



Publicly Funded Research for SMEs: Is it worth trying?

An Analysis of Publicly Financed Biomedical Research in Swiss SMEs

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Abstract

Innovation is essential to biomedical ventures, but finding the necessary financing can be difficult for small and/or early-stage firms. For this study, 73 Swiss biomedical companies provided data on their use and perceptions of public and/or philanthropic funding. Of the responding companies, 94% had applied at least once for public funding, and 85% of those who applied received funds. Forty-eight percent of companies have a success rate of more than 50% with their grant applications. Lack of time and human resources were the major reasons for not applying or for not applying more often. Concern about intellectual property rights was a further impediment. Related to these points, firms suggest that funding agencies apply a simpler and more transparent application procedure.

Introduction

Financing innovation has become more difficult with the European state debt crisis and the resulting insecurity of the financial markets. The Swiss governmentⁱ and the European Unionⁱⁱ provide funds to support innovation in small and medium-sized enterprises (SMEs) with the objective of filling the funding gap for innovation.ⁱⁱⁱ Government funds generally constitute a non-dilutive way of financing innovation, i.e. no share in equity or benefits is to be expected.

In spite of the fact that innovation is the elixir of life for technology companies, the financing of research through public funds has played only a marginal role.

Therefore, companies' applications for public funding should be in the interests of their shareholders. However, responsibilities and conditions are attached to funding schemes, and companies should be aware of the limitations as

well as the efforts needed to manage a publicly funded project comprising several partners.^{iv}

A major barrier to innovation in Switzerland has been the limited availability of internal financing. In addition, the percentage of Swiss companies that consider innovation investments as critical and the lack thereof an important barrier to innovation is higher than in other European countries.^v Since the 2008 financial crisis, internal funds available for innovation in companies has tended to decrease.^{vi} In spite of this and the fact that innovation is the elixir of life for technology companies, the financing of research through public funds has played only a marginal role, with approximately 1% of relative importance of financing.^{vii}

For technology SMEs innovation is essential for competitiveness. The objective of our research was to analyze the financing of innovation through government grants in biomedical technology SMEs in Switzerland. The present project challenged the following hypotheses:

- 1) Swiss life sciences companies are not applying for public funding to the extent that could be expected from the difficult financial environment they are in.
- 2) Swiss companies are unaware of the possibilities of available public funding.
- 3) Swiss companies that are aware of public funding and have applied for it perceive the application process as difficult and time-consuming and the evaluation process as lacking in transparency. This leads to reluctance to apply for further grants.

Characteristics of respondents

A total of 73 Swiss companies participated in a voluntary survey¹ conducted by IMD business school in Lausanne. Of the responding companies, 45 said that they undertake research in Biotech/Pharma, 31 in Medtech, 12 in Diagnostics and 8 in Services. Nineteen companies chose more than one field of activity.

Seven out of the eight companies active in services chose a second activity. This confirms an industry trend in the biomedical field of exploring pioneering ways to finance its activities. A large majority (71%) of responding companies (54) has up to 10 employees, 16 companies have 11 to 100 employees, 3 companies have more than 100 employees. In addition, we distinguished between three stages of maturity, as shown in Table 1.

To find out about companies' awareness of funding schemes in Switzerland and Europe, we presented a list of 12 funding schemes and asked respondents to choose the ones they knew. We also included private foundations and philanthropic organizations. Figure 1 shows that 97% of all respondents know about the Swiss *KTI/CTI* support for companies. Interestingly, 73% know about the *European Seventh Framework Programme* (FP7), but respondents are less aware of the specific programs for

