



# **Is Multinational R&D Heading East? -The Case of China**

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# Outline

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- Background
  - General Findings-nationwide
  - Special case-Beijing
  - Discussions
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# Background-the trend

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- The trend of R&D globalization and MNC R&D Centers in China:
  - Our study in 1999 found over 30 MNC R&D centers by major MNCs;
  - Ministry of Commerce's data for 2001 was less than 200;
  - In 2005, government reported that there are over 750 MNC R&D centers in China;
  - The most recent estimates put the number of MNC R&D centers at 980 by 2006 (Denis Simon's presentation).

# Background-issues

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- Debates and concerns:
    - In developing countries such as China, there is a debate about the impact of MNC R&D activities:
      - spill-over vs. “suck-in” effects;
    - In developed countries such as the US, there is also some concern:
      - First manufacturing. now R&D, are they going too far (Business Week, March 2005)?
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# Background-objectives of our study

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- A follow up study of our 1999 study when we surveyed several hundreds of MNCs in China and found over 30 major MNC R&D centers in China (Xue etc.2000,2001,2002);
  - Our objectives are:
    - improving our understanding of the change in MNCs R&D activities in China and the reasons behind it;
    - Improving our understanding of the impact of MNC activities on China's innovation system.
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# Background-Research methods

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- The sample:
  - 335 MNCs in China out of 483 eligible companies from Business Week Global 1000;
- Research methods:
  - Phone interviews with 289 of these companies;
  - Questionnaires sent to MNC directors in Beijing and Shanghai;
  - In depth interviews were conducted with over a dozen directors of these R&D centers.

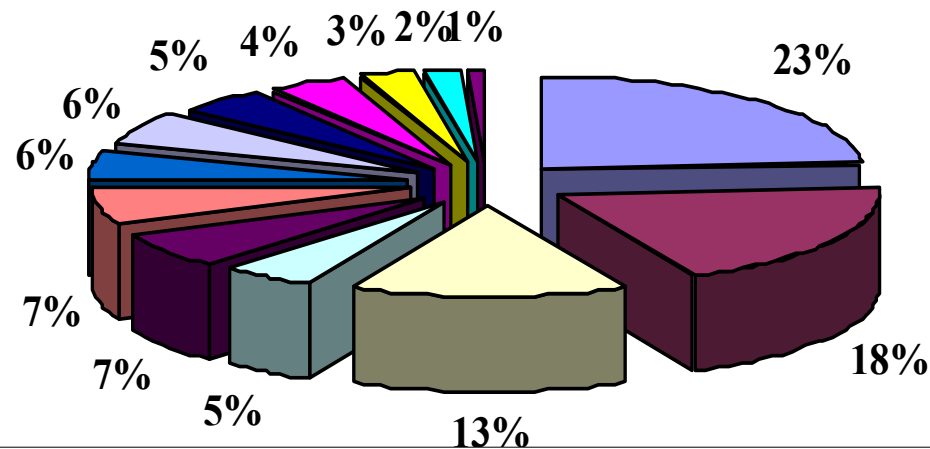
# General Findings

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- Out of the 289 companies we phoned, 117 companies have set up R&D facilities in China;
  - 215 R&D centers were set up by them;
    - 107 are autonomous R&D labs;
    - 59 are R&D units in the local subsidiaries;
    - 49 joint centers (with universities and so on)
  - Comparison of autonomous labs:
    - 1999=32;                      2004=107
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# General findings: industrial distribution

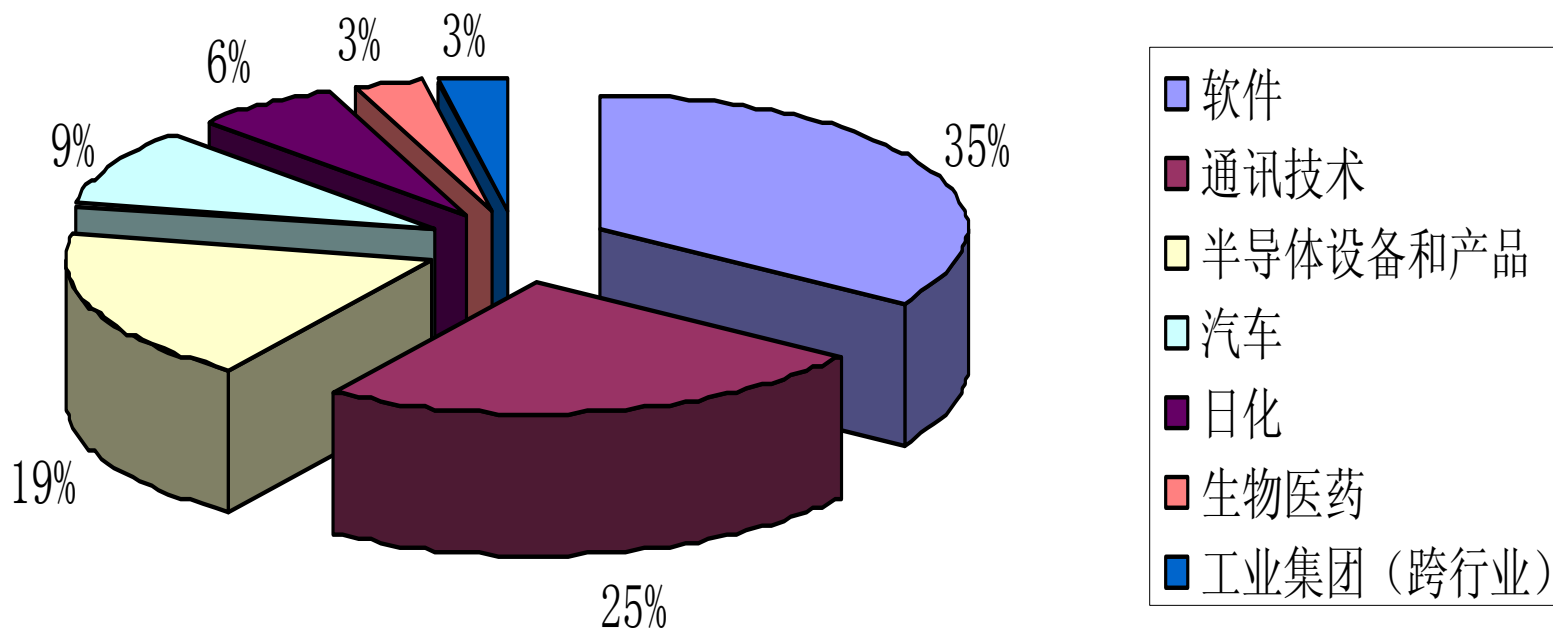
Figure 1 The industrial distribution of autonomous R&D labs settled by Business Week 1000 MNCs in China (2004)



