Research-based spin-off entrepreneurship in a transitive economy (a case of Belarus)

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Research methodology and projects

Empirical research (2003-2011) with opportunistic data collection:
- case-studies of 10 RSOs in Belarus and 2 in Estonia and France;
- semi-structured interviews with 23 experts from innovation infrastructure;
- analysis of primary patent data in the NCIP and WIPO databases on the stocks of high-tech patents and patent portfolios of particular RSOs;
- questionnaire survey and interviewing the experts among managers of RSOs and scientific research institutes in Belarus about IPR management;
- personal participation in organisation of technological transfer arrangements.

• “Innovation Performance Review: Belarus” (2010-2011 © UN)
• “Intellectual property as an asset of scientific and technical enterprises” (2010-2012 © BRFFI, Pobol)
• “Positioning of a software engineering business cluster in Belarus” (2010 © Infopark, Pobol)
• “Attraction of FDI in high-tech export oriented manufactures” (2010, Belarusian State Economic University)
• “Institutional conditions and forms of transition of the national economy to the innovation-intensive strategy of development” (2005-2008, Ministry of Education of Belarus)
• “Recommendations on creation of favorable economic environment for promotion of creation and effective functioning of small innovative enterprises” (2007, Ministry of Economy of Belarus)
• “Recommendations on development of the national innovation system of Belarus” (2005-2006, Ministry of Economy of Belarus)
RSOs: state-of-the-art
Object of study

Research-based spin-off enterprises (RSOs):
- enterprises specialised in R&D,
- the founders of which are (have been) researchers of scientific research organisations and universities

Small innovative enterprises in Belarus, 2008

Source: based on data of National Statistical Committee of Belarus
Dynamics of development of small innovative entrepreneurship in Belarus

Source: based on data of State Committee on Science and Technologies
Dynamics of development of small innovative entrepreneurship in Belarus

Source: based on data of State Committee on Science and Technologies
RSOs’ growth factors
RSOs’ growth scenarios

Scenario: cancellation of existence of concrete RSO

Loss of intellectual basis by national innovation system

Researchers migrate to the other sector of economy, where their technological competence and R&D experience are not used (e.g., trade)

Researchers migrate to the other country, where their technological competence is employed and is remunerated (or not employed but their labour is remunerated)

Preservation of intellectual basis by national innovation system

Researchers establish another firm / work for the other domestic enterprise, using their experience and technological competence

Researchers get employed at the R&D department of the foreign enterprise in the territory of domestic country

Successful scenario of development of concrete RSO

Additional financing for RSO’s R&D is found

Transformation into the joint stock company

Passing of part of stocks to business angel or venture capitalist who finance the expansion

Attraction of foreign capital and transformation of RSO into a joint or foreign enterprise

Nationalisation of RSO (e.g., if it develops technologies which are strategically important for the state security) and the efficient financing of R&D from the state budget

Disappearance as an independent economic unit (legal body) and transformation into a structural part of another innovative-focused enterprise (domestic enterprise or foreign concern / multinational corporation) as research division
Microlevel factors of the direction, speed and mode of growth of RSOs

**Specifics of products**
- Growing R&D expenditures for science-intensive products;
- Capital intensiveness of firms’ expansion in certain sectors;
- Knowledge increment in value added by RSOs.

**Demand side**
- Solvency of demand of industrial enterprises;
- Costs for introduction of the new technology and mastering of it higher then costs of technology purchase;
- Level of technological competence of customers.

