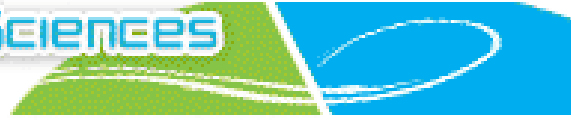




Socio-economic Sciences  
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# Intangible Investments in Bulgaria

**Todor Gradev, Lubomir Dimitrov, Spartak Keremidchiev**

**13 July 2010, Sofia**

**Project funded by the European Commission under the Seventh  
Framework Programme  
Grant No 217512**

# Overall Scoping of Intangibles

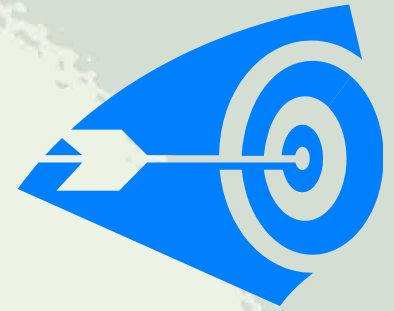
## Methodology:

- **Corrado, Hulten and Sickel (2006) - CHS**
- **Marano, Haskel (2006)**

## Applications

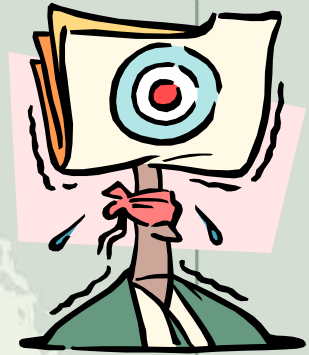
- **Hao, Manole and van Ark (2008)**
- **Edquist (2009)**

# Goal of the Study



**To measure intangible investments in Bulgaria  
by applying the new methodology.**

# Data Sources in Bulgaria



- **NSI Business Statistics data**
- **National Account Data**
- **Vocational Training Surveys**
- **Labour Force Survey Data**
- **National Classification of Professions and Occupations**
- **Survey on Information and Communication Technologies in Non-Financial Enterprises**
- **Structure of Earnings Surveys (2002 & 2006)**

# **NACE Industries Producing Intangible Assets**

- 7220 Software consultancy and supply**
- 7240 Database activities**
- 7310 R&D in natural sciences and engineering**
- 7320 R&D in social sciences and humanities**
- 7420 Architectural and engineering activities and related technical consultancy**
- 7440 Advertising**
- 7413 Market research and public opinion polling**
- 7414 Business and management consultancy and activities**

# Types of Intangibles

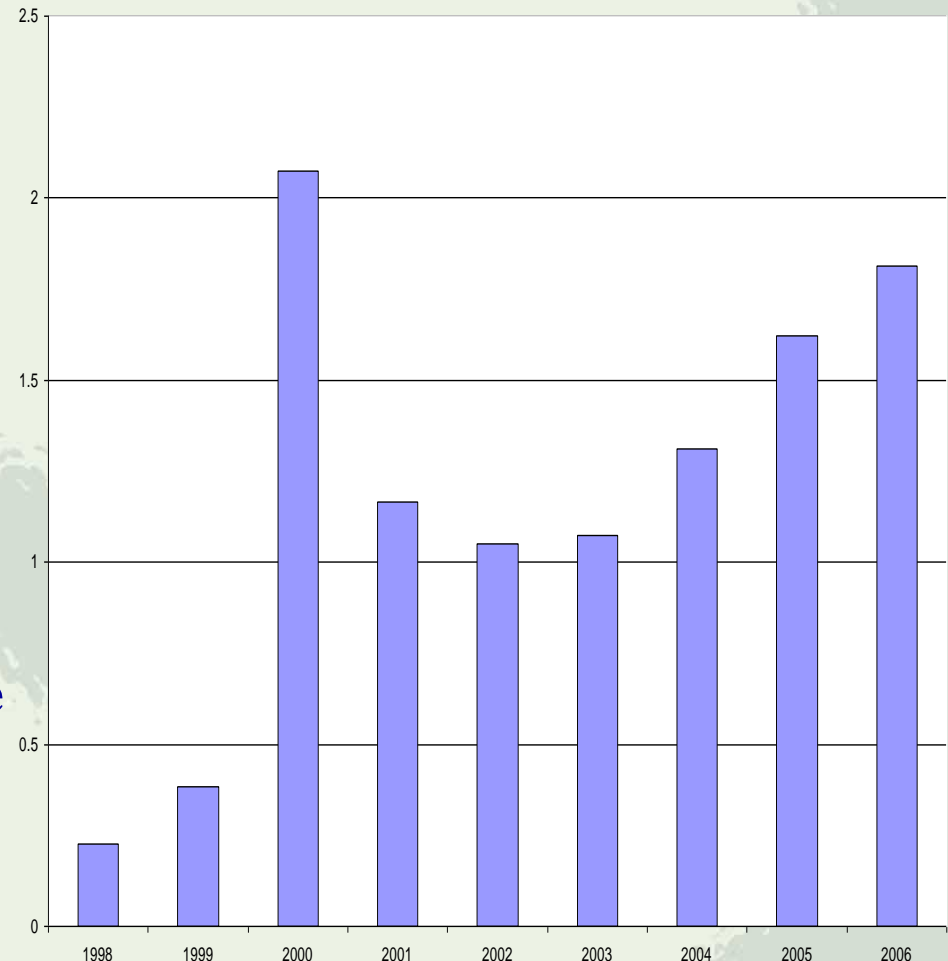
1. **Computerized Information** - Software consultancy and supply; Database activities
2. **Innovative Property** - R&D; Copyright and license costs; New product development in the financial industry; New architectural and engineering design
3. **Economic Competences** - Brand equity, advertisement; Market research; Firm specific human capital; Organizational structure

