

Promoting innovation by tax incentives

*A study of existing strategies and their
importance to biotech growth*



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Background and Objective of study

OBJECTIVE

- The objective of the study is to produce a fact-based material on tax incentive schemes that are in place to promote investments in business R&D

BACKGROUND

- The study is a collaboration between biotech industry organisations in six countries: Estonia, Finland, France, Norway, Sweden and EuropaBIO

SUPPORTED BY THE EC

- The study is a part of the project "Realisation of Young Innovative Company status, YIC, for biotech companies" supported by the European Commission (Contract No. LSSB-CT-2005-018768).



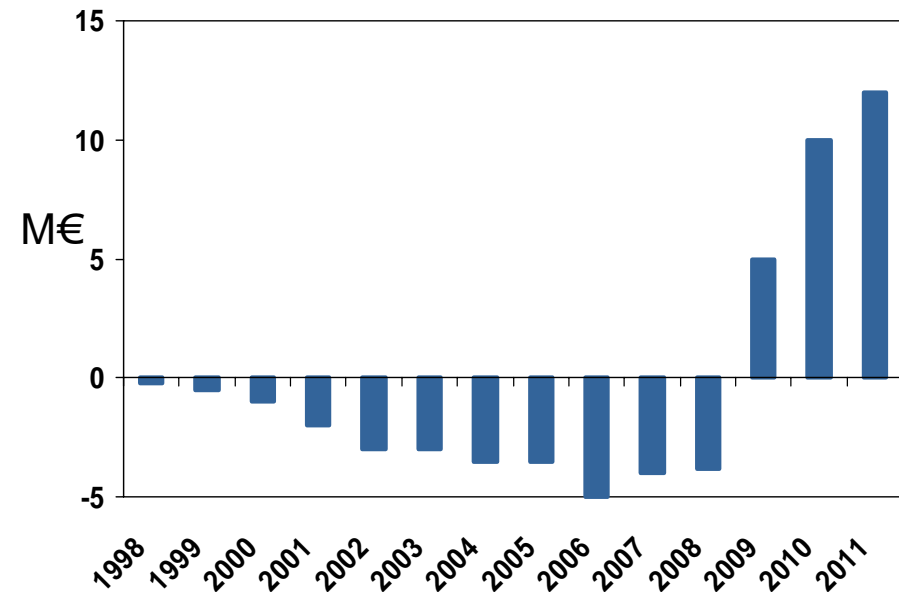
Taking a biotech company from idea to product requires huge investments and a long-term perspective

Biotech characteristics

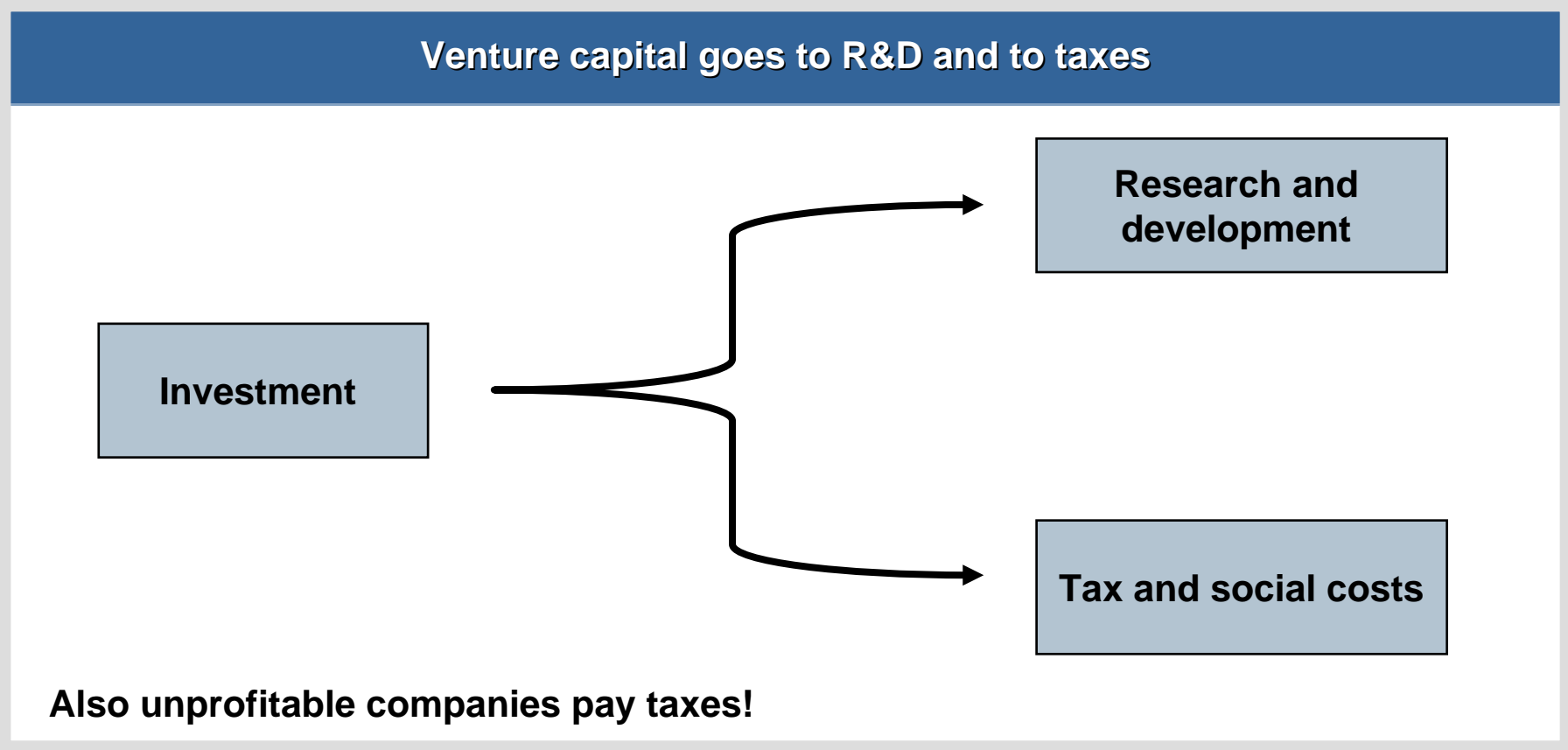
- Very research intensive
- ~60-80% of R&D investments goes to high-quality jobs
- Close collaboration with academic research
- Large investments needed to reach profitability
- High risk / high reward investments

