

Innovation Policy in the Czech Republic – Regional Cases

Pavel Ptáček, Tatiana Mintálová,
Václav Toušek

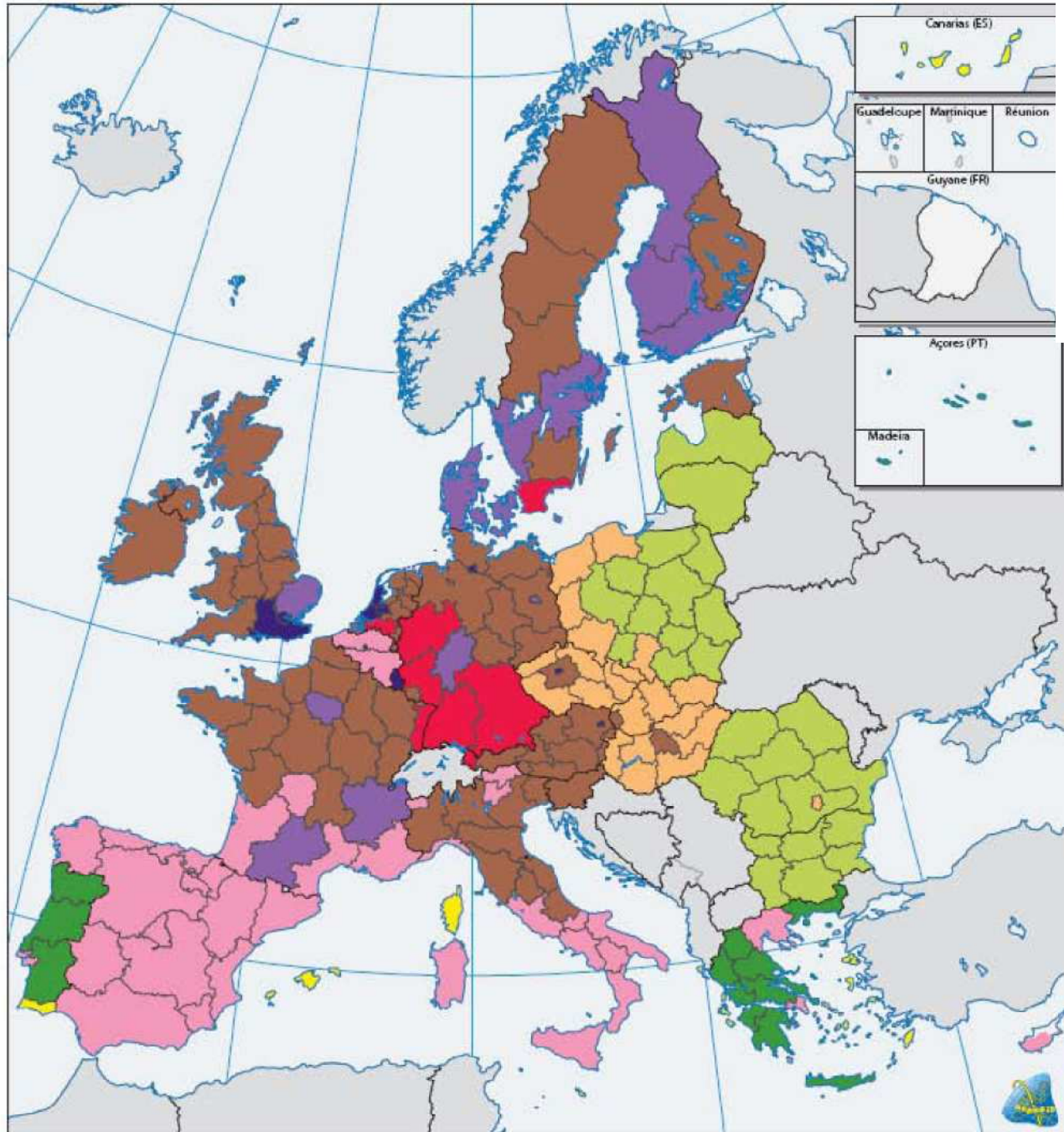
Palacký University in Olomouc, Czech
Republic



Presentation outline:

1. Characteristics of approaches to RTD in different regions in Europe
2. RTD characteristics in the Czech Republic: national and regional level
3. Foreign direct investment as a main driver of innovation in business sector
4. Case study of the car industry
5. Regional case study – Zlín region
6. Conclusions

Map 1 Classification of European regions



Clusters of regions

- Type 1A: Predominantly agricultural
- Type 1B: Diversified agro-industrial
- Type 2: Tourism-based
- Type 3: Re-industrialising
- Type 4: Newly industrialised and diversified
- Type 5: Restructuring industrial
- Type 6: High-income industrial leaders
- Type 7A: Diversified high-income economies
- Type 7B: Service-based high-income economies

Source: Dory, T.(2008): RTD Approaches in Different Types of EU Regions. European Commission, Erawatch



Characteristics of the type 3 regions

- **Type 3: Re-industrialising** low-to-medium-income economies (industrial 'catchersup'),
- benefiting from the re-location of European industry, with substantial human capital resources but yet not fully developed know. creation capacities (**20 regions**)
- RTD governance system is centrally organised



Characteristics of the type 3 regions

- important role of manufacturing in low-to-medium technology sectors
- medium-to-high-tech and high-tech a larger role as a result of multinationals relocating production – and in few cases also some R&D– to these regions
- long-standing industrial traditions
- the close match between the region's public knowledge base and the needs of industry
- the high absorptive capacity and quality of human resources



Characteristics of the type 3 regions

- some strong research facilities
- aim at upgrading and further developing the existing regional R&D capacities
- foreign investors have established some R&D centres
- some links to the regional research community thanks to the networking and cluster initiatives
- **this mode of development is only possible if the regional RTD supply matches the needs of the local industry!!!** (Czech regions X others)



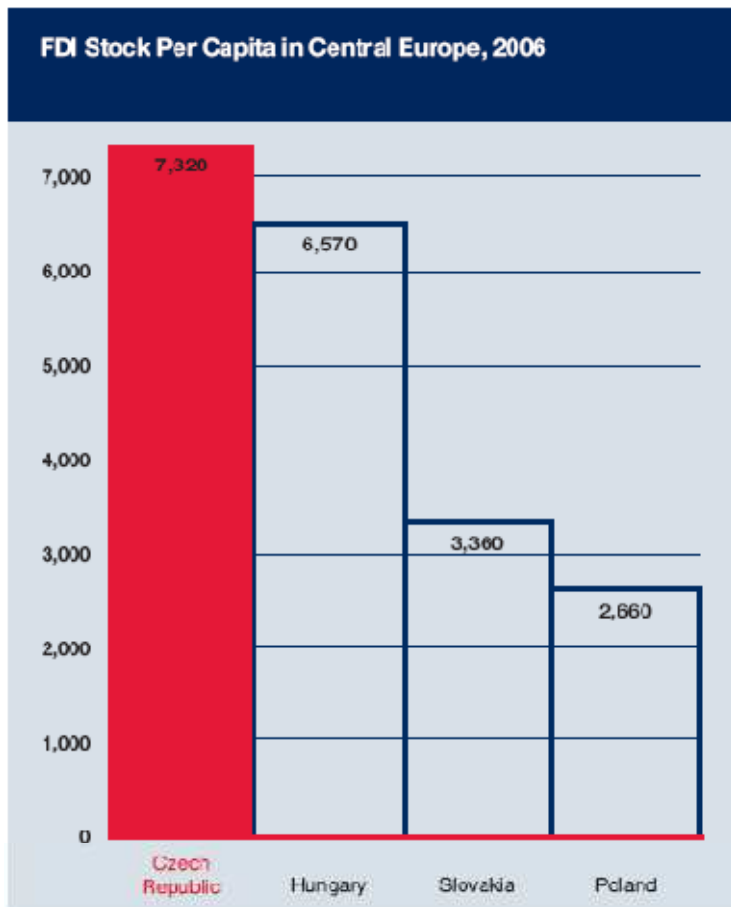
Characteristics of the type 3 regions

- recent policy measures:
- supporting the establishment of spin-off companies,
- public-sector research
- the development of regional knowledge centres (that match the specialisation of public research base)

