A world away from venture capital funds: biotechnology and finance in Shanghai

Brian Richard*, Ken Malone and Brent D. Hales

Department Economic and Workforce Development, University of Southern Mississippi, 118 College Drive, #5022 Hattiesburg, MS 39406, USA
Fax: 601.266.6071
E-mail: Brian.Richard@usm.edu
E-mail: Ken.Malone@usm.edu
E-mail: Brent.Hales@usm.edu
*Corresponding author

Markus A. Turkopuls

University of Southern Mississippi, 5 Alverston Ct., Irmo SC, 29063, USA
Fax: 803.213.6994
E-mail: MATurkopuls@ColonialLife.com

Abstract: A survey of the financing methods of 19 Shanghai medicinal biotechnology companies revealed a lack of private venture capital fund participation. Alternatively, these companies have obtained financing from government sources based substantially on the reputation and relationships of the companies’ officers with government officials. This aligns with recent literature suggesting that China is an exception to the dominant body of literature on the relationship of strong legal and financial institutions to the commercialisation process. The dominant body of literature suggests that strong legal and financial institutions are needed to provide patent protection to promote inventions and their commercialisation which, in turn, protects investors and promotes financing of the commercialisation process.

Keywords: China; biotechnology; finance; entrepreneurship; venture capital; guanxi.


Biographical notes: Brian Richard is an Assistant Professor in the Department of Economic and Workforce Development at the University of Southern Mississippi. He holds a PhD in International Development and has extensive experience in economic, fiscal and policy research.

Ken Malone is an Assistant Professor in the Department of Economic and Workforce Development at the University of Southern Mississippi. He is also Chief Financial Officer of two biotechnology companies, Ablitech, Inc. and
1 Introduction

Most research on biotechnology entrepreneurship focuses on the USA, Europe and Japan, but the dynamics of the biotechnology industry in other regions continues to be an important aspect of understanding biotechnology entrepreneurship. While recent studies have provided valuable insights into the biotechnology industry in Canada (Vanderbyl and Kobelak, 2007), Cuba (Mola et al., 2006), Latin America (Quezada, 2006), South Africa (Akermann and Kermani, 2006), India (Parmar, 2005; Palnitkar, 2005), Australia (Herpin et al., 2005) and Singapore (Lim and Gregory, 2004), the world’s largest emerging economy has received little attention.

This paper investigates the financing methods of Chinese medicinal biotechnology firms. These financing methods are compared with typical western methods. Additionally, institutional structures, such as patent protection and government finance programmes are examined.

Data were collected from interviews with 19 Shanghai based medicinal biotechnology companies regarding their methods of financing. A pre-interview analysis of these companies reported that they were not creating new-to-the-world products, but rather that they were pursuing low cost strategies for products produced in developed nations (knock-offs). Often these knock-offs were protected by patents in developed nations (Malone et al., 2008).

The government of the People’s Republic of China has made the development of a world leading biotechnology industry a national priority. Some of this is done by recruiting the branch operations of large companies from Europe and North America. Many studies have shown the positive effects of foreign direct investment on technology transfer and economic growth (see Borensztein et al. (1998) for a prominent example). China is also emphasising the growth of her own entrepreneurial ventures.

“Initial goals of a 10-year development plan include establishing 20 world-level research and development centres and 10 biotech centres with an annual output value of 36 billion US dollars.” (People’s Daily, 2000)

The Chinese government has also undertaken the development of extensive research and development in biotechnology by building the largest biotech incubator in Asia (BioSpectrum, 2006). Additionally, the Chinese government has encouraged expatriate
biotechnology scientists to return to China by promising government sponsored financing for research and development (San Francisco Chronicle, 2006).

While the Chinese government has made substantial commitments, evidence regarding the direction of the Chinese-based biotechnology venture is minimal. Will Chinese companies lead innovation and intellectual property development, be low cost manufacturers of generic medicines, create a niche in traditional Chinese medicines or commercialise products that western ethics find objectionable? There are differing answers put forth to these and other related questions.