Funding is a main challenge

Illustration of cash flow in a biotech company (fictive)



The tax policy influences the investment case as the investor seeks to get the maximum amount of R&D for each Euro invested



Tax incentives for R&D, of varying program design, are implemented in an increasing number of countries

	Level of R&D	Increment of R&D	Additional incentives for SMEs
R&D tax credits	Canada	France	Canada
	France	Ireland	France
	Japan	Korea	Italy
	Korea	Portugal	Japan
	Mexico	Spain	Korea
	Netherlands	United States	Netherlands
	Norway		Norway
	Portugal		
	Spain		
R&D allowances	Australia	Australia	Belgium
	Austria	Austria	Denmark
	Belgium		United Kingdom
	Denmark		
	Hungary		
	United Kingdom		

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There are strong economic rationales for direct governmental support to business R&D

- **Market failure in early stage financing**

Actual investment in early stage R&D are below the level that is optimal to society

- **Growth**

R&D investments are key to future growth by generating entirely new products

- **Create high-quality jobs**

Support to business R&D creates high-quality job opportunities

- **Health benefits**

Innovative companies are realising health benefits in terms of new drugs and medical equipment

R&D spillovers – the returns on R&D investments are 2-3 times higher to society as a whole than to the investing company itself

Estimates of the rate of return on R&D investments

	(1) Return to industry	(2) Return to other industries	(1) + (2) Return to society
Terelckyj (1980)	25%	82%	107%
Sveikauskas (1981)	17%	-	-
Griliches and Lichtenberg (1994)	30%	41%	71%
Griliches (1994)	30%	-	-