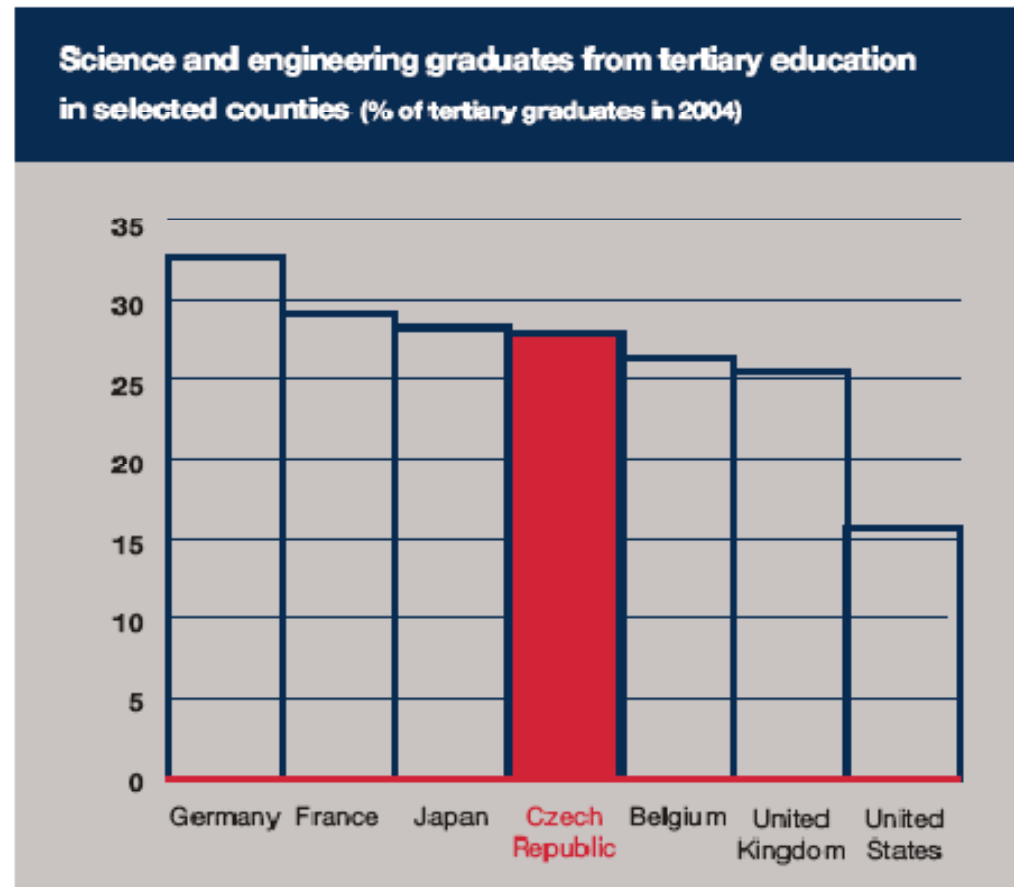
Spatial concentration of R&D in selected countries (Half of the R&D employees can be found in the agglomerations...)

| USA 1995 | Germany 1997 | Italy 1995 | UK 1995 | France 1995 | Czech R. 2005 | Hungary 2000 |
|---|---|---|--|--|--|--|
| New Jersey, Essex (9%) Boston 8% Los Angeles 7% Philadelphia 6% Detroit 4% Chicago 5% New York 4% San José 3% <i>Washington 3%</i> | Munich 12% Stuttgart 12% Darmsatdt 9% Rhine- Neckar 6% <i>Berlin 4%</i> Düsseldorf 4% Brunswick 3% Cologne 3% | Milano (Lombardy) 33% Turin (Piemonte) 24% <i>Rome (Lazio)</i> 10% | <i>London (South East) 41%</i> East Anglia 11% | <i>Paris (Ile de France) 48%</i> Rhone-Alpes 11% | <i>Prague 42%</i> Central Bohemia 28% | <i>Budapest + Central Hungary 64 %</i> |
| 9 reg. | 8 reg. | 3 reg. | 2 reg. | 2 reg. | 2 reg. | 1 reg. |
| 49% | 53% | 67% | 52 % | 59% | 70 % | 64 % |

Position of the Czech Republic in FDI stock per capita and S&T graduates

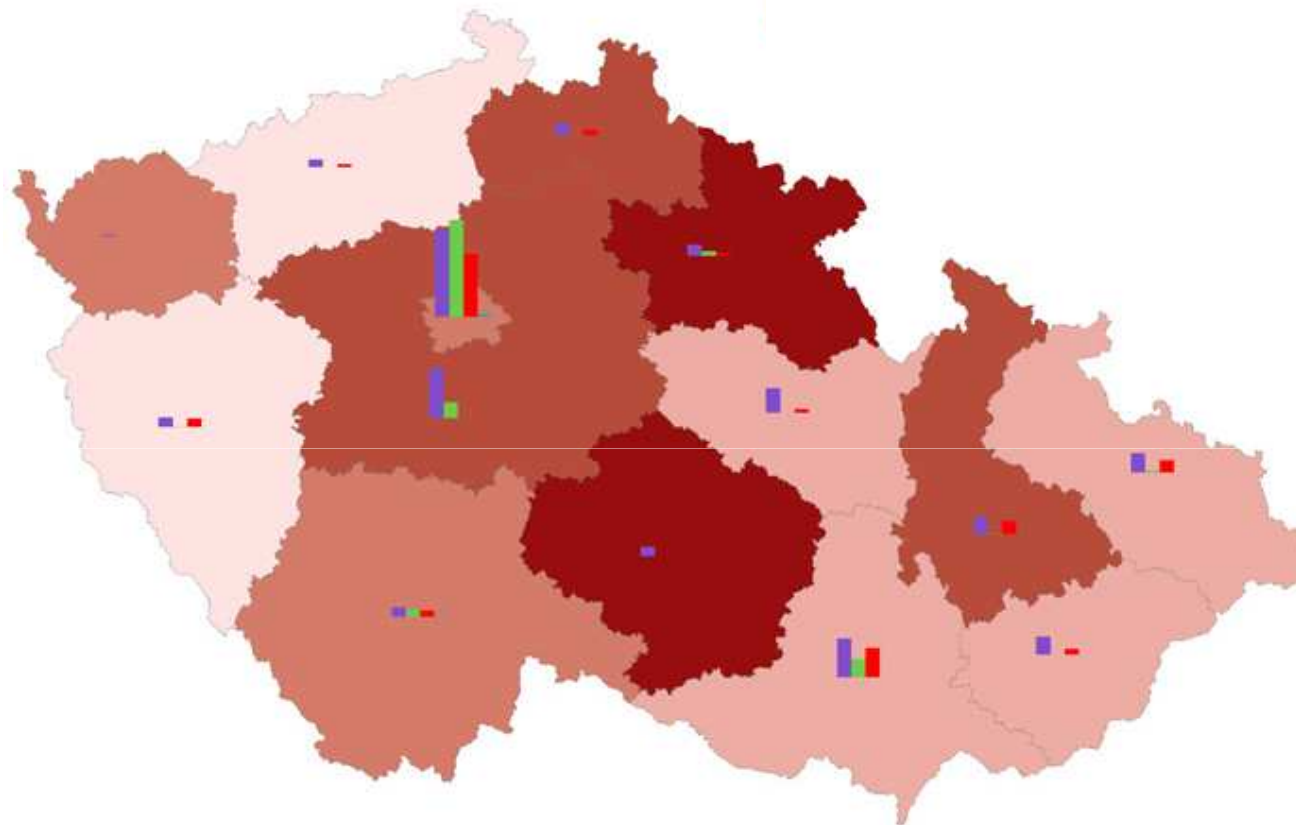


Source: World investment prospects to 2010, EIU 2006



note: the share of S&E graduates in Hungary is 13 %

R&D employees after the activity sector (2005)