- |                     |                                      |
|---------------------|--------------------------------------|
| Software            | Telecommunications                   |
| Semiconductors      | Industrial Equipments and components |
| Automobiles         | Commodity Chemicals                  |
| Biotechnology&Drugs | Household Electronics                |
| Other IT Products   | Chemicals                            |
| Food and beverages  | Industrial Conglomerates             |
| Others              |                                      |

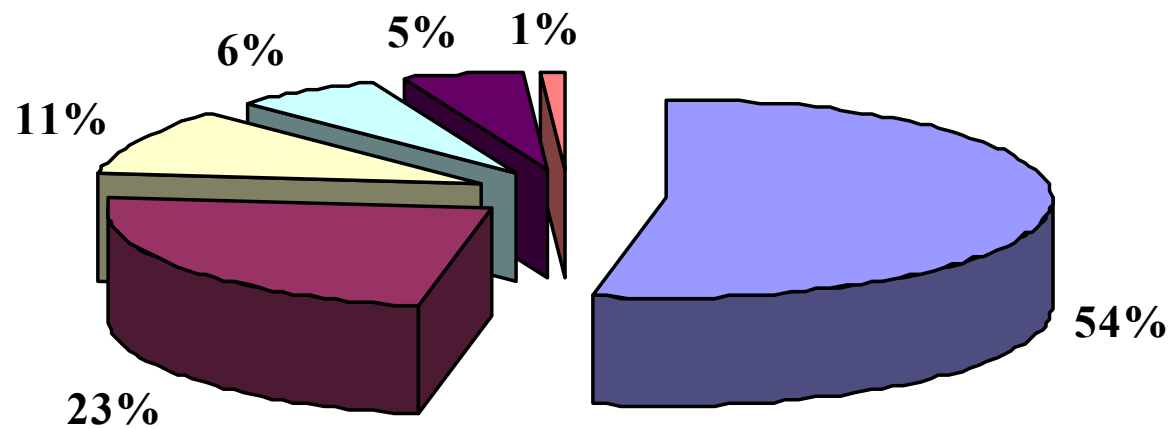
# General findings: industrial distribution (1999)

图1-6 《商业周刊》1000强在华设立独立研发中心的产业分布（1999）



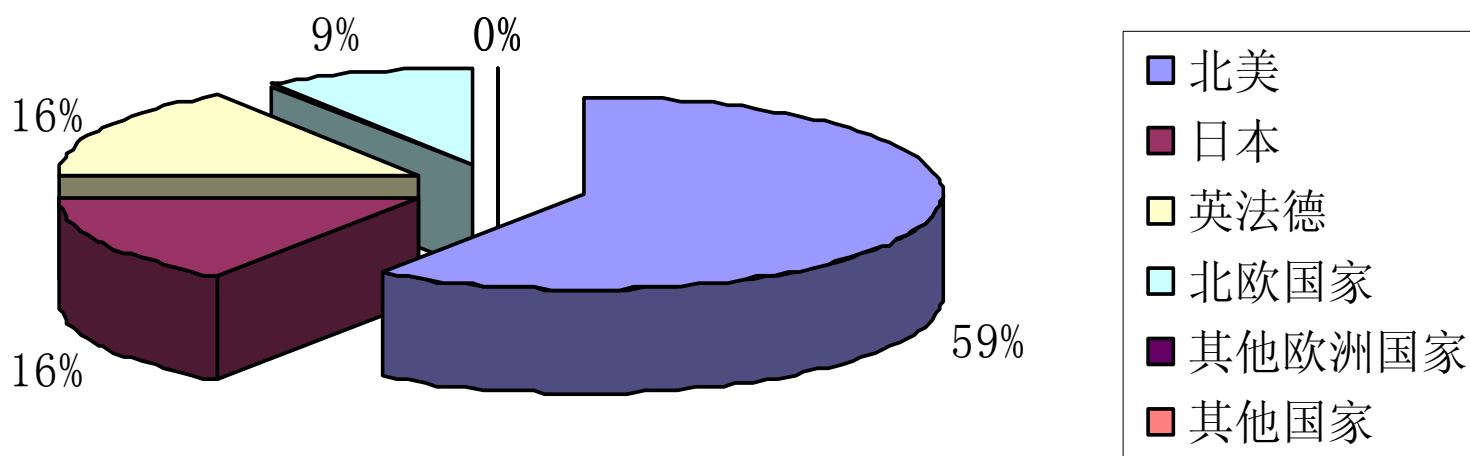
# General findings-country distribution

Figure 2 The country distribution of autonomous R&D labs settled by Business Week 1000 MNCs in China (2004)



