Economics of Entrepreneurship: A personal story on the joy of research

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Why entrepreneurship?
Trained as an econometrician and interested in labor economics, I had the opportunity to write a PhD thesis under the supervision of two TI scholars, Mars Cramer (who passed away on March 15th; see TI News section), econometrician, and Joop Hartog, labor economist. Stubbornly, I insisted on studying entrepreneurs. To my surprise, this most influential part of the labor market had been hardly studied. Almost all labor economists studied wage employees. Is this the so-called ‘streetlight effect’? Of course, employees comprise the majority—oftentimes around ninety percent—of the labor force. The other ten percent, however, has a greater effect on growth, innovation and employment (Van Praag and Versloot, 2007). This part is more dynamic, more heterogeneous, less predictable and therefore, perhaps, harder to study. I became intrigued by the topic and actually considered the sparse literature basis to be an advantage, requiring less reading.

At the time I found inspiration in two influential papers, which both proposed models that explain the occupational choice for entrepreneurship (as opposed to wage employment) and the ensuing firm size of entrepreneurs. Lucas (1978) proposed that individuals with the highest (possibly innate) skill levels and talents become entrepreneurs. And given the choice for entrepreneurship, more talented entrepreneurs will end up with larger firms. According to the theory of Kihlstrom and Laffont (1979), risk aversion is the discriminating factor between entrepreneurs and employees and between owners of large and small firms.

Starting from a labor economics perspective, my determination has been to study the research question, ‘What makes entrepreneurs (successful)?’ The empirical methods I apply have developed over time, moving along with what is accepted in our profession. Nowadays, most of my research is based on experiments, often in the field.

This article provides an overview of (mostly my own) research on human capital and entrepreneurship. I look first at whether entrepreneurship is something that can be learned, or whether gurus such as Richard Branson are correct in stating that one is born (or not) as an entrepreneur. This is followed by a discussion on the returns to education, intelligence and specific abilities in entrepreneurship. The next part examines evidence of the (in)effectiveness of entrepreneurship education programs for pupils and students. Finally, since most ventures nowadays are being started up by teams of entrepreneurs rather than by solo entrepreneurs, the discussion turns to look at the driving forces of successful entrepreneurial teams.

Nature or Nurture
Are entrepreneurs born or raised? The results from research into the determinants of (successful) entrepreneurship are more applicable to both public policy and educational policies if nurture plays a larger role than nature. The literature has until now used two methods to discriminate between the nature and nurture origins of entrepreneurship. One strand of research is based on comparing the
correlations in entrepreneurship outcomes between monozygotic and dizygotic twins (e.g., Nicolaou et al., 2008). These twin studies suggest a significant role of nature, whereas the role of nurture is more difficult to infer (Koellinger et al., 2010). The second, more recent, strand investigates the human genome to identify genetic causes of entrepreneurial behavior using Genome Wide Association Studies (GWAS; Koellinger et al.). Methodological difficulties have thus far prevented GWAS finding any relevant genetic factors explaining entrepreneurship. Koellinger et al. conclude, “Given the methodological difficulties of GWAS and twin studies, it is possible that twin studies tend to give an ‘upper bound’ for the relevance of genes ..., while GWAS give a ‘lower bound’.”

Supplementing these two strands of research, we recently applied a third methodology to measure the relative importance of nature and nurture for entrepreneurship (Sol et al., 2014). Using a unique sample of 4,000 Swedish (adult) adoptees, we compare the correlations between the adoptees’ entrepreneurship outcomes with those of their adoptive (nurture) and biological parents (nature). Although both sets of parents have a strong effect on entrepreneurship outcomes, the effect of the adoptive parents is twice as large as the effect of biological parents. Nurture is thus indeed important, and further investigation suggests that nurturing parents affect their children by being role models for them. Apparently, not only genes determine entrepreneurship, but also the environment. I must say that I was rather pleased (however non-neutral this attitude may be, for an academic) with this large effect of nurture, as this result provides a strong motivation for policy and education fostering entrepreneurship.

**Human Capital**
One of the most influential sources of human capital development is education. Is it possible that entrepreneurial skills (whatever way they are defined, Lucas’ definition was vague) are developed in school? Hundreds of studies have correlated education with entrepreneurship outcomes (for a meta-analysis, see Van der Sluis et al., 2008). The correlation with entrepreneurial income, for instance, is high. Correlations may not be the greatest measure of causal effects, however, and little effort has been put into using sophisticated identification strategies (Van der Sluis et al.). This observation motivated two studies, Parker and Van Praag (2006) and Van Praag et al. (2013), which use econometric methods that somehow take into account the fact that people self-select into education and entrepreneurship. The returns to education for entrepreneurs are rather high— even higher than for employees, as we show in a comparison. The high returns seem to be caused partly by the signal of education to capital providers (Parker and Van Praag) and partly by the greater decision authority of entrepreneurs compared to employees about how to employ their human capital in the production process (Van Praag et al.).

