Innovation Research Centre

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Trials and Errors in Risk Taking

Hungarian Experiences

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Problems in less advanced countries

- Slow progress toward innovative economy and society
- Relevancy of R&D programs to business community
- Hardly innovative business can create low demand for new knowledge
  - There are plenty of new opportunities but public and private business can hardly capture them
  - Stage of venture business (start up is difficult; risky high tech business cannot grow fast)
- Cross-border collaboration and open innovation (foreign business partners, penetration of FDI, participation in innovative business networks)

Policies developed in the past are no longer ideal

Outline

- Short overview on general issues
- Hungarian experiences
  - Legal framework
  - RDI strategy and its funding
  - Tax allowances and innovation levy
  - Foundation for Innovation – mission and facts
  - Role of risk-capital
- Lessons from Hungarian experiences

Innovation activity as well as Innovation Policy may lead to...

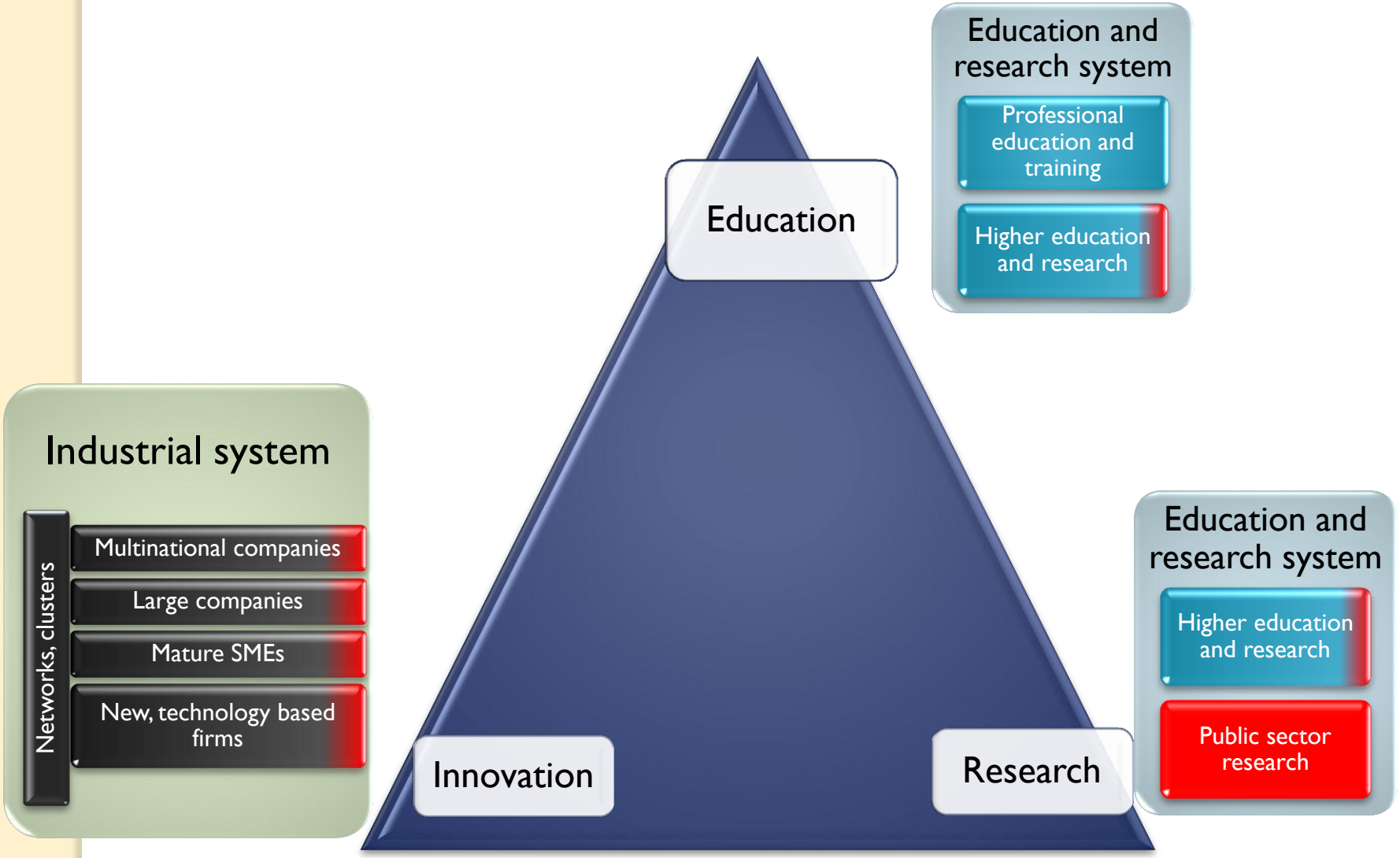
Innovation activities:
- Omitting technological change
- Lack of org innov to tech

Innovation policy
- Funding without evaluation
- Picking winners instead of facilitating
- Past-oriented
- Risk aversion

Innovation activities
- Take into account needs and technical opportunities

Innovation policy
- Employs intelligent tools
- Create innovation friendly environment
- Support collaboration
- Future oriented
- Takes reasonable risk