# Computerized Information

## Computer Software & Computerized Databases

Computerized information

- **During the 1998-2006 period the nominal investment in Computer Services increased by 13 times**
- **Visible Investment in Data Base Services – since 2002-2003. In the preceding years they amount to less than 0.1% of GDP. Since 2002 they increased to 0.5% of GDP in 2006**
- **The Data Base Services are 15-25% of total Computer Services in 2002-2006 period (being less than 5% before that)**



# **Computerized Information**

## **Software Information – Purchased and In-house**

**Purchased Services – revenues of NACE 7221 &7222**

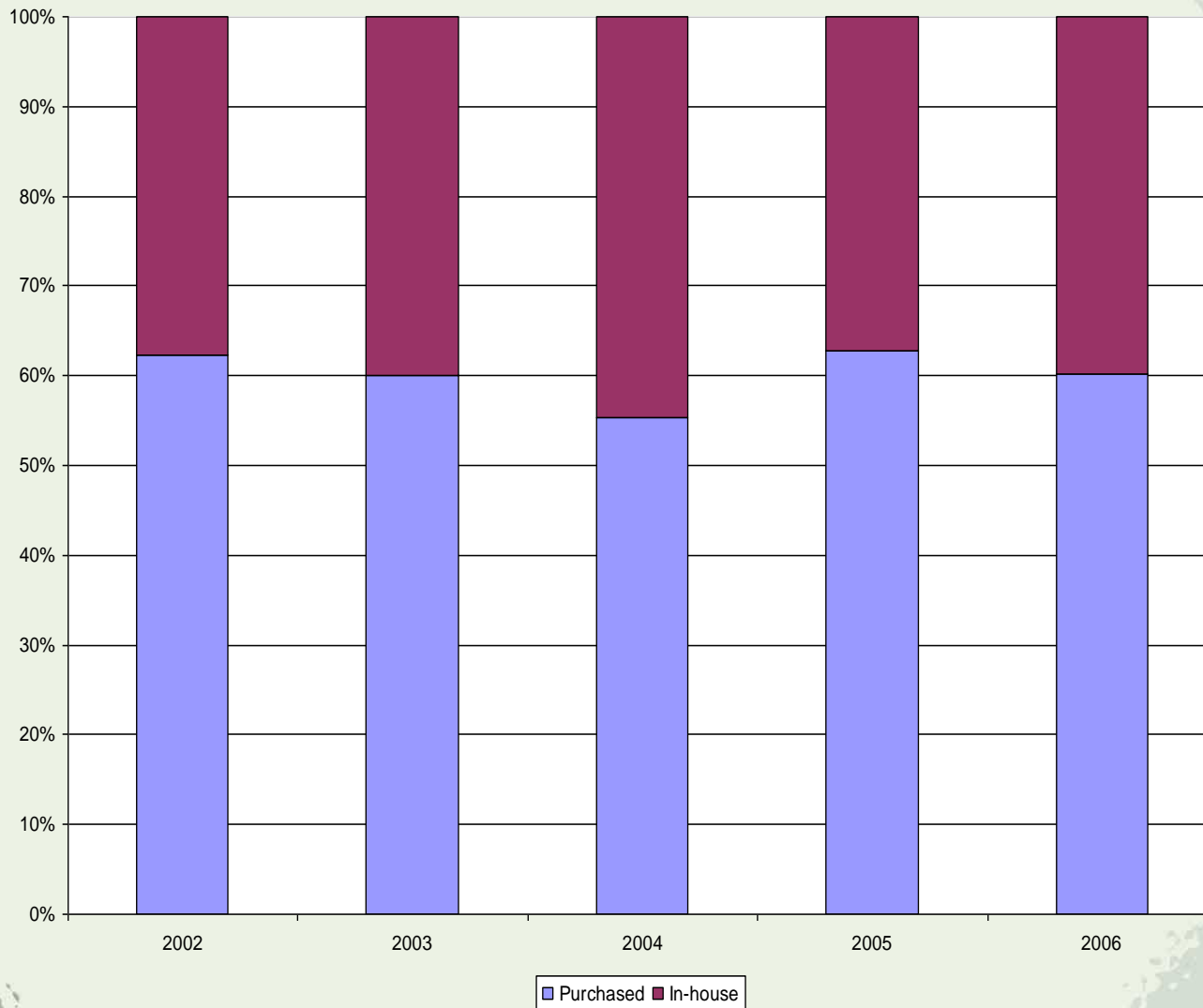
**In-house Services - method of calculation**

- **Number of employees by branches (NACE 7221 &7222)**
- **Number of employees by occupation (Computing Services Department Managers, Computing Systems Designers and Analysts, Computer Programmers, Computer Equipment Operators, Word-processor and Related Operators, Calculating Machine Operators)**
- **Annual wage in NACE 7220**
- **Working Time Allocation**