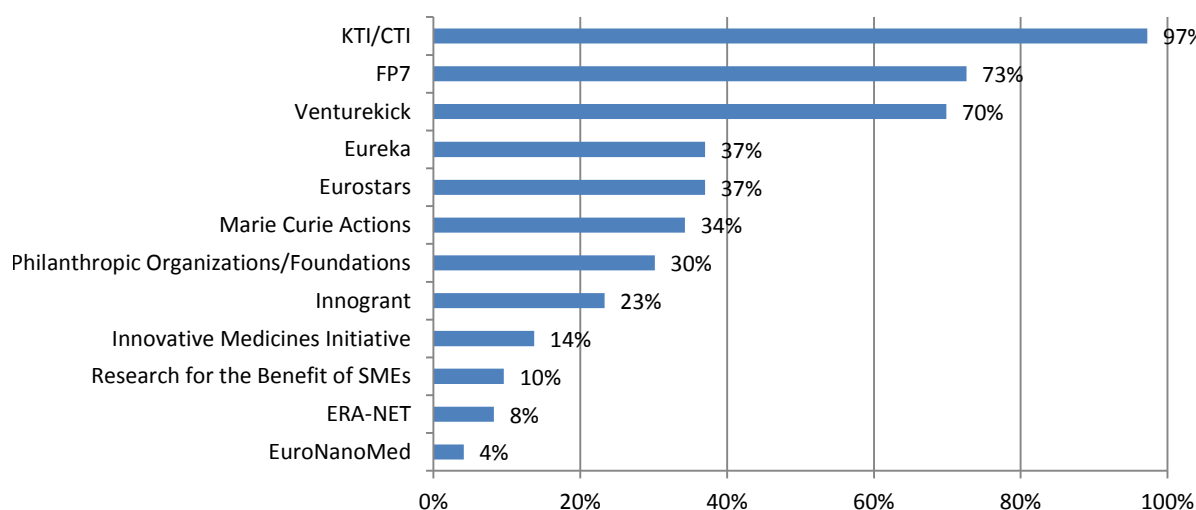


Figure 1: Percentage of companies aware of a specific funding scheme

¹ A voluntary sample is made up of people who self-select into the survey. It can be assumed that the participants have a strong interest in the main topic of the survey.

Table 1: Maturity stage of responding companies

Stage of maturity	Number
<i>Early development stage</i> (no products in clinical evaluation or on the market)	34
<i>Late development stage</i> (at least one product in clinical evaluation or within 6 months of market introduction)	14
<i>Development and marketing stage</i> (products in clinical evaluation and products/services on the market)	25

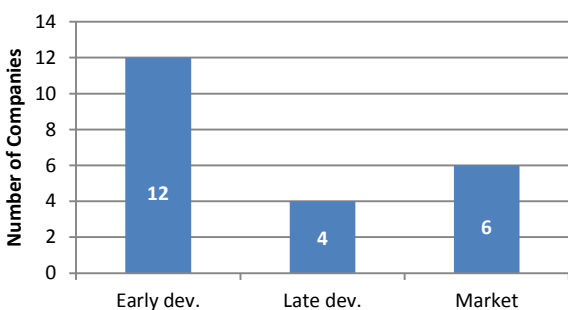


Figure 2: Number of companies aware of foundations and philanthropic organizations

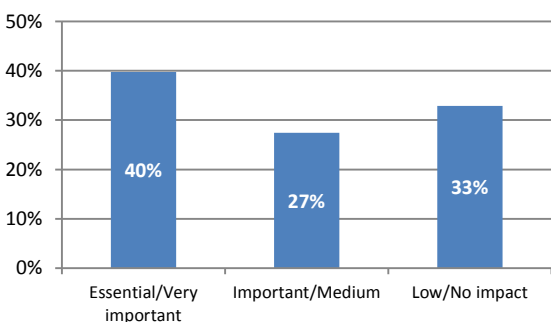


Figure 3: Evaluation of importance of public research funding

SMEs included in FP7 such as *Eureka* (37%), *Marie Curie Actions* (34%), *Innovative Medicines Initiative* (14%) and *Research for the Benefit of SMEs* (10%).

Interestingly, companies in the early development stage know more philanthropic organizations than late development stage companies or even companies with a product on the market or in the course of clinical validation, as shown in Figure 2.

When asked to evaluate the importance of public funding for their company, 40% of respondents classified it as essential or very important; 33% declared that public funding had only a low or no impact on the success of the company (Figure 3).

The information in Figure 3 can be correlated with the amounts of public funding received. To do this, we applied an importance score to the companies' replies. Figure 4 and Figure 5 correlate the importance evaluation provided by the companies with the amounts received and the number of funding schemes known. The importance score increases with the amounts received up to CHF 200,000 to CHF 500,000 and then decreases slightly (Figure 4).

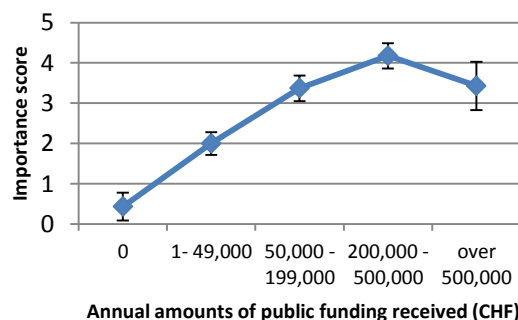


Figure 4: Correlation of importance of public funding with the annual amounts received* (error bars: standard error)

* Importance score: essential = 5, very important = 4, important = 3, medium importance = 2, low importance = 1, no impact = 0.

