

Most often, it is innovative start-up firms that will introduce these combinations. After a certain period, some become firmly established on the market due to their better cost-benefit ratio. This leads to other market actors copying the successful model and thus diffusing the particular innovation. In the case of radical innovations – that is, innovations that cause major changes in previous production methods and/or organization – diffusion can also affect some of the old firms negatively, as they fail to adopt the new combinations. Their market share will gradually shrink and they will be wiped out. On the other hand, the number and market share of the start-ups and the companies that do adopt the respective innovation or modify it with their own innovations will grow. This process of “creative destruction”, as Schumpeter terms it, constitutes the basis of long-term economic dynamics.

Science and Entrepreneurship in Europe

As the interaction between science and business in Europe has changed from the mid-1990s on, pressure and incentives have increased to commercialize government funded scientific research, by promoting the so called “academic entrepreneurship”, viewed as intrinsically innovative and based on high technologies. This approach is increasingly used in the current financial and economic crisis, as it is considered a possible way to enhance the innovativeness and therefore the competitiveness of national economies. Taking the US *Bayh-Dole Act* as an example,²² over the past decade a number of west European countries have amended their patent legislation, **granting new rights to the stakeholders under government funded research schemes** – universities and research institutes, and in a few cases, such as Sweden – to individual scientists and researchers. The legislative amendments have permitted these stakeholders to acquire ownership over the patents for the results of publicly funded research and to license private firms to use them.²³

As a result of these changes the stakeholders have focused mostly on the processes involved in the establishment of **spin-off firms – start-up businesses set up to commercialize results**. There are four major benefits of spin-offs: a strong impact on local economic and technological development; income generation for the respective research institution; commercialization, including further development of technologies which would otherwise remain undeveloped; a strong relation to business and support for research and training at the respective institution.

The majority of publicly funded research organizations in Europe work

in an environment where high-technology academic entrepreneurship has emerged fairly recently and is not well developed yet. Because of this, the establishment of spin-off firms follows a pattern rather different from that in the US. In contrast to the US, where they follow the business pull of the innovatively-intensive environment, **in Europe government funded research organizations are compelled to take on a key role in the startup and incubation of new businesses**. In this case research institutions follow the technology push and assume the role of selectors of potentially profitable technologies and, with this in mind, possible innovations. Thus, old-conti-

nent academic entrepreneurship creates the so called **European innovation paradox** – the EU is a top-level creator of scientific knowledge, but lags far behind the US and Japan in the ability to translate its scientific advances into wealth-generating innovations. Because R&D in Bulgaria is largely state funded, and non-innovative and micro-enterprises have dominated the structure of businesses, **research organizations became the main actors in the selection and development of new technological innovations** and therefore start-up companies.

European national innovation systems are much less friendly to start-

TABLE 7. UNIVERSITY SPIN-OFF FIRMS (SELECTED COUNTRIES)

Country	Period	Number of spin-offs
USA	1980 – 2003/2004	4,543*
Canada	1962 – 2003	1,100
France	1984 – 2005	1,230
Netherlands	1980 – 1990	300
UK	1981 – 2003	1,650
Belgium	1980 – 2005	320
Sweden**	До 1990	3,000-5,000
Germany**	1997 – 1999	470-4,000**
	2001	900-8,000

* Including 462 in 2004 for USA and Canada;

** Calculations for Sweden and Germany are difficult to make, as intellectual property rights are owned by the researcher rather than the university.

Source: Wright et al., p 2

²² Enacted by the US Congress on December 12, 1980, the Act is named after the two senators who sponsored it – Birch Bayh and Bob Dole (P.L. 96-517, Patent and Trademark Act Amendments of 1980, codified in 35 U.S. Code § 200-212, implemented by 37 Code of Federal Regulations 401). It set up a unified patent policy for federal agencies funding research and gave small businesses, non-profits, universities and research institutions title to retain control of their intellectual property that resulted from such funding. The Act enables US universities to license and commercialize their inventions by supporting the establishment of spin-off firms interested in the licensing and further development of these inventions. (Wright M., B. Clarysse, Ph. Mustar and A. Lockett, *Academic Entrepreneurship in Europe*, Edward Elgar Publishing, 2007, p. 1).