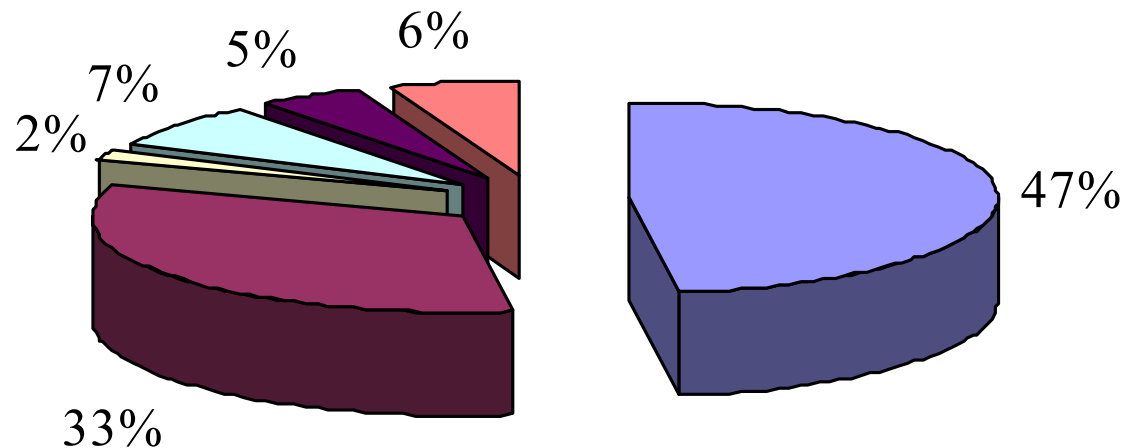
# General findings-country distribution(1999)

图1-8 《商业周刊》1000强在华设立独立研发中心的国别分布  
(1999)



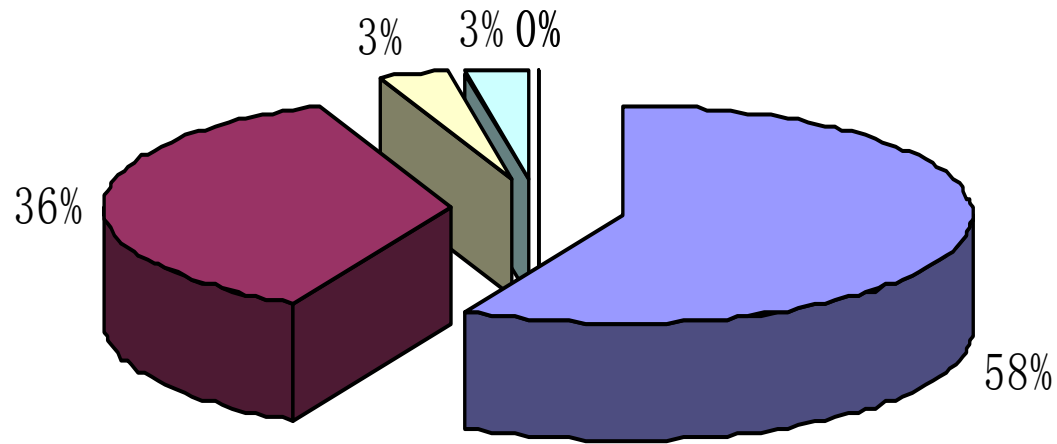
# General findings-location choice

Figure 3 The regional distribution of autonomous R&D labs settled by BusinessWeek 1000 MNCs in China (2004)



# General findings-location choice (1999)

图1-10 《商业周刊》1000强在华设立独立研发中心的地区分布 (1999)