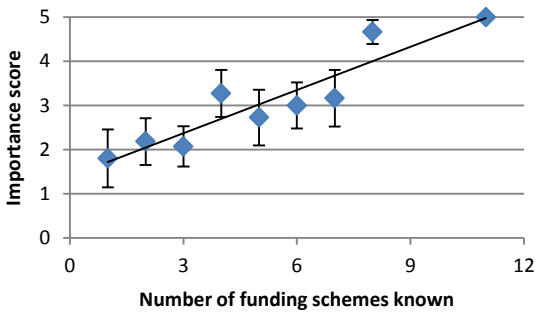


Figure 5: Importance of public funding as a function of the number of funding schemes known (error bars: standard error)*

* Importance score: essential = 5, very important = 4, important = 3, medium importance = 2, low importance = 1, no impact = 0.

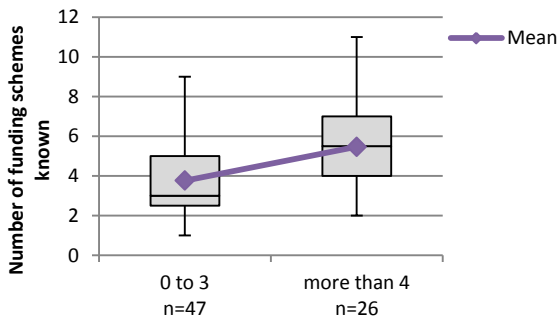


Figure 6: Box plot of the number of applications in the last three years correlated with the number of funding schemes known

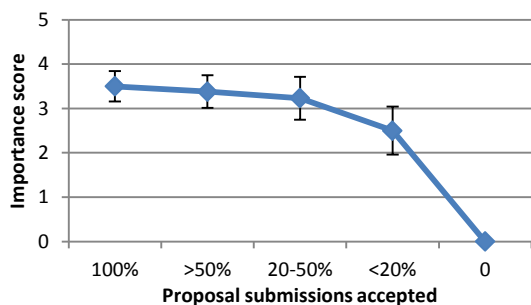


Figure 7: Importance score correlated with success rate (error bars: standard error)*

* Importance score: essential = 5, very important = 4, important = 3, medium importance = 2, low importance = 1, no impact = 0.

Not surprisingly, the more important companies deem public funding to be, the more funding schemes they know about (Figure 5). An analysis of the number of applications correlated with the number of funding schemes known leads in the same direction. The more that companies apply for public funding, the more they are aware of funding schemes (Figure 6). The success rate has a minor influence on the importance score. The importance score remains stable down to 20% success rate and drops to zero, as can be expected, when no funding was received (Figure 7).

Public funding

The companies were also asked how often they had applied for public funding over the last three years. Only five companies did not apply at all. Of the remaining companies, 42 applied one to three times, 21 applied four to eight times and 5 submitted more than nine applications for funding, as shown in (Figure 8). Thus, 68 out of 73 companies (94%) have experience in applying for public funding.

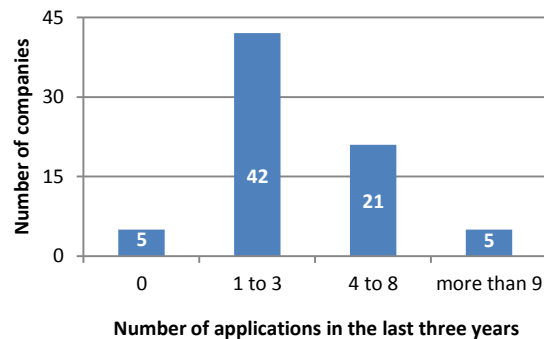


Figure 8: How often companies have applied for research funding in the last three years

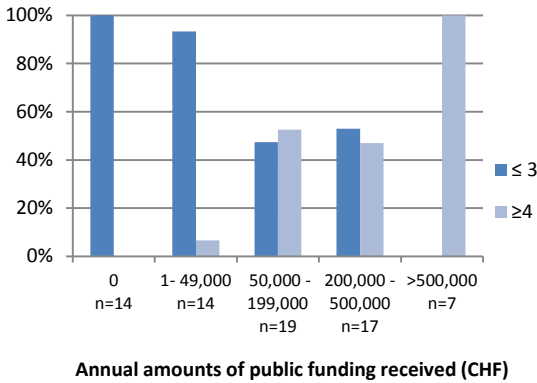


Figure 9: Amounts raised annually (CHF) in the last three years versus number of applications*