²³ Wright et al, 2007.

up business than the US. Intellectual property matters are poorly regulated and publicly-funded research organizations must comply with a number of regulations to get permission for starting spin-offs.²⁴ For instance, Germany had prohibitions on university investments into spin-offs

in force up to the late 1990s. Highlighting this fact is important, so that **Bulgaria does not seem to be an exception with its similar bans in the 1990s.** It can be argued, though, that such proscriptions in Bulgaria were supplemented by a number of negative macroeconomic and politi-

cal factors. In addition, contrary to the pattern in developed capitalist states, the lifting of these bans has been formal rather than ensuing from a policy change in this area complete with all regulatory, financial and organizational incentives to commercialize research.

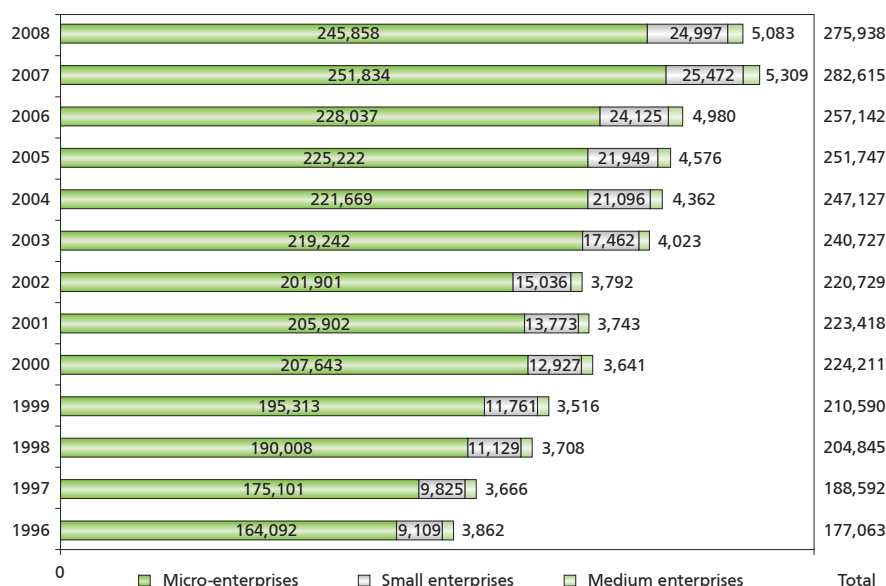
Entrepreneurship Environment in Bulgaria

Setting up a new business does not amount to entrepreneurship if the start-up follows only long-established old combinations contributing to keeping the economy in a stationary state. Therefore, the structure, dynamics or life cycle of start-up firms only point to the context or the particular entrepreneurship environment, solely serving to draw a rough estimate of entrepreneurial activity in the country.²⁵

Analysis of the number, structure and dynamics of the legal entities registered in the non-financial sector²⁶ indicates that micro, small and medium start-up enterprises have steadily increased in the period 1996 – 2008. Their number as a relative share compared to the preceding year dwindled during two periods (2001 – 2002 and 2008), mostly in 2008 when the overall number of micro, small and medium businesses decreased by 2.4 % compared to the year before.

As to their structure, in 2007 there was a rise of 0.4 % in the share of micro-enterprises compared to the previous year, while small companies' share decreased and that of medium ones did not change. A similar ratio was maintained in 2008 against the background of the already noted drop of the total number of compa-

FIGURE 16. STRUCTURE OF LEGAL ENTITIES (1996 – 2008)



Source: National Statistical Institute, 2009

nies to 275,938. Compared to the whole post-1996 period this change does not affect the trend of small and

medium enterprise growth and micro-enterprise decrease, whose shares respectively reached 9.1 %, 1.8 % and

²⁴ Wright et al.

²⁵ *Measuring Entrepreneurship. A Collection of Indicators*, 2009 Edition, OECD-Eurostat Entrepreneurship Indicators Programme, 2009, OECD Statistics Directorate.