# Computerized Information

## How Important are the In-house Investments

Software Investment



# Computerized Information

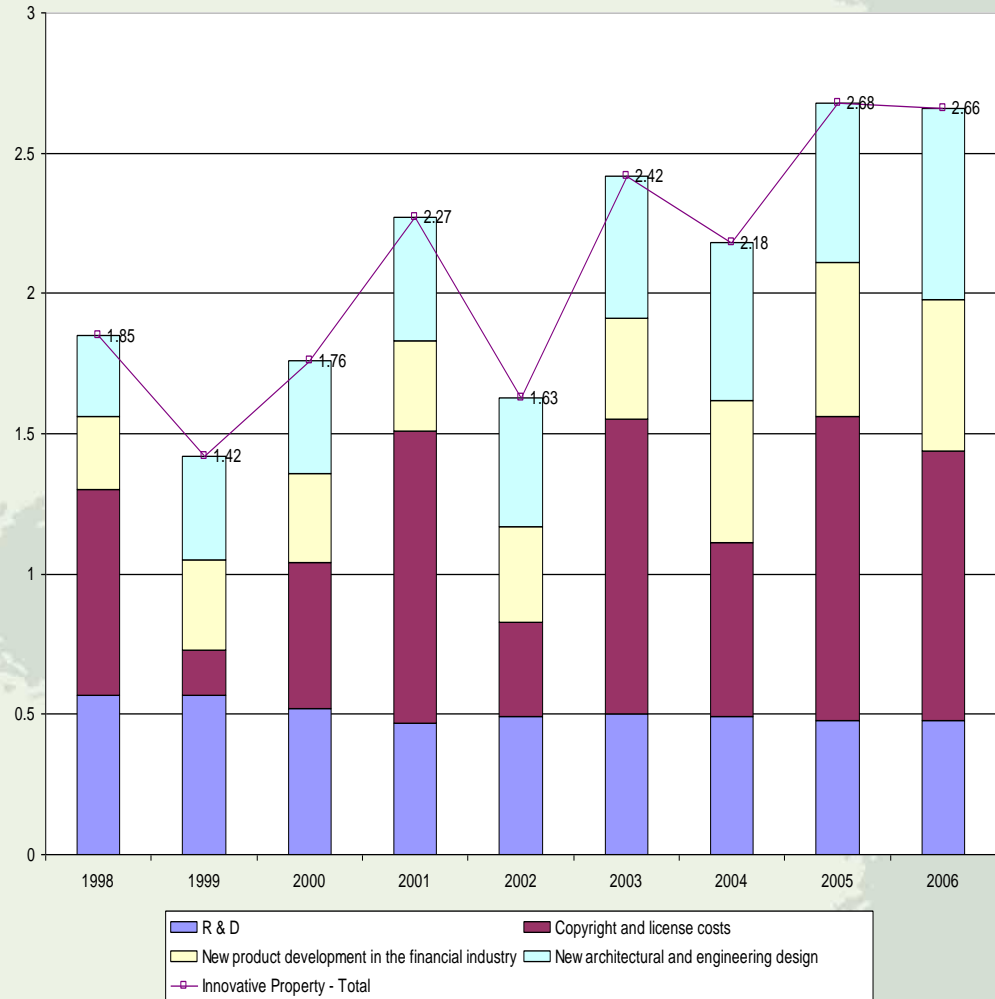
## Robustness Check – Purchased Software Investment



<b>Investment in software products (% of GDP)</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
<b>CHS method</b>	<b>0,89</b>	<b>0,88</b>	<b>1,07</b>	<b>1,32</b>	<b>1,31</b>
<b>Estimates using balance sheet data (DR = 33%)</b>	<b>0,37</b>	<b>0,22</b>	<b>0,32</b>	<b>0,46</b>	<b>0,28</b>
<b>Estimates using balance sheet data (DR = 25%)</b>	<b>0,34</b>	<b>0,17</b>	<b>0,28</b>	<b>0,41</b>	<b>0,22</b>
<b>Survey on Information and Communication Technologies in Non-Financial Enterprises</b>				<b>0,24</b>	<b>0,29</b>

# Innovative Property (% of GDP)

- **R&D – data from Eurostat**
- **Copyright and license costs – data from Firms' Balance sheets (DR = 20%)**
- **New product development in the financial sector – 20% of intermediate consumption in the sector**
- **New architectural and engineering design – 50% of revenues of NACE industry 7420 “Architectural and engineering activities and related technical consultancy”**