Chien (2003) predicts that China will become a world leader in biotech, especially technology based on traditional Chinese medicines. Yu and Dai (2006) believe that Chinese biotechnology is not following a path of innovation. Salter et al. (2006) identify key academic assets that ought to make the Chinese leaders in stem cell research but do not comment on the commercialisation capabilities. Finnegan and Pinto’s (2006) analysis has China functioning as the world’s low cost manufacturer. Grace (2004) opines that Chinese biotech companies are producing only generic medicines, but identifies impressive academic research assets, especially in genomics and traditional Chinese medicine. Grace further predicts that tightening of Chinese intellectual property laws will result in less focus on low cost manufacturing. The Economist (2002) raises concerns that the most open space for Chinese innovation in biotechnology is in human cloning and other areas which western ethics prevent developed nations from pursuing.

Of special interest to the topic of this study, trade journals point out that low cost early phase clinical trials may be attractive to multi-national corporations, but the infrastructure in China is not conducive to innovative start-up companies requiring private venture capital (Jarvis, 2004).

Towards contributing to the goal of understanding biotechnology entrepreneurship in China, this study provides an analysis on the financing of Shanghai-based medicinal biotechnology companies. A company was considered as Shanghai-based if its only R&D facilities and its senior management team were located in Shanghai. The company was considered to be participating in medicinal biotechnology if its products, or the products it is developing, were intended to find end application in the treatment of human diseases and if it was applying

“indigenous and/or scientific knowledge to the management of (parts of) micro-organisms, or of cells and tissues of higher organisms, so that these supply goods and services of use to human beings.” (Bunders et al., 1996)

2 Literature review

Much of the literature related to legal systems and economic growth suggests that strong patent protection is vital for strong economic performance. Mazzoleni and Nelson (1998) survey the literature related to patent protection and identify four broad theories. First, patent protection stimulates invention. Second, patent protection promotes the commercialisation of inventions. Third, patents reward the disclosure of inventions. And fourth, patents promote a greater exploration of wider uses of inventions.

Our interest lies primarily in Mazzoleni and Nelson’s second theory, related to the commercialisation of inventions, as Chinese patent protection is poor (Smith, 2005). In essence, the holding of a patent allows an inventor to ensure to outside financing sources that the invention they are investing in will not be commercialised
by another firm. This promotes the commercialisation (and the larger economic growth benefits) of inventions because inventors and investors are rewarded through economic rents associated with the exclusive rights to their technology.

On a larger scale, the relationship between property rights and economic growth has been shown at the national level in many studies. De Soto (2000) states that there is an ‘economic subconscious’ at work in the West, where the importance of capital and its accumulation is taken for granted, where an ‘implicit legal infrastructure’ is “hidden deep within their property systems – of which ownership is but the tip of the iceberg”. For de Soto this is a key differentiator between the developed and less developed world. Johnson et al. put it more bluntly,

“Property rights are fundamental: entrepreneurs will not invest if they expect to be unable to keep the fruits of their investment. Country level studies consistently show that less secure property rights are correlated with lower aggregate investment and slower economic growth.” (Johnson et al., 2002, p.1335)

They found evidence in Eastern Europe and the former Soviet Union that weak property rights made it less likely for firms to reinvest profits back into the business.

La Porta et al. (1997, 1998, 2000) find that countries with better legal protections for investors and better financial institutions have better financial outcomes, both at the micro and the macro levels. The stronger protections, primarily found in countries with English common-law origins, promote firms’ use of external capital markets.

Allen et al. (2005) point out that China is an interesting counterexample to the body of literature on law, institutions, finance, and economic growth. This literature finds that in general, the strength of a nation’s legal and financial systems have a positive impact on a nation’s economic outcomes. However, “despite its poor legal and financial systems, China has one of the fastest growing economies in the world” (p.59).

Allen et al. (2005) examine the government controlled, publicly traded, and private (private/local ownership) sectors of the Chinese economy. They find that the framework set forth in the literature describes the government controlled and publicly traded sectors quite well. “With poor legal protection of minority and outside investors, (standard) external markets are weak, and the growth of these firms is slow or negative” (p.59). On the other hand, the private sector, which now dominates the Chinese economy, is flourishing despite these weak institutional conditions.