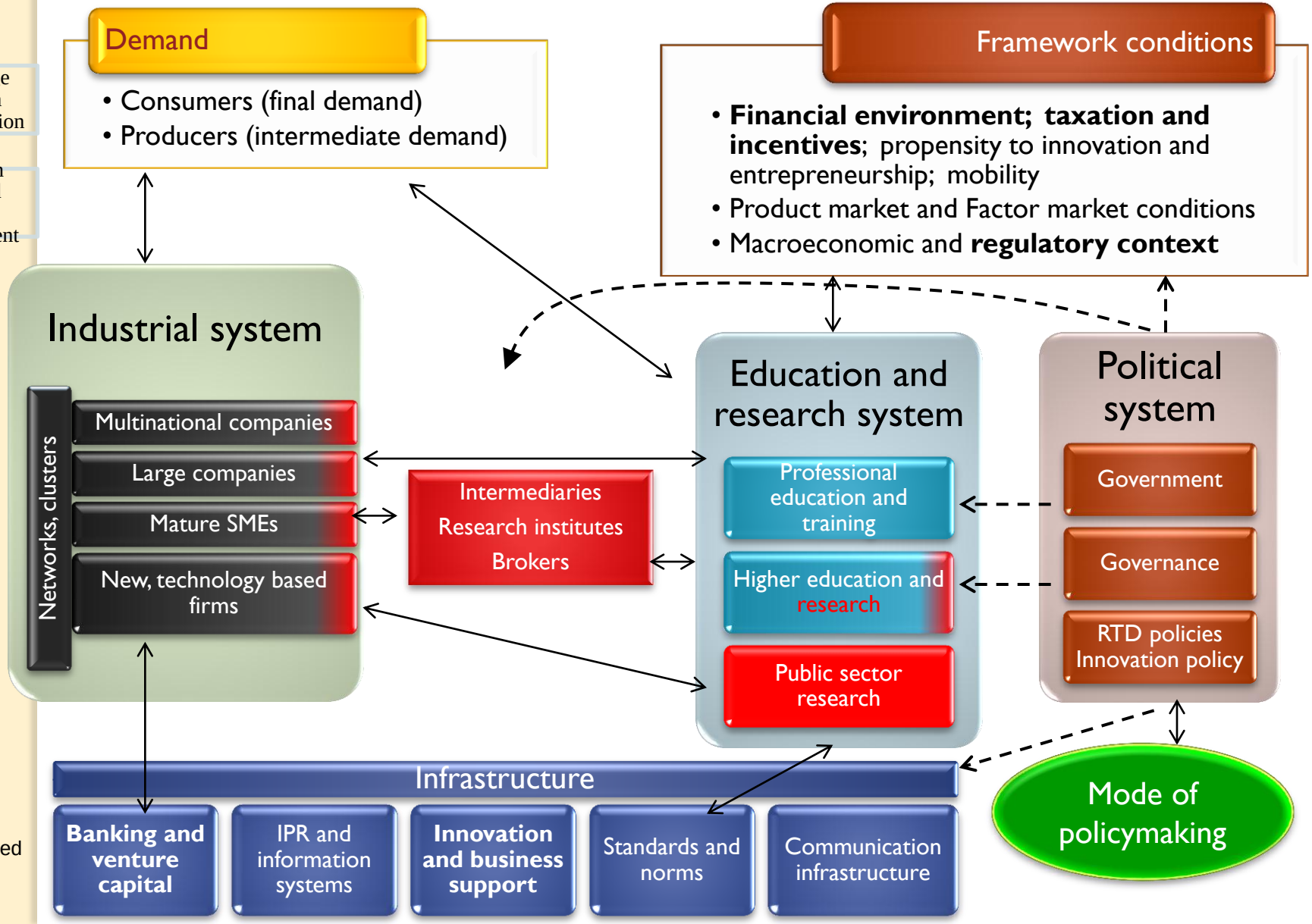
Knowledge triangle in the IS



RTDI system and public policies

Knowledge generation and diffusion

Innovation policy and its environment



Source: S. Kuhlmann, 2001, modified by A. Inzelt

The governmental instruments for financing research and innovation policy

Tools

- ***Institutional funding***
  - Rules for funding RDI in HEIs, RPOs, business
- ***Financial incentives*** (RDI programs, RDI tax credits, risk capital, innovation voucher for SMEs)
- ***Public procurement***

- **Regulatory instruments** Innovation related regulations (laws and binding regulations)
- **Surrounding conditions**
  - Public finance of education and training
  - Public policy (Competition policy, de/regulation, public stimulation of private demand)

Conditions for financial environment
- Two-tier banking system (and regulations)
- Stock exchange
- Venture capital

Legal RDI framework in Hungary

(Laws in early years of transition on HAS, HE, IPRs and so on)

- 2004. CXXXIV. Law on Research, development and technological innovation
- 2005. CXXXIX. Law on Higher Education
  - (Regulating 3rd mission: TTOs, patenting activity, share of HEIs and inventor /public funded/, patent ownership /private funded/)