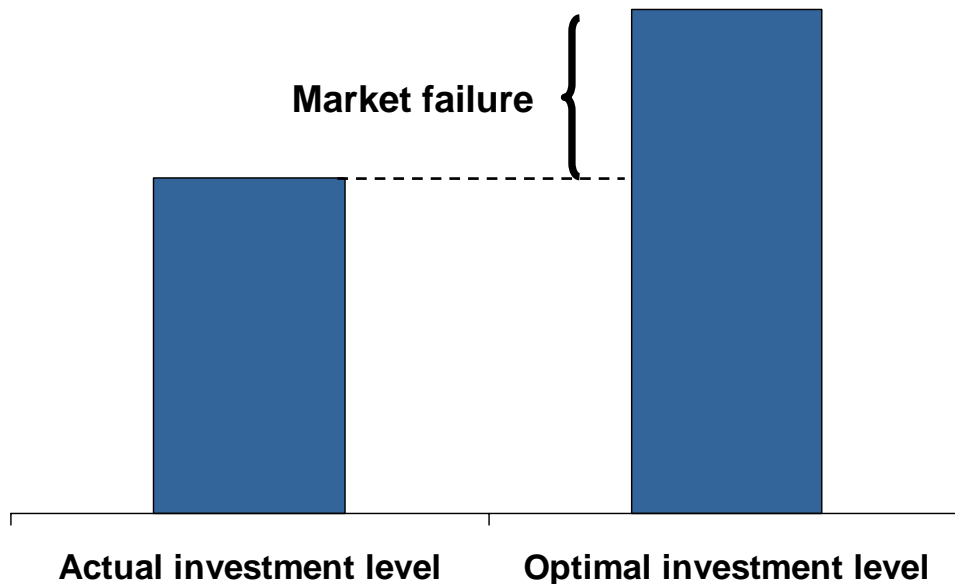
Comments

- R&D spillovers make other firms and industries gain from a firm's R&D investments
- A firm's extra spending of €100 on business R&D generates increase in output:
 - €17-30 increase for industry
 - €41-82 increase for other industries
 - **€71-107 increase to society**

Source: Griffith R, "How important is business R&D for economic growth and should the government subsidise it?" (2000), Institute for Fiscal Studies

Public support to business R&D narrows the gap between actual industrial R&D investment and the level that is optimal to society

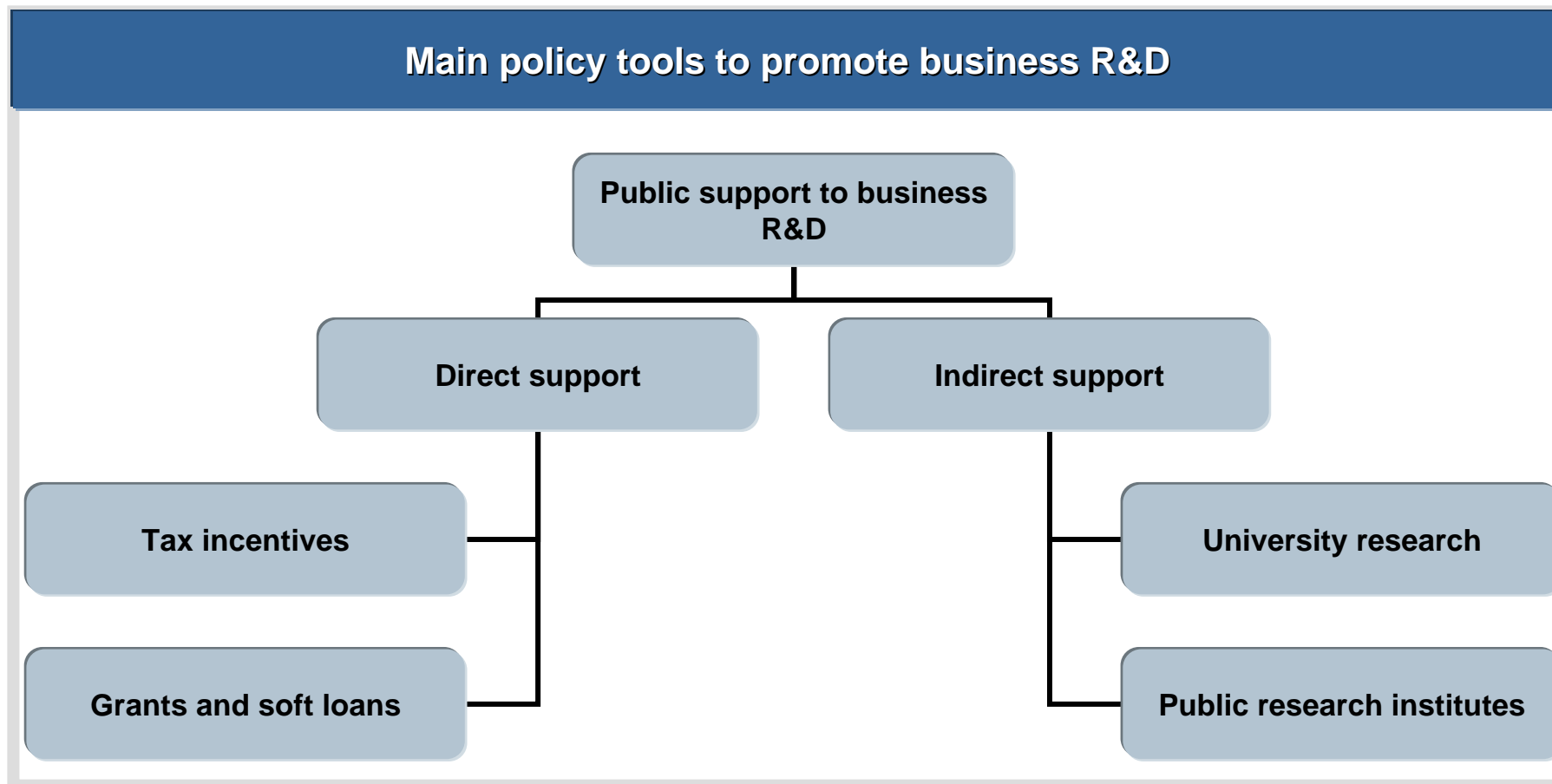
Market failure in business R&D investments