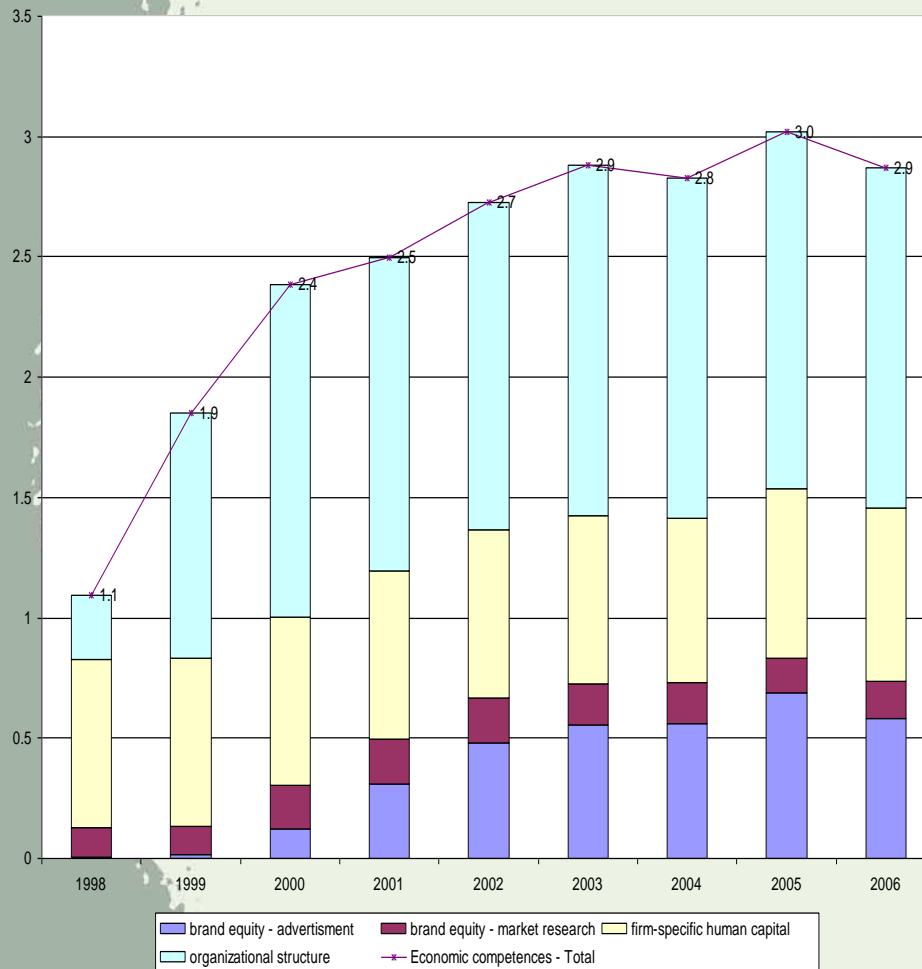


# Innovative Property

- **The Innovative Property Investments seem to be cycle dependent (especially Copyright and license costs; New architectural and engineering design)**
- **The Investments in New architectural and engineering design are growing with a high pace since 1998**



# Economic Competences (% of GDP)

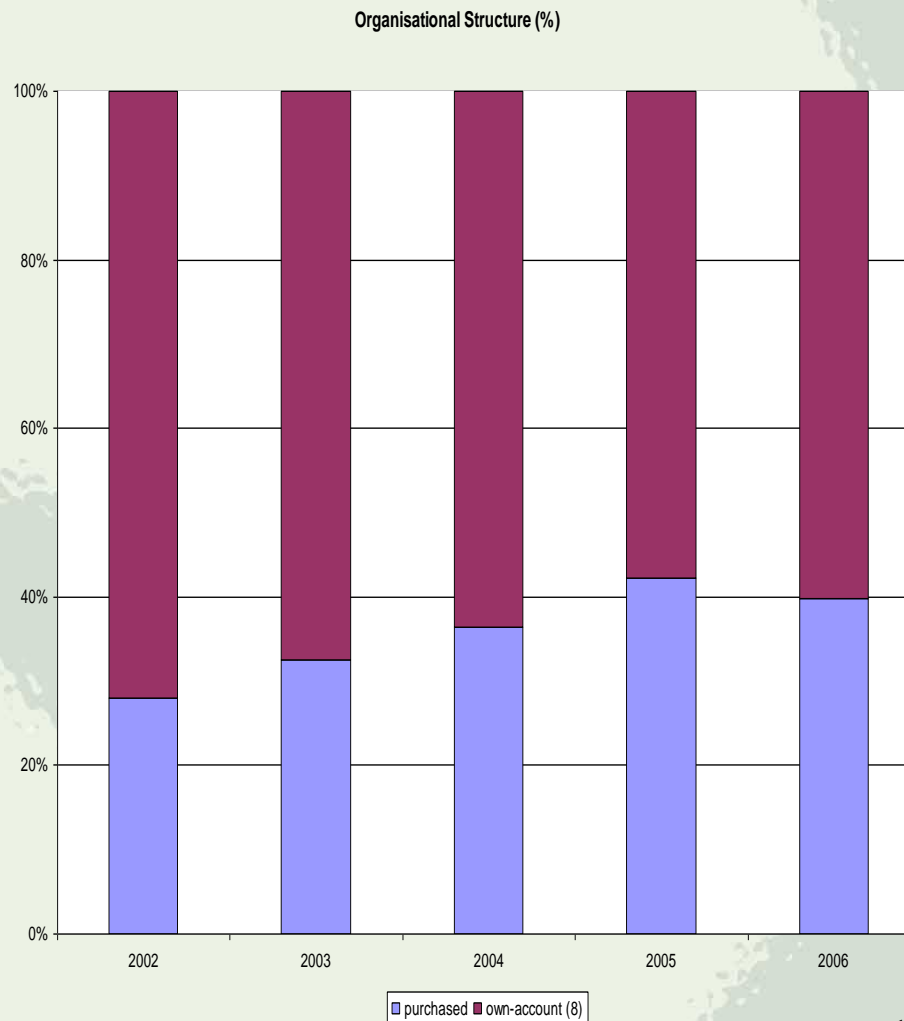


- **Brand equity, advertisement – 50% of revenues of NACE industry 7440 “Advertising”**
- **Brand equity, market research – NACE 7413 “Market research and public opinion polling”**
- **Firm specific human capital – Survey of Continuing Vocational Training of Enterprises**
- **Organizational structure – purchased and in house**
- **The most striking growth - Brand equity, advertisement; Organizational structure**

