

# Risk, Balanced Skills and Entrepreneurship

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## Motivation (1/2)

- Two of the more influential theories of individual selection into entrepreneurship are based on the concepts of risk aversion and balanced skills
  - Kihlstrom & Laffont (1979)
  - Lazear's (2005)
  
- Both effects of these variables have been examined



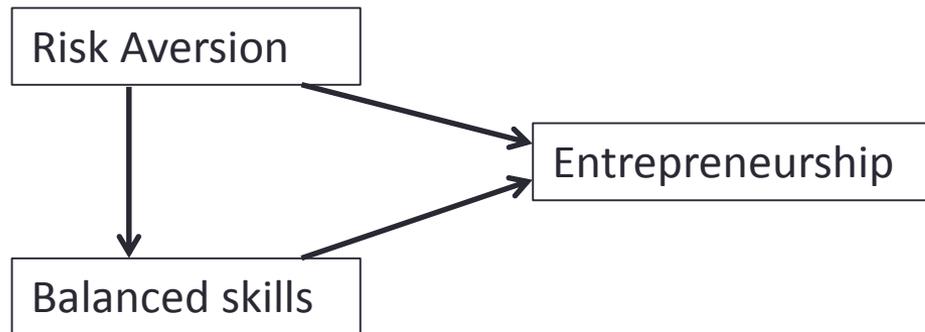
## Motivation (2/2)

- But risk-averse actors like to diversify their human capital (e.g., Amihud & Lev, 1981)
- As a result, ending up acquiring a balanced skill set which, it is argued, is especially conducive to entrepreneurship
- Empirical studies might have underestimated the relationship between both risk aversion and balanced skills



# What we do

- Extend the theoretical understanding of entrepreneurship as an occupational choice



- We propose a model where risk is present in both occupations; and the acquisition of balanced skills is treated as a choice variable in our theory.



## Model (1/2)

- Two occupations, paid employment (P) and entrepreneurship (E), and two skills which generate returns in both occupations,  $X_1$  and  $X_2$
- At stage one, individual first undergo schooling, at which point  $X$  is determined
- At stage two, students graduate and enter the workforce. At this point their abilities in the occupations are revealed. Only now do they have enough information to make their *ex post* occupational choice, which is conditioned on their  $X$  determined at stage one



## Model (2/2)

- **Proposition 1:** If assumption 1 holds, greater risk aversion is associated with a more balanced skill profile among agents who are indifferent ex ante between E and P

$$\text{Assumption 1} = 4\sigma^P > \sigma^E + \psi$$

- **Proposition 2:** All else equal, an individual with a more balanced skill profile is more likely than an individual with a less balanced skill profile to choose occupation E over P

- **Proposition 3:**

- (a) The direct effect of risk aversion on occupational choice is to promote P over E
- (b) The indirect effect of greater risk aversion is to promote E over P



# Data

- Data are obtained from an annual survey designed to measure labor market prospects of recent graduates across colleges and universities in the Netherlands
- Respondents fill out extensive questionnaires (two January's after graduation)
- The final sample comprises 3,002 respondents
- It is homogenous in terms of age, education and labor market experience and it therefore creates a great opportunity to study skill balance



## Variables (1/2)

- **Self-employment versus wage employment**
  
- **Risk attitude:** Respondents were asked to value participation in a hypothetical lottery paying out €1000 with a 10% chance of success. The reservation price ( $p$ ) for participating in such a hypothetical lottery has been shown to be a valid (inverse) indicator of risk aversion and behavior under risk



## Variables (2/2)

- **Skill balance:** Our skill balance variable is computed as the product of “Generality” and “Grade variance”.
  - *Generality:* Total number of distinct industry sectors employing graduates with a given major two years after graduation, scaled by the number of students graduating with that major
  - *Grade variance:* This construct measures the variation in grades received by respondents while in secondary school. (inversely measured)



## Results (1/4): Risk aversion and skill balance

Table 2: Risk aversion and skill balance (*SB*)