Market failure

- Industry invests less in R&D than is optimal to society
- Causes of underinvestment
 - R&D spillovers – the firm does not itself get the full benefits
 - High risk
 - Information asymmetries between investors and firms

Governments can support business R&D through a number of policy tools that will have different impact on innovation



Pros and cons of tax incentives relative to grants in promoting industrial investments in R&D

Tax incentives	Grants and loans
<p>Market pull</p> <ul style="list-style-type: none">▪ Industry decides where to invest▪ Avoid picking winners▪ Market friendly <p>Predictable for companies</p> <p>Relatively cheap to administer</p> <p>Transparent and accessible to companies</p>	<p>Can be targeted to areas that are judged important</p> <p>Better budget control for governments</p>

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The design of tax incentives varies between countries and current measures can be divided into three main groups

Definition of measures for tax incentives

- **Tax allowances** allow firms investing in R&D to deduct more from the income than is actually spent on R&D. This reduces the taxable income and the tax bill. The benefit of tax allowances depends on the tax rate that the company faces
- **Tax credits** are applied directly on the tax paid by the firm. The tax is reduced by a percentage of the R&D expenditure or the incremental increase in R&D expenditure. The benefit of a tax credit is *independent* of the tax rate
- **Extended incentives** are directed to companies without profits and income tax. They can take various forms and varies between countries. Examples include:
 - Social cost exemption for employees conducting R&D
 - A payable credit related to the R&D expenditure
 - Exemption from taxes on property

The design of tax incentives for R&D is important to get the desired effect

Important design issues

- **Generosity:** The incentive must be generous enough to influence decisions on R&D spending
- **Predictability:** R&D investments are long term decisions. Incentives will only have impact if the company can rely on them arriving for many years ahead.
- **Administration:** Getting the incentive should involve a minimum of administrative work for the company
- **Simplicity:** The incentive system should be as simple in structure as possible to invite as many as possible to make use of them
- **Targeting:** The system can be targeted to a special group. Practices include targeting to SMEs, young research intensive companies and third world vaccines. Targeting should be weighted against the increasing complexity it creates.

Short term benefits alone will finance 2/3 of investment cost for introducing tax incentives for R&D.

Assumptions (Sweden)

- Tax relief reinvested in new employees
- Average salary (incl. tax and social costs): **70'000 Euro/year**
- Payroll tax: **25% of gross salary cost** - Employer's income. tax: **33% of salary**
- Estimated reduced cost for unemployment (conservative): **10'000 Euro/new employee/year**