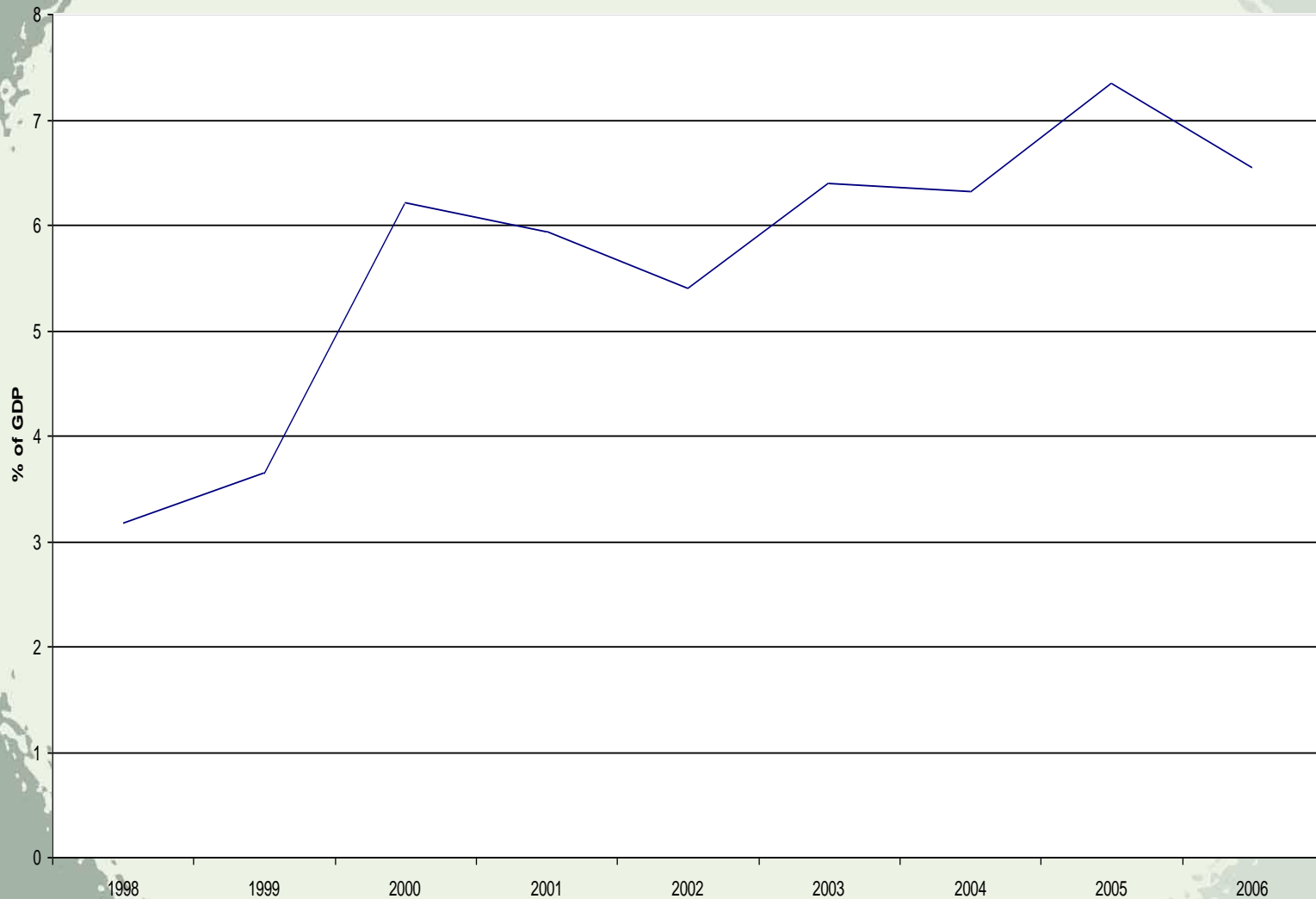
# Economic Competences

## Organizational Structure (OS)

- OS (purchased) - NACE industry 7414 “Business and management consultancy and activities”
- OS (own account) - 20% of the wage bill of Class 1 (senior managers) of the National Classification of Professions and Occupations. Data Sources - Structure of Earnings Survey (2002 & 2006); Business Statistics
- During the last years the Purchased OS increased its significance. Occasional evidence suggest that after Bulgaria’s entry into the EU in 2007, these numbers have grown substantially due to the increased TA provided by EU firms and funded by the Union