■ 北京市 ■ 上海市 ■ 天津市 ■ 广东省 ■ 江苏省 ■ 其他城市

# General findings-patenting activities

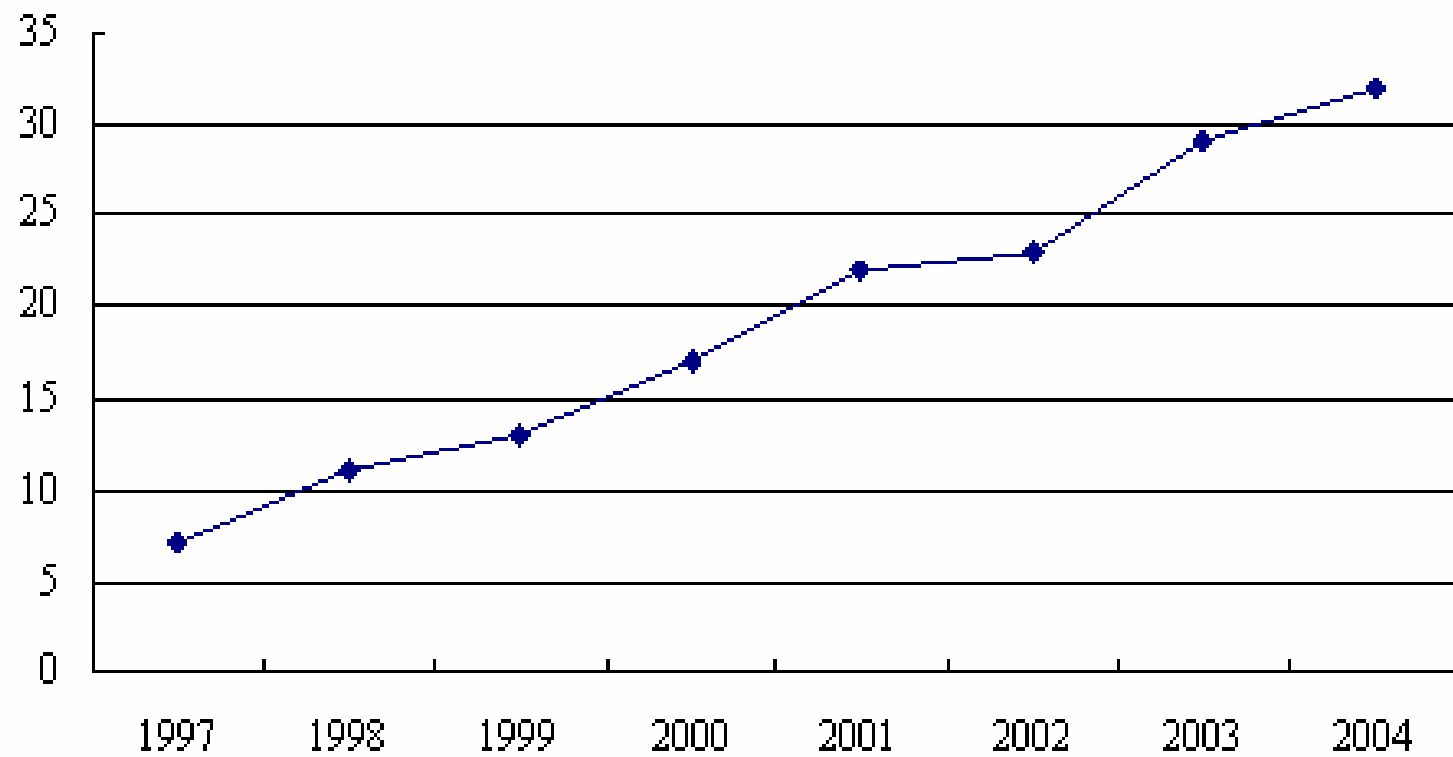
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- Patenting activities of the MNCs have been very active in China. 16934 invention patents were granted to them in 2005;
  - Most of the patents filed in China did not originate from China. There is a time lag between when it is first granted overseas and when it is granted in China. The Time lag is 27.95 months on average; it varies for different industries, notably, biotechnology and pharmaceuticals are long.
  - only 924 patents granted to these MNCs in 2005 were filed initially in China.
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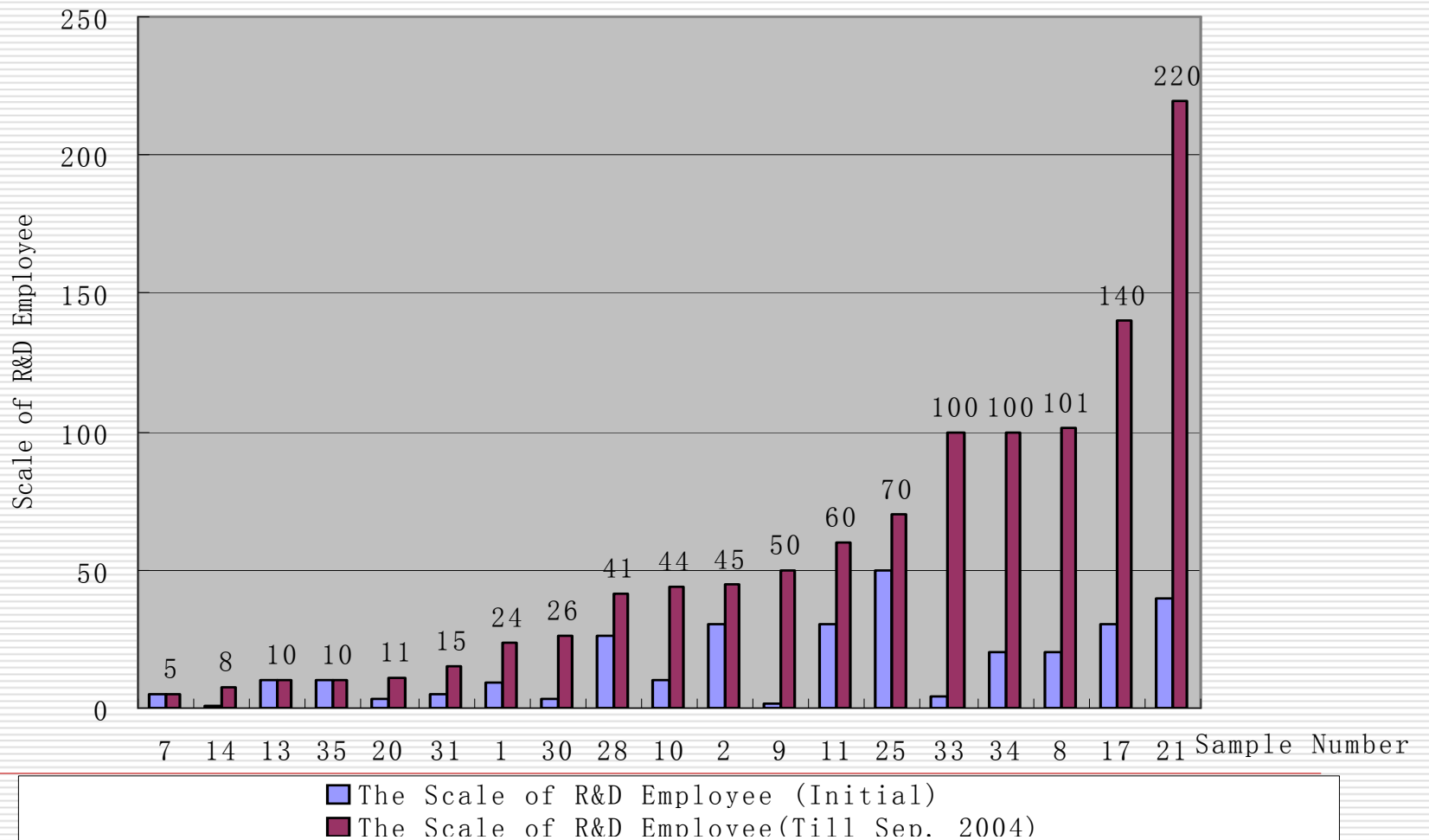
# Special case-Beijing