* One reply – Don't know/don't want to tell – is not shown

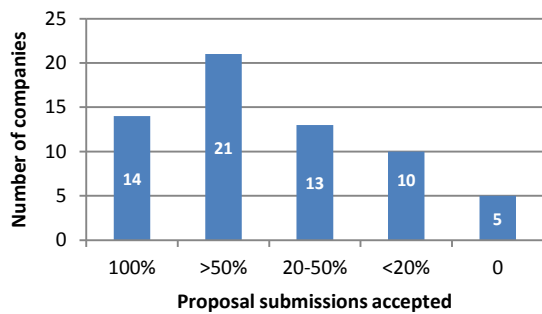


Figure 10: Success rate of applications*

* One company did not reply to this question

As shown in Figure 9, applying more often leads to higher amounts granted (light blue columns). Out of the 72 companies that replied to the question, 57 (79%) received money from public grants, 7 of them more than CHF 500,000 per year. Companies that received over CHF 500,000 per year have applied at least four times in the past three years. Fourteen companies did not receive any grants; of these 9 (13%) were unsuccessful despite applying one to three times. The remaining 5 did not apply and, hence, did not receive support. The large majority (93%) of companies that received less than CHF 50,000 per year only applied one to three times (data not shown).

We asked respondents to estimate the success rate of their applications (Figure 10). Forty-eight percent of participating companies have a success rate higher than 50%, 32% have a success rate between 20% and 50%, 7% have a success rate of zero and 14% did not reply to the question.

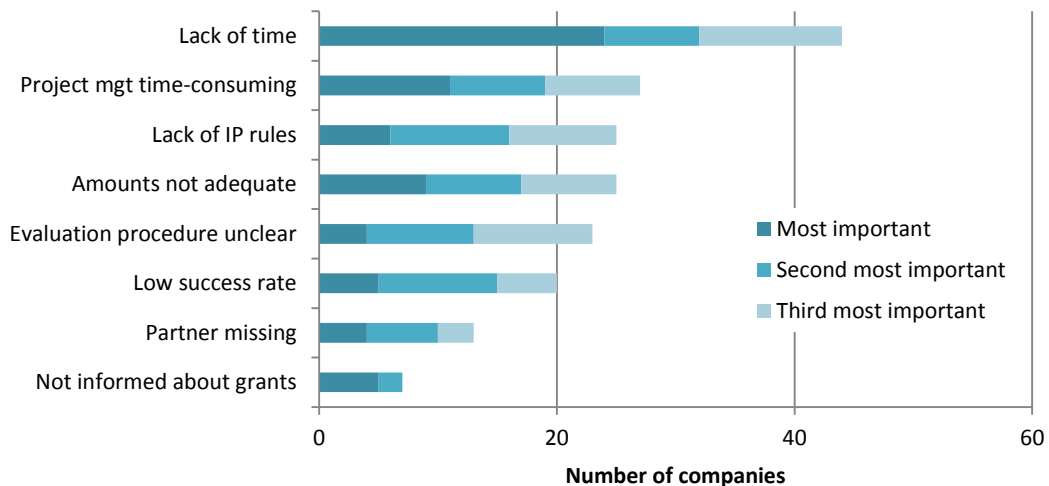


Figure 11: The reasons companies are reluctant to apply for public funding (IP= intellectual property)

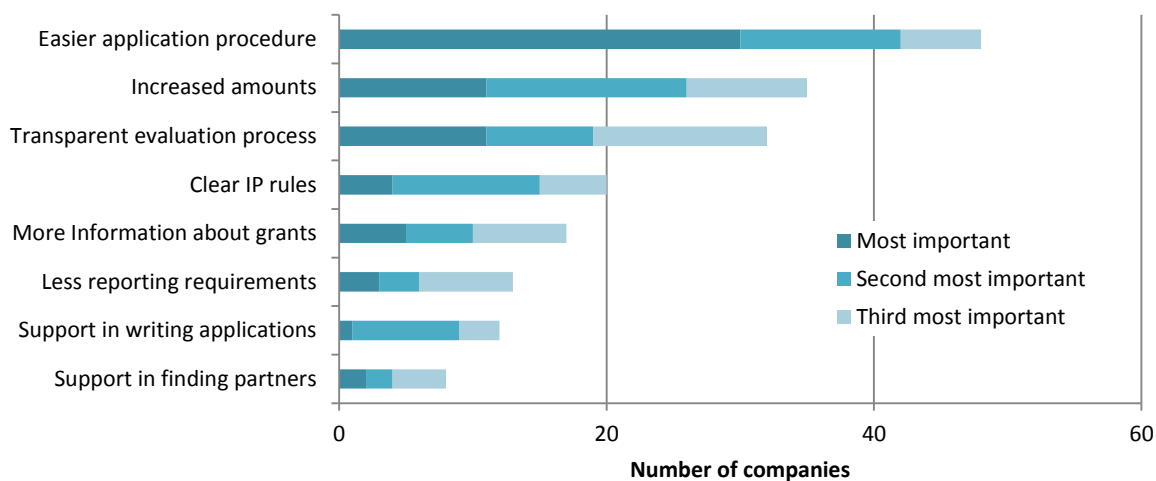


Figure 12: Ranking of the elements companies would like to see changed in public research funding