Legal framework for financing RDI

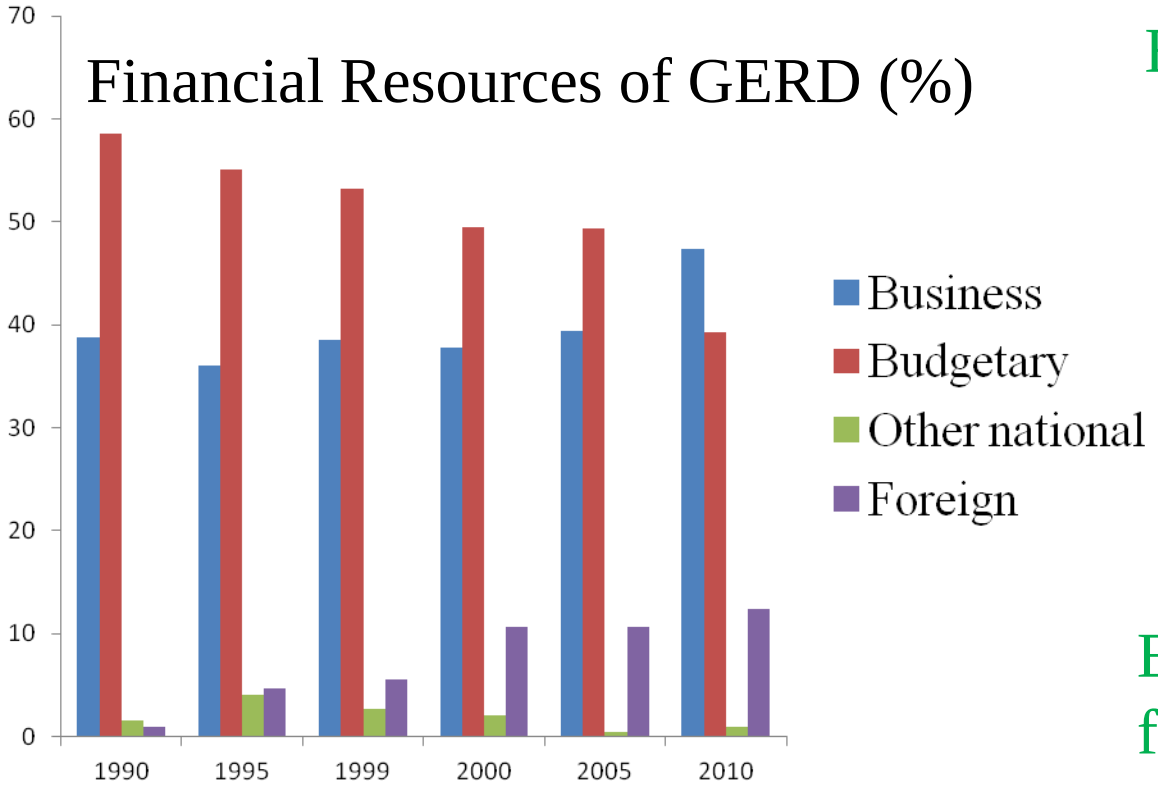
1) 1996. LXXXI. Law on Corporate tax and dividend
   - Regulating R&D related tax reduction
2) 2003. XC. Law on Foundation for Research, Technology and Innovation (RTIF)
   - Fund has to devote 25% of sources for regional innovation objectives
   - Those firms that have to pay innovation levy may deduct from yearly gross sum of levy:
     - Direct cost of in-house R&D activity
     - Total cost of contracted R&D activity if the contracted organisations are public organisations or non-profit organisations as these organisations are defined by 1997. CLVI. Law 2§ (1)

- 2006. LIX. Law on Solidarity tax
  - The tax-base may diminish with the cost of R&D

Funding R&D in Hungary

R&D expenditures in Hungary

	1990	1996	2002	2005	2008	2009	2010
GERD/ GDP (%)	1.6	0.7	1.0	0.95	1.00	1.17	1.16



European target: 3%

European target: 2/3 from business

Increase number of R&D spending firms + R&D expenditures to sales by firms

R&D activities by size-categories of firms in 2005 (total =100%)

	Micro	Small	Medium	Large
Nr of R&D units	41	21	18	18
R&D personnel	10	14	15	60
R&D expenditures	**4**	**7**	**9**	**80**

Proportion of R&D expenditures by totally or partially foreign-owned firms 71% (in 2005)

RDI financing by purposes

Purposes	Direct and indirect governmental financial intensives	Business funding (self- or financial market)	Reasons for public funding
1. Creation new knowledge • R&D • Other	+ -	+ +	Market failures Systematic failures (missing actors, missing linkages) Critical mass (international coop.)
2. Acquairing new knowledge & dissemination (HEI, training)	+	+	Learn problem solving R&D findings Networking Develop new equipment & processess Prototyping , testing Ideas to new firms
3. Innovation & diffusion of novelties	+ Public procurement	+	Facilitate and encourage innovations Share risk-taking

RDI Public Funding Organisations -- Supporting on Competitive Basis

Foundation	Main aims	Main sources
RTIF (KTI Alap) 2003-	• Practice oriented R&D and innovation • Regional innovation	Innovation levy from firms From central budget
OTKA 1986→1993→1997	Basic science	From central budget R&T Fundation replacing budget cut
EU-Hungarian Operative programs (GVOP) 2004-	• Strengthen **HE** research capacities, knowledge management and dissemination capabitlities • Develop innovation system for supporting **SMEs** innovation activities	EU Structural Funds Various Hungarian budgetary sources Self-sources of applicants

Coordination of the supports from different sources became an important governmental aim

Indirect financial instruments of innovation policy

- **Tax reduction** of firms by R&D expenditures

Over time	Rate of reduction (%)
1996 (starting year)	120
1998 - 2003	200
2004 -	For contracted HE, PRO 300

Deviation from avarege rate has existed by selected founders of start ups

Meaning of R&D!

- **Tax reduction** by salaries of employed R&D personnel who are performing basic and applied research (experimental development excluded)
- In the field of **ICT sector**
  - may accumulate tax free reserve up to HUF 500 Million (EUR 1,6 Million)
  - Accelerated amortization of investments
  - Credit in 70% of tax relating to R&D related donations
  - Accelerated tax reimbursement

New government introduced extra tax in this sector because of the budgetary debt situation

Students get reduction from their personal *income tax* if they are doing R&D activities

Defining R&D for tax reduction

An opportunity exists to request assessment from the Ministry of Finance if the activity may take into account as R&D for tax reduction

- The request should include the followings:
  - R&D activity will be executed in the future
  - Proposed to use definitions from Frascati Manual
  - Make clear the applied methodology for calculating the costs of R&D
  - the tax advantage to be utilised
- The Ministry of Finance confirms the Request by a decree which is binding for the National Tax Authority

Further development in defining R&D for tax reduction

- Since 2010 it is compulsory the activity has to be in line with the R&D classification by Frascati Manual (OECD)
  - Problem: the function of FM is different. Examples are important part of its definitions.