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## □ The growth of MNC in Beijing



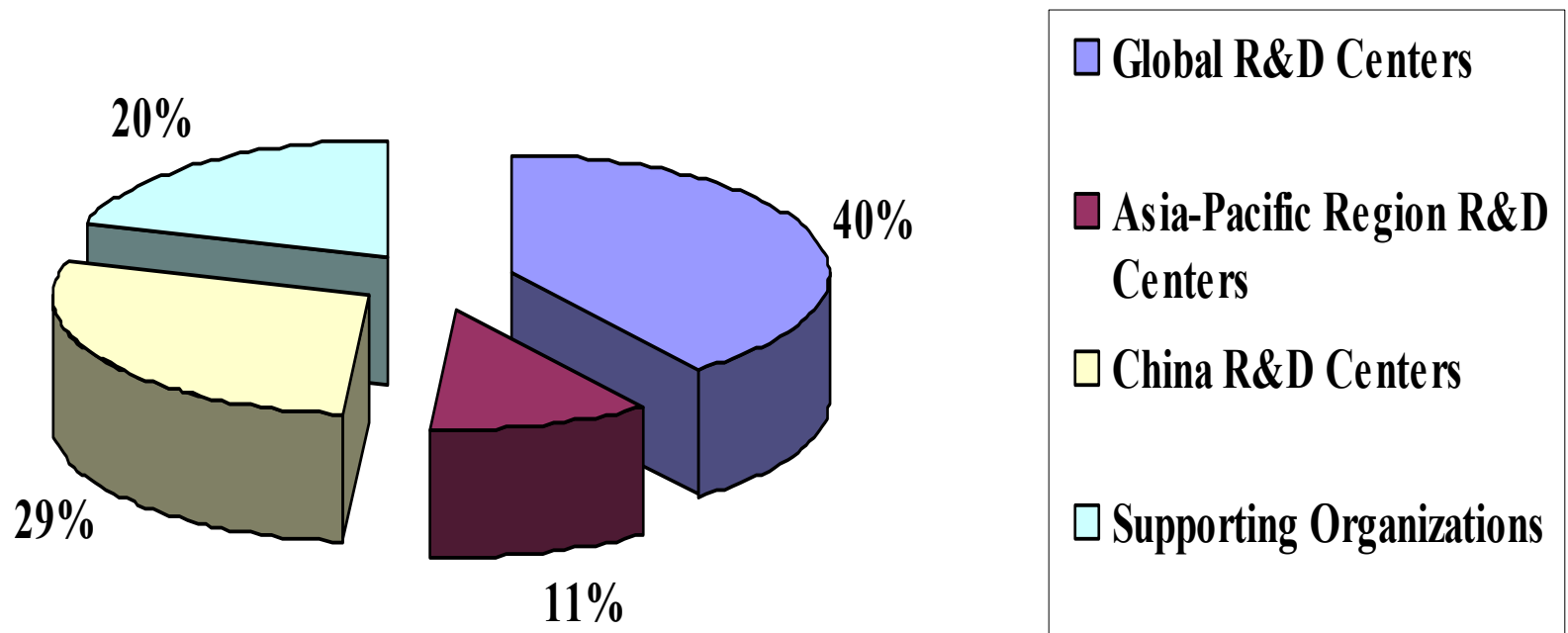
# The growth of these centers (R&D people)