Index of change of empl. numbers in 2001–2004

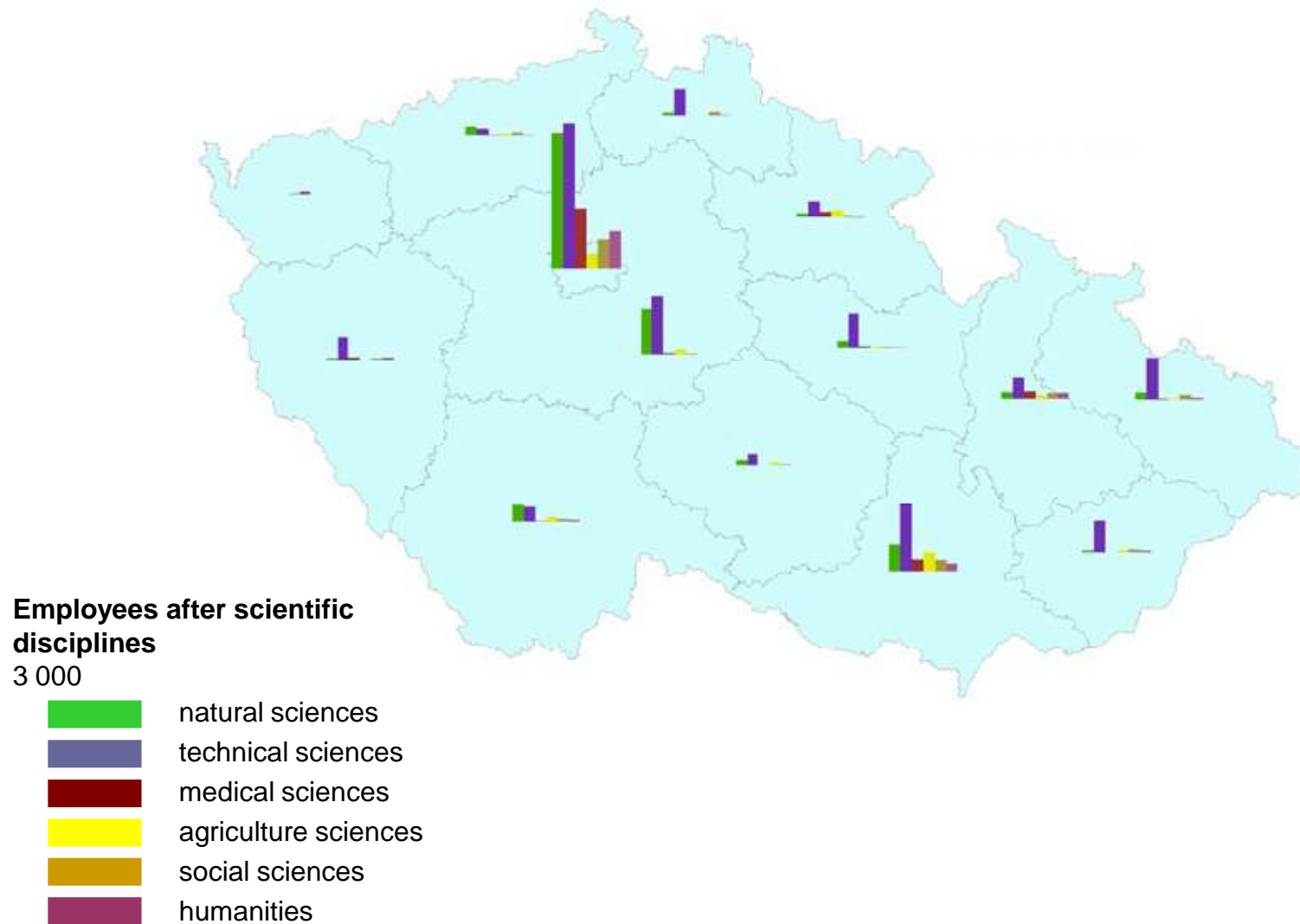
- less than 100,0 %
- 100,0 – 107,9 %
- 108,0 – 115,9 %
- 116,0 – 149,9 %
- more than 150 %

Sector of employment:

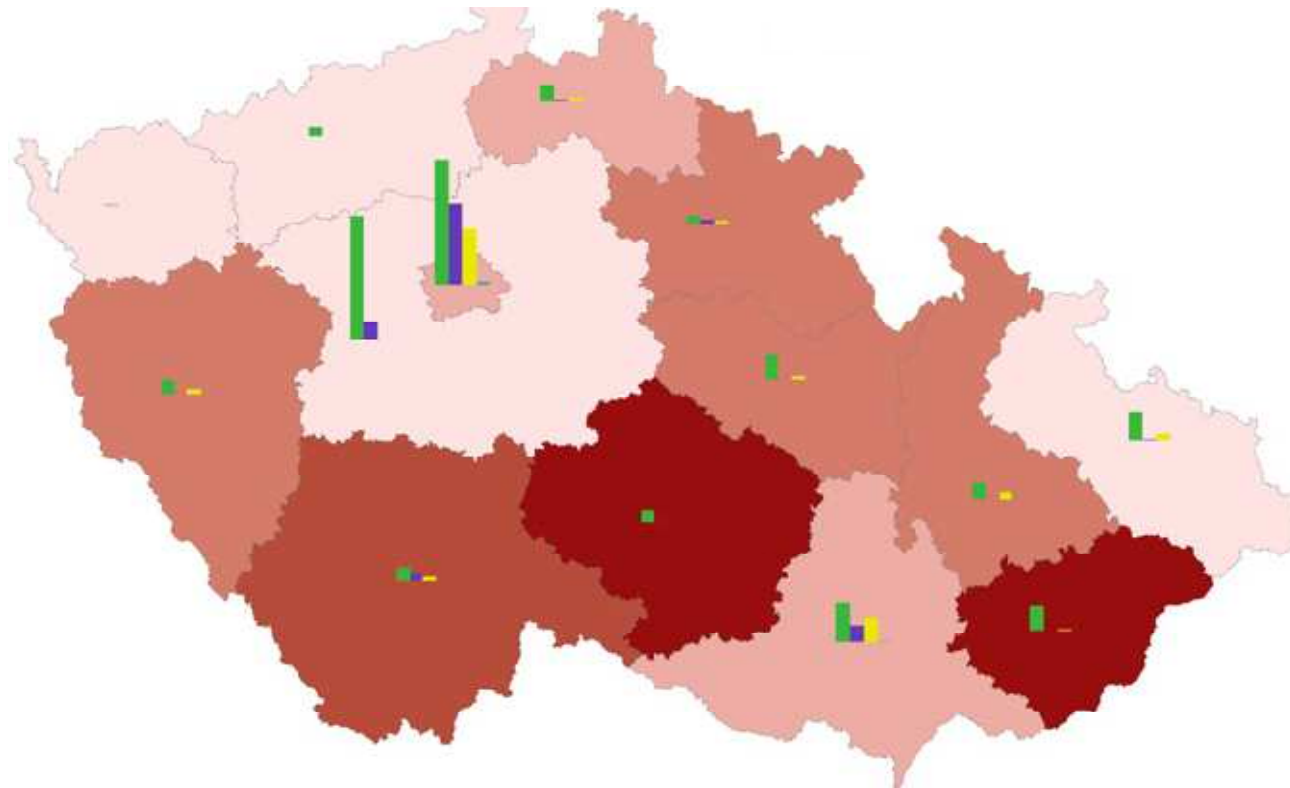
3 400

- entrepreneurial
- gouvernement
- higher education
- private NGOs

Distribution of R&D employees after scientific disciplines



Expenditures on R&D after the sector of activity (2005)