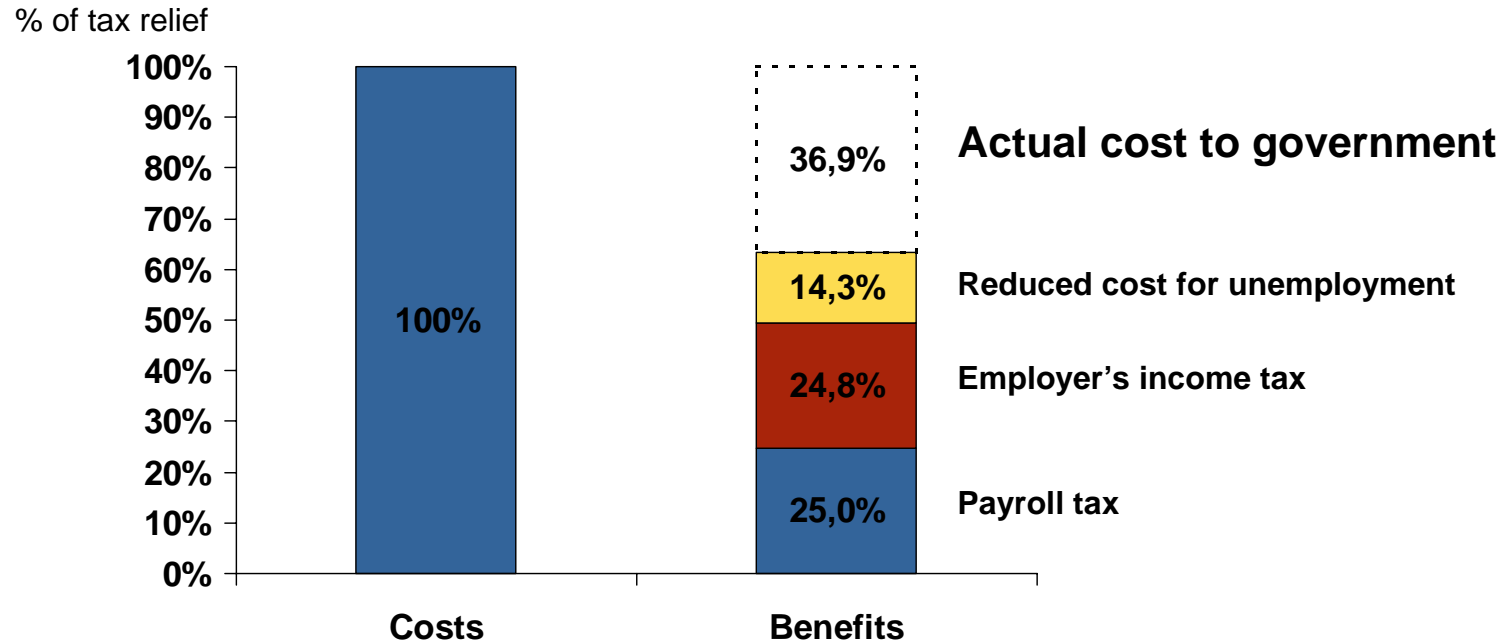


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Strategy for comparing model of fiscal incentives for R&D

Country benchmark

- Fiscal incentives for R&D in four countries are compared. They represent four distinct approaches to tax incentives for R&D.



Canada



France



Norway



UK

- **Challenge:** Different design, caps and thresholds and country-specific targeted incentives makes it difficult to compare incentives across countries
- **Solution:** Illustrate the effect of incentives on three model companies

Norway has the most generous system in terms of total costs per capita**Overall costs of fiscal incentive programs***

	Total cost (€)	Total cost / capita (€)
Norway	217	47,3
Canada	1284	39,2
France	970	16,0
UK	574	9,5

*SwedenBIO estimates for 2006, based on costs communicated by the responsible authorities in each country

Three model companies are used to illustrate the generosity of incentive schemes

Model Companies

A) Biotech start-up

- 2 years old
- No profit
- Investing **€1 M.** in R&D/year (25% increase)
- 80% of R&D-costs are salaries

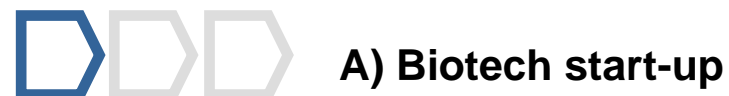
B) Growing biotech

- 5 years old
- No profit
- Investing **€3 M.** in R&D/year (10% increase)
- 70% of R&D-costs are salaries

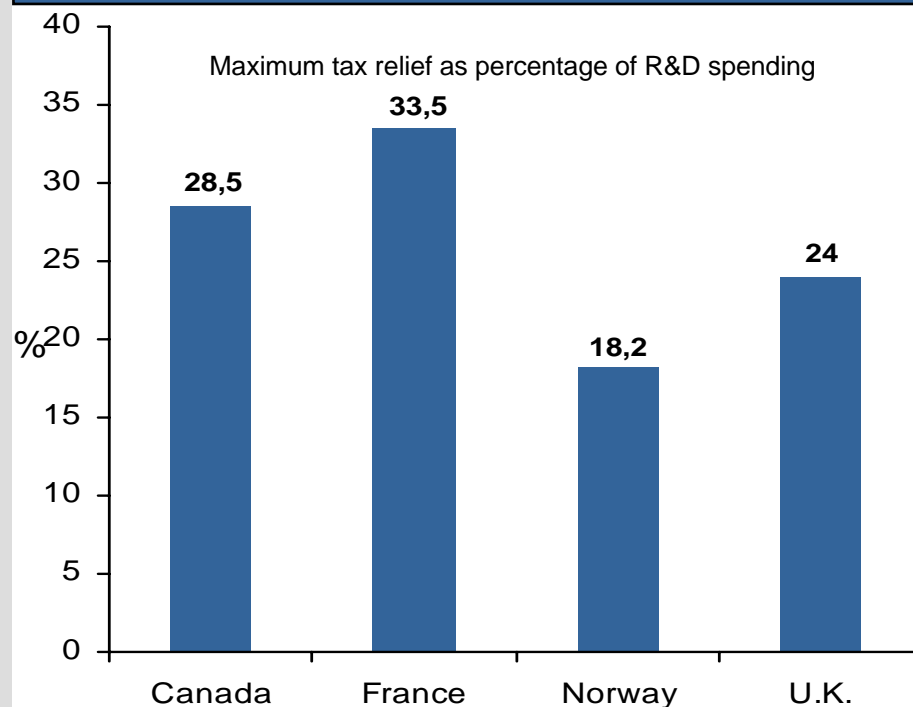
C) Profitable biotech

- 10 years old
- Taxable profit of **€7 M**
- Investing **€5 M.** in R&D/year (0% increase)
- 60% of R&D-costs are salaries