2012 Official assessment system -- Government Decree 9/2012. (II. 1.)

New function of the Hungarian Intellectual Property Office is the qualification of R&D activities

Handbook is in preparatory phase

FM will remain background information to this Handbook.

RDI related tax allowances since 2012

Corporate tax allowances			
	Relating to developments	*Million 100 or above HUF investment in R&D*	Up-to 80% of tax has allowance
	R&D wage cost	Counted among the direct cost of R&D Wage cost for employing software designer	10% up-to 30% of tax discounted by development tax allowance, in the year of taxation + 3 years
		Temporary up-to 2014	By pre-2012 regulations
Local tax of industrial activities			
		Direct cost of R&D activity	(no changes in 2012)

Establishing and funding RTIF (2003. XC)

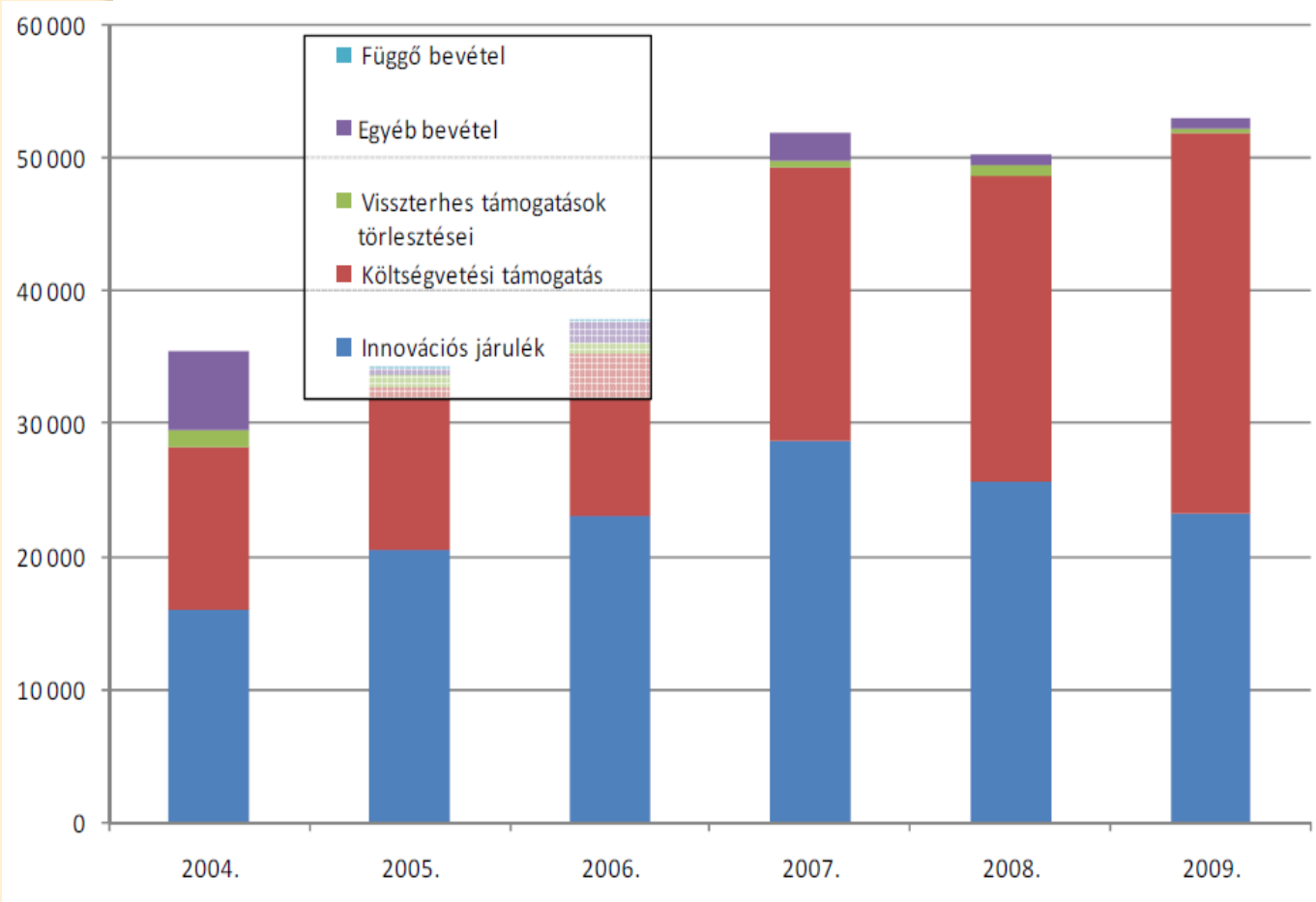
Original target (2003): Support the innovation activities of firms at least the same sum as originated from business sector into the fund

1. Do not increase the budget contribution of business sector with the innovation allowance/levy
2. Encourage and support directly the innovation activity of business sector
3. Provide predictable supporting scheme on competitive basis

Revised targets (2007 December):

- Encourage innovations
- Increase the proportion of business among the supported organisations
- Enlarge the innovation services
- Strengthen the knowledge base and international relationships
- Develop NIS

Sources of RTIF (2004-2009, M HUF)



Hanging income

Other income

Repayable support instalments

Central budget

Innovation levy

Sources: Ernst&Youmg – GKI (on the base of survey, 2010.)