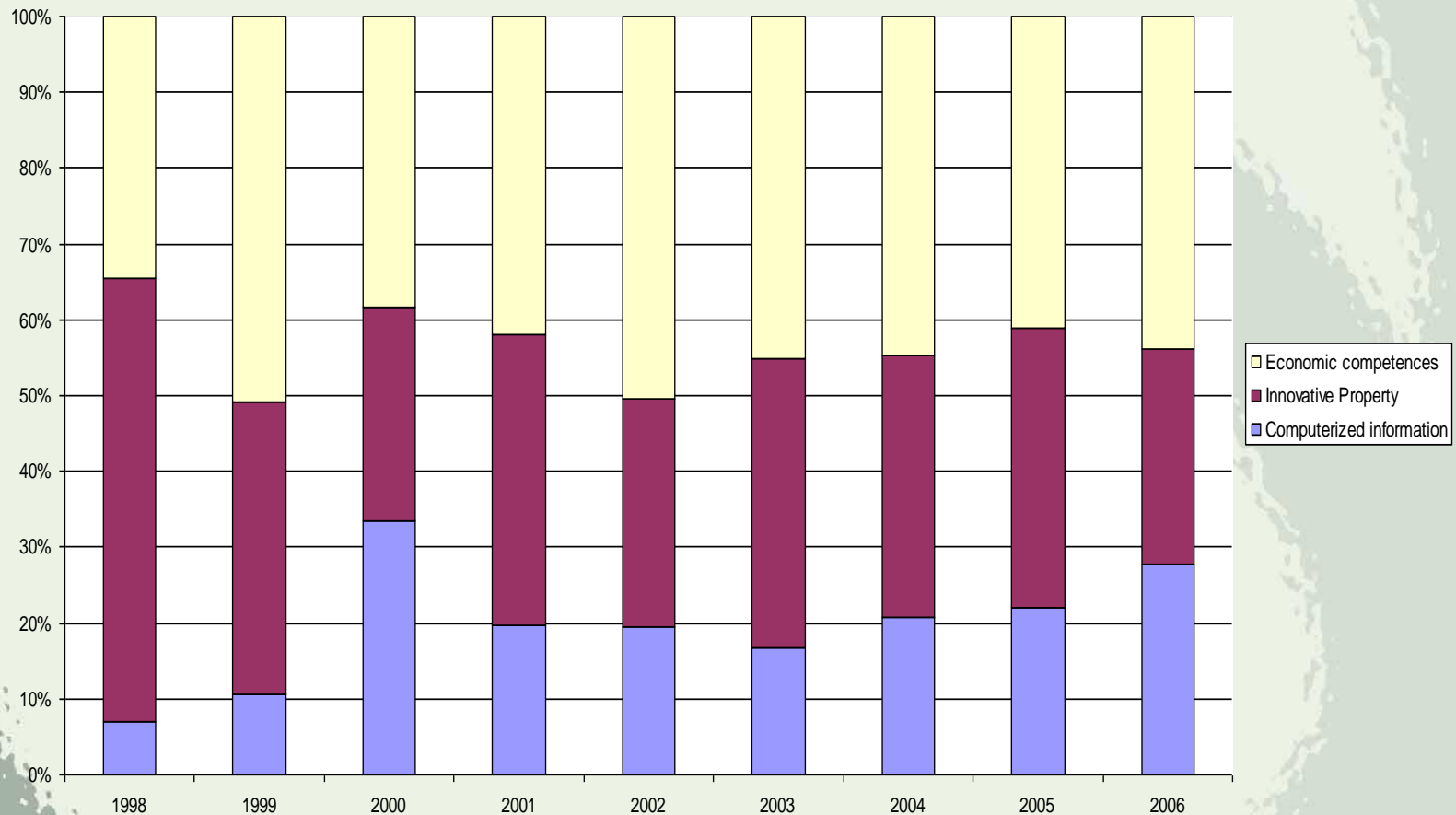


# Intangible Investment in Bulgaria, % GDP



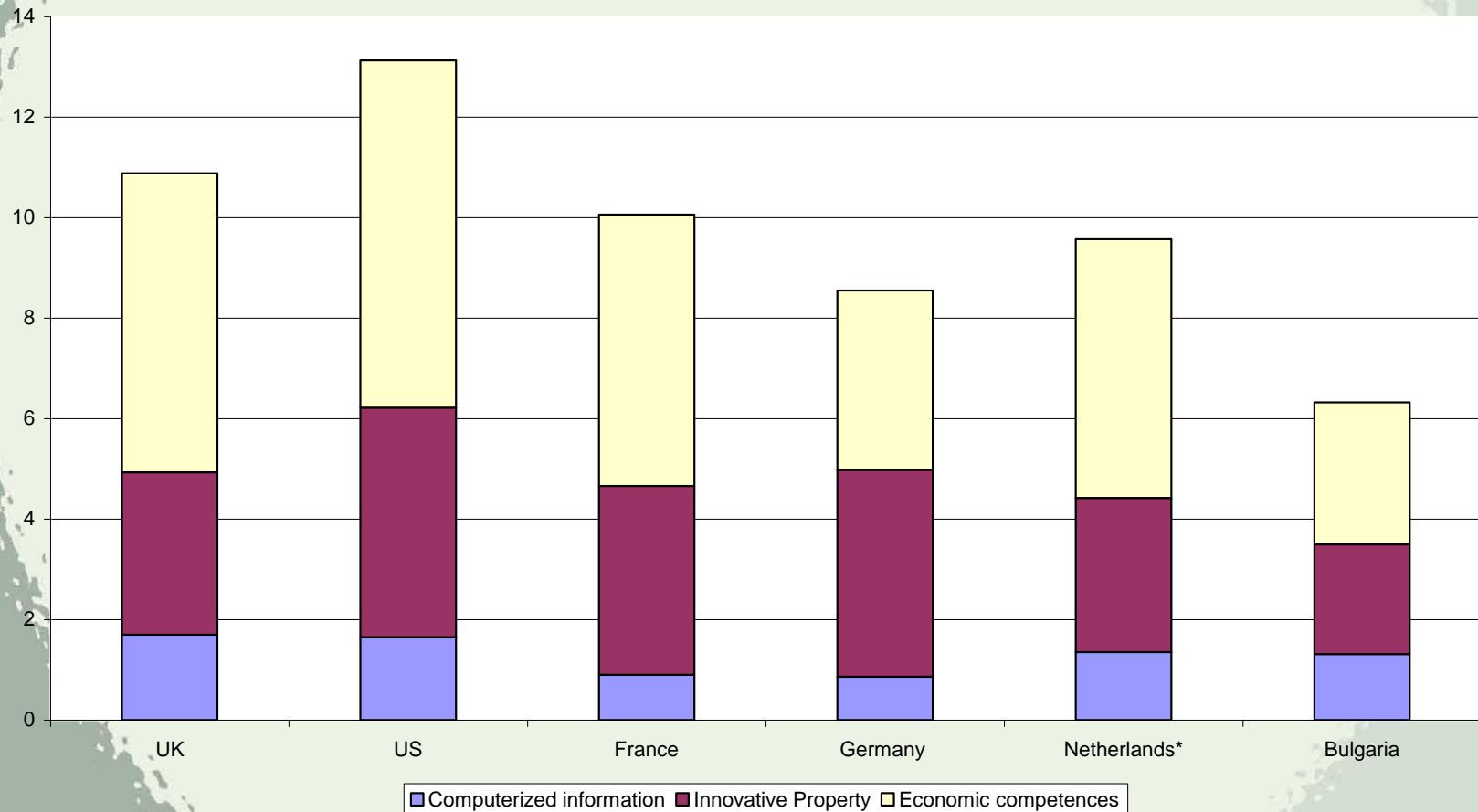
# Structure of Intangible Investments