Canada, France and the UK all have very favourable tax incentives to a small loss making R&D company



Tax relief to a start-up loss making company



Comments

A start-up biotech company

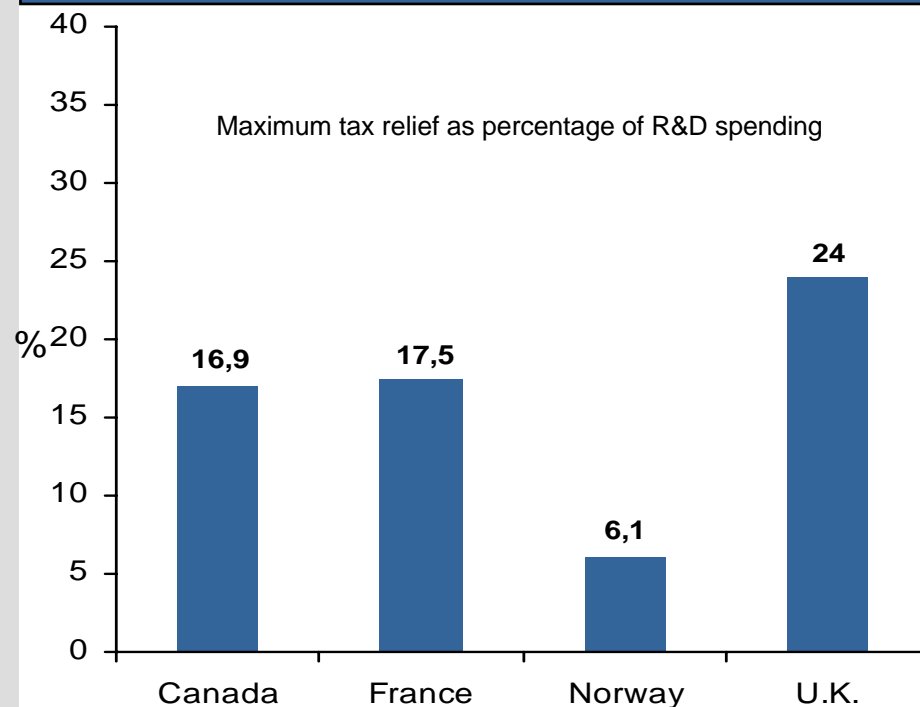
- 2 years old
- No profit
- Investing €1 M. into R&D/year (25% increase)
- 80% of R&D-costs are salaries

The Canadian and Norwegian incentives are relatively less generous as the R&D spending increases, while France and the UK remain as generous