**Supply side**
- Availability of qualified researchers;
- Operating legislative base for protection of IPR;
- Resources for innovations promotion and marketing;
- Availability of venture capital;
- Mechanisms of state support.
Factors shaping the geography of RSO’s market

- Market structure and firm's consciousness of its future changes
- Presence, complexity and solvency of demand in the market
- Local knowledge of specific characteristics of the domestic market
- Proximity of receptive local or neighboring market and oligopolistic character of demand
- Tight connection to technological partners
- Geographical differentiation of markets on complexity and structure
- Entry barriers to technological area (e.g., qualification and costs of equipment)
- Customers' level of advancement and their specialisation
Economic relations inside and around RSOs as factors impacting their growth trajectories
Challenges to RSOs in a transitive economy
Main restrictions to SMEs development in Belarus

1. **Excessive state regulation of private business:**
   wages, foreign trade, indication of plans on growth of production (GDP)

2. **Excessive bureaucracy, administrative procedures, checks of SMEs by controlling bodies**

3. **Preferential attitude of the state to largest enterprises:**
   structural changes aren’t begun yet

4. **Rules for private business are too unstable and often inconsistent**

5. **The state support of SMEs is minor**

*Source: Minsk Forum XIII “Belarus und die EU nach der Krise – Herausforderungen und Chancen fuer Politik, Wirtschaft, Gesellschaft, 2010*
Restrictions to RSO’s development in transitive economies

Require the targeted assistance
- Scarcity of financial resources
- Scarcity of high-tech equipment
- Scarcity of managerial and marketing skills (inc. IPR, foreign markets)
- Scarcity of intellectual (S&T) resources

Require the general industrial and innovation policy
- Solvency of industrial demand
- Absorptive capacity to technological innovations
- Deficient legislation on commercial usage of IP
- Degree of development of collaboration linkages

Require elimination and conflict resolution
- Excessive instrumental interference of the state policy
- Opportunism of classical scientific organisations
- Mentality and institutions’ path dependence
- Law enforcement practice
Dynamics of patent activity of Belarus

Source: based on data of National Center for Intellectual Property
Distribution of high-tech patents issued in Belarus and Ukraine in 1994-2008

Source: own search of the primary data in the databases of NCIP of Belarus and Ukraine
Methods, actually (un)used by SIEs for IPR management

- Buy-out of patents of other companies for occupation the unique competitive position.
- Special team of IP management;
- Composition of portfolio of complementary patents;
- Evaluation of IP assets;
- Analysis of IPR infringement of/by the other firms;
- Multi-patenting R&D results for demarcation the fields of licensing;
- Regular audit of IP assets;
- Provision of patent protection on the foreign markets;
- Analysis of the degree of usage of IP assets;
- Analysis of ownership of the employed IP assets;
- Keeping R&D in secret;

Source: author’s expert survey in the framework of BRFFR project, 2011
Profile of high-tech patents of Belarus

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<th>IPC</th>
<th>Number of the NCIP patents</th>
<th>Patents ceased due to non-payment, %</th>
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Source: own search of the primary data in the database of NCIP of Belarus
Policies for facilitating the emergence and growth of RSOs in transitive economies
Main blocs of the RSO-friendly policy

- **Legitimation of RSO’s status;**
- **Elaboration of schemes for regulation of conflict of interests with parent organisations;**
- **Taxation regimes**
- **Networks;**
- **Clusters;**
- **FP7, SSTP, etc.**
- **Subcontracting**

**LEGAL REGULATION**

- **Evolutionary approach responding the needs of all stages of RSOs’ lifecycle, incl. seed stage (i.e. vouchers for consulting and legal services, marketing and patent search);**
- **Venture funds, bank services and tools;**
- **State order on technological innovations etc.**

**RESOURCE BASE**

- **LMEs’ culture;**
- **Mobility;**
- **Life-long learning**

**INNOVATION CULTURE**

- **Co-financing of mastering R&D results by industrial enterprises;**
- **Awareness-raising about opportunities of science; technology transfer options, etc.**

**INTEGRATION INTO THE WORLD MARKET**

- **RSOs’ websites;**
- **Patent and market research services;**
- **Foreign markets research services & legal consultation;**
- **Grants for development of industrial samples, technical documentation, other ‘evidences’**
- **Development of sample schemes of IPR sharing;**
- **Awareness-raising of RSO about IPR management;**
- **Specialised consulting services;**
- **Mechanisms of co-financing of patenting R&D results abroad, etc.**

**NETWORKING & COOPERATION IN THE NIS**
Thank you.

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