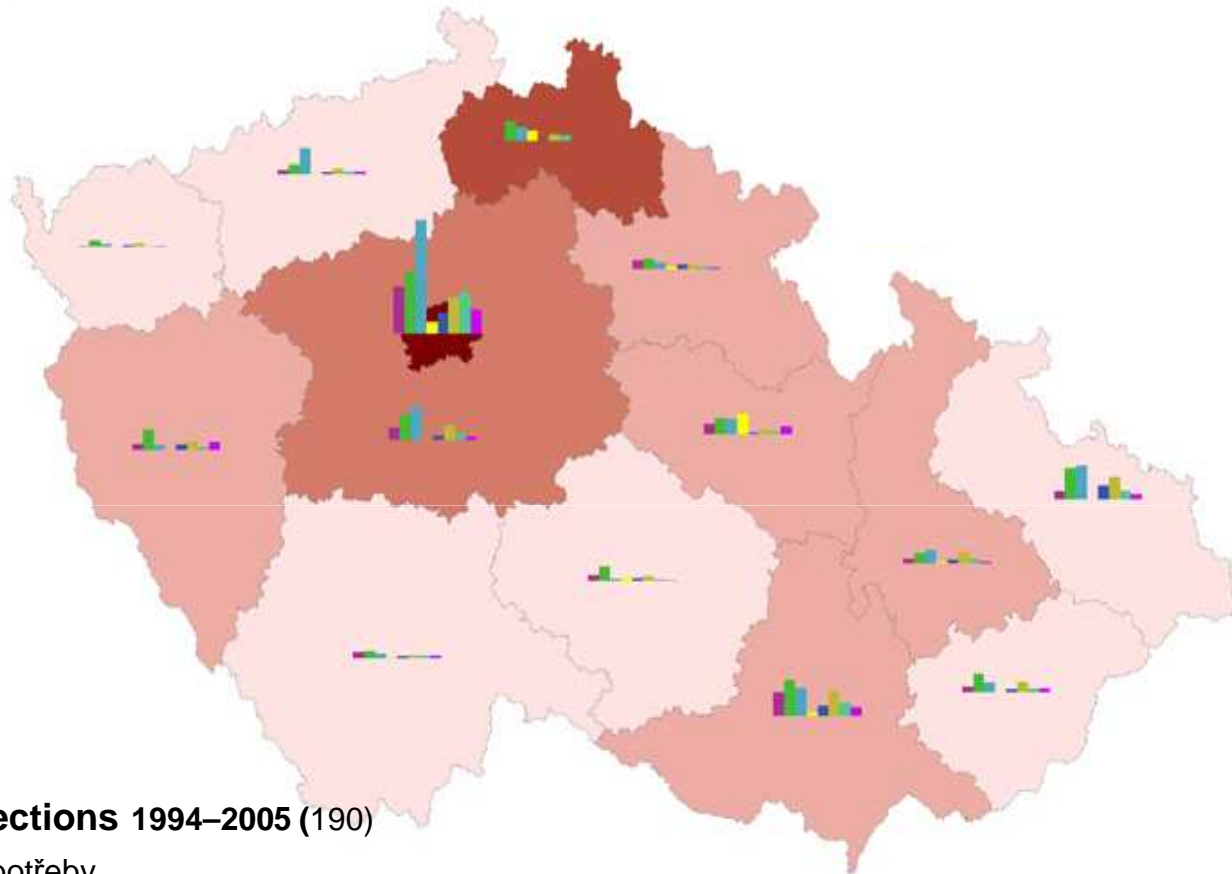
dynamics of R&D expenditure 2001–2005

- < 7,5 %
- 7,6 – 15,0 %
- 15,1 – 22,5 %
- 22,6 – 30,0 %
- > 30,0 %

Sector: 3 700 000

- entrepreneurial
- government
- higher education
- private NGOs

Patents in IPC sections (1994–2005) and number of patents per 1 mil. inhabitants (2005)



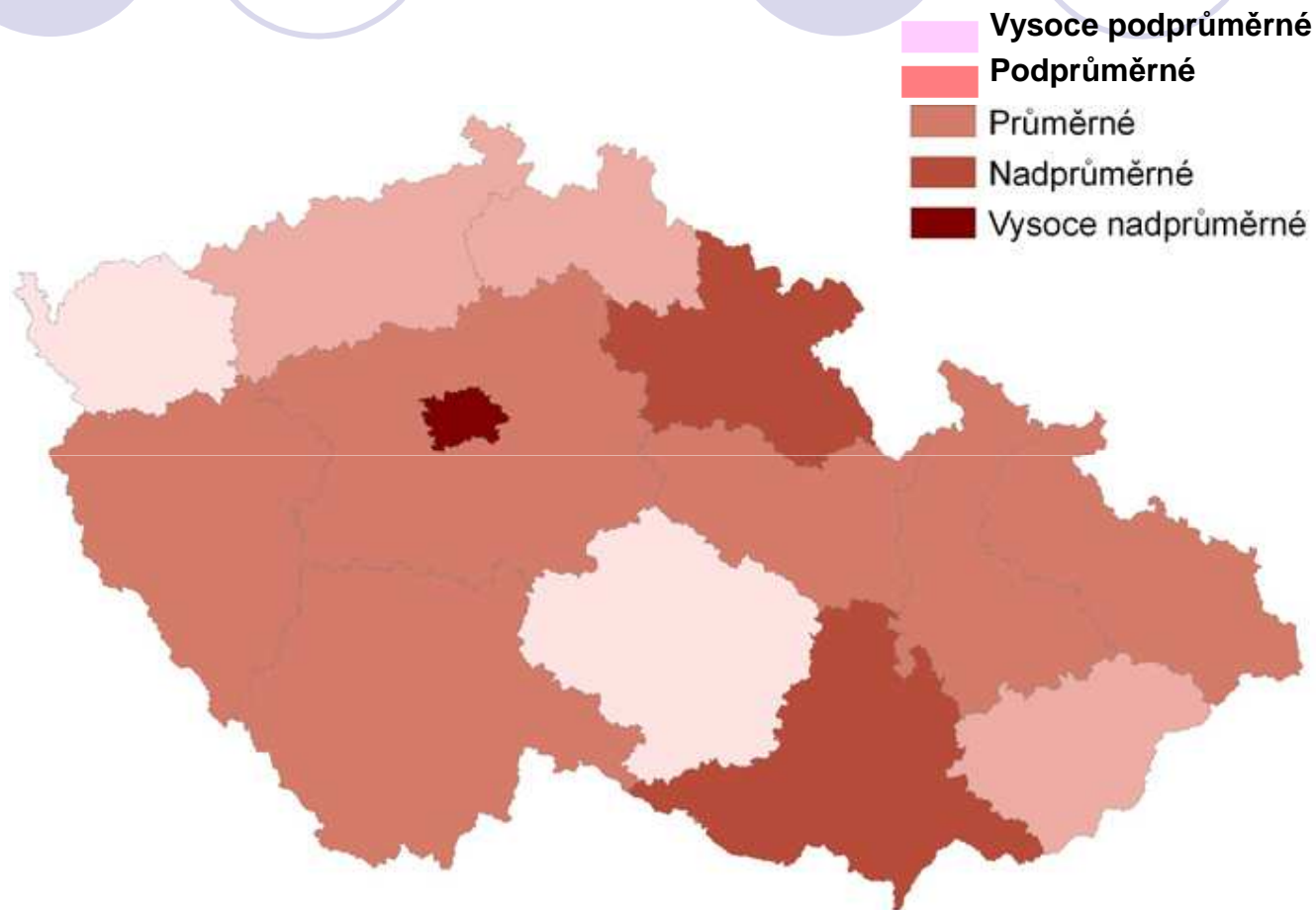
Patents in IPC sections 1994–2005 (190)

- lidské potřeby
- průmyslová technika, doprava
- chemie, hutnictví
- textil, papír
- stavebnictví
- mechanika, osvětlení, topení, zbraně
- fyzika
- elektřina

Patents per 1 mil inhab. in 2005

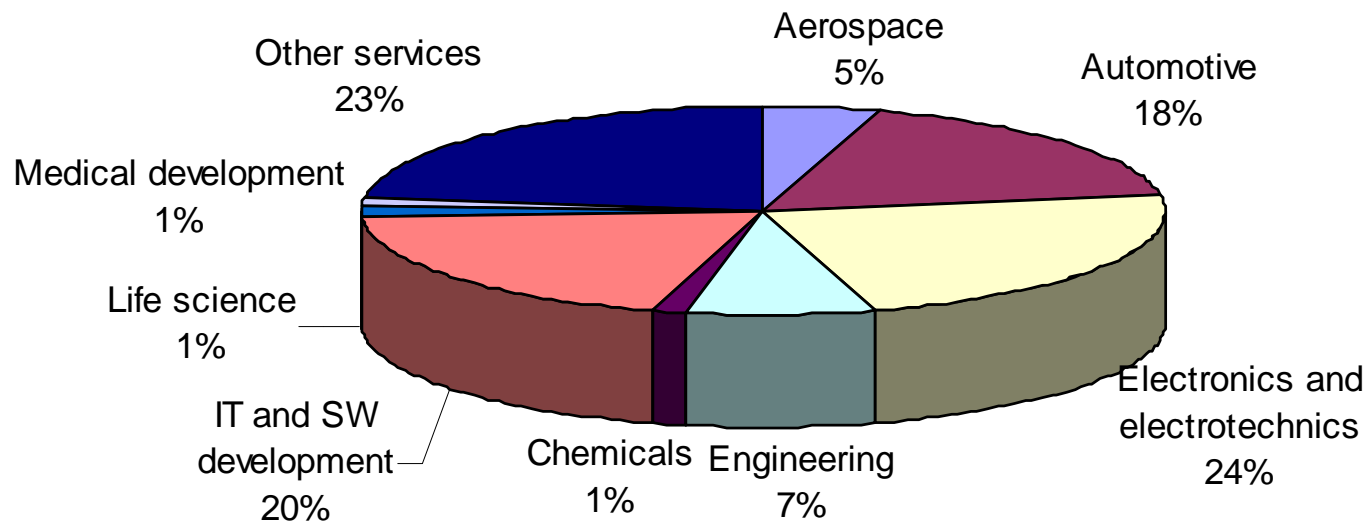
- < 20.0
- 20,1 – 40,0
- 40,1 – 60,0
- 60,1 – 80,0
- > 80