Rules for paying the innovation levy

Innovation levy has to pay into the foundation except firm invests in R&D activity

In-house

Extramural (contract research, buying patents, licences, innovation services)

Regulation changed over-time

Allowance differs by size of firms

Years		Size of organisations	
	Micro	Small	Medium and large
2004		0.05	0.2
2005			0.25
2006			0.3
2007			0.3
2008			0.3
2009			0.3

Sources: Ernst&Youmg – GKI (on the base of survey, 2010.)

Deviation from plans of RTIF income (%)

	2004	2005	2006	2007	2008	2009
Yearly innovation levy	48	-12	-1	41	10	-11
Budgetary	-17	-	-	-	-	-
Repayable support	14	21	7	21	200	12
Other incomes	-	4	561	1082	465	12
Total	33	-7	3	25	7	-5

Sources: Ernst&Youmg – GKI (on the base of survey, 2010.)

Programs

Name of the programs	Available sources (years)	Share of RTIF financing (%)	
		Applied Research	Experimental Development
Irinyi 5-LET	2004	50	25
	2005	50	25
	2008	60	35
Apponyi Patronage	2005-2006	100	
	2007-2010		
Asbóth Oszkár Leading Sector Program	2005	100	
Support for SMEs innovation by Baross-	2005, 2007, 2008	10-25 (support by goals)	
	2009	50-25 (support by regions)	

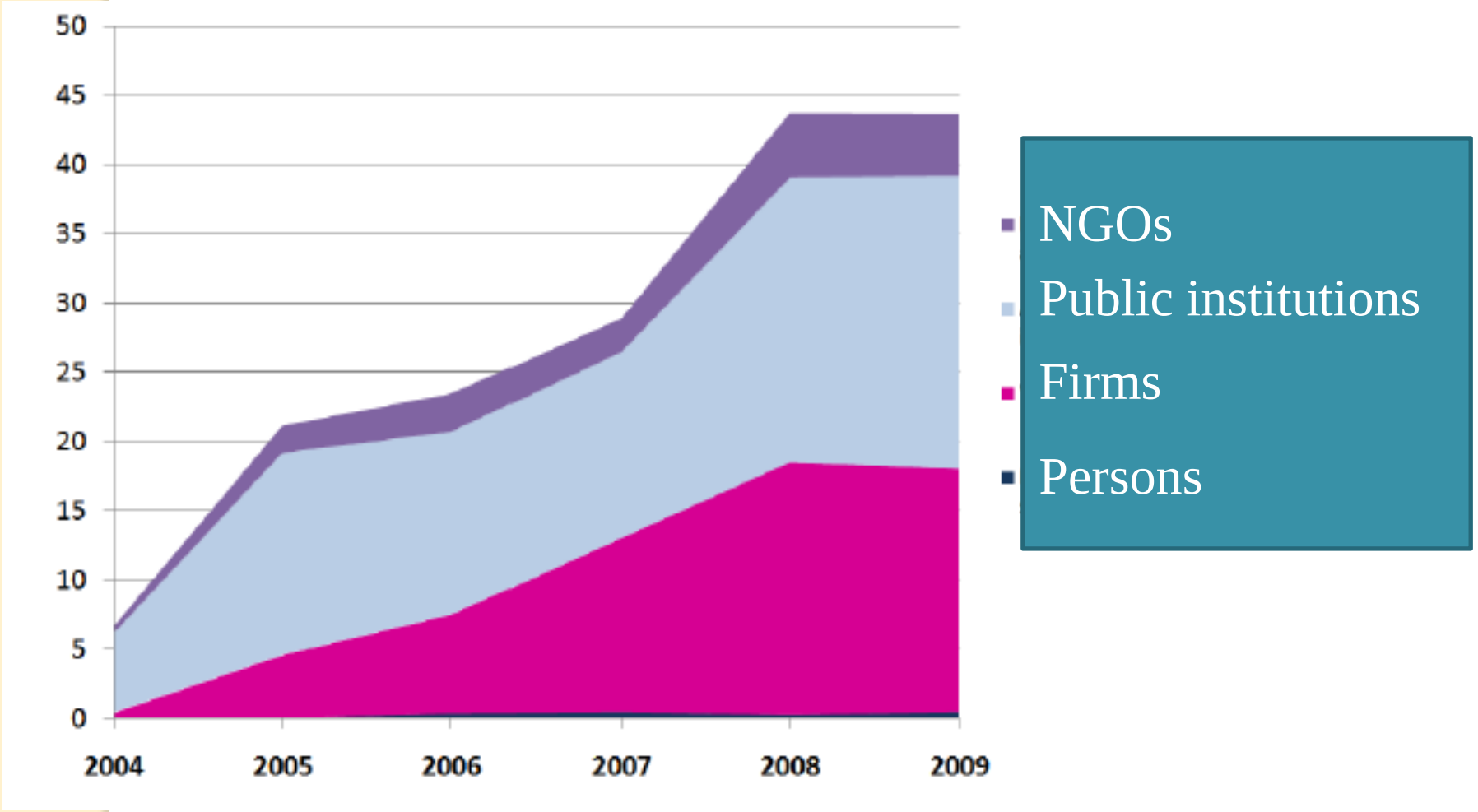
Sources: Ernst&Youmg – GKI (on the base of survey, 2010.)

Programs

Name of the programs	Refunded sources (years)	Share of financing (%)	
		Applied research	Experimental development
INNOCSEKK	2005-2007	100	
	2008-2010		
Cooperative Research Centres	2004	50	
National Technology Platforms	2007	100	
	2008		
Regional Knowledge Centres	2004-2008	100	
National Technology Programs	2008	50 (for firms), 100 (for other organisations)	75 (for firms), 100 (for other organisations)
	2009		

All of the programs are supported in 100% by KTIA.