Variable	Specification (I)	Specification (II)	Specification (III)	Specification (IV)
Risk aversion ( $\lambda$ )	0.0001*** (3.020)	0.0001*** (3.130)	0.0001*** (2.870)	0.0001*** (3.310)
N	2619	2596	2619	2596
$R^2$	0.033	0.0055	0.0033	0.0055
$F$	9.14	2.27	8.25	2.14
$Pr > F$	0.0025	0.0268	0.0065	0.0619
Control variables included	no	yes	no	yes
Robust estimation	yes	yes	no	no
Clustered estimation ( $j=40$ )	no	no	yes	yes

*Note:*  $J=40$  clusters. Absolute t-values are given in parentheses. The sample excludes self-employed entrepreneurs. They are based on robust estimates in specifications 1 and 2, and based on clustered estimates in specifications 3 and 4. \*\*\*/\*\*/\* denotes significance at the 1%/5%/10%-level.

Note: Other (control) variables included are male, age at graduation, mother's education, father's education, GPA secondary education, GPA tertiary education and a constant

# Results (2/4): Self-employed entrepreneurship, risk aversion and skill balance (SB)

Table 3: Self-employed entrepreneurship, risk aversion and skill balance (*SB*)

	Specification (I)	Specification (II)	Specification (III)	Specification (IV)	Specification (V)	Specification (VI)
<i>SB</i>	2.5818* (1.94)	2.7175** (2.08)	2.9830** (2.16)	3.0573** (2.29)		
Risk aversion ( $\lambda$ )			-0.0073*** (3.29)	-0.0075*** (3.32)	-0.0064*** (3.20)	-0.0060*** (2.68)
N	2692	2669	2692	2669	3002	2975
<i>pseudo</i> – $R^2$	0.0058	0.0313	0.0230	0.0458	0.0129	0.0313
Wald $\chi^2$	3.78	27.00	13.00	38.99	9.91	23.93
<i>Pr</i> > $\chi^2$	0.0520	0.0003	0.0015	0.0000	0.0016	0.0012
Control variables included	no	yes	no	yes	no	yes
Robust estimation	no	no	no	no	yes	yes
Clustered estimation ( $j = 40$ )	yes	yes	yes	yes	no	no

*Note:*  $J = 40$  clusters. Absolute t-values are given in parentheses. The results for specifications I-IV are obtained by clustered estimation methods where each cluster is an education degree field (with  $n_j > 30$  observations). The results are similar when applying robust estimation instead of clustered estimation. Specifications V-VI do not include variables that require clustering. \*\*\*/\*\*/\* denotes significance at the 1%/5%/10%-level. The controls included in specifications (II), (IV) and (VI) are the same as in Table 2.

## Results (3/4): Testing the indirect effect of risk aversion on self-employment

Table 4: Testing the indirect effect of risk aversion on self-employment

$\chi^2$ -test	Specification (I)	Specification (II)
Proposition 3b:		
$\beta_2 > \beta_1   \beta_1 = 0$		
$\chi^2$	4.18**	3.96**
<i>P</i> -value	0.0410	0.0465
N	2692	2669
Corrolary:		
$\beta_1 < \beta_2   \beta_2 = 0$		
$\chi^2$	5.55**	12.34***
<i>P</i> -value	0.0185	0.0004
N	3002	2975
Control variables included	no	yes
Clustered estimation ( $j = 40$ )	yes	yes

*Note:* \*\*\*/\*\*/\* denotes significance at the 1%/5%/10%-level.

## Results (4/4)

- If risk aversion has both a negative direct and a positive indirect on entrepreneurship, what is the overall effect?
- The estimated net effect of risk aversion on entrepreneurship is certainly negative at the sample mean; but it turns out to be positive for 12% of the sample cases.
- For these cases, the impact of risk aversion on the acquisition of balanced skills is so powerful that it actually turns risk aversion into a force promoting entrepreneurship



# Contributions and limitations

## ➤ Contributions

- Introduce the notion that risk and balanced skills can interact
- Estimate this notion on an extremely homogeneous sample
- Introduce a new measure of balanced skills

## ➤ Limitations

- Estimate the model on an extremely homogenous sample
- Introduce a new measure of balanced skills
- Our model does not guarantee unbiased estimated coefficients