Agregate Innovation Potential Values in NUTS3 Regions of the Czech Republic



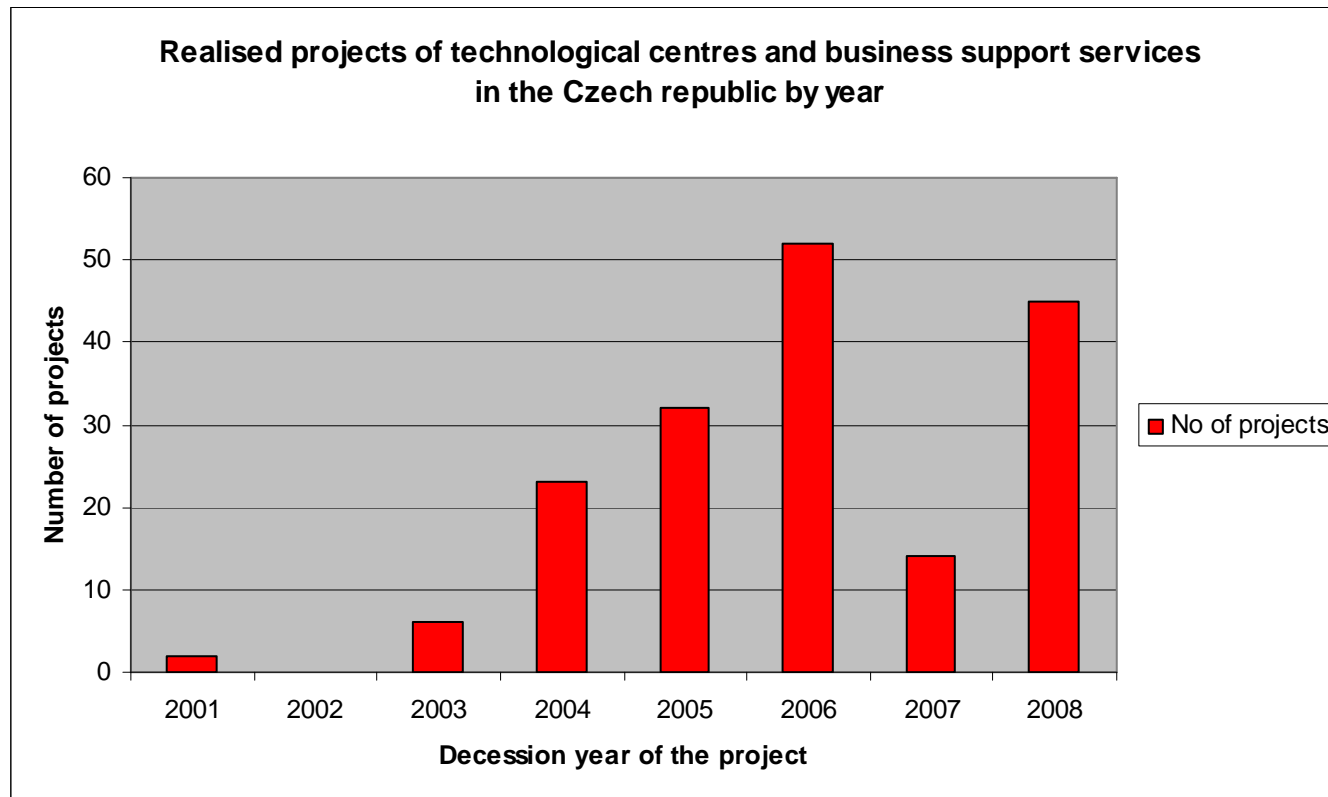
FDI and Innovation: sectoral distribution of projects