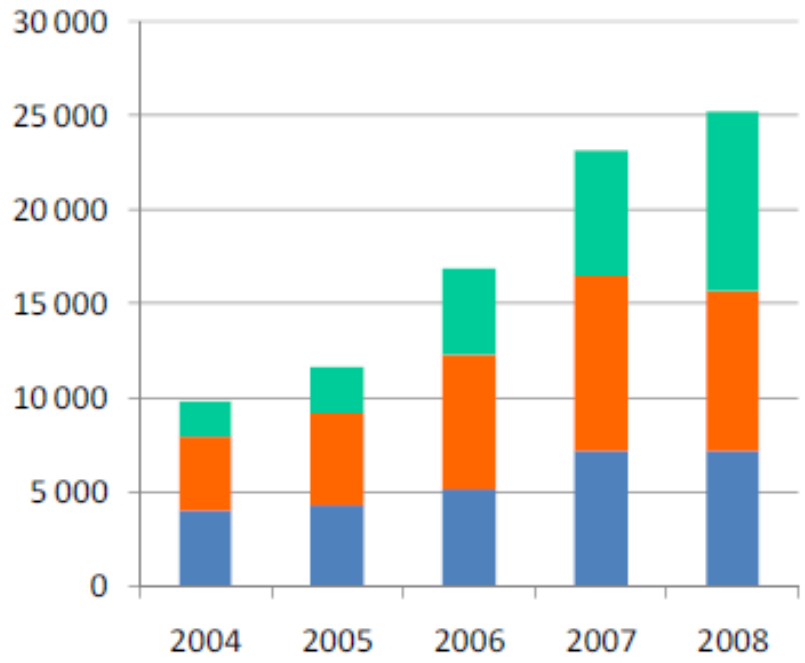
Facts: RTIF supported organisations by sectors (in Billion HUF)



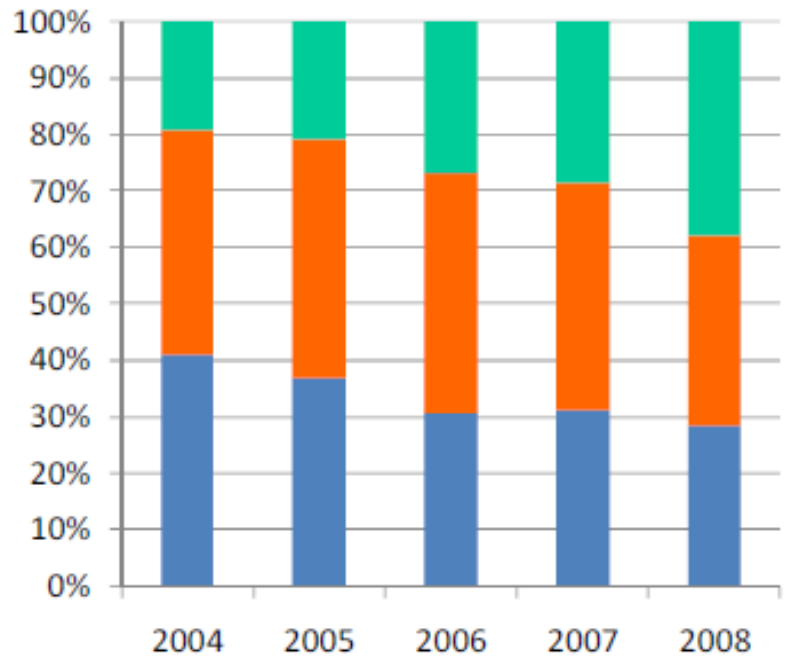
Sources: Ernst&Youmg – GKI (on the base of survey, 2010.)

Facts: RTIF supported organisations by types

M HUF



%



HAS Institutes
HEIs R&D
Business R&D

Sources: Ernst&Youmg – GKI (on the base of survey, 2010.)