If entrepreneurs experience high returns from their education due to (signaling and) useful learning, the next question is: What do people learn in school that is useful for entrepreneurial venturing? What are useful skills and knowledge areas for entrepreneurs? The concept of entrepreneurial ability that was used by Lucas (1978) is rather vague, and researchers have tried to understand what it is. Most notable is the research initiated by Lazear (2005), who asserts that entrepreneurship requires being a generalist (a “Jack-of-All-Trades”, JAT) rather than a specialist. Bringing people, ideas and physical resources together requires (basic) knowledge of a large number of business areas and a variety of skills to judge other peoples’ abilities and how to combine them.

Hartog et al. (2010) tested which skills (that is, not only general IQ, but also five other skills: technical, analytical, language, data processing or social skills) have value for entrepreneurship, and which are (more) valuable when people work as an employee. This research also explored the extent to which a balanced combination of these skills (which describes a JAT) is fruitful for the proceeds of an entrepreneur, compared to the earnings of employees. General intelligence, analytical, technical and social skills have higher returns in entrepreneurship than in wage employment. The other skills (language and data processing) have a higher pay-off in wage employment. A balanced combination of all five skills is indeed a source of success for entrepreneurs, but not for wage employees. If permitted (despite there being so few studies, each with their limitations), we would conclude that (i) the returns to education are higher for entrepreneurs than for employees and (ii) this is possibly due in part to the ability of entrepreneurs to tailor their production to their own human assets and (iii) the skills that are (particularly) useful to entrepreneurs and possibly produced in school include general intelligence and specific skills such as analytical, technical and social skills. On top, entrepreneurs benefit from developing balanced skills.

**Entrepreneurship education**
Thus far we have established that general education may be interesting and desirable for prospective entrepreneurs, and have based this assertion on three observations. First, the environment can develop entrepreneurship; second, more (successful) entrepreneurs are a desirable
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policy outcome; and third, high returns to education suggest that education may indeed foster successful entrepreneurship. As a next step we therefore turn to explore whether specific entrepreneurship education provides the stimulus and development desired by policymakers. Entrepreneurship education programs are proliferating in the US and Europe. Although evaluation studies were performed in the past to judge specific entrepreneurship education, they did not apply experimental methods (Martin et al., 2013). Only lately has this changed. Oosterbeek et al. (2010) and Von Graevenitz et al. (2010) evaluate programs for students, whereas Rosendahl Huber et al. (2012) evaluate a large entrepreneurship education program (Bizworld) taught by entrepreneurs to pupils in the last grade of primary school. Von Graevenitz et al. measure how the program affects the intention to become an entrepreneur; Oosterbeek et al. measure, in addition, the effectiveness of a large and global program in terms of developing entrepreneurial skills such as pro-activeness and creativity. Rosendahl Huber et al. study the largest set of outcome variables, also including the development of entrepreneurship-relevant knowledge. In general, the results are discouraging. Only the Bizworld program carried out in primary schools generates a positive result. Pupils in the treatment group develop their entrepreneurial skills significantly better than do those in the control group. The five-day-long Bizworld program— in which teams of pupils set up a company that designs, produces, markets and sells friendship bracelets— seems an effective means of developing entrepreneurial skills. However, the fact that the results do not support the effectiveness of the other programs suggests, at best, that the entrepreneurship education community should still develop and test new programs that are effective in later stages of education.

Entrepreneurial Teams

All of the studies discussed thus far share (at least) the following limitation: they study individual entrepreneurs. However, most of the people nowadays who start up firms— especially in high tech and high growth sectors— do so in teams. The outdated image of the entrepreneur as a lone wolf represents a call for new perspectives in studying what successful entrepreneurship involves. The composition of teams may be an additional driver of business success. Business teams are long-term units in which team members interact. A team is more than the sum of its members, however— a fact that makes it difficult to study effective team composition in a laboratory. Studying the effectiveness of teams using real-world data is also cumbersome, due to non-random team composition. Field experiments might afford a way out. Actually, the education programs discussed above provide unique opportunities. Students (and pupils) start up real firms in identical circumstances within these programs. Researchers can
Entrepreneurship is a hot topic, both in practice and in academia. Entrepreneurship economics is becoming a particularly fast-growing research field—although it is, admittedly, still in its infancy. Tests and retests (in particular) are scarce. Thorough and repeated empirical testing can be valuable for evidence-based policy. The increased attention being given to entrepreneurship policies mirrors the increasing awareness of the importance of entrepreneurs for economic outcomes and innovation. New developments in entrepreneurship—such as crowdfunding, for instance—create new questions and thus merit further research. Fascinating research opportunities in this domain are also offered in applications of behavioral economics, for instance, or the use of methodologies such as field experiments and the use of big data.

**What is next?**

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**References**