“Our conclusion for the imbalance among the three sectors is that there exist effective, alternative financing channels and corporate governance mechanisms, such as those based on reputation and relationships, to support the growth of the Private Sector.” (p.59)

To support their argument, Allen et al. (2005) surveyed 17 firms in eastern China. The firms were located in two provinces adjacent to Shanghai. The firms in the sample covered a variety of industries and were fairly large (over 1,600 employees and assets of over US$55 million on average) and well established (average age of over 11 years). Their findings suggest

“the most important reason for the growth [of the private sector] is the work of alternative financing and governance mechanisms. Perhaps the most important mechanism is reputation and relationships.” (p.96)
3 Financing methods

Allen et al. (2005) found that in their sample, banks were the most common source of startup financing while friends and private credit agencies were the most common source of growth financing. Additionally, retained earnings were a significant source of financing in the early years of operation.

In the west, there are two common sources of financing for early stage startup companies: government grants and venture capital. Government grants are typically issued to companies that are developing promising technologies. These grants are issued to support the development of technologies that would likely not be supported by private financial markets. Venture capital typically looks for similar types of high risk, high reward opportunities that might be somewhat more developed or closer to market.

It is also common in the west, as Allen, Qian and Qian found in China, for firms entering a market that is new to them to fund technology development through internal funds (retained earnings). These firms are also likely to have established relationships with banks and other traditional funding sources.

3.1 Government grants

US government grant programmes provide an example of government grant programmes in developed nations:

“Even in the most economically challenged of times, the government is one of the best sources for grants. For instance, the National Institute of Standards and Technology’s Advance Technology Program offers grants to co-fund ‘high-risk, high-payoff projects’ that will benefit American industry. Whatever the project is, you can be sure it will be scrutinised by a board of qualified experts and academia.

The Small Business Innovation Research (SBIR) office is another government agency that gives grants. The SBIR specialises in small businesses looking for financing for high-risk technologies. The catch: Unlike the Advance Technology Program, the technology must meet the research and development needs of the federal government. Founded in 1982, the SBIR recently awarded $1.5 billion to startups, with grants going to software, biotechnology, health-care and defence companies. So if you are planning on opening a pizzeria, you might have trouble with this one.

But there are federal grants awarded to food and nutrition companies. For instance, a pizzeria that caters to children and specialises in serving nutritious, healthy pizzas may be able to win a grant. You can also check with your state or local government to see what is available: start with your local or state chamber of commerce.” (Entrepreneur.com, 2007)

3.2 Venture capital

Venture capitalists in developed economies serve two functions. In addition to providing a source of financing for young firms, they also serve an information collection function. They perform this function with firms in the product development stage, especially in specific industries, that are difficult to monitor by traditional financing providers.
Venture capitalists operate in environments where their relative efficiency in selecting and monitoring investments gives them a comparative advantage over other investors. This suggests strong industry effects in venture capital investments. Venture capitalists should be prominent in industries where informational concerns are important, such as biotechnology, computer software, etc., rather than in ‘routine’ start-ups such as restaurants, retail outlets, etc. The latter are risky, in that returns show high variance, but they are relatively easy to monitor by conventional financial intermediaries.” (Amit et al., 1998)

Venture capital funds provide a substantial method for financing the biotechnology sectors of developed nations; for example, since the turn of the century venture capital funds have financed more than 350 US located biotechnology deals/year with over $4 billion/year invested (National Venture Capital Association, 2008). In 2007, there were 1,415 biotechnology companies in the USA (Biotechnology Industry Organization, 2008), indicating that venture capital funds are the substantial form for financing these firms at some point in their development. European venture capital funds also appear to be a prevalent form of financing in this sector (European Private Equity and Venture Capital Association, 2008).

The use of government funded venture capital is an interesting aspect of Chinese entrepreneurial financing. The central government plays a large role in financing the technical sector. The Ministry of Science and Technology (MoST) was a primary initiator of government backing for high-tech industry (White et al., 2005).

3.3 Guanxi

The Chinese Property Law, enacted in March 2007 gave private property rights equal to that of public property. This law paved the way for the greater development of entrepreneurial ventures by enabling private citizens to not only own property, but to reap the benefits of the sale of such property. These rights extended to intellectual property. However, this law does not extend the same variety of property rights as found in other nations.

“Despite these trends toward greater recognition of private property, various studies point to how insecure property rights, government discrimination, and legal and political uncertainty have fostered a culture of opaqueness, informality, and collusion in China’s private sector. Indeed, the politically questionable status of private firms in Chinese history has resulted in many private entrepreneurs enjoying hybrid forms of ownership and colluding with local government institutions and officials.” (McNally et al., 2007)

Clearly, China exhibits different property norms than those apparent in the many developed countries that have adopted a more western model.

