Luck and Entrepreneurial Success

Diego Liechti
Universität Bern, PPCmetrics

Claudio Loderer
Universität Bern

Urs Peyer
INSEAD
How important is luck for success?
How important is luck for success?

> Those who have succeeded at anything and don't mention luck are kidding themselves.

Larry King, CNN

> Luck seems to be central for success
How important is luck for entrepreneurial success?

Being a successful entrepreneur is 50% luck.

Greg Kiessling (1994), Canadian serial entrepreneur, e.g., co-founder Sitraka and Bullfrog

> Is luck really that important for entrepreneurial success?
Was Bill Gates lucky?
Research question

> How important is luck for entrepreneurial success?

> Why is it important to understand the role of luck:
  – Is selection of entrepreneurs important?
  – Is training of entrepreneurs effective?
  – Stigmatizing unsuccessful entrepreneurs

> Main findings
  – On average, luck is not that important than assumed so far.
  – Explains up to 17% of performance.

April 2010 - European Financial Management, Montréal
Structure of the talk

- Related literature and contribution
  - Survey design
  - Investigative design
  - Main results
  - Conclusions
Related literature

> Asset pricing literature
  – Hartzmark (1991) shows that the ability of superior traders regresses toward the mean
  – Barras, Scaillet, and Wermers (2009) show that skilled managers of actively managed funds are exceptionally rare (see also Kosowski, Timmermann, Wermers and White (2006) or Fama and French (2009))

> Entrepreneurship literature
  – Entrepreneurial performance increases with effort (Bitler, Moskowitz, and Vissing-Jorgensen (2005))
  – Previously successful entrepreneurs are more successful in their subsequent venture (Gompers, Kovner, Lerner, and Scharfstein (2009))
Contribution

> Gompers, Kovner, Lerner, and Scharfstein (2009)
  - We identify factors that their variable of prior success could represent, namely effort and skills

> Kaplan, Sensoy, and Strömberg (2009)
  - Focus on the question of the „jockey“ or the „horse“ makes sense because luck is not that important.
  - We also confirm that replacing the „jockey“ does make sense because experience, talent, and effort are important for success.
Survey design
Where do we get the data from?

> Questionnaire sent in the winter of 2007 to 40,000 randomly selected chairmen of the board, co-owners of companies of limited liabilities, and sole proprietors of new start-ups;

> Another questionnaire was sent to 23,202 managers, public employees, teachers, engineers, mechanics, and commercial clerks;

> 3,748 filled out the questionnaire for entrepreneurs, 4,497 filled out the questionnaire of the control group.
Investigative design

> Performance regressions
  – *Unexplained variance*
    \[ \text{Performance}_i = f(\text{skills, personality, control variables, correction for self selection})_i + e_i \]
  
  – *Marginal R-squared*
    \[ \text{Performance}_i = f(\text{good luck, bad luck, skills, personality, control variables, correction for self selection})_i + e_i \]
  
  – *Variance decomposition*
    \[ \text{Performance}_i = f(\text{good luck, bad luck, skills, personality, control variables, correction for self selection})_i + e_i \]

> Directly asking entrepreneurs about success factors
  > Very important (5) vs. very unimportant (1)
Variables definition
Performance measures

> Firm performance (similar to Bitler, Moskowitz, and Vissing-Jorgensen (2005))
  - Sales
  - Aggregate income (firm earnings and personal income)
  - Return on initial capital (ROI)
  - Industry and formation year adjusted

- Average (median) firm:
  - Sales: CHF 2 million (200,000)
  - Aggregate income: CHF 169,000 (119,000)
  - ROI: 421% (220%)
Variables definition

Luck measures

> Luck = unpredictable performance
  – Good luck = firm performance is better as expected
  – Bad luck = firm performance is worse as expected
  – Stated by the entrepreneur (ex post)

– Problems with our measure of luck
  – Binary variable
  – Depending on the entrepreneur’s subjective ex post expectation
    – Overconfidence bias
    – Look back bias
Descriptive statistics

> The average entrepreneur
  – Has 14.5 year (13.9 for employees) of education and is educated in 1.1 (0.65) management area;
  – Has 24.4 (30.6) years working experience, 15 (22.3) years of industry experience, and 11.9 (12.6) years of managerial experience;
  – Invest 70% (57%) of new additional wealth in risky assets, 21% (8%) in his own company.

> Proportion of entrepreneurs
  – 37% had good luck;
  – 13% had bad luck;
  – 23% were previously successful entrepreneur;
  – 8% were previously unsuccessful entrepreneur.

April 2010 - European Financial Management, Montréal
Selection equation
Probability to become an entrepreneur

> Positive effect
  – Education, management education
  – Managerial experience
  – Previously unsuccessful entrepreneur
  – Overconfidence

> Negative effect
  – Industry experience
  – Risk aversion

> No effect
  – Previously successful entrepreneur
  – Working experience
## Luck as unexplained performance

<table>
<thead>
<tr>
<th>Metric</th>
<th>Coefficient</th>
<th>t-Statistic</th>
<th>Coefficient</th>
<th>t-Statistic</th>
<th>Coefficient</th>
<th>t-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry-adjusted log(firm sales)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry-adjusted log(aggregate income)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry-adjusted return on initial capital</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of observations</td>
<td>2,349</td>
<td></td>
<td>1,499</td>
<td></td>
<td>1,421</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.326</td>
<td></td>
<td>0.088</td>
<td></td>
<td>0.098</td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.311</td>
<td></td>
<td>0.056</td>
<td></td>
<td>0.069</td>
<td></td>
</tr>
</tbody>
</table>