²⁶ Despite variations in established international definitions of what constitutes an enterprise, all underline that for a unit of study to be defined as enterprise it must have a certain degree of autonomy in decision making. (Oslo Manual. *Guidelines for Collecting and Interpreting Innovation Data*, 3rd ed., OECD and Eurostat, OECD 2005, p. 64-66, §§ 231-236) The two definitions most referred to – those of the EU and the International Standard Industrial Classification (ISIC), also incorporate this principle. (Council Regulation No 696 / 93 of 15 March 1993 on the statistical units for the observation and analysis of the production system in the Community, OJ No L 76, p.1, section III/A of the annex; ISIC Rev. 3.1., p. 16-17, §§ 49-56; ISIC Rev. 4, p. 16, §§ 77-79, 93-94).

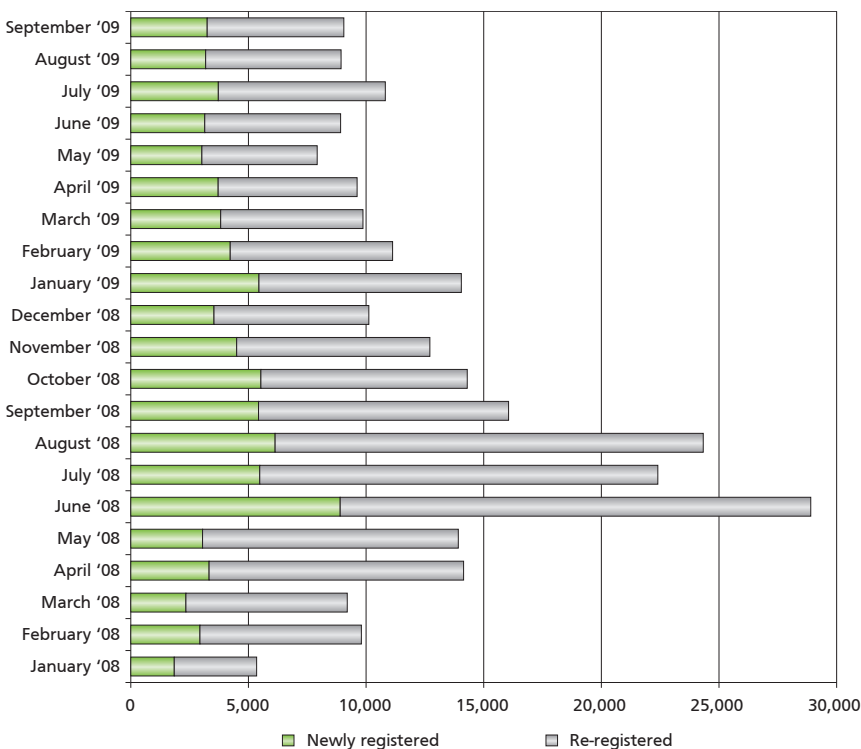
89.1 % in 2008. In terms of innovation potential this looks like a positive trend, as micro-enterprises are generally viewed as less innovative.²⁷

The Registry Agency reports that between January 2008 and September 2009 a total of 271,694 companies were entered in the Central Commercial Register, 184,995 of which were transferred from the old registers and only 86,699 were new companies.²⁸

The dynamics of the registration process shows that after a peak in June – August 2008, a downward trend settled, the number of registered firms dwindling more than twice in March 2009 when it reached a monthly 7 – 10,000. Despite the decreasing trend of re-registration and first registration, the number of first registered companies is fairly stable, particularly after March 2009, since when an average of 3,400 have been registered monthly. The dynamics of newly registered companies is one of the indicators of the national economy's level of innovativeness, as it is among entrant businesses where "authentic entrepreneurs" commencing a novel activity in the respective period are to be found. The structure of newly registered companies shows that nearly half of them for each particular month are sole proprietor limited liability companies, while proprietorships and limited liability companies occupy almost equal shares of close to one fourth, while other forms of registration account for a mere 1-3 % of new companies.