B) Growing Biotech

Tax relief to a growing loss making company

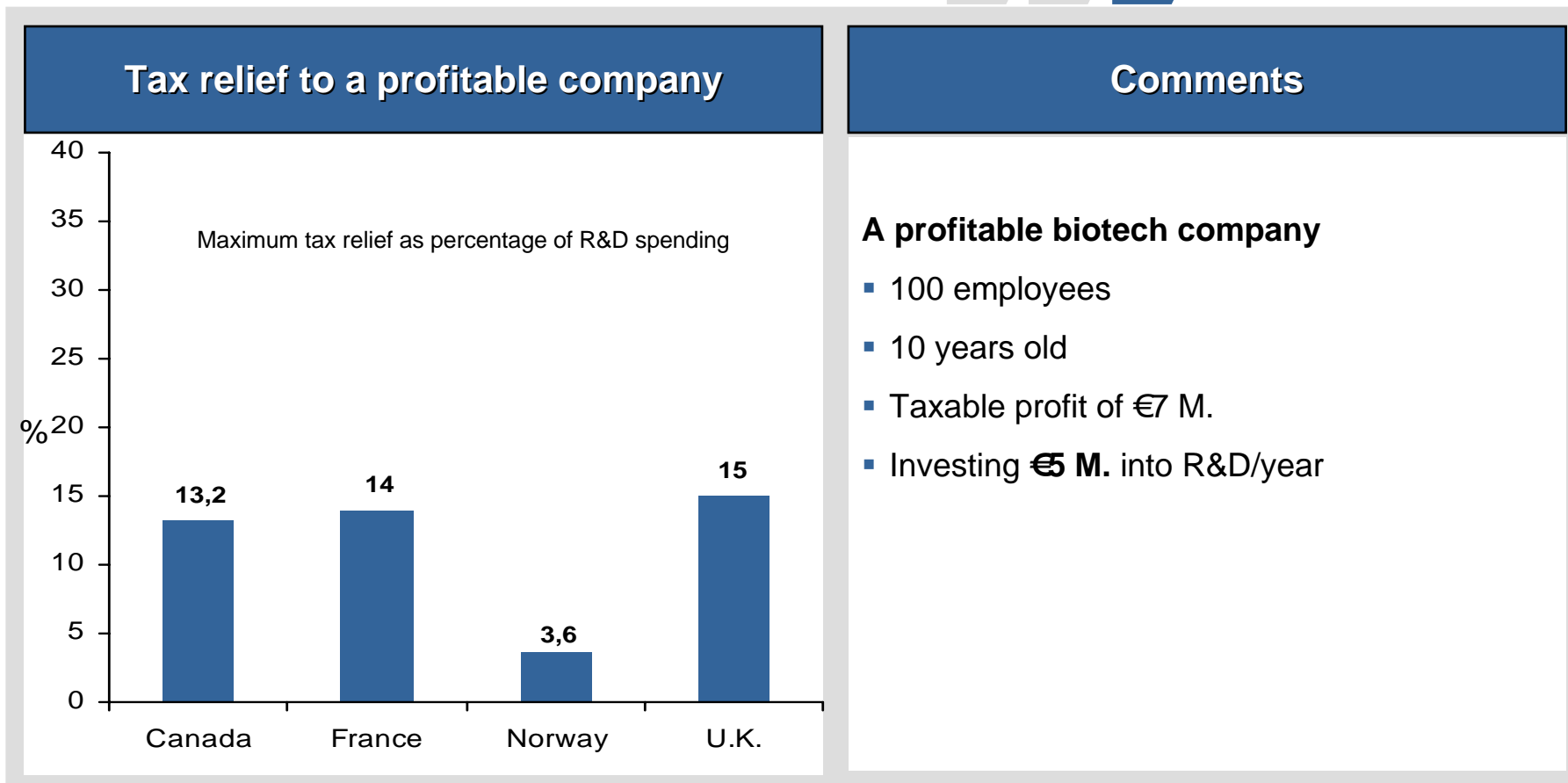


Comments

A growing biotech company

- 5 years old
- No profit
- Investing €3 M. into R&D/year (10% increase)
- 70% of R&D-costs are salaries

Canada, France and the UK are all promoting companies to reinvest profits into R&D, while Norway does so to less extent



Canada stimulates its R&D intensive industry via the SR&ED* program

The SR&ED program for innovations

Background

- SR&ED was introduced in the 1980's
- The largest source of federal support to business R&D in Canada
- Many provinces have additional programs (not included here)

Eligible Companies

- Canadian - controlled private companies are most favoured
- Other Canadian companies are eligible but can not get an immediate cash refund in not profitable
- Proprietorships, Partnerships and Trusts can get investment credits and cash refunds

Tax Benefits

- Taxable tax credit of
 - 35% of R&D costs less than €1.42 (2 M CAD)
 - 20% of R&D costs above €1.42 M
- Unprofitable companies can claim the credit as a payment
- R&D expenditures can be deducted from profits in the current year or carried forward indefinitely
- There is no maximum limit for credits

Claims

- 11 000 claims every year. About 75% are claims from small companies ranging from €14,200 – €1,420,000 (\$20,000 - \$2,000,000 in CAD)
- Total annual support worth €1284 M (1800 M CAD)

* "Scientific Research & Experimental Development" (SR&ED) is the largest single source of federal government support for industrial research

France has two major schemes of tax incentives for R&D intensive companies

The Young Innovative Company program

Background

- YIC was introduced in January 2004

Main Tax Benefits

- No social costs (~25% of labour cost) for 8 years
- Exemption from corporate tax income
 - 100% for three years
 - 50% for the next two years

Eligible companies

- Less than 8 years old
- Less than 250 employees
- At least 15% of expenditure is spent on R&D

Claims

- 862 companies (~150 biotech) received YIC status during 2004 (first year)
- ~5000 R&D employees are included
- Cost estimate 2006 is €120 M (€40 M in 2005)

The Tax Research Credit program

Background

- CIR was introduced in the 1980's and is available to any company doing R&D

Tax Benefits

- Tax credit of
 - 10% of total R&D costs *plus*
 - 40% of increase in R&D costs
- Maximum tax credit is €10 M
- Loss-making companies may carry the accrued credits forward for three years and set against profits. After three years the unused tax credits gives a cash refund. Young innovative companies may get the refund immediately

Claims

- Nearly 3000 claims per year (2760 in 2003)
- Estimated support 2006 is €800 - € 1000 M