April 2010 - European Financial Management, Montréal
Marginal R-squared

<table>
<thead>
<tr>
<th>Selection equation (probit)</th>
<th>Industry-adjusted log(firm sales)</th>
<th>Industry-adjusted log(aggregate income)</th>
<th>Industry-adjusted return on initial capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good luck</td>
<td>Coefficient: 0.583*** t-Statistic: 10.036</td>
<td>Coefficient: 0.498*** t-Statistic: 7.848</td>
<td>Coefficient: 1.619*** t-Statistic: 6.755</td>
</tr>
<tr>
<td>Bad luck</td>
<td>Coefficient: -0.587*** t-Statistic: -6.535</td>
<td>Coefficient: -0.549*** t-Statistic: -5.045</td>
<td>Coefficient: -1.268*** t-Statistic: -3.273</td>
</tr>
<tr>
<td>Number of observations</td>
<td>7,495</td>
<td>2,349</td>
<td>1,499</td>
</tr>
<tr>
<td></td>
<td>R-squared</td>
<td>0.377</td>
<td>0.196</td>
</tr>
<tr>
<td></td>
<td>Adjusted R-squared</td>
<td>0.274</td>
<td>0.362</td>
</tr>
</tbody>
</table>

Marginal contribution of the luck variables to the overall R-squared of the regression:

- Good luck: 0.051
- Bad luck: 0.041
- Overall: 0.042

April 2010 - European Financial Management, Montréal
Variance decomposition (R-squared in percent)

<table>
<thead>
<tr>
<th></th>
<th>Industry-adjusted log(firm sales)</th>
<th>Industry-adjusted log(aggregate income)</th>
<th>Industry-adjusted return on initial capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurial skills index</td>
<td>2.65</td>
<td>1.97</td>
<td>1.18</td>
</tr>
<tr>
<td>Entrepreneurial luck index</td>
<td>7.51</td>
<td>8.26</td>
<td>5.06</td>
</tr>
<tr>
<td>Personal characteristics index</td>
<td>4.24</td>
<td>1.49</td>
<td>2.65</td>
</tr>
<tr>
<td>Firm-specific controls variables index</td>
<td>22.04</td>
<td>2.77</td>
<td>3.29</td>
</tr>
<tr>
<td>Inverse Mills ratio</td>
<td>0.96</td>
<td>0.02</td>
<td>0.48</td>
</tr>
<tr>
<td>Region index</td>
<td>0.26</td>
<td>0.86</td>
<td>1.57</td>
</tr>
<tr>
<td>R-squared of the model</td>
<td>37.66</td>
<td>15.38</td>
<td>14.23</td>
</tr>
<tr>
<td>Number of observations</td>
<td>2,349</td>
<td>1,499</td>
<td>1,421</td>
</tr>
</tbody>
</table>

April 2010 - European Financial Management, Montréal
## The opinions of entrepreneurs
### Results

<table>
<thead>
<tr>
<th></th>
<th>Average score (1)</th>
<th>Average rank (2)</th>
<th>Most important vs. least important (3)</th>
<th>Very important vs. very unimportant (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luck</td>
<td>3.19</td>
<td>4.50</td>
<td>15.47% ; 78.43%</td>
<td>13.88% ; 11%</td>
</tr>
<tr>
<td>Experience</td>
<td>4.66</td>
<td>1.94</td>
<td>60.43% ; 18.46%</td>
<td>57.71% ; 0.23%</td>
</tr>
<tr>
<td>Talent</td>
<td>4.47</td>
<td>1.61</td>
<td>70.99% ; 14.34%</td>
<td>67.98% ; 0.2%</td>
</tr>
<tr>
<td>Effort</td>
<td>4.63</td>
<td>1.58</td>
<td>74.86% ; 14.53%</td>
<td>72.35% ; 0.1%</td>
</tr>
<tr>
<td>Education</td>
<td>4.25</td>
<td>2.48</td>
<td>47.23% ; 28.3%</td>
<td>44.41% ; 0.49%</td>
</tr>
<tr>
<td>Network</td>
<td>4.19</td>
<td>2.62</td>
<td>47.11% ; 28.12%</td>
<td>44.09% ; 1.08%</td>
</tr>
</tbody>
</table>

F-Value (ANOVA equality test of means)  
1,325*** 1,553***

Start-up need no luck for success 57.8%

Minimum number of observations 3,018
The opinions of entrepreneurs
Robustness test

> No systematic additional success factor
  – Only 9 of 100 mentioned an additional success factor

> Average score, ranking are robust to
  – Success
  – Luck
  – Previously successful entrepreneurs
  – Overconfidence
  – Risk aversion
  – Education
  – Management education
  – Experience
  – Starting entrepreneurs

April 2010 - European Financial Management, Montréal
The opinion of entrepreneurs

Conclusion

> If the list of success factors is complete, then they are in principle responsible for 100% of the variation in performance.

> If all success factor are equally important
  – Luck explains 1/6th (17%) of entrepreneurial performance

> But luck is the least important one
  – Luck explains less than 17% of entrepreneurial performance

– What if there are more systematic success factors?
Conclusions

> Entrepreneurs are indeed different
  – Lower risk aversion
  – Higher overconfidence
  – Male
  – More educated

> Entrepreneurial success seems to reflect much more dedication, skills, and personality than pure luck.
Thank you!

April 2010 - European Financial Management, Montréal