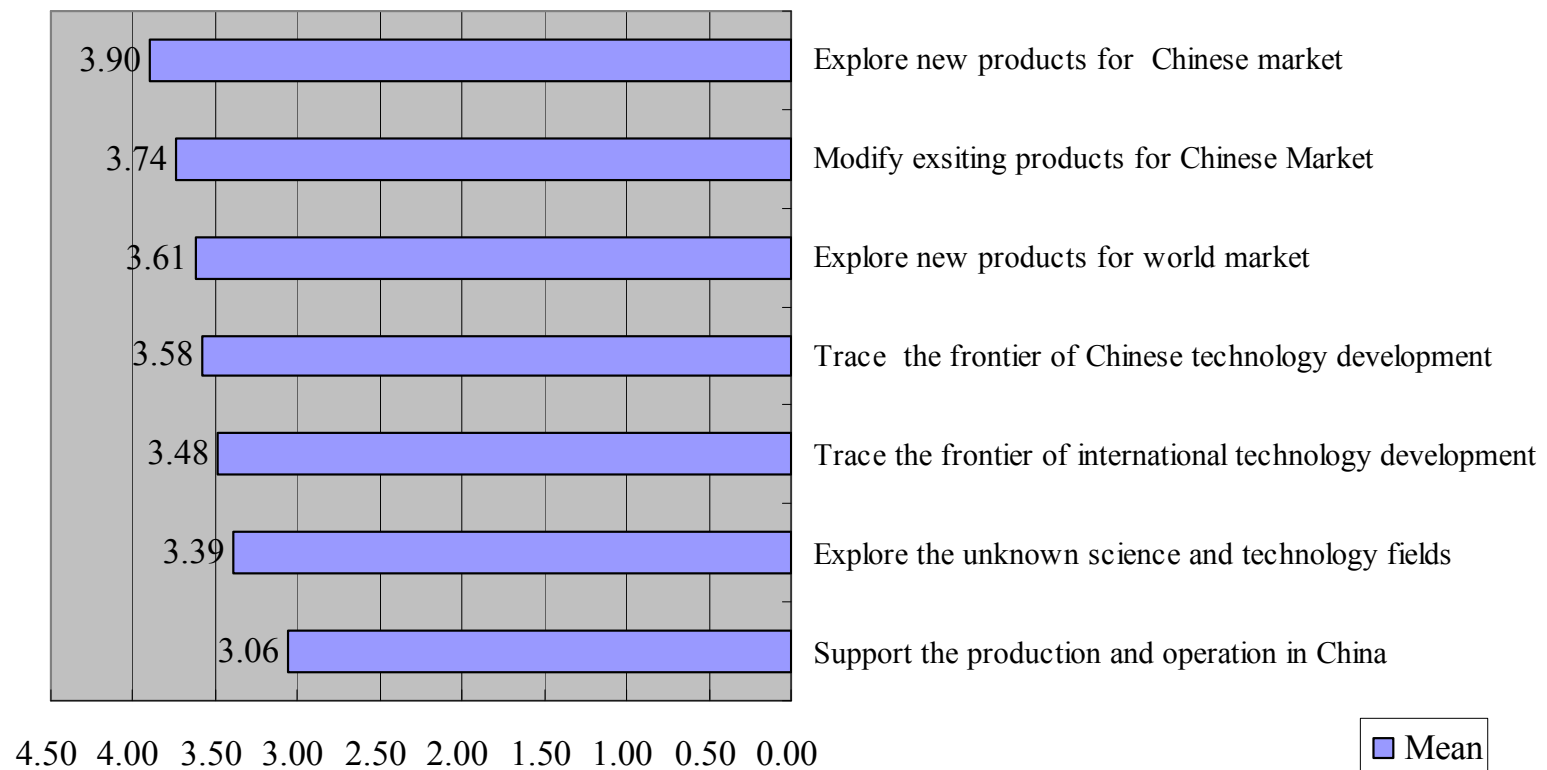
# Positioning of the R&D Centers

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Figure 5 The positioning of MNCs' R&D centers in Beijing