Sectoral distribution of projects of TC and BSS

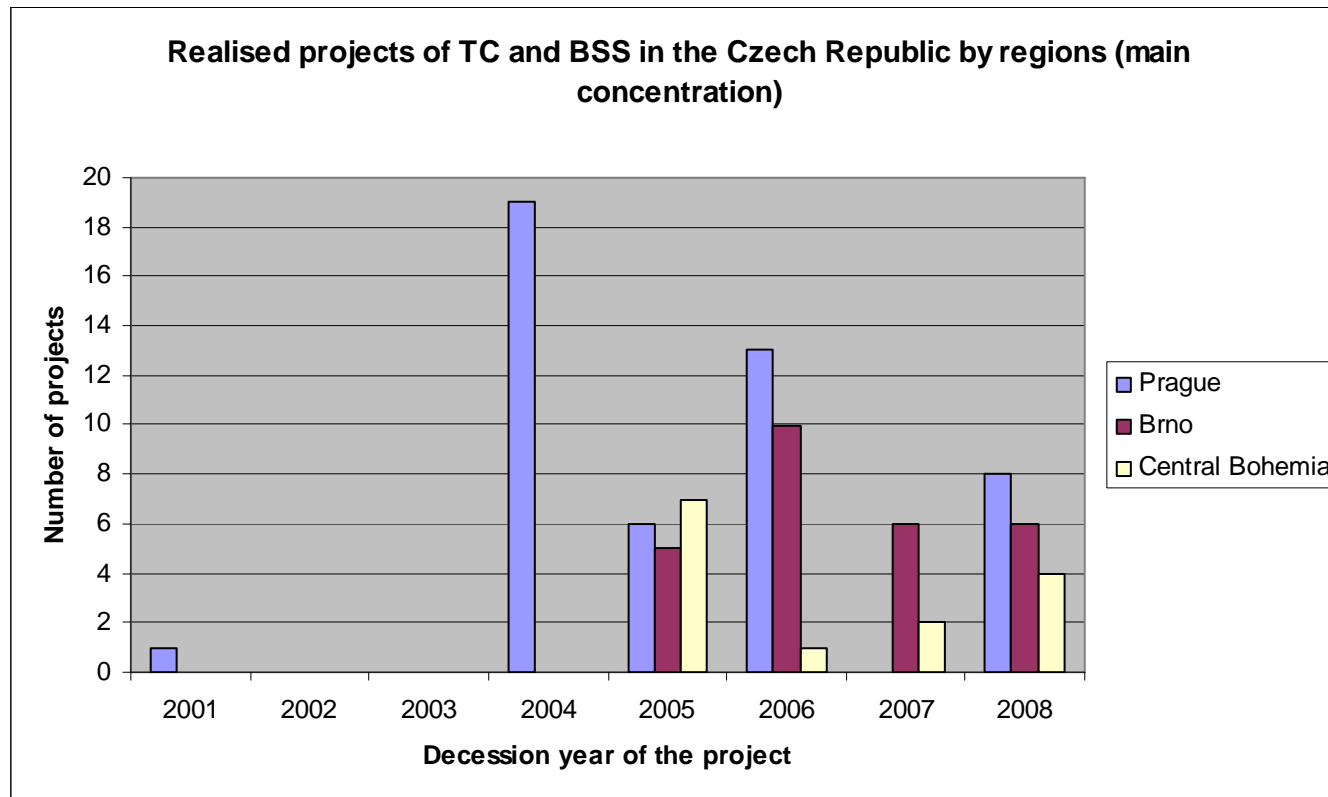


Source: Czechinvest, 2009

Time development of project realisation



Time development of projects and their spatial concentration



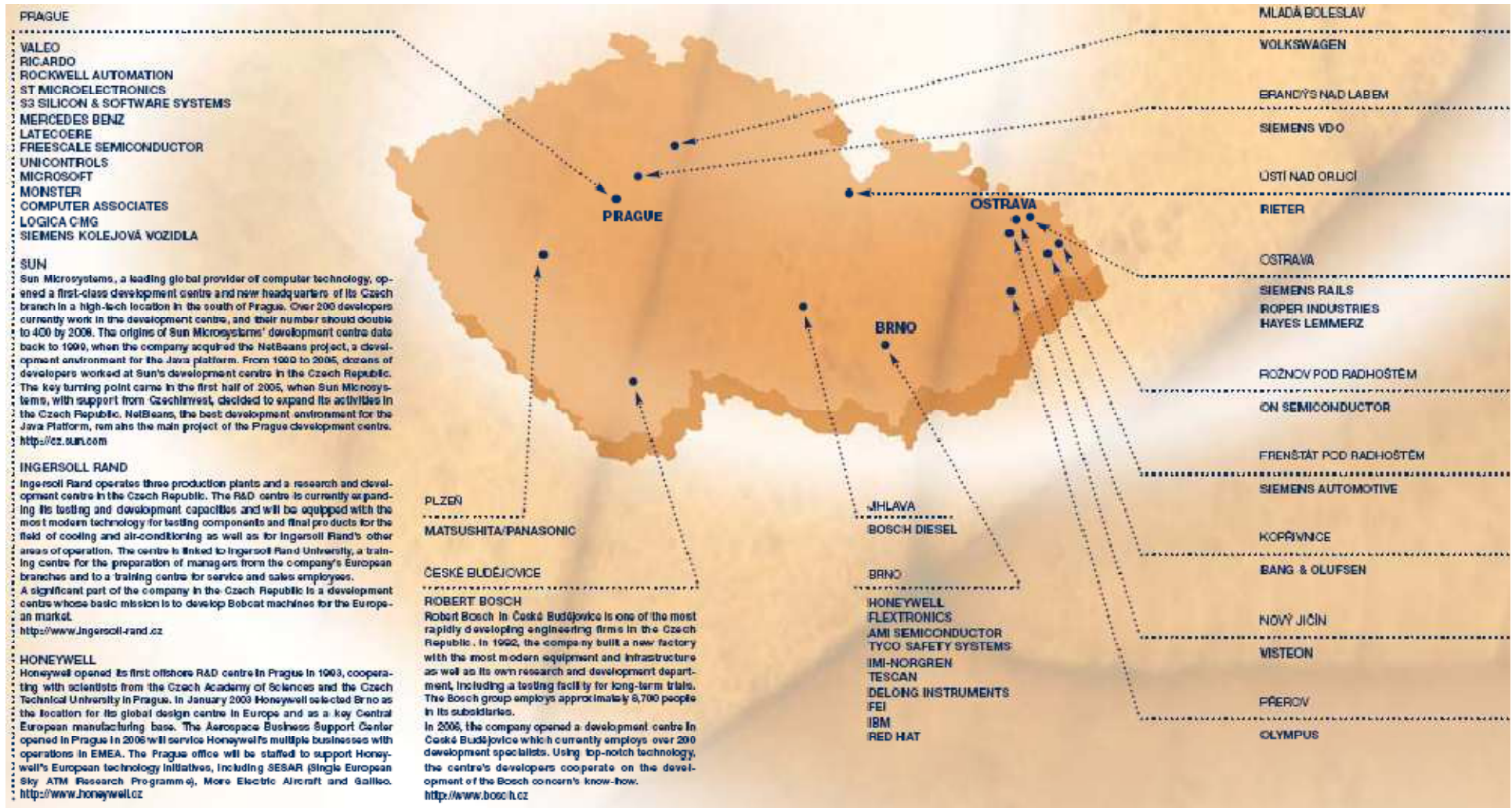
Top 10 investment in TC and BSS (2001 – 2008)

| Company | BSS TC | Applicant's country of origin | Sector | Investment mil. EUR | Newly created jobs | Region | Decision - year |
|--|--------|-------------------------------|----------------|------------------------|--------------------|-----------------|-----------------|
| DHL Information Services (Europe) s.r.o. | BSS | Netherlands | Other | 147,56 | 866 | Prague | 2004 |
| ExxonMobil Business Support Center Czechia s.r.o. | BSS | USA | Other | 32,31 | 1 300 | Prague | 2004 |
| ON Semiconductor CHC, s.r.o. | TC | Czech Republic | Semiconductors | 10,56 | 40 | Zlin | 2005 |
| ŠKODA AUTO a.s. | TC | Germany | Automotive | 35,77 | 370 | Central Bohemia | 2005 |
| Ingersoll-Rand Equipment Manufacturing Czech Republic s.r.o. | TC | Netherlands | Engineering | 8,92 | 73 | Central Bohemia | 2005 |
| LONZA BIOTEC, s.r.o. | TC | Netherlands | Life Sciences | 13,59 | 50 | Central Bohemia | 2005 |
| České aerolinie a.s. | BSS | Czech Republic | Aerospace | 41,57 | 153 | Central Bohemia | 2005 |
| CCG a.s. | BSS | Czech Republic | Aerospace | 36,15 | 176 | Moravia-Silesia | 2006 |
| SWELL, spol. s r.o. | TC | Czech Republic | Automotive | 8,36 | 52 | Hradec Kralove | 2006 |

334,79

3080

Selected Technology and IT Centres in the Czech Republic

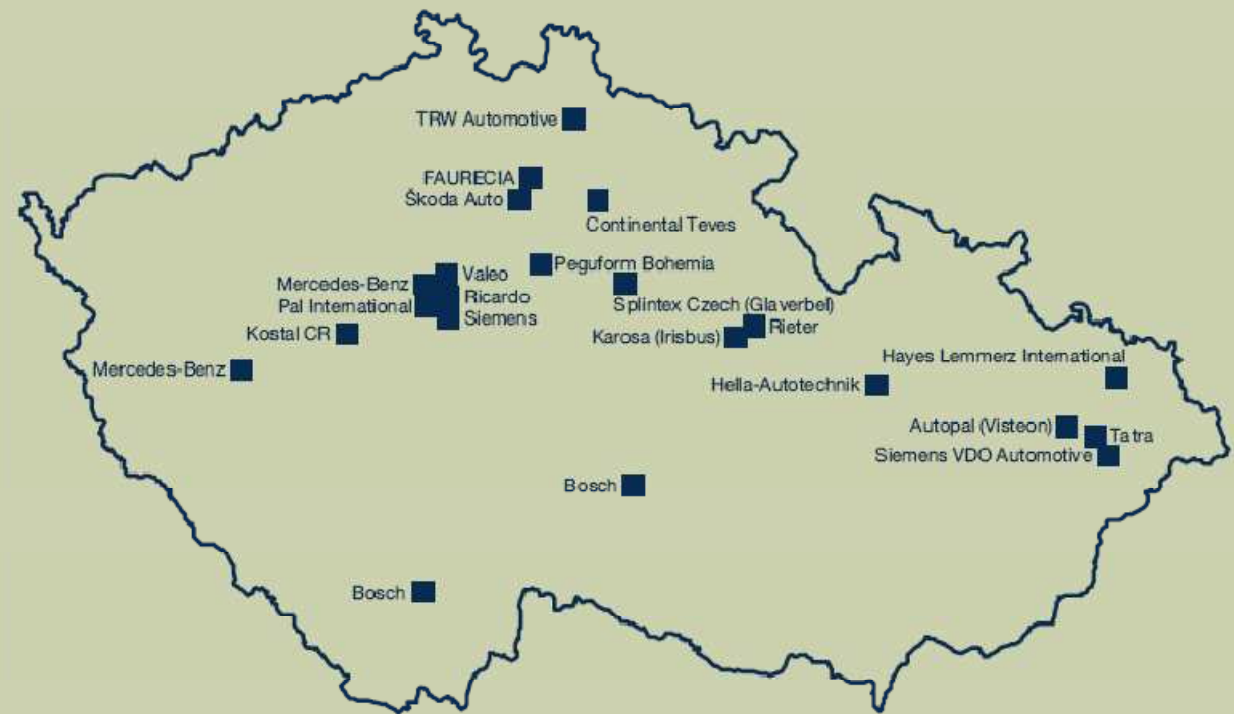


Automotive R&D locations

Automotive technology centres mediated by CzechInvest

| Technology centre | Country of origin |
|---------------------------|-------------------|
| Behr Czech | Germany |
| Blata | Czech Republic |
| Continental Teves | Germany |
| Hella Autotechnik | Germany |
| Heyes Lemmerz | USA |
| Indet Safety Systems | Japan |
| Kostal CR | Germany |
| Mercedes-Benz Engineering | Germany |
| MSV Systems | Czech Republic |
| Naretec | Czech Republic |
| Ricardo Prague | UK |
| Robert Bosch | Germany |
| Škoda Auto | Germany |
| Swell | Czech Republic |
| TRW/Lucas Varity | USA |
| Valeo Autoklimatizace | France |
| Visteon/Autopal | USA |

4,000 R&D employees in Czech automotive companies (Selection)