Investments in Intangible Assets by Type (as % of Total)



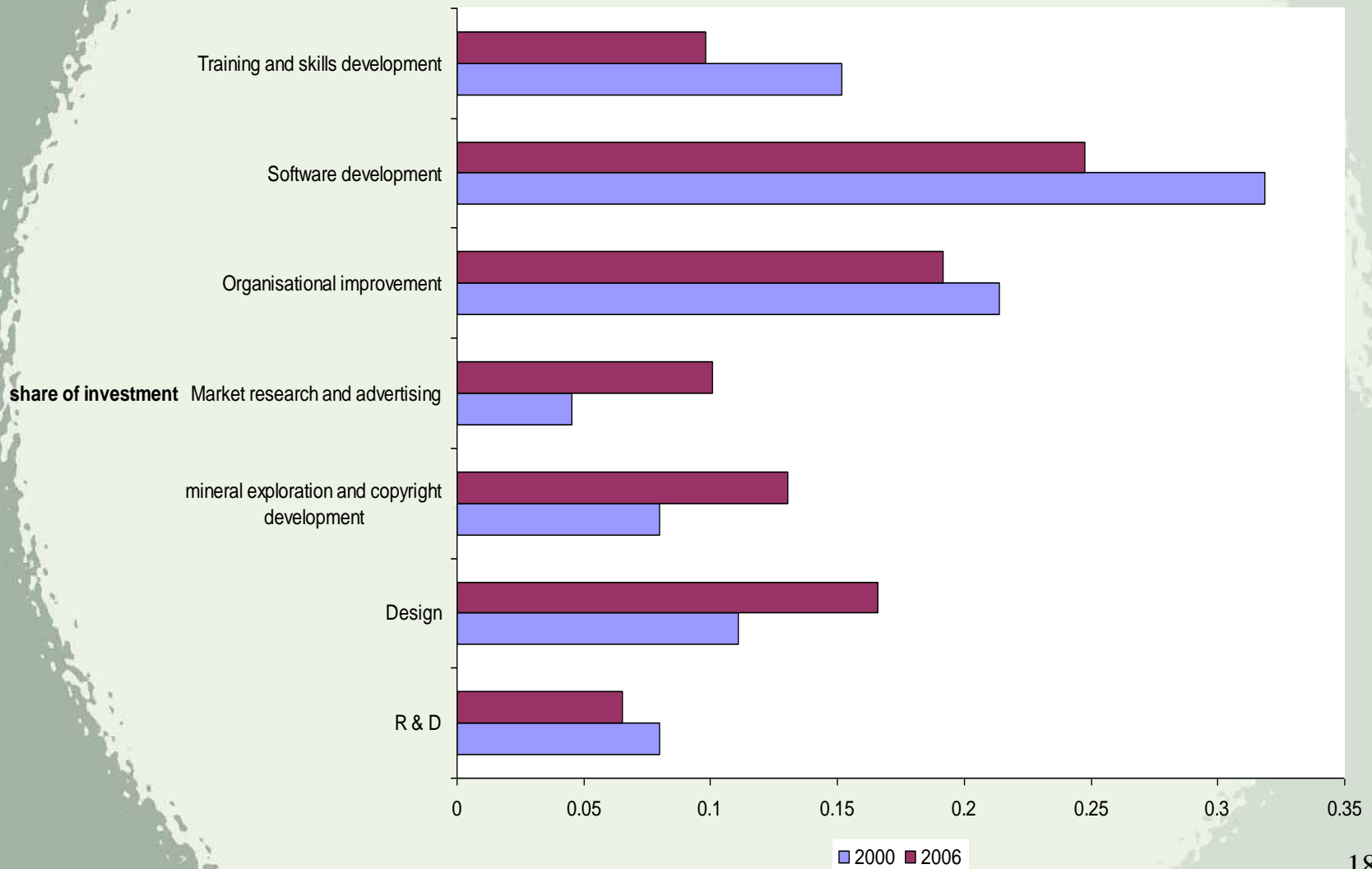
# How Does Bulgaria Compare with the Developed Countries?