While the Chinese economy, particularly the private sector economy, has grown rapidly in recent years, public institutions that regulate and facilitate this growth have not kept pace.

“Given the widely reported, underdeveloped nature of China’s institutional structures, researchers and practitioners alike are puzzled by the question: How can China be achieving rapid rates of growth while retaining [such] an institutional order? A partial answer seems to lie in the interpersonal ties across organisational boundaries cultivated by managers that serve as substitutes for formal institutional support and as access to information and resources in a highly volatile and turbulent environment.” (Luo, 2000)
These ties are commonly referred to as ‘guanxi’.

“Guanxi is often translated as ‘connections’ or ‘membership’, though these English terms hardly capture the depth of guanxi relations. Guanxi denotes the establishment of long-term informal reciprocal personal relationships. It is a form of social capital that acts as a binding agent among social actors. Guanxi ties can therefore create enduring trust which facilitates business dealings and collaborative ties.” (McNally et al., 2007)

The rapid changes in the regulatory climate as well as the vague nature of regulations being put in place make guanxi even more important. Guanxi “establishes a balance in the cumbersome Chinese bureaucracy by complementing ambiguous bureaucratic rules with personal relations. Chinese firms can circumvent bureaucratic hurdles through personal networks.” (Luo, 2000)

Managers interviewed for this research gave evidence that this is certainly the case today in China.

4 Methodology

The selection process of the companies created unavoidable elements of bias in the study, which limits the ability to broadly apply the findings to the biotech industry in China as a whole. It was the intent of the study to sacrifice this broader applicability in order to reasonably obtain a depth of knowledge regarding the companies interviewed. The details of the selection process are described below.

The study was undertaken as part of the National Science Foundation’s Integrative Graduate Education and Research Traineeship grant, “Entrepreneurship at the Interface of Medicinal Chemistry & Polymer Science”. The data were collected by four PhD candidates in Medicinal Chemistry and eight PhD candidates in Polymer Science, each having received extensive technology commercialisation training, including the development of original biotechnology business plans. These students were teamed with economic development and entrepreneurship faculty to perform the data collection. This combination of technical, business and research competency was needed to obtain a deep understanding of the companies interviewed.

In addition to the students and faculty identified above, graduate science students fluent in English from Tongji University in Shanghai were present for translation and assistance at all interviews. In all but one case, representatives for the companies spoke English well, and there was no need for translation.

An initial pool of companies was formed by using a basic set of criteria. They needed to self proclaim being in the medicinal biotechnology sector, be principally Chinese operations (rather than multi-nationals with operations in China), and be located in the Shanghai region. The existence of an industry-specific industrial park facilitated the identification of a large pool of companies. A science park development in Shanghai (Zhangjiang High-Tech Park) was designed to specifically encourage biomedical companies to locate there. In addition to contacting the companies found on the park’s website, the companies contacted were asked to provide names of other biotech companies in the Shanghai area. In general, these companies confirmed that most companies meeting the criteria would be located in the Zhangjiang High-Tech Park.
A total of 55 companies was identified through this process and were contacted by e-mail and phone to schedule interviews. All of the companies, with the exception of five, were contacted by phone, e-mail, or fax. Meetings with the five exceptions were facilitated by one of the Chinese companies contacted.

Phone and e-mail were the primary means of initiating communication with the companies. An e-mail was sent to the companies, followed by a phone call to discuss interests in the information presented in the e-mail. E-mail was used to update companies throughout the process. Contact by phone was also used to schedule, verify and discuss the date and time of the meetings. Many of the companies had at least one employee who spoke English fluently enough to discuss plans for the interview. A Chinese national on the research team provided translation in the few cases where necessary. Additionally, the confidentiality of the participants’ information was assured. All participants chose voluntarily to participate in the study.

Twenty-seven companies were understood to have accepted the proposed interview during the week of May 21–25, 2007. After the study was complete, the number of companies that were successfully visited and interviewed was 19, six companies cancelled appointments just prior to the interviews and two chose not to provide information during the interview, apparently as a result of misunderstanding the intent of the interview. Thus, 19 companies met the expectations of the proposed research and provided adequate information necessary for the study.