Note: Companies can apply for both the YIC and the Research Tax Credit System

Source: "Guide pratique – La Jeune Entreprises Innovantes", "Guide du Crédit d'Impôt Recherche"

The UK tax incentive works primarily through tax allowances

The U.K. incentive scheme for innovations

Background

- 2000: Tax relief for SMEs
- 2002: Tax relief extended to all companies
- 2002: Special tax relief for vaccine research targeting third world diseases
- A key component in UK ambition to raise R&D spending to 2.5% of GDP by 2014

Eligible Companies

- Any UK company can claim the support
- SMEs are favoured by larger support level and a payable tax credit if unprofitable
- Tax relief is claimed in the declaration of income by self assessment of R&D costs

Tax Benefits

- Extra deduction allowed for R&D costs
 - 150% for research SMEs
 - 125% for large companies
- Unprofitable SMEs can claim a payable credit of 24% of R&D costs
- The payable credit comes with a discount of ~80% and the firm can instead choose to carry the losses forward to set against later profits
- There is no maximum limit for credits

Claims

- April 2000 to Dec. 2005: Nearly 20000 claims
- 90% of SME support through the payable credit!
- According to company survey:
 - >50% say tax relief increase level of R&D
 - Tax relief gives better long-term planning

Norway gives a limited support to a large number of companies

The Norwegian “SkatteFUNN” program

Background

- 2002: SkatteFUNN (“Tax Fund”) was introduced for companies with <100 employees
- 2003: SkatteFUNN extended to all companies
- SkatteFUNN is the major Norwegian instrument to support business R&D
- Norway aim to increase ratio R&D/GDP by 80% between 2004 and 2010

Eligible companies

- Any Norwegian company can apply for the support
- SMEs are slightly better treated relative to large companies
- Collaborations with research institutions are favoured (double maximum support)

Benefit

- A tax credit of
 - 20% of R&D costs (SME)
 - 18% of R&D costs (large companies)
- The maximum support is 0.8 M NOK / company but 1.6 M NOK / company if the project involves a collaboration with a research institute
- The support is a refundable tax credit
- The support is connected to a specific R&D project carried out by the company

Claims

- 6009 companies received support in 2004
- According to company survey:
 - 80% of financed projects would not have been carried out without SkatteFUNN
 - 72% say SkatteFUNN is central to growth strategy

Main program characteristics

	Canada	France	Norway	UK
Tax credit	Up to 35% of R&D costs	10% of R&D volume + 40% of incr. in R&D	18-20% of R&D costs	-
Tax allowance	-	-	-	125-150% of R&D costs
Payable credit	Yes	Available to young SMEs	Yes	Available to SMEs
Other incentives	-	Exemption from social costs for R&D empl. (YIC)	Collaborations academia-industry promoted	-

All four programs are predictable, generous and demand moderate administration. UK and Norway score high on simplicity

	Canada	France	Norway	UK
Generosity	High	Generous, in particular to young and fast growing R&D companies	Generous overall, but very low maximum support	Medium - future tax deductions surrendered for refund today
Predictability	High	High	High	High
Administrative burden	Moderate	Moderate	Minimal	Moderate
Simplicity	Thresholds complicate the system	Based on incremental level and many thresholds	Very simple	Simple
Targeting	SMEs	SMEs, research intensive companies	General Collaboration with research institutes	SMEs

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Simplicity, predictability and liquidity are keys in a well-designed program to stimulate business R&D

General recommendations

- Define the goal and level of ambition. If the budget is limited, a targeted grant to one or several strategically important areas might be preferable.
- Include a payable credit option for unprofitable companies, and let the money reach the company as soon after the R&D outlays have occurred as is practically possible
- Avoid bureaucracy — the British system of self-assessment of R&D outlays is one attractive alternative
- Stick to a straightforward definition of R&D for tax purposes
- Avoid categorising companies with respect to age and ownership (private and public companies)
- Avoid thresholds as far as possible — simplicity is preferable
- Outline the tax relief in close collaboration with industry
- Even before launching the tax incentive program, plan for continuous evaluation together with industry
- Avoid major changes to existing programs; predictability is a virtue

Exemption from social costs is the most cost-efficient way to stimulate innovation and create high-quality job opportunities

Recommendation: Adopt Innovative Company status

Eligible companies

- SMEs spending >15% of costs on R&D

Benefits

- Exemption from social costs for all employees carrying out R&D related work

Administration

- Let companies apply for the status
- Reassess companies' status at regular intervals

Strengths

- Simplicity
- Immediate effect on cash-flow
- Resources are concentrated to the most R&D intensive firm
- Creates job opportunities in R&D

Weaknesses

- Bureaucracy and arbitrariness in granting the status must be avoided