Facts by economic sectors

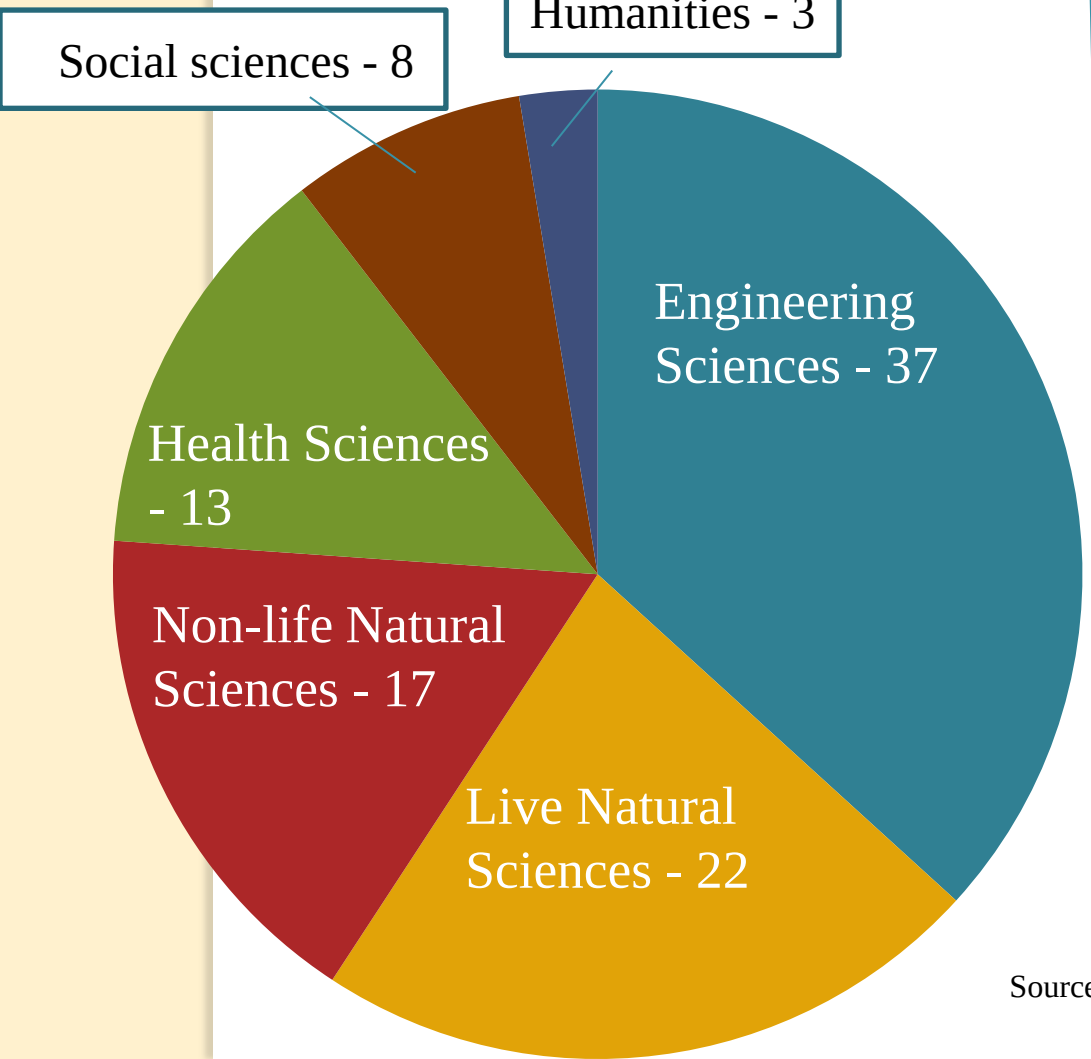
Economic sectors	Distribution of the RTIF sources
Real estate activites, business services	**44.0**
R&D sector	**25.8**
Manufacture of electrical equipment and instruments	**11.7**
Agriculture, forestry, fishing	9.2
Wholesale and retail trade, repair	7.0
Manufacture of chemicals and chemical products	5.8
Manufacture of food, beverages and tobacco products	5.1
Manufacture of machinery and equipment n.e.c.	2.8
Manufacture of vehicles	2.4
Activities of other membership organisations and personal services	2.3
Manufacture of basic metals and fabricated metal products, except machinery and equipment	2.0
Construction	1.9

Note: other sectors are below 1%

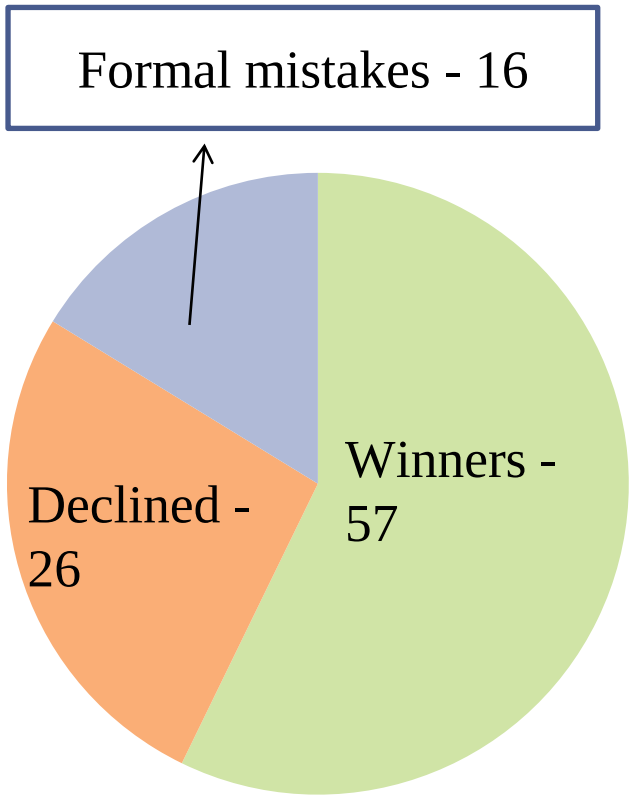
Sources: Ernst&Youmg – GKI (on the base of survey, 2010.)

Facts by granting projects (2004-2009, in %)