Background research of the companies through online methods was conducted prior to the meetings and provided the interview team with a foundation and understanding of the companies that were participating in the study. This background research also provided additional information that assisted in the interviews with the companies. If the company’s website was available, it generally provided guiding information regarding the leadership of the company and their primary business objectives. Many of the Chinese company websites had English versions and others were translated to assist in the initial research. The information disclosed on the companies’ websites was checked in the interviews to verify the information. Interviewers gained insight into the company’s financing by taking note of any differences in the information and documenting for further analysis. Furthermore, comparing the background research about each company was used to find trends prior to the interviews. These trends suggested avenues of questioning for the interviews. Additional confirmatory secondary website research was conducted after the interviews to follow up on information gleaned in the interview process. This information was used to verify information.

The instrument used in the interviews provided a guide for the interviewers and consisted entirely of open ended questions. This allowed the interviewers to explore the nuances of each company and thoroughly understand their financing intent and methods.

In all cases, the interviews were carried out with persons identifying themselves as a member of the senior management team, and this was generally the Chief Executive Officer. The interviewee was directly asked about their methods of financing, both pathways that were successful, as well as those which were not successful. In addition to asking questions which directly addressed financing, a range of questions delving into the business background of the company, the management team and other staff (education, employment history, etc.), consultants, boards or advisory committees, corporate strategy, ownership structure, intellectual property management, and marketing tactics were used to gain a depth of understanding related to their financing pathways.
5 Findings and analysis

The literature review indicated that commonly held theory requires strong intellectual property protection laws to be in place in order for effective financing of invention commercialisation to occur. Recent literature has challenged this based on findings in China, suggesting that an alternative mechanism based on reputation and relationship exists. This alternative mechanism was widely observed in the companies surveyed in this study, as was the lack of private venture capital fund financing.

5.1 Initial financing

The majority of the 19 biotech companies interviewed were initially funded by the founders of the company as displayed in Table 1. Company founders provided complete or partial financing for 14 of the companies interviewed. Nine companies (Companies A, D, E, H, L, M, O, P and R) were exclusively management funded in the initial stages. Company S received financing from friends or family members in addition to the funding provided by the startup management team. The remaining four management funded companies, Companies B, K, N and Q, received some form of government funding at startup. Company B also received some startup funding from a private equity fund. There was no substantive difference between the startup companies funded by expatriates that returned to China to start their businesses and those started in China in their initial financing.

Table 1  Basic description of companies interviewed

<table>
<thead>
<tr>
<th>Company designation</th>
<th>Start-up year</th>
<th>2006 sales (000 RMB)</th>
<th>No. of employees</th>
<th>Current business model*</th>
<th>Primary sales region**</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1994</td>
<td>Pre-revenue &lt;20</td>
<td>Mfg and sales of products to businesses</td>
<td>Global</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>2000</td>
<td>Pre-revenue 40</td>
<td>Mfg and sales of products through MDs</td>
<td>China</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>2001</td>
<td>Pre-revenue 9</td>
<td>Mfg and sales of intermediates to businesses</td>
<td>China</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>2002</td>
<td>Pre-revenue 30</td>
<td>Selling R&amp;D services</td>
<td>China</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>2002</td>
<td>Pre-revenue 5</td>
<td>Mfg and sales of products through MDs</td>
<td>China</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>2003</td>
<td>Pre-revenue 30</td>
<td>Sell IP to big Pharma and/or be acquired</td>
<td>China</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>2003</td>
<td>Pre-revenue 10</td>
<td>Selling R&amp;D services</td>
<td>China</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>2005</td>
<td>Pre-revenue 9</td>
<td>Mfg and sales of intermediates to businesses</td>
<td>Global</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>1992</td>
<td>75,000</td>
<td>Mfg and sales of products through MDs</td>
<td>China</td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>1993</td>
<td>5,500,000</td>
<td>Mfg and sales of intermediates to businesses</td>
<td>Global</td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>1996</td>
<td>50</td>
<td>Mfg and sales of products through MDs</td>
<td>China</td>
<td></td>
</tr>
</tbody>
</table>
Table 1  Basic description of companies interviewed (continued)