The structure of first registered businesses according to their ownership

FIGURE 17. NUMBER OF NEWLY-REGISTERED AND RE-REGISTERED LEGAL ENTITIES IN THE CENTRAL COMMERCIAL REGISTER



Source: Registry Agency, 2009

type could be indicative of the firm's size, as it is reasonably expected that proprietorships are basically micro-enterprises. At the same time, for the whole nearly two-year period, the newly registered proprietorships were a mere 24.0 % compared to 76.0 % of those re-registered. **This is a clear downward trend in the number of registering proprietorships compared to the pre-2008 period.** From the perspective of innovative entrepreneurship this trend could be perceived as a positive factor, since the number of the smallest, low-innovative companies, which are often a form of self or family em-

ployment, is dropping. It should be remembered, though, that a certain, small proportion of the micro start-ups are authentic entrepreneurs whose numbers will vary among economic sectors.²⁹

Taking into account the number of legal entities in the non-financial sector in 2008 (276,715 according to NSI data) as well as the total number of newly registered and re-registered companies in the Central Commercial Register (271,694 by September 2009), it can be concluded with considerable certainty that the economic entities carrying out or de-

²⁷ Many studies of European enterprises' innovation activity leave enterprises with less than 9 or even 20 employees out of the analyzed clusters on the grounds of their having no innovative potential. For instance, the survey Innobarometer 2009, commissioned by Directorate General "Enterprise and Industry" of the European Commission, only includes companies with over 20 employees.

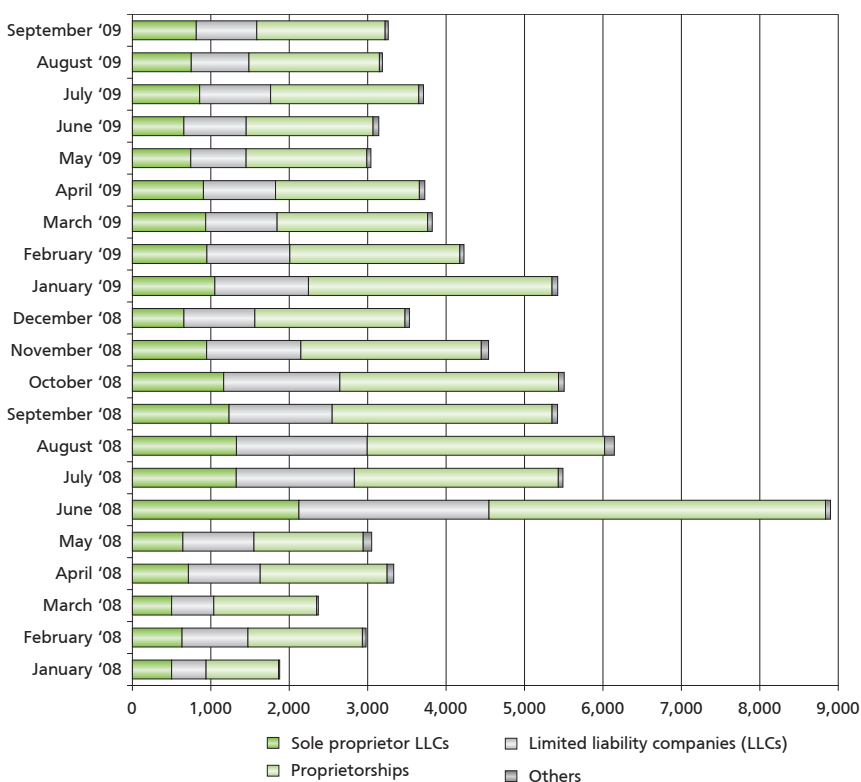
²⁸ According to the Law on the Commercial Register in force as of 1 January 2008, all active companies are subject to re-registration in the Central Commercial Register within the following three years, that is, by December 2010. After the period has expired, those that have not been re-registered will be deleted either directly if they are proprietorships, or, in the case of trade companies, through official liquidation proceedings for the purpose of deletion from the Register.

