0020 **	- 62.62
Conscientiousness	0.0002	7.63
Extraversion	- 0.0009 ***	- 28.82
Agreeableness	- 0.0004	- 14.04
Neuroticism	- 0.0003	- 9.48
Openness	- 0.0005 **	- 15.39
<i>Other Personality Traits</i>	0.0043 ***	137.03
Internal LOC	0.0001	3.97
External LOC	0.0003	8.12
Positive Reciprocity	- 0.0000	0.03
Negative Reciprocity	0.0007 **	22.64
Risk	0.0026 ***	83.30
Trust	0.0001	2.42
Impulsiveness	0.0001	4.11
Patience	- 0.0000	- 0.66
Other characteristics	Yes	- 247.99

Note: \*\*\*/\*\*/\* indicates a significant difference from zero on the 1/5/10% level.

## 7 Preliminary Conclusions

- Personality traits have explanatory power when analyzing the gender gap in entrepreneurship
- Findings imply that personality traits are rewarded differently between men and women
- Gender Gap can not be fully explained by observable characteristics including personality
- Differential might rather be due to unobservable discrimination
- Outlook:**
  - Decomposition of gender gap due to different coefficients

### References:

- Bönte, W. and M. Piegler (forthcoming): *Gender Gap in Latent and Nascent Entrepreneurship: Driven by Competitiveness*, *Small Business Economics*
- Fairlie, R. (2005): *An extension of the Blinder-Oaxaca decomposition technique to logit and probit models*, *Journal of Economic and Social Measurement* 30, pp. 305-316
- Fossen, F. (2012): *Gender differences in entrepreneurial choice and risk aversion – a decomposition based on a microeconomic model*, *Applied Economics* 44(14), pp. 1795-1812
- Verheul, I., T. Roy, I. Grilo, and P. van der Zwan (2011): *Explaining preferences and actual involvement in self-employment: Gender and the entrepreneurial personality*, *Journal of Economic Psychology* 33, pp. 325-341