<table>
<thead>
<tr>
<th>Company designation</th>
<th>Start-up year</th>
<th>2006 sales (000 RMB)</th>
<th>No. of employees</th>
<th>Current business model*</th>
<th>Primary sales region**</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>1996</td>
<td>1,095,000</td>
<td>2500</td>
<td>Mfg and sales of products through MDs</td>
<td>N America</td>
</tr>
<tr>
<td>M</td>
<td>1998</td>
<td>10,000</td>
<td>400</td>
<td>Mfg and sales of intermediates to businesses</td>
<td>Global</td>
</tr>
<tr>
<td>N</td>
<td>2001</td>
<td>2000</td>
<td>&lt;100</td>
<td>Mfg and sales of products through MDs</td>
<td>China</td>
</tr>
<tr>
<td>O</td>
<td>2001</td>
<td>8000</td>
<td>150</td>
<td>Mfg and sales of products through MDs</td>
<td>China</td>
</tr>
<tr>
<td>P</td>
<td>2001</td>
<td>?</td>
<td>90</td>
<td>Mfg and sales of intermediates to businesses</td>
<td>China</td>
</tr>
<tr>
<td>Q</td>
<td>2002</td>
<td>?</td>
<td>45</td>
<td>Mfg and sales of products through MDs</td>
<td>China</td>
</tr>
<tr>
<td>R</td>
<td>2004</td>
<td>900</td>
<td>11</td>
<td>Mfg and sales of intermediates to businesses</td>
<td>Global</td>
</tr>
<tr>
<td>S</td>
<td>2004</td>
<td>&lt;1000</td>
<td>11</td>
<td>Sales of products to businesses</td>
<td>Global</td>
</tr>
</tbody>
</table>

*For pre-revenue businesses, this is their intended model. For businesses with existing sales, this is the model for their on-going business.

**For pre-revenue businesses, this is their intended sales region. For businesses with existing sales, this is their current sales region.

Seven of the companies had some form of initial government financing, with Companies G and J being completely government funded at startup. As mentioned above, Companies B, K, N and Q received government funding along with management funding. Company F received government funding and funding from another private investor.

5.2 Product development and growth financing

External financing of R&D activities and company growth came primarily from government sources. China has grant programmes aimed at innovative product development: 863 Programs and Innovation Fund for Small Technology Firms. Companies D, K, L, M and Q received these types of government grants. Companies B, F, G, J and R received some other form of government grant.

Internal sources were the next most common source of financing for R&D and expansion. One quarter of the companies completely funded their R&D and/or expansion from their existing operations in non-medicinal biotechnology operations. Such speculative diversification strategies were used through the early 1900s in the USA (Lamoreaux et al., 2007). However, it is not typical today, primarily because of the financial discipline placed on publicly traded companies, which limits their ability to pursue long range speculative research outside of their existing markets and product lines (Graham, 2007). Chesbrough (2003) argues that large companies perform better by acquiring early stage innovation companies than by developing radical innovations internally. Thus, the current structure of the USA’s financial markets has venture
capital firms making the early stage investment in biotechnology companies with the intent of selling to the large publicly traded company as an exit strategy.

External sources of private financing were less common. Company F received financing from a private equity company, which was used to buy out a government venture capital investment. Company I received an investment from a partner company. Company K in the sample went through a stock offering on the Hong Kong Stock Exchange.

5.3 Guanxi and financing

Support for science and technological innovation has been a vital part of Chinese central government policy for many years, but only recently has the institutional structure for obtaining entrepreneurial finance become more developed. While methods of obtaining government financing may seem somewhat similar to USA programmes, in reality the methods are quite different. Based on anecdotal evidence from our surveys, financing decisions appear to be highly dependent on relationships and connections (‘guanxi’) with government officials.

Some of the managers interviewed reported stories that were very similar to the government descriptions of financing programmes. One pharmaceutical company executive said that the grant that his company received required the meeting of certain benchmarks, including making it through stages of clinical trials. He went on to say that the government “pays 75% of R&D expenditures if a product is successfully patented and sold in the USA or European Union”.

Most of the others were vaguer in their responses. When asked about the expected return on investment from government grants, one manager responded that they were expected to ‘advance the technology’. Another stated that the investment in his company was “for the greater good of the Chinese people”.