²⁹ The dropping number of proprietorships could be due to some other factors as well, such as the decrease of the minimum required amount to register a limited liability company – now, following the latest legal amendments, a mere 2 levs (Commercial Law, Art. 117, Par. 1, amended State Gazette No. 82, 16 October 2009), as well as the abolished provision that a limited company of an annual turnover below 50,000 levs can opt not to register for VAT purposes.

claring to carry out any activity are less than 300,000.³⁰ This seems to be the corporate context in which Bulgarian and foreign entrepreneurs operate on the legal side, although whether these enterprises are autonomous economic units is a different matter. Some estimates have shown that concerning control over companies' ownership and management, in the various sectors of the Bulgarian economy an average of 2.5 to 3.5 legal entities compose or service a single economic entity.³¹ Based on its own estimates the ARC Fund considers the total of economically active enterprises in Bulgaria in 2008 to be around 110,000, of which 10,000 to 15,000 have more than 10 employees and barely 1,000 to 2,500 employ over 50 people. It is among these 100,000 economically active enterprises where entrepreneurs taking up innovative activities with a start-up firm or carrying out the so called corporate entrepreneurship³² as existing medium or large enterprises should be sought.

As mentioned above, the dynamics and structure of companies in the economy as well as the structure of economically active enterprises can only provide for a rough assessment of some factors determining entrepreneurial activity. From the perspective of the innovative potential of the national economy, of particular economic sectors or of local techno-economic hubs key distinctions of the types of

FIGURE 18. TYPE OF OWNERSHIP OF COMPANIES FIRST ENTERED IN THE CENTRAL COMMERCIAL REGISTER



Source: Registry Agency, 2009

entrepreneurs are made according to the degree of novelty and the intensity of innovations applied by the entrepreneur as well as the innovations' impact on the enterprise productivity, the growth of its market share and the competition-led replacement of dated production forms.³³ Having recognized how important this criterion is, in the last two decades in

Europe particular attention has been paid to innovative entrepreneurship and the proliferation of high-technology start-ups in order to promote and speed up the commercialization of results from both publicly and privately funded R&D.

As the analysis in the following chapters of entrepreneurship devel-

³⁰ According to the Registry Agency, at the end of 2007 there were 1,200,000 registered legal entities. Current legislation requires re-registration if companies are to be allowed to perform certain key activities (such as concluding contracts with other firms or taking part in public procurement procedures), which means that most companies conducting any activities have already re-registered. ("One million companies have to re-register in order to continue operation", interview with Atanas Georgiev, acting Deputy Director of the Registry Agency, *Novinar* daily, November 4, 2009).

³¹ This issue was examined at greater length in *Innovation.bg 2009*, pp. 22-23; Data from INA-4 and case studies in various economic sectors, including highly innovative branches, carried out in 2009 confirm the conclusions about the average number of legal entities constituting a single economic enterprise. Apart from the analysis in *Innovation.bg 2009*, there is a growing number of cases where networks of legal entities are created in order to become legitimate participants in the EU structural funds tenders. According to the Acting Director for the Registry Agency, in certain cases 10-15 firms are fictitiously registered, particularly in order to decrease due taxes or to engage in tax fraud ("One Million Hollow Firms in Bulgaria", *Monitor* daily, November 23, 2009).

³² Although the term was coined later on, as early as in 1942 Schumpeter described the process of making entrepreneurship routine within large corporate structures where specially trained expert teams draw mid and long-term plans and strategies of innovative development and entrepreneurial activities (Schumpeter, J., *Capitalism, Socialism, Democracy*, HarperCollins Publishers, New York and London, 2008). As enterprises are going increasingly global in the last two decades, corporate entrepreneurship becomes highly developed. Large multinational companies, mostly in high-technology branches (IT: IBM, Nokia, Microsoft, Panasonic, etc.; automobile industry: Toyota, Volkswagen, General Motors, Ford, Daimler, etc.; pharmaceutical and cosmetic industry: Pfizer, Johnson&Johnson, Novartis; military and space and aircraft industry: Lockheed Martin, Boeing, BAE Systems, etc.) are working on special programs to encourage internal corporate entrepreneurship, also through earmarking financial, organizational and other resources. Several cases of corporate entrepreneurship are also found in Bulgaria, falling into two basic groups – either local branches of multinational corporations where the relevant corporate policies are supported, or Bulgarian companies that have planned and are following a long-term innovation strategy for the company (mostly firms in the ICT and defense sectors).

³³ *Evaluation of the Finnish National Innovation System*, Policy Report, 2009, Helsinki University Print.

