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Title and Abstract

Title: Government-backed investment funds and their behavioural additionalities: The Dutch Mibiton fund for leasing and sharing R&D equipment and its impact on follow-on financing and growth

Abstract: Research equipment for start-ups in high-technology is often vital to conduct state-of-the art research. The R&D facilities in the field of, for instance, biotechnology or nanotechnology are often single-purpose technologies (e.g. for testing prototypes or validating research outcomes), making them very expensive and obsolete in just a few years. As a result, science-based start-ups do not have the resources to acquire state of the art research equipment and depend on investment funds to provide the necessary financial means. Having advanced research equipment is often vital for the start-up company to grow in the near future in order to produce additional research findings and make (more) effective claims. All of this may have significant impact on the start-up's future technologies and products. Investors on the other hand are reluctant to engage in an investment agreement when large risks are involved and little collateral is at hand because the technical and economic lifetime of the equipment depreciates quickly. Also the task of testing and validating research is not as high on the investor's priority list, compared to new product development, marketing and partnership development. So the absence of large investments in R&D equipment for biotech start-ups can significantly limit their growth potential. The absence of available investment funds for research equipment is stalling the development of biotechnology start-ups and potential entrepreneurial opportunities remain unexplored and underdeveloped. The Dutch government has recognised that this as a problem for the further development of start-ups but as well for the biotechnology sector as a whole. A new government-backed funding form has emerged to fill this gap of market imperfection. Although the precise format of the investment vehicle has drifted somewhat, the Mibiton fund was established in

the late 1990s and is still up and running till today.

The aim of the present paper is to investigate the characteristics of this particular investment fund that is specifically geared for research-based equipment. The main questions we address are, 1) what are the reasons it can exist, 2) what are the conditions when it is more attractive to use this fund compared to other investment funds and 3) how does the investment affect the competitiveness of the start-up company. We in particular investigate the bahavioral additionalities that are associated with this investment fund.

Research on the various types of investments that are available for start-up firms is extensive. Behavioural additionality (Clarysse et al, 2009) has received recent discussion as a benefit of investments for start-ups besides the traditional input and output benefits of financial support. Researchers discuss the contribution of behavioural additionality in terms of changes in the mindset of people, posture of firms and how it is related to changes in the processes that take place within the firm. The concept of behavioural additionality is discussed by Falk (2007) who argues that public support contributes to firms by increasing their scope to acquire new knowledge. In general managers are bounded by the high-pressure of daily activities (Fransman, 1990; Georghiou et al., 2003) and disregard the value of new knowledge, unless it emerges from areas where the firm is currently carrying out activities and funding. As a result of the financial support, start-ups obtain some organisational slack which allows them to initiate new activities and engage in new networks that may lead to new information that might entail new opportunities. However, it is also argued that the same organisational slack can have detrimental effects on the start-up. For instance it provides cushion effects for start-ups by making them less vulnerable to fierce market forces, or makes them less responsive to new insights and cultivates the dominant logic within the start-up (Flynn, 1991) whereas being flexible and receptive to new opportunities is often important in start-ups. Based on the literature analysis we discuss the market imperfection for an investment fund in equipment and compare it with alternatives, e.g. facility sharing and facilities provided by universities or incubators, in terms of advantages and disadvantages for the start-ups in biotechnology.

In the present study we investigate the benefits in terms of behavioural additionalities of Mibiton, a particular investments fund for leasing and sharing equipment in the Netherlands. The research approach is an explorative case study of 19 biotechnology-based start-ups that have acquired more than 30 investments to invest in equipment. The investment source is a government backed fund that exclusively invests in lab equipment for start-ups in biotechnology. The fund can be characterized as a revolving fund and is relatively small with investments ranging from about 50kEuro up to 1,5 mEuro. Our research aims at identifying the motives for start-ups to engage in this fund, the advantages and disadvantages of the fund compared to other funding alternatives and identify how the fund can contribute to the firm in terms of behavioral additionalities. In doing so, we conducted a two-step approach to our research. In the first step we held face-to-face interviews and discussed with policy makers and fund managers of various alternative investment funds the landscape of funding options and the interest of investors to fund or not to fund specific laboratory equipment.

The findings provide clear insights on the reasons for the market imperfection

for investments in laboratory equipment. For market-based investments funds the investments in research equipment is highly unfavourable and also investments through equity-based funding seems not to work well. The main reasons lie in the large depreciation of equipment and the absence of an upside potential for investments in equipment when the start-up is sold or when an initial public offering takes place. As a result, science-based start-ups in biotechnology need different routes to find funding. The government-based investment fund for research equipment is such an alternative that allows research-based start-ups in biotechnology buy equipment they need in their research endeavour. We compare and discuss the variety of support functions that market-based and government-based investment funds in general have and relate these to the government-based investment fund in equipment. Following these support functions we identified the positive and detrimental effects of financial support. In particular the findings discuss the positive effects of investments in terms of behavioural additionality. Many of the start-ups investigated address the importance of the equipment. Without state-of-the-art research equipment, they could not have taken the entrepreneurial opportunity that flows from the research findings. Furthermore, the entrepreneurs disclose that a flexible and responsive fund with relatively high interest rates is important to increase the proactiveness of entrepreneurs. A short turnaround and flexibility enable entrepreneurs to pursue opportunities whereas the high interest rate makes the entrepreneur proactive as well. It requires that the entrepreneur generates positive cash flow streams in order to pay back the capital they obtained. These characteristics increase the speed of innovation and the entrepreneurial orientation of the entrepreneurs.