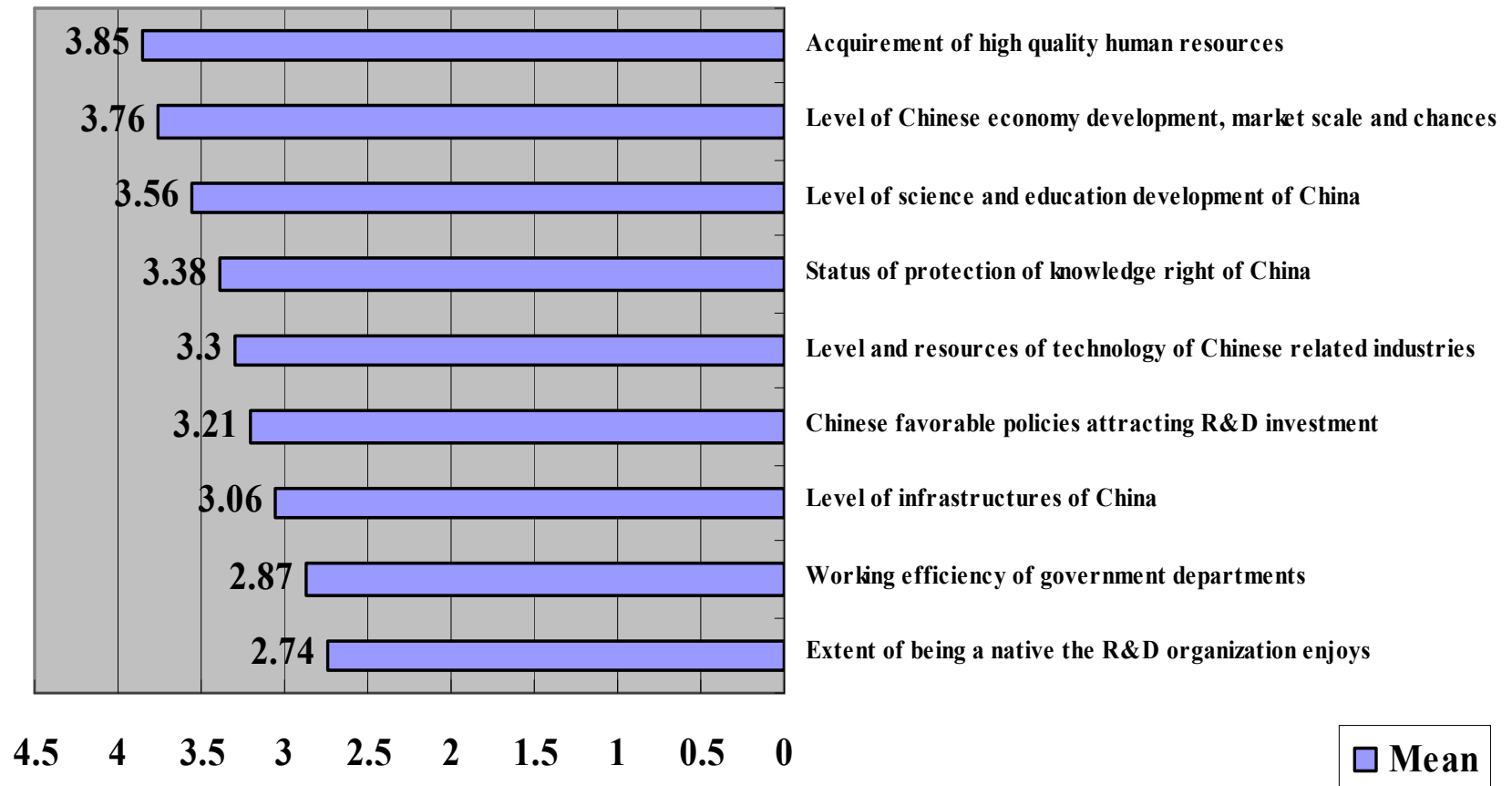


**Figure 4 The importance of different objectives of the R&D centers' work(2004)**



# What attracts these R&D centers to Beijing?

**Figure 6 The importance of different factors which have impacts on MNCs' R&D investing decision in China**



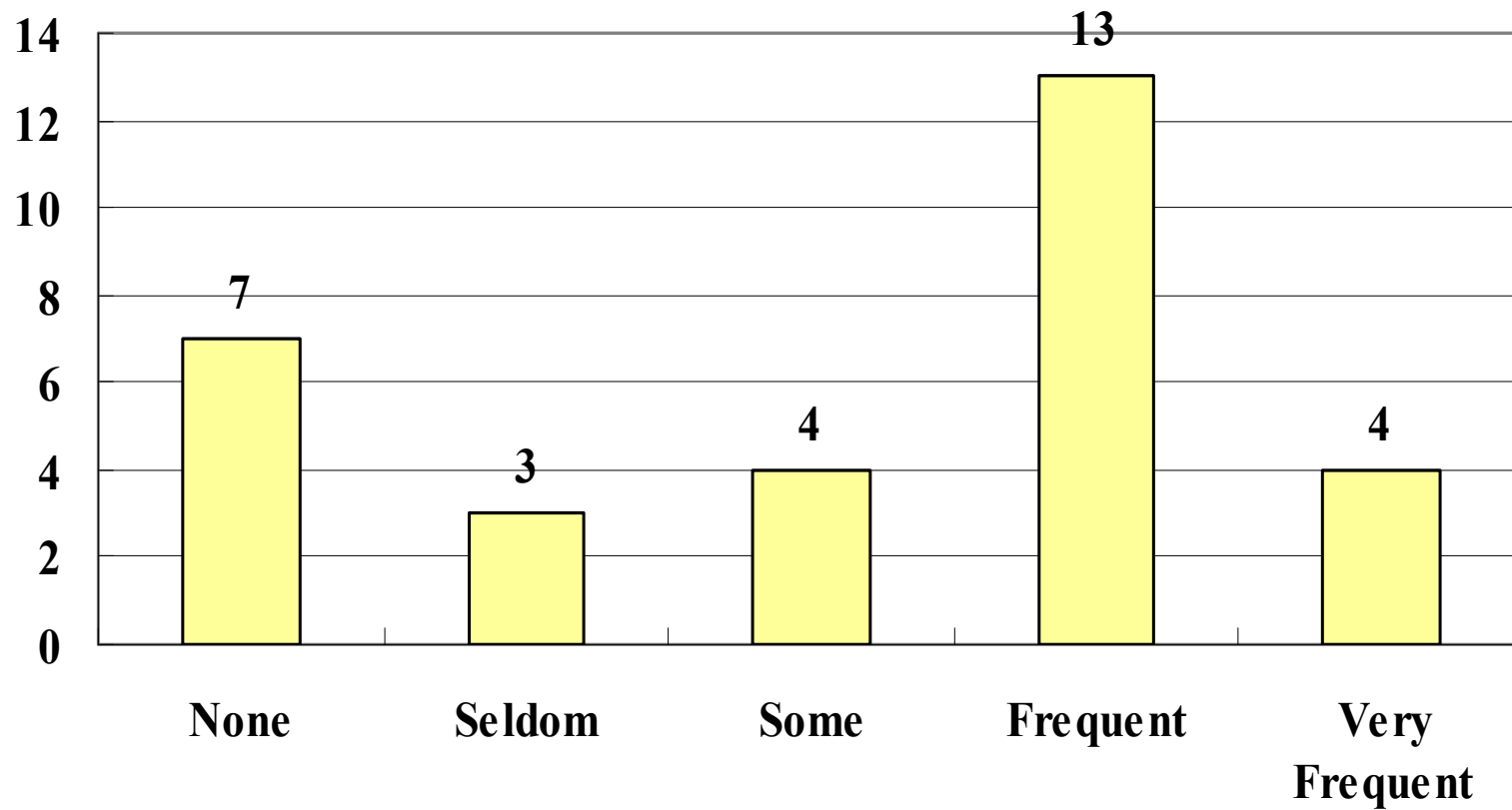
## Importance of sources of knowledge of MNCs' R&D Centers in Beijing (importance from 1-5)