Intangible Investment in 2004 (% of GDP)



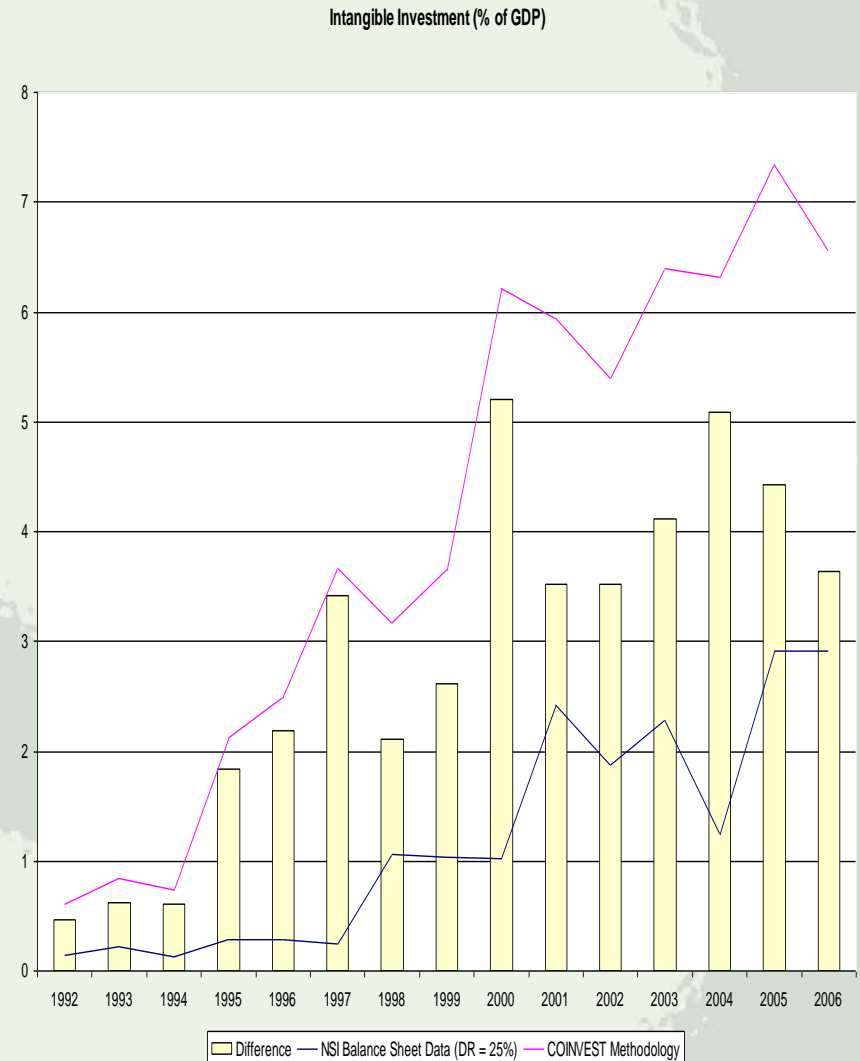
# Intangible Investment by Categories

Shares of total intangible investments by individual categories, 2000 and 2006

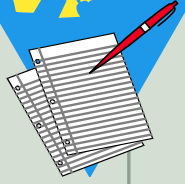


# Intangible Measurement

- **The CHS methodology expands the Intangible Investment concept**
  - New services are treated as Investment
  - Expands the treatment of services already regarded as Investment
- **The difference between the traditional and CHS treatment of Intangible Investment is increasing**
- **The difference between the both concepts amounts to:**
  - **0.5 – 1.0% of GDP in early 90s**
  - **2.0 – 3.0% of GDP in late 90s**
  - **3.5 – 5.0% of GDP in 2000-2006 period**



# Main Findings



- From the beginning of the 1990s, as the economy gradually switched from **manufacturing to services dominated**. We therefore observe a rapid growth of services-dominated intangibles as innovations in finance, computer databases and new software development.
- From the mid-1990s, as the economy became more **private ownership dominated**. This coincides with the growth of more market-oriented intangibles as organizational structure, brand building through advertising.
- From the early 2000's, as the economy became more **FDI dominated**. This is reflected in higher rates of new product design, market research and advertising.