Source: Automotive Industry Association of the Czech Republic

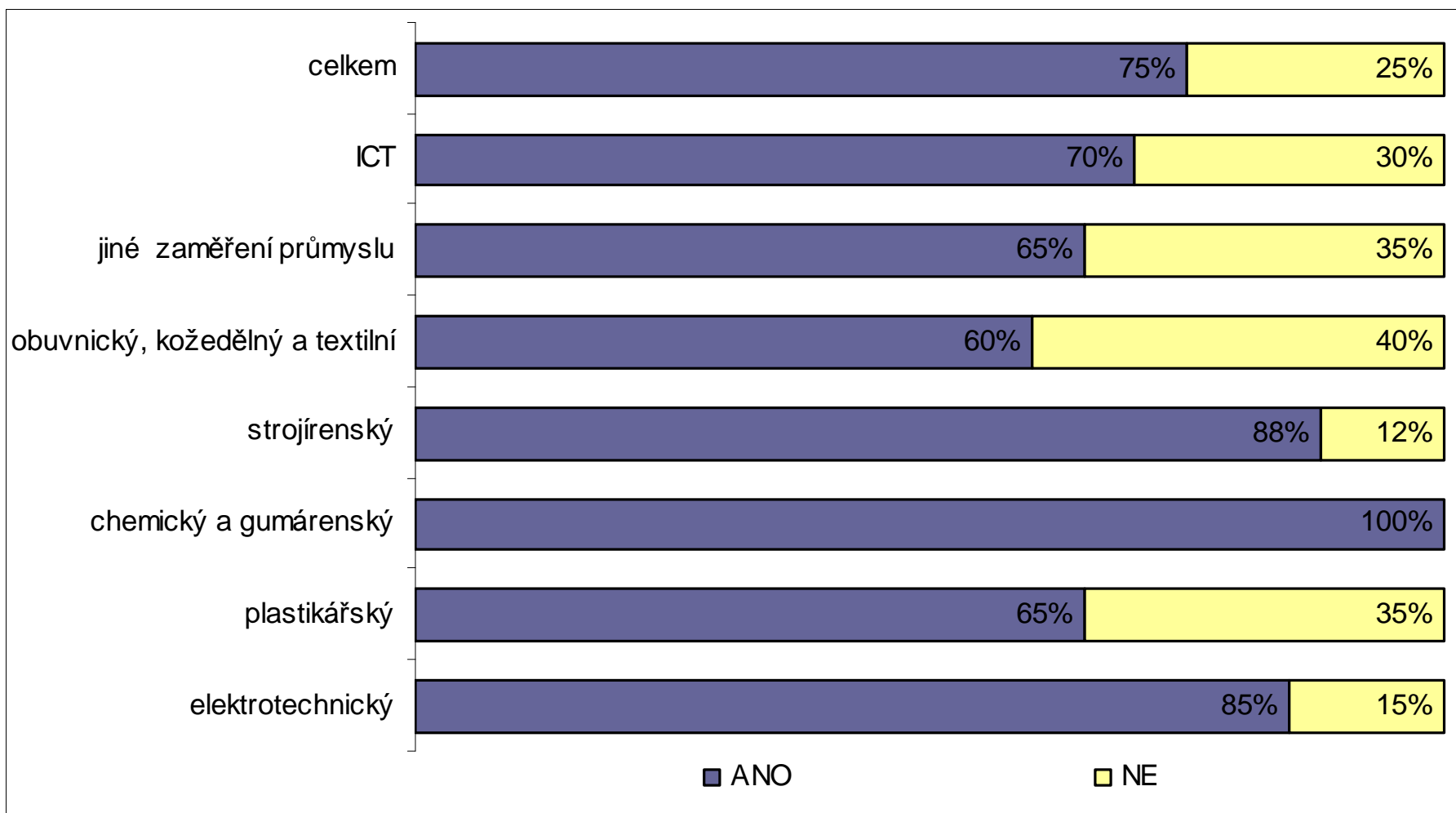
Analysis of the Innovation Potential of Zlín Region (NUTS3)

| No of employess,category (%) | 0 – 20 | 21 – 250 | > 250 |
|-------------------------------|--------|----------|-------|
| total | 27 | 60 | 13 |
| electrotech. | 21 | 69 | 10 |
| plastic | 23 | 60 | 17 |
| chemical | 0 | 75 | 25 |
| engineering | 13 | 74 | 13 |
| shoe making, leather, textile | 40 | 60 | 0 |
| others | 25 | 50 | 25 |
| ICT | 60 | 40 | 0 |

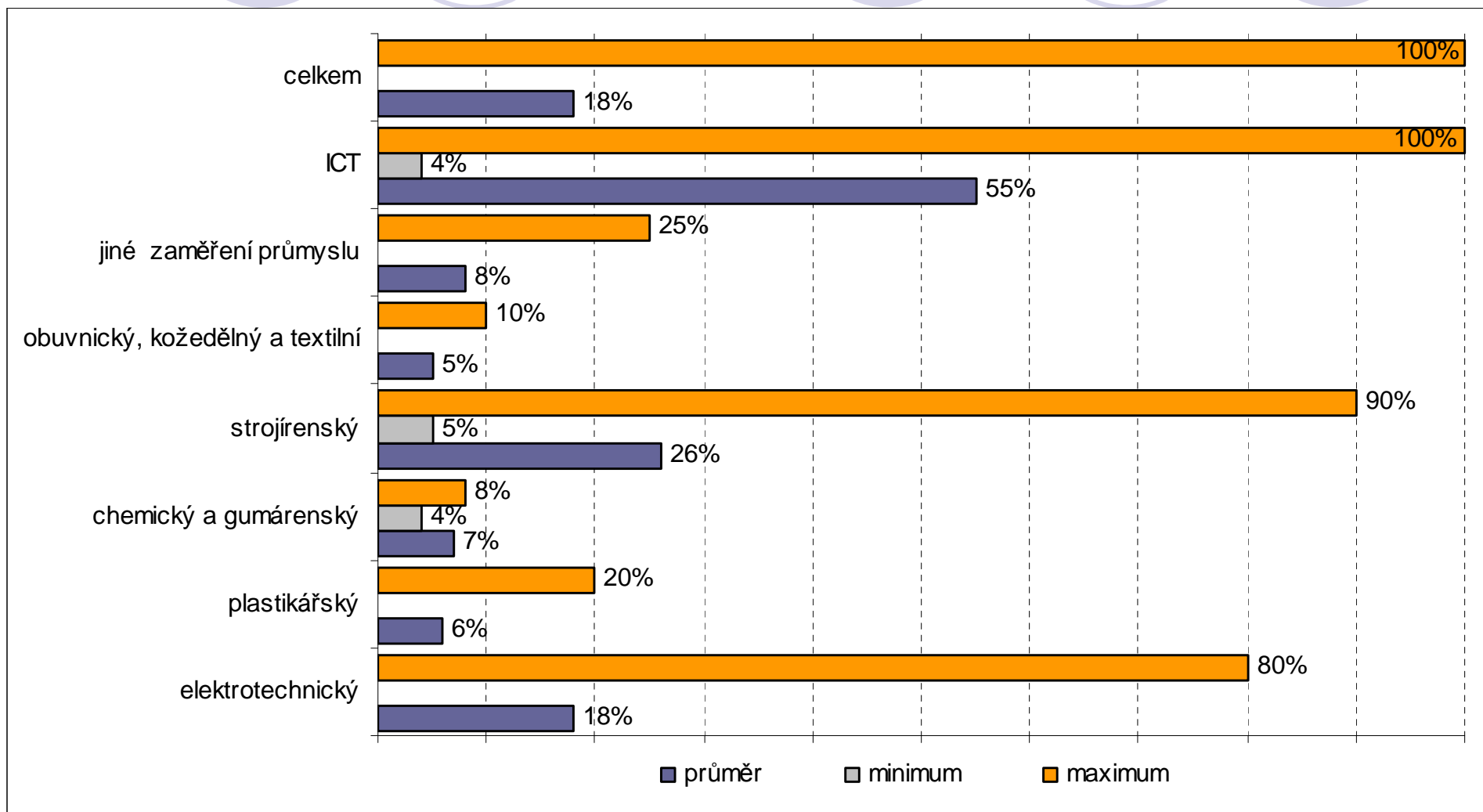
Analysis of the Innovation Potential of Zlín Region (NUTS3)

| branch | Most frequently stated activities, innovations |
|----------------------------------|--|
| Process innovation (58 %) | Introduction of new technologies and tools, production automation |
| Organisational innovation (50 %) | New management methods, motivation programs for employees, structural reorganisation |
| Product innovation (88 %) | New products |