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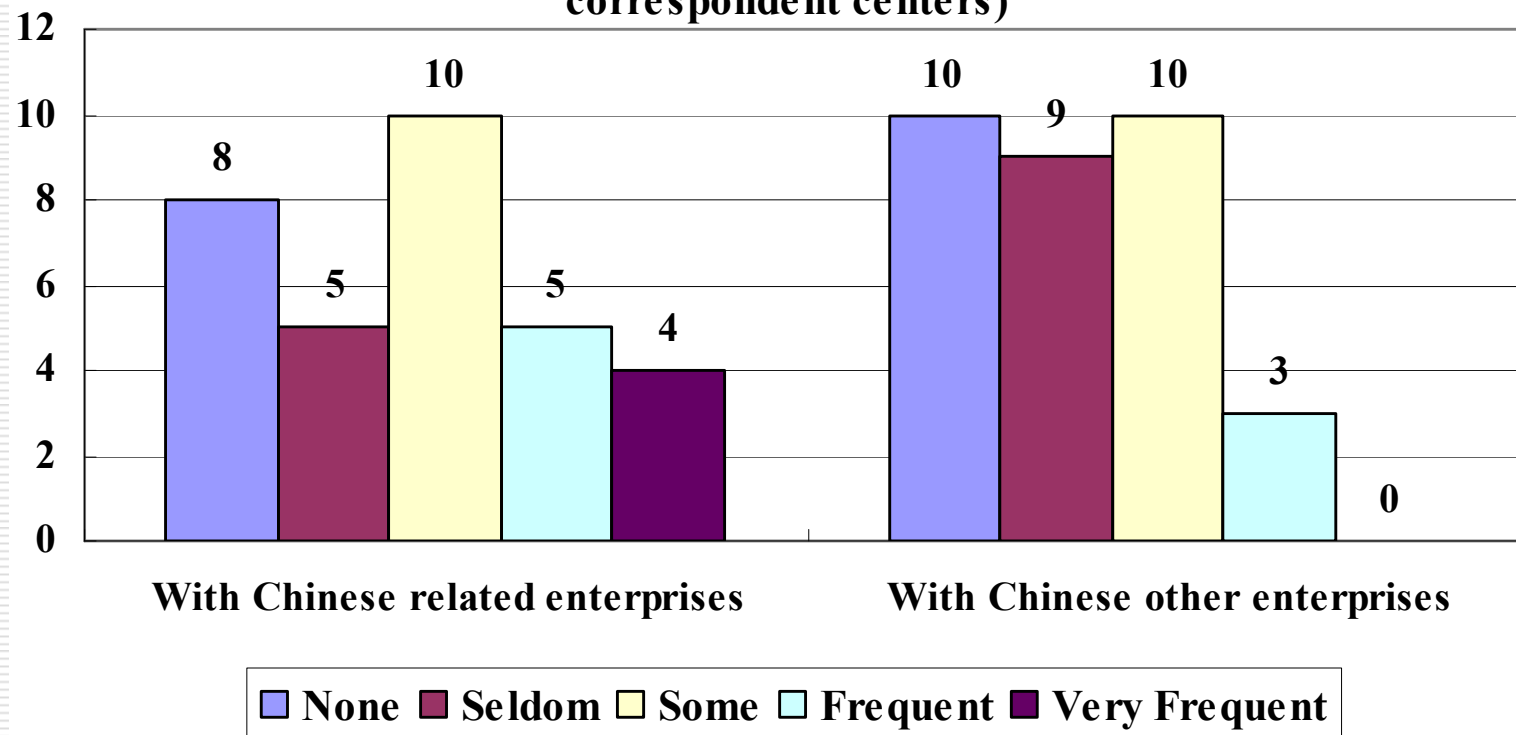
| <b>Sources</b>                 | <b>Number of Samples</b> | <b>Mean</b> |
|--------------------------------|--------------------------|-------------|
| <b>R&amp;D Headquarter</b>     | <b>30</b>                | <b>3.77</b> |
| <b>Literature</b>              | <b>30</b>                | <b>2.17</b> |
| <b>Brother R&amp;D Centers</b> | <b>30</b>                | <b>2.17</b> |
| <b>Chinese Uni. Or Inst.</b>   | <b>30</b>                | <b>1.93</b> |
| <b>Other R&amp;D Centers</b>   | <b>30</b>                | <b>1.20</b> |
| <b>Local brother factories</b> | <b>30</b>                | <b>1.17</b> |

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**Figure 7 The frequency of communications between MNCs' R&D centers and Chinese university/science research institute (the number of correspondent R&D centers)**



**Figure 8 The frequency of communications between MNCs' R&D centers and Chinese enterprises (the number of correspondent centers)**



# Discussion

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- The number of MNC R&D centers in China has been increasing rapidly over the last few years; a high percentage of these R&D centers are still at the initial stage of their development process;
    - In the next few years, the growth in numbers may slow down, but the scale may go up; some early entrants are beginning to consolidate;
  - High quality S&T human resources and market opportunities are the most important factors drawing MNC R&D centers to China;
    - Local market orientation
    - Human resource orientation-for the global R&D activities
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- Many of these centers behave more like enclaves in China, interacting mostly within the company's own network; the linkages with local companies are very weak.
    - Normal process?
    - These centers are just part of the companies' internal global R&D network;
  - Research output of these R&D centers measured by patents are limited. intangible benefits are difficult to measure; suck-in effects are limited.
    - integrated at the headquarter?
    - IPR protection?
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Thank you!

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