When asked about the process for obtaining government financing, one manager was quite clear that he had not gone through a competitive process. He stated that the process involved “asking a powerful man who has connections in the government”. Another stated that it was based on the ‘profile’ of the company. A couple of other company executives would not be specific about how they obtained their government financing but stated that it was easy to obtain.

Those companies that had not received any government financing were also explicit about their understanding of the government financing process. One company founder who returned from living in the USA for several years to start a company said he was told, when he opened his shop in China, about the great R&D credits, funds that can come from the government once a product comes to market, and other benefits. He said that he was very naïve. Essentially, he said that those go to folks with government contacts and although he is a Chinese citizen, he is seen as a foreigner because he lived in the USA for so long. Another manager whose company had not received government financing stated that the government only funds companies when they “reach a certain level”. 17 of the companies interviewed for this study were located in the Zhangjiang High-Tech Park. Several companies stated that locating in the technology park, while more expensive than other locations, made it easier to receive government financing. One company official stated that his firm had received some financing directly from the park. Others stated that the government is more likely to provide financing to companies located in the park.
5.4 Venture capital

Of the companies interviewed, only Company B and Company F had received financing from private venture capital funds. In one case, the initial technical concept was developed in the laboratories of an Australian University and, in the other, from the laboratories of several US Universities. The founders obtained financing from the same Hong Kong-based venture capital fund and chose to locate in Shanghai for the stated reason of national pride, as well as the hope that the Chinese government might also provide funding. However, the government had not provided such funding at the time of the interviews.

Interestingly, the two venture capital backed companies were also the only ones pursuing new-to-the-world products and following a Porter (1980) Focused Differentiation or Miles and Snow (1978) Prospector business strategy. Porter states that business units either try to gain advantage through product differentiation or through cost structure. In Miles and Snow’s typology, Prospectors react quickly to perceived changes in the marketplace, are constantly working on the development of new products and services and seek to gain advantage through speed to market and product differentiation. Additionally, Company F, founded with technology with its roots in the USA, envisioned an exit strategy from acquisition. The company with its roots in Australia considered acquisition to be a viable option, but did not articulate a clear exit plan. The other companies envisioned that they would grow to be large multi-national corporations in the distant future.

The non-venture capital backed companies were pursuing knock-off products and typically envisioned that these products would be sold primarily in China for the foreseeable future. While one day, they intend to become global, it was not in their immediate plans.

5.5 Implications for managers

In balance, the study found a strong relationship between the types of financing used and the product development strategies of the companies interviewed. When the company had a new-to-the-world product, venture capital was involved. Where Chinese government financing existed, the product being developed was directed towards the social needs of China for lower cost alternatives to imports from developed nations. In the case of companies funding new-to-the-company product development for diversification, these were not new to the world products.

For today’s Chinese biotech entrepreneur with dreams of bringing a radically new product to market, the data and other’s findings imply certain important courses of action. First, this entrepreneur should secure viable patent(s) in developed nation(s). Second, these patents should be used to attract investors from Hong Kong and beyond. Third, this entrepreneur should work towards the objectives of these investors, most likely to position the company for acquisition or for an initial public stock offering.

For tomorrow’s Chinese biotech entrepreneur, the dynamics may well be different. It is feasible that venture capital funds within China will find that biotech entrepreneur’s dream to be a viable investment if certain conditions are met. The most important of these conditions are progress towards enforceable patent laws and the strengthening of institutions needed to support a transparent public stock market.
6 Conclusions

The lack of private venture capital fund financing has been filled by government grants and financing. There are several financing programmes that have been set up by the Chinese government that are designed to promote innovation and the commercialisation of innovations. These programmes appear similar to programmes available in the USA in terms of the methods for obtaining financing. However, interviews with firm owners and managers revealed that ‘guanxi’, or personal relationships appear to continue to be the driving force behind financing decisions.

These alternative methods of financing appear to be working well for companies focused on low cost and low technology production. The fact that the only two companies in the sample that attracted private venture capital were also the only two using a product differentiation strategy is enlightening. Clearly, private venture capital is not interested in funding low cost knock-off production. Until more Chinese companies follow a product differentiation strategy, it is unlikely there will be significant private equity investment in the biotechnology sector.

Acknowledgements

This study was supported by the National Science Foundation through an Integrative Graduate Education and Research Traineeship grant.

References