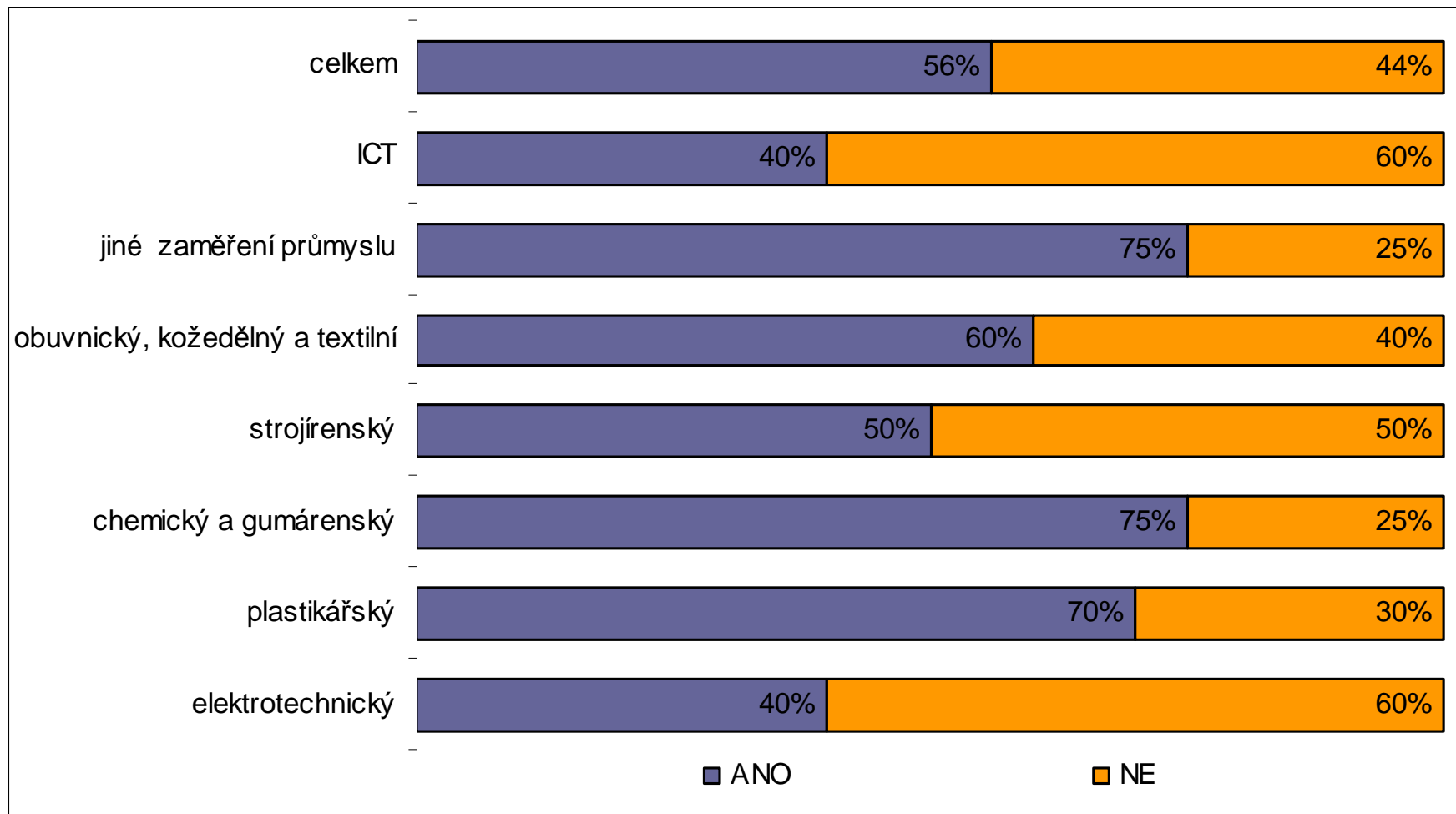
The share of the own base for R&D



The share of employees dealing with R&D activities



The share of firms using patents and other forms of know-how protection



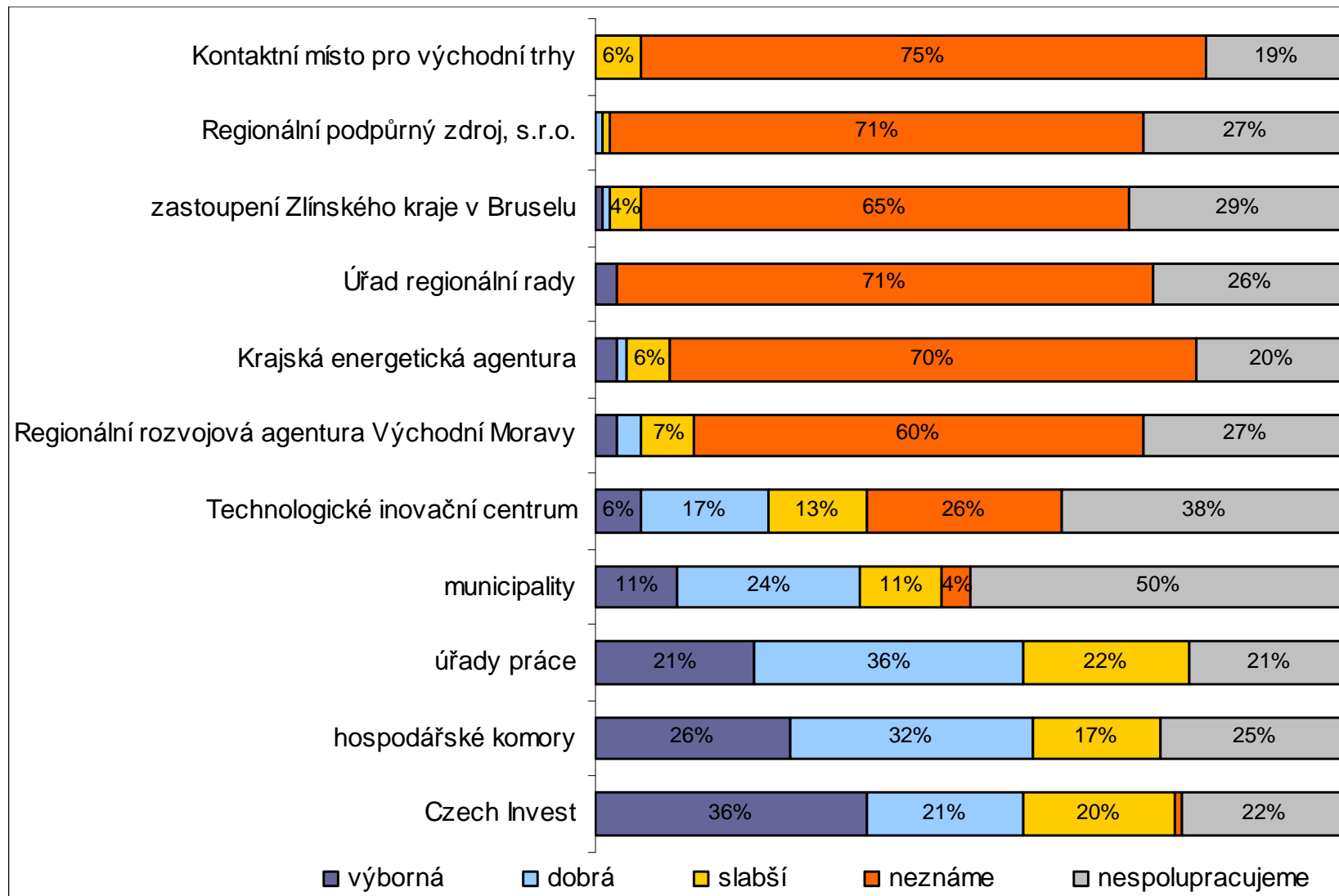
Barriers restricting R&D activities



Collaboration on R&D activities

| Number of institutions with which the firms collaborate/ share (%) | Universities | Research institutes | Firms |
|---|---------------------|----------------------------|--------------|
| 0 | 25 | 66 | 40 |
| 1 | 29 | 19 | 22 |
| 2 | 22 | 14 | 13 |
| > 2 | 24 | 1 | 25 |

Level of collaboration with institutions established by regional government to support entrepreneurship in the region





Conclusions

- innovation policy must reflect long-lasting path-dependent development
- big role for innovation base played by technical universities and FDI
- dominant role of business sector
- institutional support is important
- in case of the Czech Republic big role of automotive, electronic industry, ICT and BSS

Conclusions



- despite an effort of the Zlín region to support innovation infrastructure it is obvious that innovative companies don't know inst. established by regional government for their support
- universities are not prepared for collaboration with praxis
- companies expect help in orientation and administration in European projects



Thank you for your attention

Pavel.Ptacek@upol.cz

Tatiana.Mintalova@upol.cz