Evaluation of the funding schemes

We also asked the survey participants why they did not apply or why they did not apply more often for public research funding. The major reason for not writing more grant applications was a lack of time (Figure 11). Lack of time is followed by the impression or experience that project management is time-consuming and then by issues with intellectual property (IP) rights in publicly funded projects.

We also asked the companies what they would like to see changed in order for them to apply for public research funding more often. An easier application procedure was most often mentioned, followed by a recommendation to increase the amounts of funding and a more transparent evaluation process (Figure 12).

Conclusions

Of the 73 Swiss biomedical technology companies that replied to the IMD survey, 94% have applied at least once for public research funding, and 36% have applied four times or

more in the last three years. The Swiss funding agency *KTI/CTI* is well known to 97% of these companies, while European funding opportunities are less well known, in particular individual programs such as *Research for the Benefit of SMEs* (10%) and *EuroNanoMed* (only 4%). Overall, the respondents are predominantly aware of funding opportunities and have even applied in the past three years.

Increasing awareness that public funding can constitute an important contribution to the financing of research may positively influence the amounts received. Although 79% of participating companies received funds, the success rate increases to 85% when only the companies that applied for funding are counted. This leads to the conclusion that once a company decides to apply for funding, there is an 85% chance of obtaining it. This conclusion is supported by the finding that applying more often leads to increases in the amounts received. It is also encouraging to note that 48% of companies have a success rate that is greater than 50%.

Lack of time was the major reason that companies did not apply or did not apply more often for research funding. This is logical, since most of the participating companies have 1 to 10 employees, and grant writing takes a significant amount of time and expertise, both of which are limited in these small structures. This explanation also applies to the second most important reason – the time-consuming project management of publicly funded research, which is almost exclusively in collaboration with an academic partner.

Companies asked for the application procedure to be made simpler.

Intellectual property rights issues are also a major concern for companies in publicly funded projects. This can be explained by the fact that the vast majority of public research funding goes to consortia comprising academic and private members. Defining how IP rights are to be shared needs to be handled before the project starts and is often laborious. In addition, it is often difficult to foresee all potential cases of new IP generation and, as a consequence, the sharing of the benefits.

When asked what should be changed for them to apply more often, companies asked for the application procedure to be made simpler, which

is consistent with the lack of time and the limited resources available in companies. This is followed by the wish that funding amounts should increase. Somewhat unexpectedly, a more transparent evaluation procedure was suggested as well. This can be attributed to the fact that companies rarely know who is evaluating an application, which means they have doubts about the confidentiality of the information provided (anecdotally some respondents commented on this). One can assume that the volume of applications would increase if the funding agency provided more information about the evaluation process, as well as administrative support for the grant writing procedure.

Entrepreneurs and managers in start-up companies should not be reluctant to apply for public funding to finance research. Indeed, their chances of success increase in line with the attention and seriousness they pay to application writing. Public funding agencies, for their part, could make it easier for companies by adopting simple application procedures and by making the evaluation process more transparent.

Acknowledgments

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Appendix

Table 2: List of Swiss and European funding programs

Funding Program	Weblink for more information
CTI/KTI	http://www.kti.admin.ch/index.html?lang=en
Innogrant	http://vpiv.epfl.ch/page-22998-en.html
7 th Framework Program (FP7)	http://cordis.europa.eu/fp7/home_en.html
Horizon 2020 (follow up program of FP7)	http://ec.europa.eu/research/horizon2020/
Marie Curie Actions	http://ec.europa.eu/research/mariecurieactions/
FP7 Cooperation	http://cordis.europa.eu/fp7/cooperation/home_en.html
Innovative Medicine Initiative	http://www.imi.europa.eu/
COST	http://www.cost.eu/
EUREKA	http://www.eurekanetwork.org/
Eurostars	http://www.eurostars-eureka.eu/
Research for the Benefit of SMEs	http://cordis.europa.eu/fp7/capacities/research-sme_en.html
Euronanomed	http://euronanomed.net/

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