WINNERS

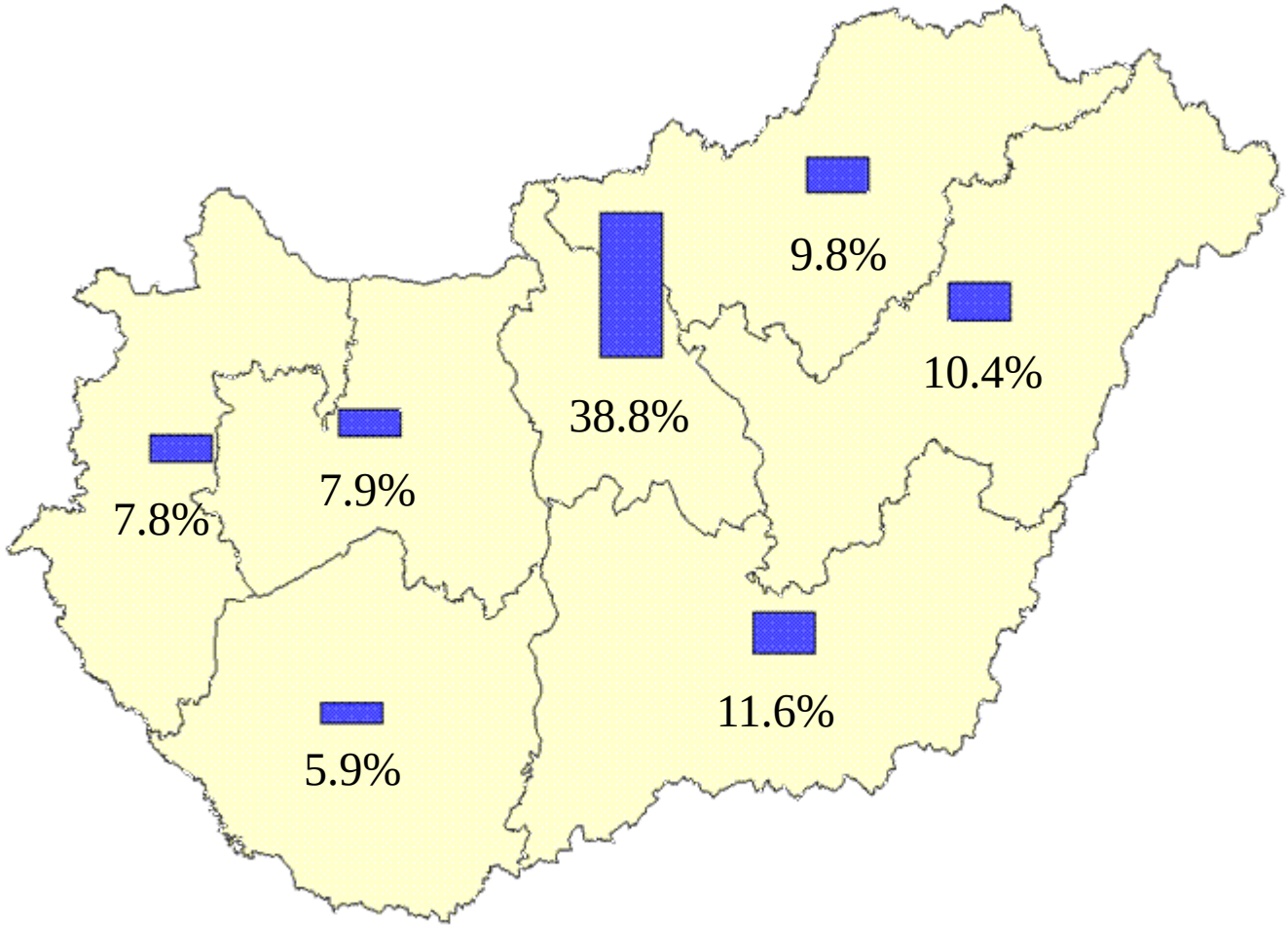


EVALUATION OF PROPOSALS



Sources: Ernst&Youmg – GKI (on the base of survey, 2010.)

Facts: Winners of RTIF support by regions



Data sources: Ernst&Youmg – GKI (on the base of survey, 2010.)

Working practice of R&D Foundation

- Budget under performed its compulsory yearly payment into the Foundation
- The aims of the Foundation by Law were frequently modified
- Government or Parliament has shifted the budgetary responsibilites to Foundation (non-innovation aims)

Risk Capital

Financial market niche

- Seed money
- Start up capital
- Early phase capital
- Expansion
- Buy out

Actors

- Angels
- Investment funds

Risk capital investors in Hungary

Before 2010:
Public OR Private

After 2010
Public, Private AND Hybrid financier

Hybrid: initiated by EU JEREMIE (Joint European Resources for Micro to Medium Enterprises)

Promising but financial crisis

Function of Risk-capital over-time

1989-2004

10% of risk-capital went into early stage firms

7% of risk-capital financed development and market introduction of innovative firms

Risk investment by financial functions 1989-2010

Phase	Number of funded firms (%)	Value (%)	Average (in Mio USD)
Early	32	4	1,1
Expansion	59	28	4,2
Buy out	9	68	66,4
Total	100	100	8,9

Source: Karsai 2012, p.217 (MKKE)

Lesson: State funded risk-capital did not completed but replaced private risk-capital

Its funding profile was:

- funding expansion (not earlier stage)
- Preferring traditional sectors (not more risky high tech)

State did not participate in management (only control function) → firms missed the support beyond capital (participating in development of strategy; further financing; building up professional linkages; upgrade management)

From where did risk-capital investment come in Hungary?

Risk-capital investment in Hungary by geographic radius of investors 1989-2010 (Total= 100%)

Investors	Number (%)	Value (%)	Average value in USD
Hungarians	64	13	1,8
Regional	29	35	10,7
Global	7	52	69,3

Source: Karsai 2012 (MKME)

- Size of risk-capital:
  - International inflow + EU membership

After 20 year attempts Hungarian risk capital market has matured

Significantly improved the availability of risk-capital

However there are still scarcity of business angels for start ups and risky technology / knowledge intensive firms

Lessons

- Government has important role to encourage innovation activities
- More stability in financial sources and their regulation can improve their efficiency
  - However refinement of new policy tools are always very important
  - Refinement has to base on evaluation instead of short-term budgetary view
- Competitive system has many advantages
  - Moving from picking winners to facilitating innovations

Lessons cont.

- Government can facilitate business RDI activities but cannot replace them
- More innovative business can create better demand for R&D at universities and RPOs
- Development in financial environment can attract more private sources in RDI activities

Thank you for your kind attention!

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